

The Quest for Salient Features of Effective
Water Resources Management Systems:
Assessing the English and Ethiopian Water
Policies and Laws

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Thesis

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in partial fulfilment

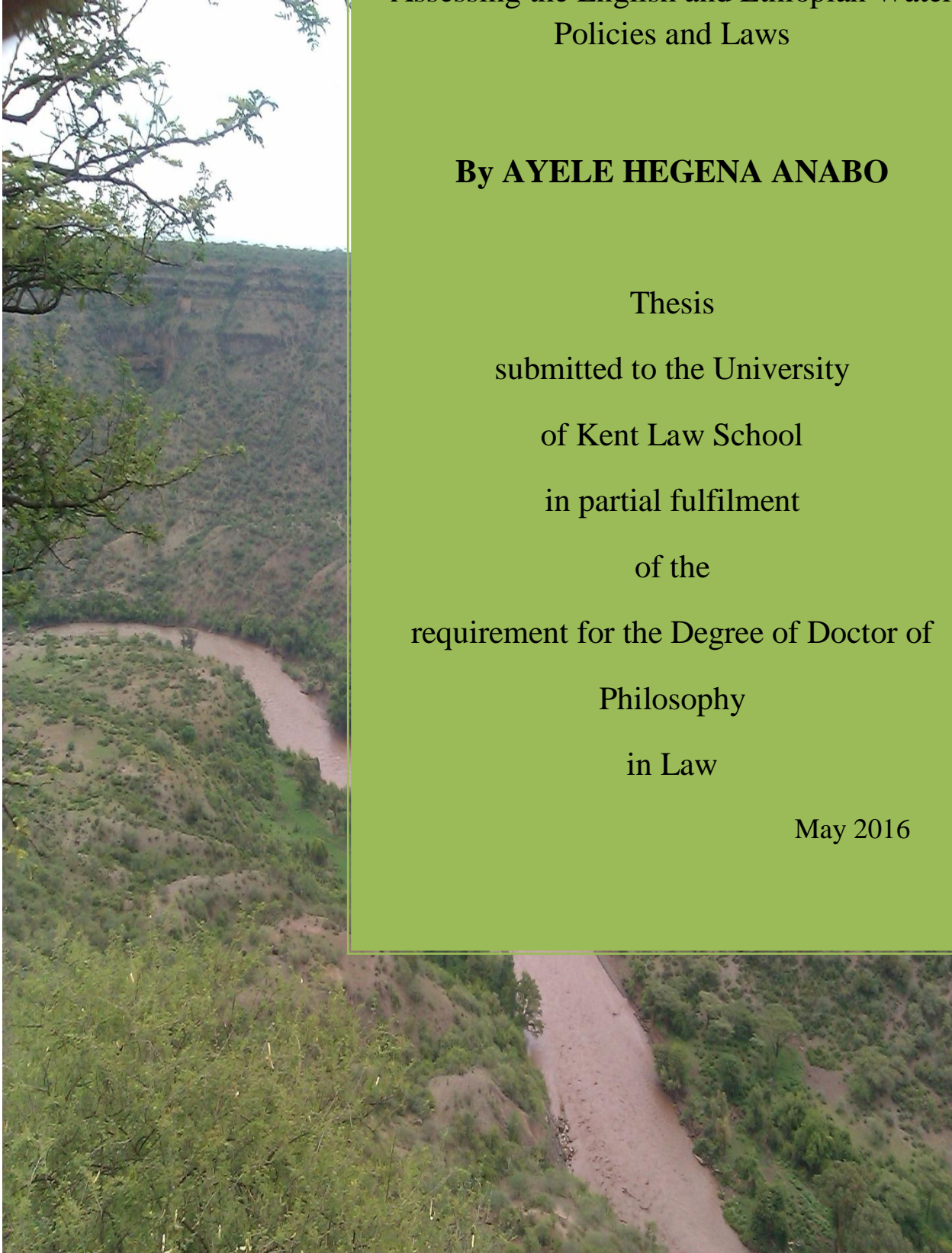
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Declaration

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Dedication

This thesis is lovingly dedicated to my mother, Shawo Handino, for her constant love, support and encouragement that have sustained me throughout my life.

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Acronyms

AMCOW: African Ministerial Conference on Water

AU: African Union

BHC: Basin High Council

CBD: Convention on Biological Diversity

CCG: Consumer Challenge Group

CCWater: Consumer Council for Water

CFA: Cooperative Framework Agreement

CIS: Common Implementation Strategy

CIWEM: Chartered Institution of Water and Environmental Management

COP: Conference of Parties

Defra: Department for Environment, Food and Rural Affairs

DWI: Drinking Water Inspectorate

EU: European Union

FAO: Food and Agricultural Organization

FDRE: Federal Democratic Republic of Ethiopia

IWRM: Integrated Water Resources Management

MDGs: Millennium Development Goals

MERET: Managing Environmental Resources to Enable Transitions

MoWE: Ministry of Water and Energy Resources

NEPAC: New Partnership for Africa's Development Agency

NEPAD: New Partnership for Africa's Development

OAU: Organization of African Unity

OECD: Organization for Economic Co-operation and Development

Ofwat: Office of Water Services

PSNP: Productive Safety Net Programme

PTD: Public Trust Doctrine

RBMP: River Basin Management Plan

SADC: Southern African Development Community

SDGs: Sustainable Development Goals

SLM: Sustainable Land Development

TFEU: Treaty on the Functioning of the European Union

UN: United Nations

UNDP: United Nations Development Programme

UNEP: United Nations Environment Programme

UNEP-DHI: United Nations Environment Programme Centre for Water and Environment

UNFCCC: United Nations Framework Convention on Climate Change

UNESCO: United Nations Educational, Scientific and Cultural Organization

WASHCo: Water and Sanitation Committee

WFD: Water Framework Directive

WRM: Water Resources Management

WRMP: Water Resources Management Plan

WSRA: Water Services Regulation Authority

WWAP: World Water Assessment Programme

WWF: World Wildlife Fund

Abstract

The shortage of water as a resource is a threat to which both Ethiopia and England are exposed. This vulnerability of the countries necessitates the question of whether existing management systems for water resources will promote the sustainability of such resources. With growing natural resource insecurity over the last fifty years, the tragedy of the commons and the integrated water resources management (IWRM) approach are at the forefront. This study evaluates the tragedy of the commons and the IWRM approach to identify key features of effective water resource management (WRM) systems. The study also assesses the effectiveness of English and Ethiopian systems by reference to their salient features, to explore the extent to which the major facets of an effective system are reflected within the countries water policies and laws. The evaluation demonstrates that in the case study countries, some such factors have already been reflected within their water policies and laws. From the overall review of each countries' water policies, it may be argued that the contemporary policies that are in place generally accommodate some of the main attributes of an effective management system for water resources if they are accompanied by proper water laws, implementation strategies and institutional remits that are designed to promote water security. However, while some key features of an effective WRM system can already be seen in the case study countries' water laws, the initiatives which have been taken are limited and varied. Particularly, in Ethiopian WRM systems, the progress made to incorporate the main elements into binding law were slow. Even if some features have been reflected within the water laws of both jurisdictions, theirs scope is limited and incomprehensive. Moreover, their implementations are weak and incomplete in both jurisdictions. This study demonstrates that there has not been much deviation from the 'traditional' way of managing water resources.

Chapter One: Introduction

1.1 Backgrounds

1.1.1 The concept of security

The notion of 'security' is not a new concept on the political and legal agenda; it is an over-used notion, which has no common understanding.¹ Traditionally, the idea was conceived under the threat of war and military aggression and dominated by a narrow perspective in relation to conflicts.² The notion's interpretation was increasingly limited to war and conflicts. In this context, the concept is perceived as a demand for taking counter actions to control the risks of war.³ This realm of conceptualization assumes that there are actual or possible military threats that require a framework to regulate them.⁴ Through this perception, security is seen as the capacity of a state to manage military threats. The appreciation that is given to managing possible or actual war threats remains necessary, even in this day; states may well have actual or potential war threats. Conflict is amongst the threats endangering human life and property. Predictably, humans are unsafe when they live in a potential or actual conflict zone.

The problem of this traditional security conceptualization is that it does not encompass the daily threats to the lives and wellbeing of most people and ecosystems, and fails to appreciate the protection of a range of values.⁵ Nowadays, various non-military challenges threatening humanity and healthy ecosystems are on the rise across the globe. Among these, water security is one of the critical challenges. Its insecurity 'is as big as malaria, as big as HIV/AIDS. It's bigger than tsunamis, bigger than earthquakes; more people are affected each year by the water crisis than by all wars in any given year. It's a crisis as big as we face ... Our lack of will to grapple with this issue is astonishing and perhaps criminal'.⁶ In 1994, a change in institutional arrangements of security commenced with the adoption of the UNDP report on 'human security', which outlined security by

¹ Sadia Mushtaq, 'Security perception: an overview' (2011) 1(10) *Berkeley Journal of Social Sciences*, 1.

² Ken Booth, 'Security and emancipation' (1991) 17(4) *Review of International Studies*, 318 <www.jstor.org/stable/20097269> accessed 2 November 2010.

³ Max Manwaring, 'The new global security landscape: the road ahead', (2000) 11(3) *Low Intensity Conflict & Law Enforcement*, 190 <<http://dx.doi.org/10.1080/0966284042000279993>> accessed 5 September 2013.

⁴ *ibid.*

⁵ *ibid.*

⁶ Ban Ki-moon, 'Time Is Running Out on Water', Davos World Economic Forum (24 January 2008). <<http://www.un.org/apps/news/infocus/sgspeeches/search-full.asp?statID=177>> accessed 10 June 2012

expanding its traditional landscapes.⁷ At present, the interpretation of security has been increased to accommodate a range of threats. The traditional perspective, a narrow interpretation which associated security with the military and with conflicts, has changed with the introduction of ‘non-traditional security challenges’.

The bedrock of security was conceived with the notion of the presence of a specific value that is exposed to threat.⁸ This idea is related to the protection of a given value to provide a stable environment.⁹ Practically, the concept of security may demand relatively favourable conditions that provide a sustainable guarantee for the specific value, with regard to its need to receive protection or improvement, and provide strategies to mitigate or adapt to the threats. By doing so, security aims to avert a risk or limit the impacts of damage, but the failures to take measures are likely to exacerbate the impacts of risk.

In nature, a safe environment is relative—some people or beings prefer to live in an environment in which others may not consider as the right place to stay. Beings accept an environment when it fulfils some of the requirements that they consider necessary for them to stay, or they adapt to an unfavourable environment if they have no choice. Some threats may be fully resolved, and others may not. In such instances, the option may be to design strategies that assist in coping with the conditions that generate threats or with the threats themselves.¹⁰ Particularly, security demands strategies that contribute to preventing, improving or mitigating vulnerability.¹¹

1.1.2 The concept of water security

The notion of water security is not as well discussed when compared with ‘food security’ and ‘energy security’, although it is at the heart of these two threats.¹² Arguably, for instance, in the governance of the Nile water resources in Ethiopia, the introduction of a water security model as part of water resources management (WRM) is a recent phenomenon. In 2010, the Cooperative

⁷UNDP, *Human Development Report* (1994) 1–136. <http://hdr.undp.org/sites/default/files/reports/255/hdr_1994_en_compelete_nostats.pdf> accessed 16 June 2015.

⁸ Estrela Solidum, Roman Dubsy and Teresita Saldivar-Sali, ‘Security in new perspectives’ (1991) *Philippine Social Sciences Review*, 119.

⁹ *ibid.*

¹⁰ *ibid.*

¹¹ *ibid.*

¹² Janos Bogardi, David Dudgeon, Richard Lowford, Eva Flinkerbusch, Andrea Meyn, Claudia Phal-Wostel, Konrad Vielhauer and Charles Vorosmarty, ‘Water security for planet under pressures: interconnected challenges of changing world call for sustainable solution’, (2012) 4(35) *Current Opinion in Environmental Sustainability*, 43.

Framework Agreement (CFA), setting a shared vision of the equitable utilization of the Nile's water, incorporated the phrase 'water security' as an alternative approach to resolving the persistent contention over the Nile's water.¹³

Water securitization is now becoming a new power that contemporary water hydro-politics assume in order to sustain water. The securitization of the Nile's water, however, could be considered to encourage inequitable water utilization.¹⁴ Makonnen notes that the introduction of the securitization model within WRM would not itself bring about a positive solution to the contemporary challenges to the use of the Nile's water.¹⁵ Rather, it would exacerbate inequitable water utilization, by supporting the status quo that maintains the behaviour of those countries that are benefiting from conventional treaties, and it would encourage the inequitable water utilization already in place to remain uncontested. He also argues that equitable water utilization would not materialize through mere water securitization. The intervention needed would not be the insertion of water security in the water law, but rather the introduction of a set of precise institutional arrangements, which govern the riparian states' behaviour with regard to inequitable water use.¹⁶ He concludes that, as a remedy for the Nile's contemporary water challenges, a 'crucial first step in this regard would be the complete removal of the hegemonic bait of "water security" from the Common Framework Agreement. Breaking the sanctioned discourse and bringing, instead, the cardinal question of equitable reallocation to centre stage is another task of no less importance.'¹⁷

The introduction of water security in the common framework agreement may be seen as coming from good intentions, but without developing a comprehensive scheme for implementation, it may not sufficiently be supportive to enhance the sustainability of water resources. Water security is strongly linked to the state of a set of rules designed to ensure water sustainability. In the Nile water usage, existing legislative institutional and management structures are inadequate to ensure

¹³ Agreement on the Nile River Basin Cooperative Framework (2010), articles 2(f), 3(15) and 14.

¹⁴ Dereje Makonnen, 'From tenuous legal argument to securitization and benefit sharing: hegemonic obstinacy – the stumbling block against resolution of the Nile water question' (2010) 4(2) *Mizan Law Review*, 233–35.

¹⁵ *ibid*, 233–34.

¹⁶ *ibid*, 235.

¹⁷ *ibid*, 257.

increasing water shortages.¹⁸ While the introduction of precise rules for equitable water-sharing laws is one of the key aspects for the sustainability of shared water, in the contexts where water shortage is becoming a critical challenge, water securitization is important, since its management requires the political will of the water-sharing countries.¹⁹

However, not all Nile water challenges will find a solution through the removal of the concept water security from existing policy instruments, although the problem is a starting point for introducing a set of comprehensive water resource sustainability rules. An introduction of the notion has its own importance in setting the urgency level at which the water resource challenges become threatening, and curbing the growing water threats may demand more robust measures. Noticeably, the underlining bedrock of water securitization is the existence of multifaceted water challenges, but sensible institutional arrangements for WRM are required to bring about comprehensive reform. The existing Nile water governance system failed to address contemporary challenges. In WRM, equitable water sharing alone is not enough to safeguard its sustainability. What is needed, then, is the introduction of water security with a comprehensive set of rules at different scales to regulate the threats to water sustainability.

Water security may be seen as a ‘catch-box’, which brings a range of threats under scrutiny. For instance, the 2006 UN *Human Development Report* describes water security as ‘ensuring that every person has reliable access to enough safe water at affordable prices to lead a healthy, dignified and productive life, while maintaining the ecological systems that provide water and also depend on it’.²⁰ Similarly, Grey and Sadoff define water security as an ‘acceptable quantity and quality of water for health, livelihoods, ecosystems and production coupled with an acceptable level of water-related risk to people, environment and economics’.²¹ Water resources are threatened when they become inaccessible or unsuitable for satisfying the needs of humans and the ecosystem.²² When conducting an assessment of water security, ‘whether or not adequate quality water [is] available for use, and [whether] individuals and ecosystems have access to adequate water’ are important

¹⁸ Intelligence Community Assessment (ICA), ‘Global water security’ (2 February

2012) <www.dni.gov/files/documents/special%20Report> accessed 7 September 2013.

¹⁹ Patricia Wouters, ‘The relevance and role of water law in sustainable development from “Hydrosovereignty” to “Hydrosolidarity”’ (2000) 25(2) *Water International* (International Water Resources Association), 202–03.

²⁰ UNDP, *Human Development Report: Beyond scarcity: power, poverty and the global water crisis* (UNDP 2006) 3.

²¹ David Grey and Claudia Sadoff, ‘Sink or swim? Water security for growth and development’ (2007) 9 *Water Policy*, 545.

²² UNDP (n 20) 3.

factors.²³ However, the quantity of available water alone does not guarantee water security. Rather, the available water must be of acceptable quality to meet a range of needs. Inadequate quality or quantity of water means that the security of people and ecosystems is under threat. In addition, there must be responsive and comprehensive institutional arrangements that control factors contributing to water insecurity at different levels.

1.1.2.1 Water scarcity as a security challenge

Freshwater resources are vulnerable to drought and scarcity. Both these threats are characterized by the imbalance of demands with the available water resources in a specific body of water.²⁴ However, these threats – drought and water scarcity – suggest two different phenomena. Drought is experienced when a country or an area experiences a temporarily lower than average amount or period of precipitation, causing an imbalance between water demands and available water.²⁵ It is an on-and-off phenomenon, varying by seasons or years. Drought is an uncertain natural event, often characterized by it being impossible to know when it is going to happen and when it will end.²⁶

In 2007, the European Commission adopted a Communication on water scarcity and droughts. This Communication considers ‘drought’ as ‘a temporary decrease in water availability due for instance to rainfall deficiency’ and ‘water scarcity’ as ‘water demand [that] exceeds the water resources exploitable under sustainable conditions’.²⁷ Similarly, in 2010, the European Commission defined drought and water security by using as a reference when and how they occur. The European Commission referred to drought as ‘a temporary decrease in water availability, for example, when it doesn’t rain over a long period of time’.²⁸ On the other hand, it maintained that water security ‘occurs when demand for water exceeds the available sustainable resources’.²⁹ The European Commission uses the water exploitation index (WEI) as an indicator of the pressure or stress on

²³ Patricia Wouters, *Water security: global, regional and local challenges* (Institute for Public Policy Research 2010) 7.

²⁴ Luis Pereira, Ian Cordery and Iacovos Iacovides, ‘Coping with water scarcity’, (2002) 58 *UNESCO International Hydrological Programme*, 7.

²⁵ *ibid.*, 6.

²⁶ Environment Agency, ‘Managing drought in England and Wales – report 2011’ (GEHO0911BUDJ-E-E, version 2, issue date: 9 September 2011) <www.eauc.org.uk/file.../managing_drought_in_England_and_wales.pdf> accessed 20 September 2014.

²⁷ European Commission, ‘Communication from the Commission to the European Parliament and the Council, addressing the challenge of water scarcity and droughts in the European Union’ COM (2007) 414 Final.

²⁸ *ibid.*

²⁹ European Commission, *Water scarcity and drought in the European Union* (brochure, August 2010).

freshwater resources.³⁰ The WEI indicates ‘the amount of water abstracted each year as a proportion of total long-term freshwater resources’.³¹ WEI values above 20 per cent means that a water resource is under stress, and a value above 40 per cent is considered as severe water stress.³² This suggests that in a normal year, the water resources exploitation values are below 20 percent, and such water abstraction is sustainable. The WEI of the European Commission attaches the notion of ‘water scarcity’ to a human problem that leads to long-term water demand and supply imbalances, whereas ‘drought’ is associated with a natural attribute. However, human pressures may exacerbate the drought problem, which – though not wholly prevented by water policy and law reforms – may yet be anticipated by legislative mechanisms that are important in taking actions that will minimize its impact.³³

Arguably, water scarcity does not have a common meaning that enables the objective interpretation of the notion. This may create confusion as to what exactly the concept of ‘water scarcity’ entails; it may convey the idea of threats to water security or the designing of proper policy and law. Often, the notion is considered as the ‘long-term ... insufficiency of water to satisfy average demands’.³⁴ This does not mean that the state of water scarcity within a water body is the same throughout the seasons. In nature, the availability of water in a water-scarce zone may change with the levels of rainfall that a water body obtains and with the water demands in given areas. Variations in water quantity and quality may also influence the availability of water, either positively or negatively.

Water availability is often measured objectively by using the ‘Falkenmark indicator’ or the ‘water stress index’.³⁵ This index was developed by Malin Falkenmark, a Swedish hydrologist. Through this index, the state of the available quantity of water is defined by dividing the total amount of water resources that are available for defined water uses – such as for food and cash crops, for supply and industries – by the population of a country, with the resultant figure shown in terms of what is

³⁰ *ibid.*

³¹ *ibid.*

³² *ibid.*

³³ William Howarth, *Integrated water resources management and the right to water security* (Policy Brief, FLJS 2013)

6.

³⁴ European Environment Agency Report No. 2, ‘Water resources across Europe – confronting water scarcity and drought’ (2009)8–9. <www.eea.europa.eu/publications/water-resources...europe/download> accessed 25 September 2013.

³⁵ Global Water Forum, ‘Understanding water scarcity: defining and measurements’ (7 May 2012).

<<http://www.globalwaterforum.org/2012/05/07/understanding-water-scarcity-definitions-and-measurements/>> accessed 15 March 2016

available per person per year within that country.³⁶ Considering the state of the availability of water, through the Falkenmark indicator, countries are classified into four categories: water abundant, water stressed, water scarce and under absolute water scarcity. Any country that has over 1,700 cubic metres per person per year is considered as water abundant, whereas countries below the threshold of 1,000 cubic metres per person per year are said to be experiencing water stress.³⁷

Water stress levels may be characterized by a blue light warning that suggests possible water scarcity (red light) unless measures are soon put in place and implemented. A country is exposed to water scarcity when the water supplies fall below the threshold of 1,000 cubic metres per person per year; and absolute water scarcity is the worst state of water shortage, when water availability drops below 500 cubic metres per person per year.³⁸ A situation of absolute water scarcity may be equated with water resource ruin, in which the recovery of an affected water ecosystem is difficult or even impossible. It is projected that, by 2025, 1.8 billion people will live in countries or regions experiencing absolute water scarcity, and almost half of the world's population will be living in areas experiencing water stress.³⁹

The Falkenmark indicator, or water stress index, gives an approximate water quantity level, which focuses on an administrative boundary-oriented water availability measurement. It also lacks the identification of local variations within a country, and fails to give a clear picture as to how to identify water shortages within water bodies that are shared between countries. The availability of water may vary even within a single basin. Moreover, it is unclear how this model can accommodate water recycling, wise water usage and other related water footprints. The scheme focuses on water quantity concerns and ignores whether available water is safe for consumption. It considers all the country's water demands at a similar level.⁴⁰ However, despite these limitations, the Falkenmark indicator defines the average state of water availability in a country, and indicates national, regional or global implications of water availability.

³⁶ Malin Falkenmark, 'The massive water scarcity now threatening Africa: why isn't it being addressed?' (1989) 18(2) *Ambio*, 115.

³⁷ ICA (n 18) 2.

³⁸ Pereira et al. (n 24) 1.

³⁹ UN, '2007 World Water Day. Coping with water scarcity: challenge of the twenty-first century' (2007) 10. <www.unwater.org/downloads/escarcity.pdf> accessed 21 June 2015.

⁴⁰ Frank R Rijsberman, 'Water scarcity: fact or fiction?' (2006), 80 *Agricultural Water Management*, 6–8.

Another scheme used to define water scarcity is the ‘criticality ratio’, which is ‘the ratio of water use to water availability in a watershed or country’.⁴¹ It includes the state of all ‘the water withdrawals for human use’ as a scheme to define the water scarcity of the country.⁴² The model categorizes a country as being under water stress when its total water withdrawals are between 20 and 40 per cent and under severe stress when withdrawals exceed 40 per cent.⁴³ This approach does not consider variations in countries’ water resources and focuses on water quantity management. In many parts of the globe, an estimated 1.4 billion people now live in river basins where water use exceeds the minimum recharge levels or is near to reaching this status.⁴⁴ Similarly to the previous scheme, this model fails to consider water quality and other factors that contribute to water availability threats.

A third approach classifies water scarcity into two different spectrums, namely economic and physical water scarcities. This approach was developed by the International Water Management Institute.⁴⁵ Through this scheme, a country is under economic water scarcity when the water prediction suggests that a country is unable to meet its water demands without the development of further infrastructures to increase water supply. This nature of water scarcity is often experienced due to a lack of infrastructures and to water mismanagement problems.⁴⁶ On the other hand, if the prediction suggests that a country is unable to meet its demands despite further infrastructures being developed, the country is considered to be experiencing physical water scarcity.⁴⁷ The physical availability of water concerns what exists naturally to provide for the demands of humans and ecosystems.⁴⁸ It is related to the relative lack of sufficient freshwater within nature.⁴⁹ Globally, some 1.2 billion people (almost one fifth of the world’s population) are living in areas where there is physical water scarcity, and 1.6 billion people are experiencing economic water

⁴¹ Joseph Alcamo, Petra Döll, Frank Kaspar and Stefan Sieber, ‘Global change and global scenarios of water use and availability: an application of water’ (University of Kassel 1997)3.

⁴² Rijsberman (n 40) 6.

⁴³ P Raskin, P Gleick, P Kirshen, G Pontius and K Strzepek, *Water futures: Assessment of long-range patterns and problems. Comprehensive assessment of the freshwater resources of the world* (Stockholm Environment Institute 1997) 3.

⁴⁴ UNEP, *Vital water graphics: an overview of the state of the world’s fresh and marine waters* (2nd edn, UNEP 2008).

⁴⁵ Rijsberman(n 40)3.

⁴⁶ RICS Research Report, ‘Water scarcity and land use planning’ (2011) 12.

<www.joinricsineurope.eu/uploads/files/WaterScarcityandlandUsePlanning.pdf> accessed 5 September 2013.

⁴⁷ *ibid.*

⁴⁸ Pereira et al. (n 24) 10.

⁴⁹ Peter Gleick, ‘Water in crisis: paths to sustainable water use’,(1998) 8(3) *Ecological Applications*,574.

scarcity.⁵⁰ Nevertheless, despite the centrality that this approach gives –with it being wider in its scope and in the nature of the threats compared to the former models – this approach is not inclusive in accommodating a range of water availability threats.

The fourth scheme is the ‘water poverty index’.⁵¹ This model uses a range of ideas, such as the level of access to water, water quantity, water quality and variations, the purposes of water uses, and the capacity of WRM.⁵² It demonstrates that uncontrolled and unregulated pollutant discharges endanger the availability of water.⁵³ Moreover, this approach suggests that over-abstraction of water and unregulated water use may generate water insecurity, which exacerbates poverty and marginalization for many people, and exposes the environment to severe dangers.⁵⁴

In 2004, 1.1 billion people in the global community were without access to a water supply, and 2.4 billion people were without access to improved sanitation facilities.⁵⁵ The 2012 UN-Water fact sheet indicated that 783 million people were without access to safe drinking water, and 2.5 billion people lacked basic sanitation, such as toilets or latrines.⁵⁶ The recent report by the World Health Organization and UNICEF Joint Monitoring Programme noted that 750 million people around the world lack access to safe water and 82 per cent of those who lack access to improved water live in rural areas, while 18 per cent live in urban areas.⁵⁷ Globally, on average, nearly 1,000 of these people die every day from diarrhoeal diseases linked to unsafe drinking water.⁵⁸ This problem can be controlled through providing access to safe water supplies and sanitation.⁵⁹

⁵⁰ RICS Research Report (n 46); see also UN-Water, ‘Water for Life 2005–2015: Water scarcity’ (2014) <www.un.org/waterforlifedecade/scarcity.shtml> accessed 20 February 2016.

⁵¹ *ibid.*

⁵² *ibid.*

⁵³ UNDP (n 20) 143.

⁵⁴ *ibid.*

⁵⁵ World Health Organization and UNICEF, ‘Meeting the MDG drinking water and sanitation target: the urban and rural challenge of the decade (2006)’ <www.wssinfo.org/fileadmin/user_upload/resources/1198239354-JMP_06.pdf> accessed 17 June 2015.

⁵⁶ The United Nations Department of Public Information, ‘The future we want: water and sanitation’ (fact sheet, 20–22 June 2012) (RIO +20, United Nations Conference on Sustainable Development, 4–6 June 2012).

⁵⁷ World Health Organization and UNICEF Joint Monitoring Programme ‘Progress on drinking water and sanitation – 2014 update’ (2014) <http://apps.who.int/iris/bitstream/10665/112727/1/9789241507240_eng.pdf>. accessed 17 June 2015.

⁵⁸ UNICEF Press Centre, ‘World Water Day: nearly 750 million people still without adequate drinking water – UNICEF’ (updated: 20 March 2015) <www.unicef.org/media/media_81329.html> accessed 17 June 2015.

⁵⁹ UN, ‘Water, a shared responsibility: the second United Nations world water development report’ (2006) 18–19 <www.unesco.org/water/wwap/> accessed 3 February 2013.

Likewise, in developing countries, up to 90 per cent of untreated wastewater flows into water bodies and 70 per cent of industrial waste is dumped untreated into waters, where they pollute the usable water supplies and threaten health, food security and access to safe drinking and bathing water.⁶⁰ These threats have cross-dimensional elements for the safety and wellbeing of humanity, the environment and economic development. Through these challenges, humanity and ecosystems are exposed to a range of threats, The ‘water resources and the related ecosystems that provide and sustain them, are under threat from pollution, unsustainable use, land-use changes, climate change and many other factors’.⁶¹ Since 1990, half of the world’s wetlands have been lost because of human pressures.⁶² This vulnerability demonstrates that – while conflict and war risk people’s lives – water scarcity endangers the economy and ecosystems, and water contamination also risks the health and lives of people.

Compared with the previous schemes, the water poverty index is more comprehensive and it accommodates a range of threats. This index further suggests that water scarcity varies in the context within which the definition is applied. This does not mean that the water poverty index alone is comprehensive in defining what water scarcity constitutes in real terms, or that the other models are unhelpful in defining water scarcity. No single method among the above-mentioned schemes is inclusive in defining water scarcity in all contexts, but one model may be complemented by another to define the actual water availability in a given water zone.

As the over-withdrawal of water leads to water scarcity, water pollution also affects the availability of water.⁶³ Thus, natural water availability, the level of water supply infrastructure and man-made pressures affect the state of water availability (see Figure 1). The relative strength of each scheme may depend on the nature of the water security threats to which a given country or water body is exposed.

⁶⁰World Water Development Report (2012) <www.unesco.org/new/en/natural-science/environment/water/wwap/wwdr4-2012/> accessed 20 September 2013.

⁶¹Global Water Forum (n 35).

⁶² UNEP Report (2012) <www.unep.org/annualreport/2012/#> accessed 7 October 2012.

⁶³Bjørn-Oliver Magsig, ‘Introducing an analytical framework for water security: a platform for the refinement of international water law’ (2009) 20 *Water Law*, 65.



Figure 1: Factors contributing to water insecurity

1.1.2.2 The degree of availability of adequate safe water

The earth is covered by around 1.4 billion km³ of water in volume and, from this figure, freshwater constitutes only 2.5 per cent.⁶⁴ Around 97 per cent of the earth's water resources are salty water, which cannot be accessible without the process of desalination being carried out. Freshwater comprises a small portion of the earth's water, but its state of accessibility is constrained by the nature of its existence. Only 0.3 per cent of freshwater exists in lakes and rivers that are relatively easily available for human use.⁶⁵

Of the remaining freshwater, 30 per cent is groundwater, while 70 per cent is situated within ice and snow cover in mountainous areas.⁶⁶ Freshwater resources are not evenly distributed by place.⁶⁷ The

⁶⁴UNEP, NEP (2002). Vital Water Graphics: An Overview of the State of the World's Fresh and Marine Waters <http://www.unep.org/vitalwater> accessed 3 February 2013.

⁶⁵ibid.

⁶⁶ibid.

⁶⁷ Gleick (n 49)574.

availability of safe water resources varies regionally, seasonally and annually.⁶⁸ Periodic water variation affects the availability of suitable water supplies.⁶⁹ Some geographical areas are humid, while others are semi-arid or arid; and even in humid zones; water availability varies by place and time. In addition, human-induced pressures also threaten the availability of freshwater resources.⁷⁰ Water resources are wasted, polluted and mismanaged by users in a way that is unsustainable.⁷¹ As a result, the human-induced pressures reduce water security.⁷² In particular, when the available water resources become scarce, human-induced pressures exacerbate the challenges to water security.⁷³

Although the precise impacts of climate change vary around the world, it is predicted that climate change may cause greater uncertainty in rainfall patterns. Temperatures rising by 2 to 3°C due to climate change would expose between 1.1 and 3.2 billion people to water scarcity problems.⁷⁴ As a result, availability of water resources is likely to change significantly. The challenge is likely to exacerbate with increasing population growth and climate change.⁷⁵ With increasing climate change challenges, '[t]he greatest vulnerabilities are likely to be in unmanaged water systems and systems that are currently stressed and unsustainably managed due to policies that discourage efficient water use and protection of water quality, inadequate watershed management, failure to manage variable water supply and demand'⁷⁶... In unmanaged systems there are few or no structures in place to buffer the effects of hydrological variability on water quality and supply.'⁷⁷

The *Third Assessment Report* of the Intergovernmental Panel on Climate Change states that 'in unsustainably managed systems, water and land use can add stresses that heighten vulnerability to climate change'.⁷⁸ In unmanaged or poorly managed water bodies, unsustainable water

⁶⁸ UN, 'Water Status Report on integrated water resources management and water efficiency plans (2008) 3 (prepared for the 16th session of the Commission on Sustainable Development, May 2008).

⁶⁹ William Howarth, 'Planning for water security' (2012) *Journal of Planning & Environment Law*, 357.

⁷⁰ Bogardi et al. (n 12) 1–2.

⁷¹ UNDP, *Human Development Report. Coping with water scarcity: challenge of the twenty-first century* (UN-Water, FAO2007) <www.fao.org/nr/water/docs/escarcity.pdf> accessed 23 August 2012.

⁷² Second World Water Forum, 'Ministerial Declaration of the Hague on water security in the 21st century' (2000) <www.worldwaterforum.net/index.html> accessed 3 February 2013.

⁷³ *ibid.*

⁷⁴ Intergovernmental Panel on Climate Change, *WGII Fourth Assessment Report 2007* (IPCC 2007) 6.

⁷⁵ European Commission (2007) COM 414 final (n 27) 18.7.

⁷⁶ IPCC (n 74) 6.

⁷⁷ *ibid.*

⁷⁸ RT Watson and the Core Writing Team (eds.) *Climate change: impacts, adaptation, and vulnerability. A contribution of working group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2001) 9.

exploitation, unsustainable watershed exploitation and other environmental pressures bring water resources to the brink of depletion. Increased pressures on water resources result in increased vulnerability, whereas introducing many institutional arrangements that reduce the pressures will lessen this vulnerability.⁷⁹ This challenge is likely to exacerbate with increasing population growth.⁸⁰ This demonstrates that more safeguarding measures may be needed to enhance water security by reducing human pressures.

1.1.2.3 Global trends of water scarcity

Globally, water scarcity is already threatening the earth.⁸¹ The global water shortage map, which was published by *Nature* in September 2010, predicts that by 2050, nearly 80 per cent of the world's population will be exposed to high levels of water security threat.⁸² Water security challenges therefore continue to rise across the globe.⁸³

⁷⁹ *ibid*, 31.

⁸⁰ European Commission (2007) COM 414 final (n 27) 18.7

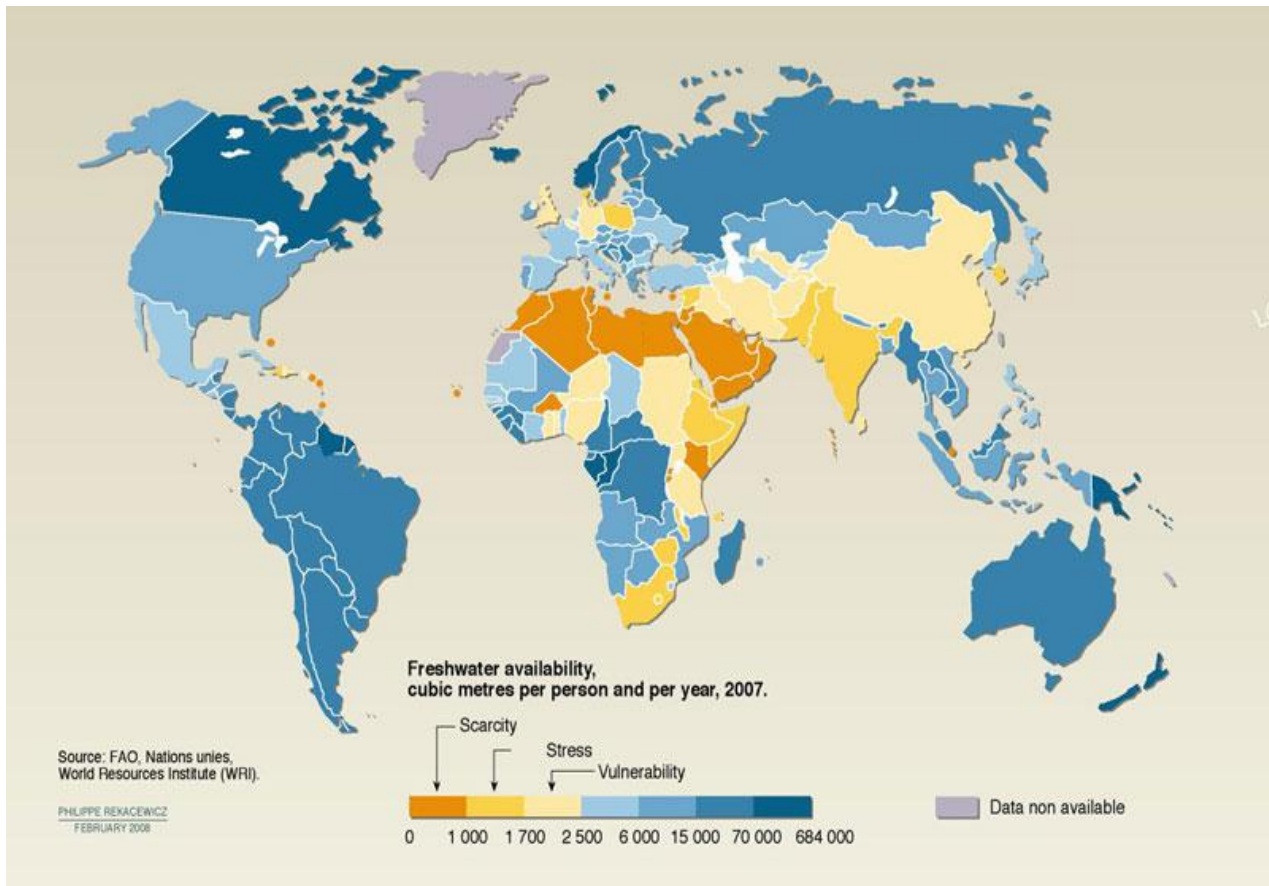
⁸¹ UN-Water, 'Water for Life 2005–2015: Water scarcity'

(2014) <www.un.org/waterforlifedecade/scarcity.shtml> accessed 20 February 2013

⁸² CJ Vörösmarty, PB McIntyre, MO Gessner, D Dudgeon, A Prusevich, P Green, S Glidden, SE Bunn, CA Sullivan, C Reidy Liermann and PM Davies, 'Global threats to human water security and river biodiversity' (2010) 467(7315) *Nature*, 555–56.

⁸³ Wouters (n 23) 4.

Map 1: Global water stress and scarcity⁸⁴



Map 1 indicates the extent of the vulnerability of global countries with regard to the threats to their water security.⁸⁵ Many of the global communities are categorized within the water shortage zone. This data suggests that water scarcity is among the main challenges that humanity and the environment are facing in the twenty-first century across the globe. In many parts of the world, the challenges to the security of water resources are expected to become critical.⁸⁶

Africa is home to the world's longest river, the Nile, and the second largest river by water flow and basin size – the Congo River – is also situated in Africa. There are many other water bodies on the

⁸⁴ Philippe Rekacewicz, 'Global water stress and scarcity' (February 2006)(FAO, Nations Unies, World Resource Institute) <www.grida.no/publications/vg/water2/>accessed 1 February 2013.

⁸⁵ibid.

⁸⁶Oregon State University, *Transboundary freshwater dispute database*<www.transboundarywaters.orst.edu/>accessed 1 February 2013.

continent, and Africa is endowed with abundant freshwater but, paradoxically, the distribution of the water resources is uneven, and many African countries are experiencing water scarcity.⁸⁷ In Africa, a considerable quantity of the water used is wasted due to an inefficient governance system.⁸⁸ The 2009 UN-Water scarcity index has estimated that around three million people per year die due to the lack of safe drinking water and sanitation in Africa.⁸⁹ In Africa, almost a quarter of the region's population lives in a water-stressed country, and the threats will continue to rise unless proper measures are in place.⁹⁰

In particular, the water security threats are likely to be high in the sub-Saharan African countries,⁹¹ with Ethiopia being one of the countries exposed to such threats.⁹² In Ethiopia, a considerable portion of the population, constituting more than 80 per cent, lives in the rural areas, and water shortage through drought is a considerable threat to their livelihoods, and is something that could shock the economy of the entire country.⁹³ A single drought event in 2003 affected approximately 12.6 million people.⁹⁴ This drought resulted in water shortages creating vulnerability to the people.⁹⁵ Map 1 above shows that the whole of Ethiopia is categorized under the water scarcity zone.⁹⁶

Traditionally, water scarcity was understood from the perspectives of semi-arid and arid countries. However, now there are water security problems in humid countries as well.⁹⁷ Water security challenges are 'matters which are of wide geographical concern and extend well beyond the arid countries that have previously been seen as most vulnerable to threats of water insecurity'.⁹⁸ Water

⁸⁷Economic Commission for Africa, 'State of the environment in Africa' (ECA/FSSDD/01/06/2001) 55<<http://allafrica.com/download/resource/main/main/00010021:0bc1b9a35e3a65c4693145a6678874a6.pdf>> accessed 21 April 2014.

⁸⁸ibid, 57.

⁸⁹ Vladimir Smakhtin, Carmen Revenga and Petra Döll, 'UN-Water scarcity index' (2009)<www.grida.no/publications/vg/water2/> accessed 1 February 2013.

⁹⁰ibid, 136.

⁹¹European Union Institute for Security Studies, 'Brief: Water as a stress factor in sub-Saharan Africa' (2013) 1–4<www.iss.europa.eu/uploads/media/Brief_12.pdf> accessed 20 August 2014.

⁹²ibid.

⁹³ UNDP/FDRE, 'Africa water atlas', 1–2<www.unep.org/dewa/Portals/67/pdf/Ethiopia.pdf> accessed 6 September 2013.

⁹⁴ibid.

⁹⁵ibid.

⁹⁶ Rekacewicz (n 84).

⁹⁷ Howarth (n 68) 357.

⁹⁸ Martha Grekos, 'Climate change, water security and flooding: EFRA committee publishes its report' (2005)*Journal of Planning & Environment Law*, 47.

scarcity and drought affect both developed and developing countries, but the impacts are more damaging to economically developing countries, which are already experiencing water security problems.⁹⁹ The water security threats are likely to be high in countries with low economic levels similar to Ethiopia.¹⁰⁰ Even in poor countries, the impacts of problems in water security are likely to be high on the people who are poor.¹⁰¹ Those people who have ‘the economic resources, skills and opportunities to leave their water problem behind’¹⁰² may have the capacity to change and live in the parts of the country where water security challenges are low, or develop infrastructures helping them to manage the threats.

Generally, water use is divided into two groups: consumptive and non-consumptive. The former refers to water use whereby very little water is returned to the water sources after consumption, compared with non-consumptive water use.¹⁰³ This distinction is made by considering ‘the extent to which water that is used for a particular purpose is returned to the source of supply after use’.¹⁰⁴ Despite variation in the degrees, ‘all water abstractive use is consumptive if measured by the proportion of water returned after use as well as the alteration in the quality of water that is returned, due to contamination and heating’.¹⁰⁵ The classification of water use is conducted through considering whether ‘fewer’ or ‘more’ proportions are returned to the water sources after use.

Globally, agriculture is the biggest water user, with irrigation accounting for 70 per cent from overall water withdrawals.¹⁰⁶ The remaining percentages, 20 and 10, are consumed by industries and the domestic sector, respectively.¹⁰⁷ In the world’s least developed countries, agriculture alone accounts for more than 90 per cent of water withdrawals.¹⁰⁸ The agricultural water consumption is expected to increase globally by about 20 percent by 2050.¹⁰⁹ Water for agricultural irrigation and for some industrial processes may take a position of being ‘more consumptive’ followed by the water used for

⁹⁹ UNDP (n 20)156–58.

¹⁰⁰ *ibid.*

¹⁰¹ Smakhtin et al. (n 89).

¹⁰² *ibid.*

¹⁰³ Howarth (n 33) 4.

¹⁰⁴ *ibid.*

¹⁰⁵ *ibid.*

¹⁰⁶ UN-Water (2014), ‘Agriculture is the biggest user, with irrigation accounting for 70% of global water withdrawals’ (last updated 7 October 2014) <www.unwater.org/statistics/statistics-detail/en/c/246663/> accessed 1 February 2015.

¹⁰⁷ *ibid.*

¹⁰⁸ *ibid.*

¹⁰⁹ *ibid.*

drinking and domestic purposes.¹¹⁰ On the other hand, Howarth placed under the ‘less consumptive’ or ‘non-consumptive’ classification the water used in generating hydropower, navigation, supporting fisheries and enabling recreational uses.¹¹¹ The list provided is non-exhaustive, but indicative of a range of human pressures that water laws and policies need to consider. The impacts of water use significantly vary between consumptive and non-consumptive uses, because the extent of water left after use differs.

Of the European countries, nine are listed as being under water stress: Cyprus, Bulgaria, Belgium, Spain, Malta, FYR Macedonia, Italy, the UK and Germany.¹¹² In Europe, 38 per cent of abstracted water is for hydropower and industrial cooling; agriculture accounts for 30 per cent; public water supplies account for 18 per cent; and industry (excluding cooling water) accounts for 14 per cent.¹¹³ Despite water resources being scarce in many European countries, water wastage is prevalent.¹¹⁴ In France, as much as 30 per cent of water is wasted before it reaches consumers, and in Spain this is between 24 and 34 per cent.¹¹⁵

Map 1 above, which indicates global water stress and scarcity, also shows the varying water security in different parts of England; in particular, the threat is higher in the south-eastern and eastern parts of England, where the level of threat is at the stage of water stress. In south-east England, there is less water per person than in arid and semi-arid countries such as Morocco and Egypt.¹¹⁶ ‘Future Water’, the UK government policy strategy regarding water resources, underlines the alarming threats to the availability of water resources in England.¹¹⁷ It was suggested that the UK should consider water security as a core component of policy making to address threats related to unsustainable water use.¹¹⁸ This evidence suggests that England is not immune from water insecurity

¹¹⁰Howarth (n 33) 4.

¹¹¹ibid.

¹¹²European Environment Agency, ‘Sustainable use of Europe’s water? State and issues’ (2000) 7*Environmental Assessment Series*, 10.

¹¹³ibid.

¹¹⁴ibid.

¹¹⁵ibid.

¹¹⁶ Environment Agency, *Water resources in England and Wales – current state and future pressures* (Environment Agency, December 2008) 10 <www.environment-agency.gov.uk>. accessed 29 September 2014

¹¹⁷Defra, *Future water: the government’s water strategy for England* (Defra, February 2008).

¹¹⁸Royal Academy of Engineering, ‘Global water security: an engineering perspective’ (2010) 3–7 <www.raeng.org.uk/publications/reports/global-water-security> accessed 29 September 2014.

problems. The growing water security challenges in south-eastern parts of England may extend to other parts of the country.¹¹⁹In England, there is a considerable degree of human pressure over - freshwater. South-east and eastern England are categorized as areas of ‘water stress from water abstraction’, from which more than 22 per cent of freshwater resources are abstracted.¹²⁰ The threats to water availability lie not only in the south-eastern parts of England; rather, many catchments experience threats to the water that is available for abstraction.¹²¹ Some catchments are exposed to over-abstraction and over-licensing.¹²²

1.1.2.4 Impacts of water scarcity

The sustainable access and availability of safe freshwater is often considered as one of the basic requirements needed for sustainable development.¹²³It is a source of life and a natural resource that sustains our environments and supports livelihoods.¹²⁴ Threats to water resources are cross-dimensional¹²⁵ and may include human health threats, economic crisis and civil strife.¹²⁶Water security is at the centre of sustainable development, and it links to the security of humans and healthy ecosystems.¹²⁷Traditionally, water policy and law tended towards protecting human needs; they were not centrally aimed at protecting the environment, water ecosystems and other living things that rely on water quality and quantity.¹²⁸ Now such imperatives are progressively changing with the growing concerns of human-induced pressures.¹²⁹

The concept of ecosystem is defined as ‘a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit’.¹³⁰ Similarly, the Conference of Parties 5 ‘Convention on Biological Diversity’ (CBD) document describes the term

¹¹⁹Stephen Tromans, ‘Planning and environmental law – uneasy bedfellows?’ (2012) *Journal of Planning & Environment Law*, 83.

¹²⁰Environment Agency (n 116) 5.

¹²¹ *ibid.*

¹²² *ibid.*, 6.

¹²³UN, ‘The Dublin Statement on Water and Sustainable Development: Preamble’ (International Conference on Water and the Environment, adopted 31 January 1992).

¹²⁴ UNDP (n 20)3.

¹²⁵ *ibid.*

¹²⁶ Dennis Wichelns, ‘Assessing water footprints will not be helpful in improving water management or ensuring food security’ (2011) 27(3) *International Journal of Water Resources Development*, 618.

¹²⁷Grey and Sadoff, (n 21) 546–47.

¹²⁸ Howarth (n 33) 4.

¹²⁹ *ibid.*

¹³⁰ CBD (1992), article 2.

‘ecosystem approach’ as ‘a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way’.¹³¹ The water ecosystem (water ecosystem) has strong connections with the security of water resources since the sustainability of freshwater may partly depend on the continued healthy functioning of water ecosystems. All aspects of water quality, quantity and related natural resources management need to be addressed, which requires managing water, land and related resources.¹³² Change in a given ecosystem has an impact on its adjacent ecosystems;¹³³ therefore, from the ecosystem point of view, any development must take into account any possible impact on its adjacent ecosystems.¹³⁴ For instance, water uses are seen to be subject to natural limits, both to sustain water and to maintain the healthy functioning of water ecosystems. Water uses are less damaging to the water ecosystems. Ultimately, an ‘ecosystem paradigm’ may come to be seen as recognition for the need of limitations on human actions.

1.1.3 The roles of water policy and law in water security management

Water policy and law shape the behaviour of customers, companies, abstractors, polluters and government, and affect the way in which water resources are used. Moreover, water policy and law coordinate WRM. To manage water security challenges, introducing proper water policy and law—amongst other things – are at the centre.¹³⁵ The 2006 UN *Human Development Report* underlined the fact that most water security problems are capable of being solved or at least controlled.¹³⁶ Gleick noted that the water resources crisis is partly the problem of inappropriate management systems.¹³⁷ Sound WRM institutional arrangements and organizational remits can enhance the security of water.¹³⁸ With inefficient institutional arrangements and organizational remits, it may not be possible to manage water security challenges effectively.¹³⁹ Rather, they exacerbate the challenges

¹³¹ CBD COP 5 Decision V/6.

¹³² Neil Cunningham and Darren Sinclair, ‘Policy instrument choice and diffuse source pollution’ (2005)17(1) *Journal of Environmental Law*, 51–81.

¹³³ CBD Cop 5 Decision 58.

¹³⁴ *ibid.*

¹³⁵ Grey and Sadoff (n 21) 555–56.

¹³⁶ UNDP (n 20) 2.

¹³⁷ Gleick (n 49) 571.

¹³⁸ Maria Saleth and Ariel Dinar, ‘Institutional changes in global water sectors: trends, patterns, and implications’ (2000) 2 *Water Policy*, 175–77.

¹³⁹ M Falkenmark, A Berntell, A Jagreskog, J Lundgvist, M Matz and H Tropp, ‘On the verge of a new water scarcity: a call for good governance and human ingenuity’ (2007) *SIWI Policy Brief*, 3.

to the security of water resources.¹⁴⁰The central issue is: ‘How can an effective management system for water security be developed and implemented?’

1.1.4 The key research questions

With growing water shortages in both Ethiopia and England, there is a dilemma as to whether existing management systems for water resources are fit to enhance the security of water. As part of ongoing debates, the focus of this research is to evaluate management systems for water resources that are already in place at different scales. Within this view, the existing water resources theories are reviewed to identify key features of effective WRMPs, and those of England and Ethiopia are assessed to evaluate the extent to which these key features of an effective WRM system are reflected under their water policies and laws. The notion of ‘effectiveness’ is one key concept within the themes of the thesis. The term ‘effective’ may be one of those words that most leads to too many meanings. At this point it might be supportive to reflect on the meaning of the word. It avoids vagueness and illuminates what the concept tries to address in the context of the thesis. Accordingly, the notion ‘effective’ is about features of water law and policy that can help to enhance the security of water.

Ultimately, this study evaluates the following research questions:

1. What have natural resource management theorists proposed as key features of an effective management system for natural resources, including water resources?
 - 1.1 How strong are these theories in providing the key features of an effective management system for contemporary water security threats?
 - 1.2 What are the key qualities of an effective management system for water resources? What are the main human-induced pressures in the case study countries?
2. How can water law and policy help to achieve water security?
 - 2.1 How have water resources been managed in the past and present in the case study countries?

¹⁴⁰ibid.

2.2 Are there changes in conventional WRM policy and law to accommodate key features of an effective management system for water resources?

2.3 To what extent are key features of an effective management system for water resources reflected in the case study countries' water policies and laws?

1.2 Methodology and data

1.2.1 Methodology

The main purpose of this study is to identify the qualities of an effective management system for water resources and assess the extent to which these key features are reflected in the case study countries' water policies and laws. The study evaluates the tragedy of the commons and historical development of water policy and law, and draws out the main qualities of an effective management system for water resources. Then the study assesses the English and Ethiopian systems by reference to the yardsticks identified to understand the state of their WRM systems. Understanding evolving WRMPs demands assessing research from the perspectives of different countries – the management system for water resources of some countries are more developed than others, and they may vary in the schemes they use. In addition, legal developments addressing water security problems may also vary within countries. Furthermore, with globalization and democratization, every part of the world is interconnected by shared values and shared needs. National jurisdictions may become less important in water resource issues, and national water laws are not immune from the influence of the water laws and policies of other countries which shape their landscape. This means that no one country has a water regime that is best for managing water resource problems. The experiences from different parts of the world may help to enhance areas with shortfalls under the existing institutional arrangements and practices.

There are numerous reasons to support the selection of the case study countries' water policies and laws for evaluation. First, the study assesses the evolving jurisprudence of contemporary WRM law and policy from the perspective of different jurisdictions. The African countries' WRM policies and laws, in particular, have been partly influenced by colonial laws. Because of this, it is difficult to understand the current water policy and law in Ethiopia without understanding the past and present

water jurisprudence in England, which was one of the dominant colonial powers that influenced the management system of water resources in Africa.

It is logical to investigate England's water policies and laws to understand whether there are changes to the conventional WRMPs concerned with the security of water resources in England. Notably, by assessing English water law and policy along with their counterparts in Ethiopia, the study will gain a critical insight into the WRM system in Ethiopia. An assessment via this method allows the identification of a broad range of issues and trends in the systems within different countries. Therefore, an exclusive study of Ethiopian WRMPs may not provide sufficient understanding of how contemporary WRM law and policy are shaping water resource sustainability, in theory and in practice. Whilst the WRMPs share some communality in the case study countries, the historical, cultural, political and socio-economic contexts or systems of each country affect their WRM. The study does not intend to conduct a 'like-with-like' comparison; rather, it produces an assessment of the operating systems using the key qualities of an effective WRM system as a measure of the systems.

The domestic water policy and law in Ethiopia and England have been influenced and guided by international and regional policy and law. Often, water security problems may not only occur because of individual water users' actions; rather, states may engage actions that generate insecurity. Such water security challenges require actions at both regional and international levels. Because international- and regional-level water policy and law are critical, the assessment of domestic water policy and law may not be sufficient enough to understand any particular WRM system.

Ethiopia has 12 river basins; many of them are international river basins and drain several east African countries.¹⁴¹ There are around 80 international river basins in Africa.¹⁴² England does not have international river basins; however, the EU shares many transboundary river basins with non-member states. Across Europe, there are 64 transboundary water bodies that connect member states

¹⁴¹ Federal Democratic Republic of Ethiopia: Ministry of Water Resources National Metrological Services Agency, 'Initial National Communication of Ethiopia to the United Nations Framework Convention on Climate Change' (June 2001) 4.

¹⁴² Economic Commission for Africa, *The Africa Water Vision for 2025: equitable and sustainable use of water for socioeconomic development* (Economic Commission for Africa, Addis Ababa) 9; see also Oregon State University, 'Transboundary Freshwater Dispute Database (Map Two: African shared water bodies)' (2009) <www.transboundarywaters.orst.edu/> accessed 26 April 2013.

or non-member states.¹⁴³ Sustaining the shared water resources requires the introduction of international and regional water policy and law, but they may not be practical enough without adopting comprehensive domestic water law. Accordingly, this study reviews water policy and law at these levels as a core part of a domestic water security management system.

1.2.2 Data

Data was collected from a variety of sources. In addition to legal analysis and published literature (including academic discussions, interviews and court decisions), published and unpublished reports and workshop training materials and related documents were reviewed. Following the review of the extensive relevant literature dealing with issues of water security management, the study discusses rules and organizational remits. Moreover, the role of the water resources plan in England is discussed as part of the WRM system, to review its significance in supporting the security of water.

As far as the data from Ethiopia was concerned, three months for field data collection was scheduled, and data was collected from various institutions and experts starting on 8 July 2011 and ending on 7 October 2011. The field data collection work aimed to collect primary and secondary data from the areas where it was assumed that it might be obtained, in order to assess the state of their WRMPs. Before commencing field data collection, the shortage of enough literature on Ethiopian water policy and law was noted, so the research sought to conduct interviews with water policy and law practitioners in order to hear their views. In order to conduct these interviews, the Socio Legal Studies Association's 'Statement of Principles of Ethical Research Practice', the Social Research Association's 'Ethical Guidelines' and the ESRC's 'Research Ethics Framework' were consulted and approval was obtained from the University of Kent's Research Ethics Advisory Group. A letter from Kent Law School was obtained in advance, explaining the purposes of the research and seeking the assistance of potential participants in the research. An access to field data collection was also gained through obtaining a letter from the University of Kent Law School.

From among the institutions listed for data collection in Ethiopia, interviewees were selected from the MoWE, Environmental Protection Authority (now the Ministry of Environment and Forest), the

¹⁴³Aaron Wolf, 'International River Basins of the World', (1999) 15(2) *International Journal of Water Resources Development*, 404–08.

Awash Basin Authority, Action Professionals' Association for the People and other relevant stakeholders. The key interviewees were: Ato Fekahmed Negash, Directorate Director of Basins Management Administration in the MoWE; Ato Zewdu Tefera, Director Directorate of Legal Affairs, Ethiopian MoWE; Ato Mohammed Ali Mohammed, Director of Technology Transfer Program Directorate, the Federal Democratic Republic of Ethiopia Environmental Protection Authority; Ato Frewe Abebe, Head of Technical Department in the Awash River Basin Authority, Ambhara; Ato Kahsay G/Tensae, Director of National Parks and Wildlife Sanctuaries Coordinating Directorate, Ethiopian Wildlife Conservation Authority; Ato Tigistu G/Meskl, Director Directorate of Rural Land Administration and Land Use in the Ministry of Agriculture; and Wongel Abate, Executive Director of Action Professionals' Association for the People. The selection of these interviewees was made on the grounds of their direct involvement in the implementation of the water law and policy and the positions that the officials were holding in the identified institutions.

As an interview tool, open-ended questions were framed in advance to collect detailed information about existing WRM systems. The main questions included: How is Ethiopian water management integrated and what factors are affecting water resources? How are institutions arranged to conduct water resources management? Who is involved under the river basin management and at what level? What are the roles of different actors in the river basin management? How are water resources and land management in the basin integrated? Does river basin-based integrated water resources management alone prevent water resource problems? What roles do regional states and federal government play in river basin management? How are various aspects of water resource uses decentralized to enhance the sustainability of WRM? How do their functions coordinate horizontally and vertically in the basin (collaboration)? Who is the competent authority for coordinating river basin management? How is integrated river basin management actually implemented at the federal and regional state levels? How is local people's participation ensured in WRM? How is equitable water share ensured in the river basin for different users and uses?

Collecting data through interviews allows the voices of concerned officials to be heard regarding the extent of the reflection and implementation of the key qualities of effective WRM systems. The data obtained through interviews is referenced as footnotes under the relevant. The inferences made from the interviews were triangulated with the data obtained from different sources.

Data collection from the field was not conducted without challenges. During field data collection, some government officials were out of their offices for summer leadership training. The problem was not expected in advance and it was unusual. This caused delay in access to information in some offices. Continuous appointments for access to data collection or to conduct interviews also consumed much time during field data collection. Some libraries were not well arranged, which meant that it was not easy to find documents quickly. Moreover, the libraries of the MoWE and the Ministry of Trade and Industry were closed for the conduction of their yearly inventories. In addition, continuous heavy summer rain and traffic disruption consumed much of the time for data collection in Addis Ababa. The field visit to the Awash River Basin Authority was also challenging, because of its hot temperature.

1.3 Chapter breakdown

The overall processes of study are: setting out the research problem and questions; exploring vital features of effective water management systems; searching for these in the case study countries' water policies and laws; and mapping the findings in the conclusion. These are summarized in Figure 2.

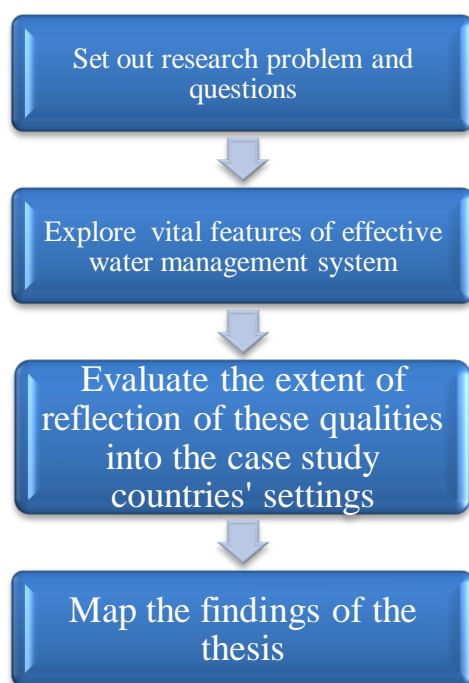


Figure 2: Study processes

The thesis is presented in eight chapters. The introductory chapter provides a general background, as well as the overall aspects of the research project, the contexts of water resource challenges in the case study countries, and the purposes of the study. The background in the introductory chapter examines how the concepts of security and institutional arrangements are understood in the context of this study. This may help an in-depth understanding of the core concepts of the study. The introduction also provides the research questions, methodology and structure of the thesis.

Chapters Two and Three review the theoretical approach and modern water management principles to establish the research framework. These two chapters provide a foundation for the thesis as a whole. In Chapter Two, the tragedy of the commons theory is discussed. A critical reflection is made to map out key features of an effective WRM system. The third chapter discusses the underlying principles of integrated water resources management to complement further explanations of the discussions in Chapter Two.

The fourth chapter assesses the EU's water resources policy and law that shape water security management. These are discussed as part of England's management system of water resources. The fifth chapter assesses the WRM system under the national water policy and law of England to understand the extent to which the key features of an effective WRMP are reflected in England's system. The chapter examines the trends of water policy and law development in England to obtain insights for the assessment of Ethiopia's WRM system.

Chapter Six evaluates the WRMPs in the African Union (AU). The main objectives of this review are: to understand whether the AU, as a supranational body, has in place effective WRM systems to enhance the security of water within the AU; and to evaluate the extent to which key qualities of an effective WRMP are reflected within the AU's water policies and laws, since it is hardly possible to fully understand the Ethiopian management system without having knowledge of the AU's system. As a member state of the AU, Ethiopia is influenced by the AU's system, and the country shares many of its water bodies with other African countries. In particular, a separate assessment of the Ethiopian WRM system may not provide sufficient insight to understand its strengths or weaknesses. An understanding of the AU's WRM system may hence offer an

opportunity to understand both regional and national systems. Therefore, this chapter aims to evaluate the Ethiopian system from the perspective of the AU's by presenting assessments of the development of water policies and laws in the AU.

In the seventh chapter, the WRM system in Ethiopia is discussed and, with regard to this, a range of policies and laws are investigated. The chapter also examines the context of water security in Ethiopia. After conducting an assessment of the English and Ethiopian management systems, a reflection is provided in the final chapter. Chapter Eight of the thesis also draws the conclusion by using the questions that are set out in the introduction, the yardsticks identified as vital features of effective WRMPs –through conducting an evaluation of the theories from Chapters Two and Three – and the assessments made from the English and Ethiopian WRM systems, in order to understand the extent to which the key features of an effective management system are reflected in English and Ethiopian water policies and laws.

Chapter Two: The tragedy of the commons

2.1 Introduction

Any management system for water resources cannot be introduced or operated in a vacuum. It requires theories that shape its formulation and implementation. A clear understanding of these theories is imperative, before assessing the WRM systems in the case study countries. With growing natural resource insecurity over the last fifty years, a range of theories, including the notion of tragedy of the commons, has suggested how to enhance sustainability of natural resources. The tragedy of the commons was developed by Garret Hardin and nearly half a century has now passed since Hardin developed this theory.

This chapter examines, inter alia, the literature on the tragedy of the commons in order to identify key features of an effective WRMP, to understand its theoretical and practical strengths, and to evaluate the applicability of its core ideas to the present day challenges to water security. Where natural resources experience little pressure and there are no scarcity problems, regulatory intervention may not be so important.¹⁴⁴ Chapter Two is used as a foundation for the thesis to assess

¹⁴⁴ James Salzman and Barton Thompson, *Environmental Law and Policy* (3rdedn, Thomson Reuters 2010) 47.

the case study countries' WRM systems in the upcoming chapters, with the aim of understanding the extent to which the identified key features of an effective system are reflected in their water policies and laws.

The notion of 'tragedy' in Hardin's tragedy of the commons theory gives an insight into why scarce natural resources are being ruined. Hardin argued that it is understood that open access to pastureland may not be problematic for a group of users in situations where pasture is surplus to requirements. The danger comes when resources become scarce and the exploitation of natural resources goes beyond the carrying capacity of such natural resources, where these resources are left unregulated. The theory notes that scarce natural resources are exposed to risks, up to the extent of extinction, which Hardin called the 'tragedy of the commons'.

The theory provides enlightenment as to why such a tragedy is happening and what management system for natural resources is effective to prevent the threat of ruin. The theory provides remedies to the independent and selfish usage of scarce resources by individual users in a manner affecting common interests. The theory of the tragedy of the commons calls for the 'commons' to be appropriated through establishing property rights over them. The theory also suggests the introduction of coercive regulatory intervention, which limits the access to and use of the commons. The theory calls for the individual users to have rights in place to use natural resources by allocating these resources; however, such utilization is subject to control in order to protect long-term common interests.

From a water resource point of view, the implication of Hardin's remedies is that a lack of coercive regulatory instruments and schemes establishing property rights for water demand management is the root problem for the water resources tragedy. It is argued that approaching water resource problems in terms of the regulation of individual water users' behaviours and establishing property rights may have their own positive contribution to enhancing water sustainability, if such management systems are comprehensive enough to address a range of water security problems. Property rights can manage the water resource on behalf of the owners, but, given the public good nature of water, the wider public needs and their interests are protected. Hardin's coercive regulatory remedy focuses on the

behaviour control of individual users, by limiting access to and use of scarce resources, which is therefore essential.

This chapter also contends that contemporary water security challenges are diverse by their nature, and these problems may not always stem from a lack of schemes allocating water resources or enforcing coercive rules. As a result, enhancing water security needs to be approached through multiple regulatory and other features, which are beyond the regulation of individual water users' behaviour with regard to riparian states. More importantly, regulatory rules by themselves may not bring about change without effective implementation. Considering all these challenges, the central argument of this study is that a lack of schemes for water allocation and rules regulating users' behaviours may be part of the problem for contemporary water security challenges. As contemporary water security problems are interconnected and complex, Chapter Two challenges the adequacy and effectiveness of coercive regulatory rules and schemes that establish property rights over water resources to individual water users' behaviour in sustaining water security. The tragedy of the commons theory should be reframed to an orientation that understands water security challenges from the perspectives of their interconnected and complex problems.

2.2 The development of the tragedy of commons theory

Hardin published an article in *Science* in December 1968 entitled 'The tragedy of the commons'.¹⁴⁵ Since its publication, the article has been widely reprinted in scientific journals and quoted across disciplines.¹⁴⁶ The tragedy of the commons suggests how to prevent the open access of scarce resources from generating ruin for all.¹⁴⁷ The theory is not about preventing the utilization of the resources but, rather, it is concerned about the abuse of the commons and their exploitation in a manner that affects long-term availability. Similarly, with growing demand on natural resource sustainability, since 1987 there have been considerable discussions of the principle of sustainable development. The Brundtland Report, formally known as the World Commission on Environment and Development, defines sustainable development as 'development that meets the needs of the

¹⁴⁵Garrett Hardin, 'The tragedy of the commons' (1968) 162 *Science*, 1243–44.

¹⁴⁶Ian Angus, 'The myth of the tragedy of the commons' (24 August 2008)*Socialist Voice: Marxist perspectives for the 21st century*<www.socialistvoice.ca/?p=atbkzkh..&paged=22>accessed 04 October 2014.

¹⁴⁶Hardin (n 145) 1243–48.

¹⁴⁷ *ibid.*

present without compromising the ability of future generations to meet their own needs'.¹⁴⁸ The principle of sustainable development is entrenched with the idea of long-term common interest; controlling the threats of natural resources by human misuse, over-taking and mismanagement. The definition recognizes that humans must use natural resources for their needs, but it suggests that their utilization should also have limitations in order to ensure their sustainability.¹⁴⁹ As a trustee of present and future generations, a government has a duty to safeguard the sustainability of natural resources.¹⁵⁰ Specifically, the concept of sustainable development suggests the protection of the environment to ensure its sustainability, guaranteeing the long-term availability of resources for the present as well as future generations. The essence of this definition is closely related to some of the ideas encompassed by the tragedy of the commons.

2.3 The concepts of 'tragedy' and 'commons'

The tragedy of the commons theory embodies two key words: 'tragedy' and 'commons'. The word 'tragedy' is not seen in the usual theatrical sense. Hardin stated that '[t]he essence of dramatic tragedy is not unhappiness. It resides in the solemnity of the remorseless working of things'.¹⁵¹ Until the commons are ruined, rational individual users generate the maximum possible benefits, whilst ignoring the cost of over-exploitation of the commons. Hardin further underlined the idea that '[t]his inevitableness of destiny can only be illustrated in terms of human life by incidents which in fact involve unhappiness. For it is only by them that the futility of escape can be made evident in the drama'.¹⁵²

Similarly, Hardin described 'commons' as a common pool of resources where access to natural resources is open to all persons.¹⁵³ These resources are freely available to anyone in the system and are unregulated. Crowe also defined the concept 'commons' as 'a social institution...some environmental objects, which have never been, and should never be, exclusively appropriated to any

¹⁴⁸ United Nations, *Report of the World Commission on Environment and Development* (1987) General Assembly Resolution 42/187, 11 December 1987.

¹⁴⁹ Jon Hutton and Nigel Leader-Williams, 'Sustainable use and incentive-driven conservation: realigning human and conservation interests' (2003) 37(2) *Oryx*, 215–26.

¹⁵⁰ The Oregon State Bar, 'The public trust doctrine, climate change and future generations' (Winter 2009) 10(1) *Outlook Environmental & Natural Resources Section*, 2 <http://osbenviro.homestead.com/Newsletters/09-12_Outlook_Vol10_No2.pdf> accessed 24 June 2015.

¹⁵¹ Hardin (n 145)1243–44.

¹⁵² *ibid.*

¹⁵³ *ibid.*

individual or group of individuals'.¹⁵⁴ An example that Hardin used is that of open-access pastureland, in which no user has the prerogative to exclude others from use, and all users are equally entitled to use it without any restriction.

2.4 Public rights

Hardin's notion of the commons was not a new theory. It has often been said that the model of management system that governs natural resources determines the sustainable use of such resources. The roots of these assumptions are partly related to Aristotle's perspectives. Aristotle had stated that anything that 'is common to the greatest number has the least care bestowed on it'.¹⁵⁵ Aristotle observed that the nature of rights over a thing affects its prospects of care; it can either enhance the sustainability of resources, or may expose them to depletion and degradation. In those circumstances, when the level of care a given thing receives is the least possible, the prospect for those resources may be depletion.

The underlying idea is that when something is under the control of the largest number of people, it becomes difficult to provide the maximum possible care that thing deserves. This idea implies that holding a thing in common is not by itself problematic; the problem is most likely to be experienced when the number of persons who are enjoying a common right over a thing is the largest. The contrary reading of Aristotle's premise implies that the care level of something is the maximum possible when the number of persons with property rights over the thing is small.

In contrast to something held in common without appropriation, property rights provide an incentive that encourages an owner to value and manage the resources for his or her long-term benefits.¹⁵⁶ However, property rights protect the owner but not necessarily the wider community. An individual water use right is a qualified right in order to protect long-term public interest over the water resources. Whilst water resources are allocated through a permit system, they are regulated. Long-established in legal jurisprudence, water is a public resource,¹⁵⁷ and as a public good it is usually

¹⁵⁴ Berly Crowe, 'The tragedy of commons revisited' (1969) 166(399) *Science, News Series*, 1103–07.

¹⁵⁵ Aristotle, 'Politica', trs B. Jowett, in Richard McKenon (ed), *The Basic Work of Aristotle* (Random House 1941) 1113–1316.

¹⁵⁶ Carol Rose, 'The comedy of the commons: commerce, custom, and inherently public property' (1986) Faculty Scholarship Series, Paper 1828 <http://digitalcommons.law.yale.edu/fss_papers/1828> accessed 5 August 2013.

¹⁵⁷ David H. Getches, *Water Law in Nutshell* (Nutshell Series) (2nd edn, West Publishing Co. 1990) 10.

subject to public control to protect common needs.¹⁵⁸ Water as a public resource is managed by the ‘public trust doctrine’ (PTD) which gives recognition to a special public right over water or natural resources¹⁵⁹ Property right over the water is subject to regulation to protect the public interest. The rights allowing water usage and the duties imposed on using the water resources in a sustainable way are embedded in the PTD,¹⁶⁰ and schemes could be offered to limit unsustainable water use.¹⁶¹ For instance, the Convention Concerning the Boundary Waters between the United States and Canada, which was signed in 1909 regarding the Great Lakes, aims to protect the integrity of the quantity and quality of the boundary waters, their related ecosystems, and the rights of the public to use those shared waters.¹⁶² Thus, a government does not only create the system allocating water resources, but it controls water wastage, pollution and inefficient water utilization practices.¹⁶³

2.5 Local participation

When Hardin demonstrated what he called the tragedy of the commons on pastureland, it was not about a ‘common’ – which is collectively owned by a group of users who restrict other users from coming outside of the group – but it was about open-access resources. Hardin used the term ‘commons’ whilst describing ‘open-access’ or unregulated resources, which has been seen as a misconception of the term resources.¹⁶⁴ The main confusion regarding the tragedy of the commons may stem from confusing ordinary commons or common-pool resources with open-access resources. With the ordinary commons, individual owners can have a range of prerogatives to control access and the extent of exploitation to make the resources sustainable. Stevenson noted that common property is not open access; the group has rights and duties to limit access and the extent of exploitation of its resources.¹⁶⁵ Since such property has defined rights and duties upon group users

¹⁵⁸ *ibid*, 10 and 140.

¹⁵⁹ James Olson, ‘All board: Navigating the course for universal adoption of the public trust doctrine’ (2014) *Vermont Journal of Environmental Law*, 371.

¹⁶⁰ *ibid*, 369.

¹⁶¹ *ibid*.

¹⁶² Convention Concerning the Boundary Waters Between the United States and Canada, US–Gr. Brit., 11 January 1909, 3 UST 2607, 2607 (hereinafter Boundary Waters Treaty).

¹⁶³ Getches (n 157) 124–25.

¹⁶⁴ Michael Taylor, ‘The economics and politics of property rights and common pool resources’ (1992) 32, *Natural Resources Journal*, 3; see also Partha Dasgupta, *The control of resources* (Harvard University Press 1982) 13.

¹⁶⁵ Glenn Stevenson, *Common property economics: a general theory and land use applications* (Cambridge University Press 1991) 58–9.

and outsiders, the commons closely resembles private property, which gives the owner the right to exclude others' exploitation without his or her consent.¹⁶⁶

Most of the time, a given thing is held in common by the largest number of people, and the government has the authority to control access and the extent of use in order to protect the common interest.¹⁶⁷ The commons users are expected to abide by the rules that impose duty.¹⁶⁸ Dahlman contends that the commons has been regulated by quasi-governmental or governmental rules.¹⁶⁹ The access and use of the resources within a group are limited.¹⁷⁰ For instance, in England, common pastureland has persisted for centuries.¹⁷¹ Such pasturelands were not open access in their nature; instead, they were owned by a defined group that excluded any other group from intervention in the property rights they had. The local people's involvement, in the management of the resources, has sustained the resource. Often, the village court, the government or a quasi-government regulated their exploitation.¹⁷² Similarly, Turkish fisheries have been governed through the rules developed by the users, and this system has endured for a long period of time.¹⁷³ The fishers themselves have developed rules governing the extent of exploitation, to avert possible depletion.¹⁷⁴ The government has also developed regulatory rules limiting fishing.¹⁷⁵

In many cases in ordinary commons, the number of persons with common rights may be too small, whereas in public, it is too large.¹⁷⁶ Since a large number of users are involved, the care bestowed on the resources is the least possible, unless there are schemes to regulate users' behaviour. However, in those contexts where something is owned by a small or large group as co-owners or community, there has been care for the resources, since such a group of people would have introduced a self-regulatory system, or the level of resource use would have been determined by a government's rules

¹⁶⁶ *ibid.*

¹⁶⁷ Daniel Cole, *Pollution & property: comparing ownership institutions for environmental protection* (Cambridge University Press 2002) 7–8.

¹⁶⁸ *ibid.*

¹⁶⁹ Salzman and Thompson (n 144) 21.

¹⁷⁰ *ibid.*

¹⁷¹ *ibid.*, 33–6.

¹⁷² *ibid.*, 126.

¹⁷³ Fikret Berkes, 'Success and failure in marine coastal fisheries of Turkey', in Daniel Bromley (ed.), *Making the commons work* (Institute for Contemporary Studies 1992) 167.

¹⁷⁴ *ibid.*

¹⁷⁵ *ibid.*, 168.

¹⁷⁶ Cole (n 167) 11.

to ensure the sustainability of the resources.¹⁷⁷ The co-owning group or community excludes others from any intervention that adversely affects their interest.¹⁷⁸ In any case, public goods such as water may require more regulatory as well as non-regulatory schemes to enhance the sustainability of resources.

Bromley contends that a common becomes an open-access regime for the individuals within the group.¹⁷⁹ There are no rules limiting individual group members from access and use of the resources. However, practice indicates that the traditional common did not entitle the group to exploit the resources without restriction.¹⁸⁰ Their exploitation levels are limited by rules developed by themselves or the government or both.¹⁸¹ The members in common-pool resources cannot exclude their group's members; they exclude non-group members from access and use.¹⁸²

Elinor Ostrom observed the commons from the perspective of real-world contexts, by carrying out empirical research on communal resources, such as fisheries, land irrigation systems and farmland. She considered open-access resources and common-pool resources as two different concepts. With open-access resources, she believed that there is no limit to the access of resources, and it is impossible to identify who the users are.¹⁸³ Open-access resources are characterized as those resources that are free to all users. She described common-pool resources as large enough, where it is difficult to define who the users are, but it is not impossible to identify them.¹⁸⁴ Hardin's explanation of pastureland usage suggests that the word 'commons' refers to open-access resources, in which no individual has a claim to any part of the resources used by another user; the commons nature of resources allows the use of a portion of it for his/her own benefit, without any limitation from other

¹⁷⁷ Carl Dahlman, *The open field system and beyond: property rights analysis of an economic institution* (Cambridge University Press 1980) 132.

¹⁷⁸ Daniel Bromley, *Environment and economy: property rights and public policy* (Basil Blackwell 1991) 25–6.

¹⁷⁹ *ibid.*, 149.

¹⁸⁰ *ibid.*

¹⁸¹ *ibid.*

¹⁸² *ibid.*, 25–6.

¹⁸³ Elinor Ostrom, 'The challenges of common-pool resources' (2008) 50(4) *Environment: Science and Policy for Sustainable Development*, 11.

¹⁸⁴ Elinor Ostrom, *Governing the commons: the evolution of institutions for collective action* (Cambridge University Press 1990) 90–105.

users. For example, resources like the open sea and the atmosphere are classified as open-access resources, whereas rivers and lakes are categorized as common-pool resources.¹⁸⁵

The second criticism against Hardin's theory is related to the decision-making institutional arrangements and organizational structures that he proposed to avert the tragedy of the commons. Ostrom argued that, with common-pool resources, users have their own rules, developed to utilize the resources and limit outsiders. The tragedy of the commons also does not suggest a management role for the users of scarce common resources. It is very vague as to what organizational remit is appropriate for enhancing the security of water, and it is unclear which level of government would be mandated to provide regulatory rules. Moreover, it seems to fail to recommend options for coercive rules.

Hardin's assumptions and the solutions he suggested fail to consider the community as part of the management to supplement the coercive regulatory arrangements or natural resources allocation, and the theory finally fails to demonstrate the practical and theoretical relevance of community management. Ostrom suggested an idea that recognizes, under certain circumstances, the possibility of managing natural resources by the community itself. She underlines the fact that, in some circumstances, community users formulate the rules that regulate common-pool resources and enforce them without any government intervention.¹⁸⁶ Her work brings a self-governance system to the centre of sustaining scarce natural resources in defined circumstances.

Ostrom describes the following circumstances that should shape common-pool resource management.¹⁸⁷ Primarily, the resources' boundaries should be defined, and the users' rights be clearly identified. Moreover, there must be established rules specifying the amount of resources that each user is entitled to exploit from the common pool of resources. The third aspect concerns collective choice arrangements. Many of the individuals who are affected by the utilization and protection of the resources should become involved in the group that makes or modifies the rules which govern collective action. The fourth aspect suggests that there must be close monitoring of the behaviour of users. This can be done by a body that is at least partially accountable to the users, or it can involve the users themselves. The fifth idea involves imposing a graduated sanction on the

¹⁸⁵Elinor Ostrom and Charlotte Hess, 'Artifacts, facilities and content: information as a common pool resource' (Conference on Public Domain, Duke Law School, 9–11 November 2001).

¹⁸⁶Ostrom (n 184) 90–105.

¹⁸⁷ *ibid.*

wrongdoer, based on the context and nature of seriousness. The users or officials accountable to them, or both, can impose this sanction.

Another aspect is that there should be a low-cost system that resolves conflict between users, or between users and the officials managing the resources. Furthermore, there is an idea that the users are not restricted to having their own institutions to manage resources by the governmental authorities. There must be a minimum standard that entitles the users to organize how they manage their resources. At the same time, they must be given long-term access to the resources. The final aspect is the introduction of multilayer governance for the appropriation, provision, monitoring, enforcement, and conflict resolution and governance activities.

Hardin's theory called for the further intervention of more government agencies rather than participatory management through developing self-rules. However, the local users are not the only cause of the tragedy of the commons; rather, they come up with solutions that are supportive in sustaining the commons. With regard to this, Ostrom demonstrates the possibility of the introduction of cooperative arrangements for the commons through collective agreement on how to exploit the resources sustainably.¹⁸⁸

The idea of 'commons', in the tragedy of the commons, demonstrates that resources are kept open access for a larger number of individuals. As the numbers of the commons users are so many, it becomes increasingly difficult to adopt such a cooperative system and limit free riders. Often, the transaction costs are too high, either to reach an agreement or to implement it.¹⁸⁹ This collective action problem may limit the introduction of a self-governance system in WRM.

Ostrom's empirical evidence shows the existence of stability in long-lived irrigation communities due to the decision-making of the users' community.¹⁹⁰ However, Ostrom does not entirely rule out or disagree with Hardin's theory, and neither does she disagree in principle with the inevitability of the tragedy of commons in the absence of an institutional arrangement regulating the behaviour of users, or in situations where common-pool resources management systems are weak or

¹⁸⁸ Salzman and Thompson (n 144) 19.

¹⁸⁹ *ibid.*

¹⁹⁰ Elinor Ostrom, 'Collective action and the evolution of social norms' (2000) 14(3) *The Journal of Economic Perspectives*(American Economic Association), 150–53.

impractical.¹⁹¹ She maintains the optimality of the use of appropriation and coercive rules as devices in different circumstances. The common-pool resources theory only works in exceptional circumstances, depending on the context of resources and the behaviour of the users.

What Ostrom totally rejects is the limited choices of decision-making within the institutional arrangements that the tragedy of commons theory proposes, and the way that ‘commons’ is conceptualized. She underlines how government and market alone are not solutions to the threats of natural resource pressures. Her ideas were subsequently reinforced by Bosselman, who notes that a common-pool resource is not a resource that is available to anyone to exploit. Rather, it is regulated by community norms as to how it is used and who participates in the utilization and protection of the resource.¹⁹²

Another study conducted by Ostrom, in collaboration with other scholars, suggests that there is no single institutional arrangement that averts the challenges of water resource security. Rather, ‘the best system of control is one which meets the most critical challenges of the situation at hand’.¹⁹³ They suggested that the reason why a ‘control system sometimes succeeds and sometimes fails is that the challenges of resource management vary: characteristics of the resource users; and the environmental, social, economic, and political context of resource use – most of which change over time’.¹⁹⁴ This study further suggests that WRM should be context specific, changing with the factors that shape the context, and flexible enough to accommodate those changes.

More empirical research conducted by Ostrom concerning common-pool resource shows that the status of some common-pool resources is, at present, better in some areas while the scenario is different in other parts of the world.¹⁹⁵ The cause for mixed outcomes in common-pool resource management is the existence of variation in the contexts.¹⁹⁶ She suggests that the institutional arrangements regarding natural resources require updating regularly in the light of the information and experience gained.¹⁹⁷ They should be framed as change responsive.¹⁹⁸ This new orientation in

¹⁹¹ *ibid.*

¹⁹² Fred Bosselman, ‘Limitation inherent in the title to wetlands at Common Law’ (1996) 247(15) *Stanford Environmental Law Journal*, 283–84.

¹⁹³ Elinor Ostrom, Paul Stern and Thomas Dietz, ‘Water rights in the commons’ (2003) 5(2) *Water Resources Impact*, 9–12.

¹⁹⁴ *ibid.*

¹⁹⁵ *ibid.*, 10.

¹⁹⁶ *ibid.*

¹⁹⁷ *ibid.*, 17.

common-pool resources discloses the necessity of modifying institutional arrangements in relation to the dynamics of the context. Ostrom also notes the fact that common-pool resources management should take into account the interests of users and provide a conflict resolution mechanism.¹⁹⁹

In this study, she reinforced the idea that common-pool resource management varies according to the scope of the area it covers, the number of users and the nature of exploitation. She concluded that there is no particular ideal common-pool resource management scheme; rather, it varies with the context.²⁰⁰ She went on to argue that common-pool resources may be governed through various institutional arrangements, but she grouped these institutional arrangements roughly into three: governmental, private and communal institutional arrangements.²⁰¹ This range of management institutions does not present alternatives; they may only be effective if used with sufficient information regarding the context of the common-pool resources problems. None of these policy options are free of the disadvantages incurred upon their use; it is wise to choose based on the circumstances in question. These institutional arrangements are not the best schemes in all contexts and at all times.

Whilst Ostrom places direct resource users at the centre of decision-making, the initial study of any common-pool resource does not provide for the involvement of persons that have a stake in the specific natural resources, other than direct users, when the circumstances contended by Ostrom are met.²⁰² Accommodating the stakes of non-direct natural resource users is equally important in natural resources management, and this was undermined by Ostrom's study. In particular, in Ostrom's early study of common-pool resources, the inclusion of the outsiders' community interests was unclear. The impression is that the decision-making in common-pool resources was dominated by the users' self-governance system.²⁰³ In such situations, it is said that the selfish users may not see far beyond their self-interest.²⁰⁴ It is often said that such natural resources management is a constraint on economic development,²⁰⁵ and may undermine the equitable use of natural resources for present and

¹⁹⁸ *ibid.*

¹⁹⁹ *ibid.*

²⁰⁰ *ibid.*, 11.

²⁰¹ *ibid.*

²⁰² Ostrom (n 197).

²⁰³ Bonnie McCay (ed.), *Right to nature: ecological, economic, cultural, and political principles of institutions for the environment* (Island Press 2009) 119–21.

²⁰⁴ *ibid.*

²⁰⁵ HHG Savenije and P Van der Zaag, 'Conceptual framework for the management of shared river basins; with special reference to the SADC and EU' (2000) 2 *Water Policy*, 25.

future generations.²⁰⁶ The danger may be critical to ‘voiceless’ stakeholders who cannot protect their interests, such as the water environment.²⁰⁷

Whilst Hardin is correct in observing that the destiny of unregulated scarce resources is ruin and threats to the security of humans and the economy, the remedies he suggested fail to recognize the creditability of participatory natural resources management. Hardin’s theory seems reluctant to consider local-level empowerment in the management of scarce natural resources. For Hardin, the users of commons are the threat to resource conservation. Natural resources, including water resources, need social learning, which requires the involvement of stakeholders in managing natural resources.²⁰⁸ Hardin’s suggestion tends to favour a more centralized than a polycentric decision-making process in WRM.²⁰⁹

In the tragedy of the commons theory, issues such as distributional equity, community welfare and other social and cultural benefits are undermined.²¹⁰ Environmental concerns are too important to be left solely to the regulators. The involvement of the local citizens is crucial to protect the environment. The common users may change their behaviour towards sustainable resource use or combat unsustainable resource exploitation by others when they realize that unsustainable resource exploitation is already happening – or is about to start happening. In addition to such hard rules and market instruments, persuasion is a soft approach to force users to change their behaviour.²¹¹ To this end, the government engages in a range of activities that inform of the danger and create awareness of unsuitable resource exploitation, and educates the users by showing the causes and possible dangers of the over-use of resources.²¹² This may be achieved through local people’s participation.

²⁰⁶ Christopher Stone, *Should trees have standing? Law, morality, and environment* (3rd edn, Oxford University Press 2010) 172.

²⁰⁷ *ibid.*

²⁰⁸ C Pahl-Wostl and M Hare, ‘Process of social learning in integrated resources management’(2004) 14 *Journal of Community & Applied Social Psychology*,193–94.

²⁰⁹ Hardin(n 145) 1243–48.

²¹⁰ McCay (n 203) 111.

²¹¹ Salzman and Thompson(n 144)50.

²¹² *ibid.*

2.6 Problems of unregulated commons for the sustainability of natural resources

Hardin noted that if the commons are left unregulated and not appropriated, the extent of exploitation would rely on the judgement of the users themselves, and he doubted that individual rational users would work to sustain the long-term interests of the common users. Apparently, those individuals who exploit the commons excessively would leave fewer resources for those users who behave responsibly themselves. In the absence of any rules restricting the access and extent of use, such resources become open-access resources.

Ultimately, such exploitation of resources could lead the commons to a tragedy that might even lead the resources to the point of extinction. For such adverse consequences, Hardin's theory criticizes the political-economic model of leaving the resources as open access. The tragedy of the commons considers as a root cause of environmental challenges the absence of regulatory rules and schemes allocating the commons.²¹³ The theory assumes not only that the commons is a natural resource held by many individuals, but also that the access and extent of the exploitation of its resources is unregulated.²¹⁴ The incentive is created since the cost of the exploitation of resources is externalized and is borne by the public or future stakeholders at large, whilst rational individual users are maximizing short-term economic gain with no cost to pay.²¹⁵

Hardin illustrated this problem by using open-access pastureland, whereby each rational herdsman makes an effort to maximize the gains from his or her herding in a plot of land.²¹⁶ In such situations, Hardin believed that a rational herdsman would receive most pastureland benefits by adding more and more herds whilst, at the same time, these practices would lead the natural resources to ruin:

The tragedy of the commons develops in this way. Picture a pasture open to all. It is to be expected that each herdsman will try to keep as many cattle as possible on the commons. Such an arrangement may work reasonably satisfactorily for centuries because tribal wars, poaching, and disease keep the numbers of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, that is, the day when the

²¹³ Eban Goodstein, 'The economic roots of environmental decline: property rights or path dependence?' (1995) 62 *Journal of Economic Issues*, 1029.

²¹⁴ Salzman and Thompson (n 144) 19, 47.

²¹⁵ *ibid*, 20–1.

²¹⁶ Hardin (n 145) 1243–48.

long-desired goal of social stability becomes a reality. At this point, the inherent logic of the commons remorselessly generates tragedy.²¹⁷

The tragedy of the commons theory stresses that natural resources experience possible threats to their sustainability if they are left unregulated and are not allocated.²¹⁸ In ‘open access’, Hardin contended that any user or group of users is unable to limit access and therefore unwisely uses the commons.²¹⁹ The users’ behaviour is uncontrolled, in terms of protecting common interests and environmental sustainability;²²⁰ they are free to use the resources to the extent of their need. The threat for such resources is, without rules or limitations, people acting less responsibly.²²¹ The openness (non-restriction) of the access and use of the resources facilitates the ruin of those resources. As the incentives to exploit the use of resources increase, the users are encouraged to exploit the unregulated resources more and more.²²² Eventually, all users may resort to exploiting as much as their capacities allow, rather than reasonable use from what is available and from what the carrying capacity of the resources permits: ‘Freedom in a common brings ruin to all.’²²³

The main criterion underlining the tragedy of the commons is that if a resource is held in common by a large number of people, for use by all without limitation of access and use, and owned by no person or group, no one may wish to behave and use the resources in a manner that sustains the resources for long-term common use. The users exploit resources in a way that promotes short-term self-benefits while ignoring or undermining the long-term benefits. In such a situation, ‘[t]he result is individually rational in the short term – if the resource will be depleted, you might as well ensure you get your share –but collectively disastrous in the long term’.²²⁴ The openness of the commons develops a dilemma for its use, whereby ‘individually rational behaviour is collectively deficient. Individuals’ personal incentives work *against* the best long-term solution’.²²⁵

In such situations, the theory suggests that rational (self-centred) users face a dilemma of short-term self-interest or sustainability of natural resources for common long-term interest. In terms of natural

²¹⁷ *ibid.*

²¹⁸ *ibid.*, 1243.

²¹⁹ Cole (n 167) 6.

²²⁰ McCay (n 203) 115.

²²¹ *ibid.*

²²² *ibid.*, 19, 47.

²²³ Hardin (n 145).

²²⁴ Salzman and Thompson (n 144) 20.

²²⁵ *ibid.*, 20.

resource usage, rationality may be characterized by any selfish action that would not be carried out by a sensible person standing for the common interest. The essence of the theory is that the root causes for the possible ruin of commons is the selfish act of individuals. This theory generalizes that the rational users do not work for the benefits of the whole community. Rather, they compete to benefit unfairly from the open access to natural resources.

2.7 Introducing sustainable approaches

Identifying the conditions that lead to ruin does not in itself assure sustainability of the commons. It is necessary to find out key features of a management system that can facilitate sustainable resource usage. The tragedy of the commons gives an insight into why scarce natural resources are ruined, and how to prevent the open access to such scarce resources from generating ruin for all.²²⁶ The theory has identified two important solutions: appropriation and regulation of the commons through coercive rules.

2.7.1 Appropriation of the open-access resource

Appropriation as a remedy to the tragedy of the commons theory suggests that a government can establish rules allocating scarce open-access resources; thereafter, each owner uses his or her natural resources in a way that is sustainable. The implication is that a 'rational individual' does not cause his or her own resources to be ruined by his or her own actions. This may take the form of tradable permits (e.g. tradable licence to graze cattle and a permit for water abstraction). By the rights created in the form of marketable use, the market shapes the behaviour of users and, eventually, natural resources allocation encourages efficient and sustainable use of resources.²²⁷ Allocation determines the exploitation by giving a profit motivation, since it allows users with property rights to sell their surplus to others. Salzman and Thompson contend that natural resource allocation encourages the development of innovation that is supportive of sustainable resource use:²²⁸ 'In theory, those for whom grazing is most valuable will pay the highest price to buy the permits from those who value them less, encouraging that the common is dedicated to the most valuable market use.'²²⁹ This may be so, but it does depend on how many permits (e.g. how many heads of cattle) are issued in the first

²²⁶ Hardin (n 145) 1243–48.

²²⁷ Salzman and Thompson (n 144) 48.

²²⁸ *ibid.*

²²⁹ *ibid.*

place–allocation is thus crucial. Permits may not limit the tragedy of natural resources if the number and nature of the permits are not responsive enough to address the circumstances of the natural resources in question. Hardin’s argument, suggesting appropriation of natural resources, ultimately supports the private property right to control users’ behaviour.

2.7.2 Introducing coercive rules

The tragedy of the commons suggests regulated access and use of commons. The rules involve a ‘mutual coercion mutually agreed upon’.²³⁰ Hardin believed that it might not be possible to limit the tragedy of commons through a mere ‘verbal appeal’. The theory recommends the introduction of coercive rules that limit selfish individuals or groups. As a society, users need to change their behaviour towards the over-exploitation of the commons. However, the tragedy of the commons fails to specify the nature of the rules limiting access and use of the commons so as to change users’ behaviours, except through prescriptive regulation. To avert the tragedy of the commons, a range of regulatory and non-regulatory schemes have been developed.²³¹ For instance, through prescriptive regulation, the government may limit access or the extent of the exploitation of resources.²³² The rules limit the particular types of natural resource usage that a government considers unsustainable, and declares which resource uses are permitted. Through this, access to and exploitation of some natural resources are limited or stopped.

The coercive rules are generally developed and administered by outside agents, which necessitates an impartial regulator to enforce the rules without bias. This favours a direct top-down natural resources management. This type of regulatory instrument is often considered as a command-and-control regulation by a government agency, and it is doubtful that it would bring about an effective change in the level of resource exploitation.²³³ Once the users have attained the relevant level of limitation of access to or use of the commons, the rule does not offer any incentives to encourage further innovation that enhances sustainable resource use.²³⁴ Because of this, the users may continue to rely on traditional and non-innovative regulatory mechanisms. However, some scholars argue that strict prescriptive regulation increases sustainable use by encouraging the production process and

²³⁰ Hardin (n 145) 124.

²³¹ Salzman and Thompson (n 144) 47.

²³² *ibid.*, 47.

²³³ *ibid.*

²³⁴ *ibid.*

innovation designs.²³⁵ For instance, a government may introduce and limit any water abstraction that it considers unsustainable, impose limitations on discharges that affect water quality, and protect the extent to which water ecosystems are accessed to avert tragedy.

2.7.3 Market instruments

Another regulatory means is financial penalties or charges that internalize the costs. This regulatory approach discourages unsustainable resource use through imposing fees.²³⁶ It aims to provide incentives for each user to shape his or her behaviour. A practical problem for introducing this scheme is identifying the appropriate fee, which accommodates the full social and environmental cost, since the valuation of the right fee is difficult.²³⁷ Introducing and implementing the correct internalization of the social and environmental cost is increasingly dependent on the political willingness of a given country. For such a scheme to be effective, the fees should be high enough to send price signals towards sustainable resource use; however, environmental goods charges often tend more towards revenue-raising.²³⁸ In contrast to financial penalties, financial payments could subsidize those people who use the resources in a beneficial way, in order to encourage their sustainable use.²³⁹ Both regulation and market instruments are designed to discourage harmful social behaviour and encourage beneficial behaviour. In this case, the government does not impose penalties or charges; instead, it subsidizes them. From the perspective of regulation and market instruments, the government uses 'hard' regulatory institutions.²⁴⁰

2.8 Understanding the context of the threat

None of these policy options are free of the disadvantages that are incurred upon their use; it is wise to choose an option based on the circumstances in question. These institutional arrangements are not best in all contexts and at all times. The tragedy of the commons may be addressed more effectively through an adaptive governance system that takes into account specific contexts, rather than

²³⁵Porter and Van der Linde, 'Towards a new conception of the environment-competiveness relationship' (1997) 97(4)*Journal of Economic Perspectives*, 47–52.

²³⁶ *ibid.*, 50.

²³⁷ *ibid.*

²³⁸ *ibid.*

²³⁹ *ibid.*

²⁴⁰Porter and Van der Linde (n 235) 51.

privatization or government regulation.²⁴¹ In addition, natural resources have been best governed and sustained for centuries through informal institutions, rather than the formal institutions that Hardin prescribed.²⁴² However, this is not to generalize that traditional institutions are the best fit in all places and contexts; depending on the nature of the problems, the contexts of the natural resources and the behaviour of the users, their level of effectiveness varies.

For instance, transcending water pollution problems, climate change and related challenges that are exacerbating the scarcity of natural resources may not be effectively managed through traditional institutional arrangements alone, although these have yet to supplement formal institutional arrangements.²⁴³ They may at least require institutions at regional or global level. Many challenges to the availability of water resources are local by their nature, but their impacts are transcending. Such challenges may require complex, polycentric and more comprehensive institutional arrangements that work through collaboration than localized and fragmented or centralized arrangements. Moreover, in its initial stage, the common-pool resource theory did not place due focus on how to manage the impact of one natural resource utilization on the adjacent water body. In the real world, common-pool resources do not exist in isolation; ecosystems are interconnected with their adjacent ecosystems. Pressures on the given land resources affect the uses and protection of adjacent water resources; the problems of unwise exploitation of land resources may not be limited to those resources or users. However, the early orientation of the theory indicates that it did not give adequate room for regulating a range of factors, which may contribute to the threat of natural resource scarcity except in demand management.

2.9 Some issues in the applicability of the tragedy of the commons to water security challenges

2.9.1 Water resources as public resource

Unqualified property right is not seen as the right solution for those resources that are widely public in their nature.²⁴⁴ Following water does affect property rights and makes it different from land. As water is a public good, it is not appropriate to apply the traditional concepts of real property.²⁴⁵ It

²⁴¹ Thomas Dietz, Elinor Ostrom and Paul Stern, 'The struggle to commons' (2003)302 *Science*, 1910.

²⁴² *ibid*, 1907.

²⁴³ *ibid*.

²⁴⁴ Salzman and Thompson (n 144) 7.

²⁴⁵ Getches (n 157)15.

exhibits features of property rights that allow resource utilization, but the right is subject to regulation.²⁴⁶ Because of this, water is by law exempt from the ordinary rules of real property rights.²⁴⁷

Getches noted that '[w]ater is legally and historically a public resource. Although private property rights can be perfected in the use of water, it remains essentially public; private rights are always incomplete and subject to the public's common needs'.²⁴⁸ Water as a public resource needs to be integrated with PTD. In France, for instance, the Institutes of Justinian declared running water among things that could not be owned privately or by a few commons, although it recognized the private right to use them in a restricted fashion.²⁴⁹ Similarly, in the Supreme Court of the United States, Mr Justice Holmes noted that a 'river is more than an amenity, it is a treasure. It offers a necessity of life that must be rationed among those who have power over it'.²⁵⁰

Across the globe, public/state control of the water resources in a natural water body is common, whereby the largest number of people enjoy public rights whilst many individual users enjoy private rights, which entrusts the right to use of the resources. The majority of water laws are established on PTD. The beneficiaries do not possess property rights such as over ordinary things. In the United States, the federal government regulates the use of rivers and lakes, and controls waste disposal to ensure that waterways remain navigable.²⁵¹ Water resources are seen as the 'public property of the nation'.²⁵² In the United Kingdom, navigable water resources are public property.²⁵³ Similarly, in Ethiopia, all natural resources, including water resources, are public property; the ownership is vested upon the state and the people of Ethiopia.²⁵⁴ This type of property right is not a private or ordinary common right by its nature, which confers ownership to a person or specific group without restriction. Accordingly, in Ethiopia, the federal government is empowered to regulate the use of water resources across the country.²⁵⁵ Under public ownership of water resources, public property

²⁴⁶ Salzman and Thompson (n 144) 7.

²⁴⁷ George Joseph Bell, *Principles of the law of Scotland* (Law Society of Scotland, Butterworth 1899) 299.

²⁴⁸ Getches (n 157).

²⁴⁹ *ibid.*

²⁵⁰ *New Jersey v New York*, 283 US 336, 342 [1931].

²⁵¹ *Gilman v Philadelphia*, 70 US 713, 725 [1865].

²⁵² *ibid.*

²⁵³ Bell (n 247) 299.

²⁵⁴ Constitution of the FDRE no. 1/1995, articles 40(3) and 51(11).

²⁵⁵ *ibid.*

rights are imposed against water resource users.²⁵⁶ This duty affects how water resources are exploited.²⁵⁷ A permit is commonly required to allocate water resources and this creates some sort of right for a permit holder to use the water.

2.9.2 Regulation of water access and use

Owing to the special characteristics accommodated by freshwater, a significant public intervention is inevitable.²⁵⁸ In many countries, although not open access, water resources are not held under exclusive private or co-ownership. No individual or group can claim exclusive ownership over water resources. Similarly, in a transboundary water body, no country has exclusive rights over water resources. According to the tragedy of the commons theory, with regards to freshwater resources, tragedy happens in two ways: the unregulated over-taking of water; and putting pollutants into the water body. Consequently, the theory suggests the use of government rules to control the over-taking of water resources and the discharge of pollutants into the water body, in order to protect water resources. It also suggests water allocation through a property rights system introduced by the government. Where there are no proper rules regulating users' behaviour, the exploitation of water resources as a commons is not free from the dilemma of individual water users. The rules limit the particular types of water usage that a government considers unsustainable, and declare which water uses are permitted. Through this, access to and exploitation of some water resources are limited or stopped.

To implement such a regulation, standards may be set out with penalties imposed for non-compliance. In particular, the water resources are exposed to tragedy when water resources are unregulated in terms of over-abstraction, water wastage and point source water pollution. Water pricing, water metering and developing responsive permit systems for water abstraction may limit the over-use of water. Similarly, introducing regulatory rules and market instruments regulating water exploitation may enhance water availability.

²⁵⁶Cole(n 167) 27–8.

²⁵⁷ibid.

²⁵⁸ FAO, 'Water sector policy review and strategy formulation: a general framework' (1995) 3 *Land and Water Bulletin*, 4.

In addition to water demand management, water security naturally requires pollution control of water systems. This suggests that achieving water security does not only require introducing rules regulating the over-exploitation of water resources, but that first, it may require comprehensive rules for both water quantity(demand) and quality management. From a pollutant-management point of view, the theory focuses on the point source at which pollution is discharged into a water body. A theory is unlikely to address contemporary diffuse pollution challenges.

As discussed elsewhere, natural causes are one of the threats to water security.²⁵⁹ Yet the tragedy of the commons theory does not consider physical water shortage as constituting one of the major threats to water security. The theory also fails to propose aspects relating to water supply management. Practically, it may not be possible to provide a proper solution to natural water security challenges by opting to manage water demand alone at all times and places. The central idea of Hardin's theory involves regulating users of specific resources through coercive rules, but this seems inadequate in its discussion of the regulation of those people who whilst not using the resource themselves-are still affecting the availability of the resource. It excludes them from regulatory scope, which is equally important for enhancing the wise use of water resources.

2.9.3 Capacity to develop and implement rules

The discussion surrounding the tragedy of the commons widely focuses on the creation system allocating the resources and regulating resource use. Through these, the maximum possible cares for the resources are achieved, since individual users do not rationally strive to maximize short-term economic gain against their own property. The tragedy of the commons increasingly focuses on the non-availability of rules rather than the strength of existing rules to reshape the exploitation of unsustainable commons. Undoubtedly, the availability of rules regulating natural resources is decisive for the sustainability of the commons; however, this may not address the root cause. The economic development, the nature of the resources themselves and related factors matter in defining comprehensive rules and implementing them effectively. A given country cannot introduce and implement the rules without costs.²⁶⁰

²⁵⁹United Nations Department of Economic and Social Affairs, 'International decade for action: water for life 2005–2015'(2012) < http://www.un.org/waterforlifedecade/pdf/unwdpac_biennial_report_2012_2013_eng.pdf> accessed 23 August 2012.

²⁶⁰ Dahlman (n 177) 138–39.

In many cases, a lack of regulatory institutional arrangements and the capacity to implement them are root problems for natural resource degradation and unsustainable use. Within countries, the capacity to introduce such institutional arrangements and their implementation varies.²⁶¹ In the member states of the AU, including Ethiopia, the capacity to develop institutional arrangements for water security is low compared with developed countries.²⁶² The economic capacity and related problems adversely affect the pace of the introduction and implementation of a WRM system;²⁶³ the ultimate cause of environmental problems does not only stem from a lack of regulatory institutional arrangements.²⁶⁴ Defining such arrangements is too costly,²⁶⁵ so the challenge lies in the economic capacity to introduce an effective WRMP and to develop strategies that facilitate implementation.²⁶⁶ The central example that Hardin cited to demonstrate the tragedy of the commons is pastureland used in common. This implies that Hardin's theory is very traditional and considers resource problems within a very limited space.

2.9.4 Collaborative institutional arrangements

The tragedy of the commons suggests government regulation towards individual behaviours, but it does not consider the impacts of government failures which may lead to the ruin of shared water resources. The theory is very vague about what organizational remit is appropriate for enhancing the security of water and the level of government that would be mandated to provide institutional arrangements. Thus, the theory does not include the government among the parties and factors that can contribute to the ruin of water resources. Even if the tragedy of the commons theory puts the government inside its theoretical ambit, it may be unlikely that the government could impartially regulate its behaviour through rules formulated by itself, particularly if that government is also part

²⁶¹ Watson et al. (n 78) 14–15.

²⁶² *ibid.*

²⁶³ *ibid.*

²⁶⁴ Cole (n 167) 2–3.

²⁶⁵ Yoram Barzel, *Economic analysis of property rights* (Cambridge University Press 2002) 64; see also Cole (n 168) 178.

²⁶⁶ Watson et al. (n 78) 31–2.

of the problem of natural resource over-use or quality deterioration. In shared water resources, tensions between governments are among the threats in sustaining the resources.²⁶⁷

Notably, today, there are challenges in managing water resources in a way that is sustainable, because of the actions of governments for their short-term interests, rather than for long-term riparian common interests. A government may also run many large development projects that significantly affect the availability of water and, as a government's term of office is not long, short-term benefit-seeking by governments may be more problematic than that by individuals. They may also compete to control the uses of water resources for their own governmental interests, considering biased short-term benefits rather than the long-term riparian interests.

A water body is a complex system, thereby making it difficult to determine a proper boundary, which requires taking into account the interconnectedness of the water system beyond the usual administrative boundaries and linkages.²⁶⁸ There is usually a mismatch between water resources and administrative boundaries. As the result, action on one affects the other.²⁶⁹ The people at the local level 'are closer to the problems, often understand them better, and have to live with the consequences of the environmental policy. At the same time, if the problem is one of transboundary pollution, the locals do not live with the consequences of their pollution. Those downstream do'.²⁷⁰ In nature, exploitation of water resources in parts of the water system affects the water users in other parts. Many of the water challenges are interconnected and interrelated and the world is currently encountering changing realities to which traditional institutional arrangements that focus on water quantity might not be adequately responsive.²⁷¹

With regards to transboundary water, institutional arrangements developed by a single country or level may not differ from the unregulated individual behaviour that can lead to the ruin of resources. Each level or government acting in an isolated manner may tend to over-use and misuse the

²⁶⁷ Lucia Dedtefno, James Duncan, Shlomi Dinor, Kerstin Stahl, Kenneth Strzepek and Aaron T. Wolf, 'Mapping the resilience of international river basins to future climate change – induced water variability' (2010) 15 *Water Sector Board Discussion Paper Series* (The World Bank), 1.

²⁶⁸ WWF, 'Adapted from integrated water resources management' (2000) (Global Water Partnership Technical Advisory Committee Background Papers no. 4) <wwf.panda.org/about_our_earth/about_freshwater/rivers/irbm/> accessed on 7 July 2012.

²⁶⁹ Salzman and Thompson (n 144) 22.

²⁷⁰ *ibid*, 23.

²⁷¹ UNEP, 'Water and development: industry's contribution' (2004) 27(1) *Industry and Environment*, 17–19.

resources in an inequitable manner. These levels formulate and render decisions independently, unless there are schemes to harmonize their actions. The tragedy of the commons theory considers the government as a single body (that can regulate individual resource users) and does not envisage the regulation of government actions by supranational bodies. It thus undermines the significance of a multilevel governance approach (through regional and global bodies) in shaping institutional arrangements for water resources. While water and its ecosystems should not be seen in isolation, the tragedy of commons overlooks such linkages. The theory is more localized to the commons problems, rather than considering wider opportunities.

Water security challenges, whether local, national or global, are inextricably linked.²⁷² In such contexts, the institutional arrangements need to accommodate a range of factors contributing to water insecurity.²⁷³ In particular, water security can not only be achieved through institutional arrangements introduced at a national level to regulate water users' behaviour; but also, it conversely requires comprehensive policy and law at various levels.²⁷⁴ In climate change, for instance, it is contended that '[t]he linkage among local, regional, and global environmental issues, and their relationship to meeting human needs, offer opportunities to capture synergies in developing response options and reducing vulnerability to climate, although trade-off between issues may exist'.²⁷⁵ The climate change impacts on water resources are a transcending and shared problem, which adversely affects the global community.²⁷⁶

2.10 Conclusion of chapter

As a foundation for the thesis as a whole, this chapter examined the theory of the tragedy of the commons to draw out the key features of an effective WRM system that avoid the tragedy. The Hardin theory suggests two different ways of dealing with the commons: property rights and regulation, since the water user's right is subject to coercive regulation. Whilst property rights and regulation can and do co-exist, owners are subject to the law. A property right can manage the water

²⁷² *ibid*, 29.

²⁷³ *ibid*, 3.

²⁷⁴ *ibid*, 4.

²⁷⁵ Watson et al. (n 78) 4.

²⁷⁵ *ibid*, 29.

²⁷⁶ *ibid*, 4.

resources well on behalf of the owners, but given the public good nature of water, the wider public needs and their interests are protected through coercive rules.

In both remedies of the tragedy of the commons, the role of government agencies is decisive. In the context of water resources, the remedies suggested by the theory require the introduction of regulation, developing schemes that establish public rights that restrict access to and use of water resources, whilst introducing property rights. The government may introduce a permit system that allocates water resource use, in that the permit holder utilizes water resources by adhering to conditions that are set out to ensure the sustainability of such resources. By and large, with regard to water resource security, the core issue is coercive rules. Sustainability of water resources may require water demand regulation at a local level. However, regulatory institutional arrangements for water demand alone may not sustain water resources because the challenges may involve a range of water pressures. In addition to well defined and coercive regulatory institutional arrangements, water security may require non-coercive regulatory rules and effective implementation mechanisms.

The discussion in this chapter has demonstrated that water resources have distinct characteristics from many other types of resource. This is mainly because water resource boundaries are usually large, the resources are uneven, uses and users are diverse and the resources are transboundary within a range of scales. Moreover, water availability is adversely affected not only by unsustainable water resource exploitation but also by water quality failures and water systems degradation. This is attributable to the interconnectedness of natural water systems with other ecosystems. In many cases, the impact of water pressures is not limited within a specific scale, and WRM cannot be effectively addressed in an isolated fashion. Actions in adjacent environments or even in locations further away, may impact upon the availability of water. An isolated view of natural resource problems solely through the regulation of users' demands excludes a range of water pressures. The theory therefore fails to propose comprehensive key features of an effective WRM system. Discussion of the tragedy of the commons theory maps out the context and supply and demand management as the key features of an effective WRMP. The findings in this chapter demonstrate that Hardin's theory of water resource challenges was, and is, of great importance; but the theory was written in 1968 and much has happened since.

Chapter Three: Historical development of integrated water resources management

3.1 Introduction

Over the last two decades, the need to introduce and use a watershed boundary-based IWRM approach has been advocated widely and globally, with respect to the growing concerns of water resource problems. At present, the institutional architecture of this type of WRM is increasingly shaping it as a whole; the water laws and policies are evolving in both developing and developed countries to manage water resources in an integrated fashion at the river basin level. This chapter reviews the concept of IWRM and discusses the historical development of international water law and policy to explore modern water management principles that are related to IWRM. The main focus of the chapter is on exploring the key features of an effective WRM system that are supportive to the sustainability of water.

3.2 The concepts of river basin management and IWRM

The notion of a ‘river basin’ is not a new concept; although the exact date of its origin is still disputed.²⁷⁷ Barrow noted that it probably first originated in 1752, and has been more widely used since the 1930s.²⁷⁸ The European Union’s Water Framework Directive (WFD) defines the term ‘river basin’ as ‘the area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta’.²⁷⁹ This definition indicates that the boundary demarcation of a river basin lies with the areas of drainage coverage, encompassing the totality of the land areas that are naturally drained by a watershed. Traditionally, river basin management was water-centred and lacked integrated management of land and related resources.²⁸⁰ The notion supported coordinated development of water resources at a hydrological boundary; often this boundary is not the same as political boundaries.²⁸¹ The concept was often

²⁷⁷ Asit K Biswas, ‘Integrated water resources management: a reassessment’ (2004) 29(2) *International Water Resources Association*, 250–53.

²⁷⁸ Christopher J Barrow, ‘River basin development planning and management: a critical review’ (1998) 26(1) *World Development*, 172.

²⁷⁹ EU, Water Framework Directive, article 2.

²⁸⁰ Bruce P. Hooper, ‘Integrated water resources management and river basin governance’ (2003) 126 *Water Resources Update* (Universities Council on Water Resources), 10–14.

²⁸¹ UNEP ‘Towards integrated water resources management: international experience in development of river basin organizations’ (2014), 9 <www.unep.org/disastersandconflicts/portals/155/countries/Sudan/pdf/SudanWRM.pdf>. accessed on 23 January 2015

focused on exploitation of water resources for economic development, although it took the river basin boundary as a demarcation for water development.²⁸² This approach was widely used in the 1960s and 1970s and viewed the basin ‘as a resource system whose waters were to be exploited for economic development’.²⁸³

On the other hand, IWRM was ‘a product of the environmental movement of the 1970s, questioned the single (and multi-) objective approach and its strong development emphasis.’²⁸⁴ The notion of an ‘integrated’ WRM may be seen as an umbrella term encompassing a range of integrated activities which contribute to the activities of the overall sustainability of water resources. IWRM considers river basins as ‘large, complex, integrated ecological basins’.²⁸⁵ As a river basin favours the coordinated development of water resources, IWRM favours taking the watershed boundary as an appropriate scale for managing water resources, but it suggests an integrated approach rather than mere coordination.²⁸⁶ IWRM recognizes the river basin level as ‘the most appropriate tool’ to deliver an integrated management system.²⁸⁷ It considers river basins or catchment areas as a level for managing water resources. This physical unit is justified as follows:

Water flows according to natural characteristics and does not respect administrative boundaries – therefore the question arises: should water be managed and management structure defined according to existing administrative boundaries or according to natural boundaries, usually taken to be river basins? From a pure water resources point of view there might be much logic to adopting a river basin approach, or at least considering the river basin as a logical planning unit.²⁸⁸

The idea of IWRM is therefore closely connected with river basin management. In both approaches, the natural drainage boundary division is used to identify an area of boundary demarcation, but these concepts are not the same.

As an approach, IWRM has received both criticism and praise. With respect to the criticisms, the approach is said to have found favour without much reflection on the likelihood of actually

²⁸² Hooper (n 280)10–14.

²⁸³ *ibid*, 13.

²⁸⁴ *ibid*, 14

²⁸⁵ *ibid*.

²⁸⁶ *ibid*.

²⁸⁷ UNEP (n 281)10

²⁸⁸ WWF(268) 47.

integrating WRM.²⁸⁹ Because of this, the notion is often said to be vague, nominal and non-practical.²⁹⁰ The approach accommodates different views, but is difficult to understand ‘in terms of what it actually means’.²⁹¹ It is considered to not be operational and is vague in terms of being put into practice.²⁹² Converting the approach into practice is often said to be difficult and leaves the impression that the concept has largely tended to be a blueprint, rather than a workable approach to assist in water security challenges effectively.

It is said that IWRM is attractive regardless of differences in disciplines.²⁹³ The term is used in many synonymous ways, owing to the involvement of different disciplines.²⁹⁴ Practically, the concept is understood and implemented in various ways.²⁹⁵ However, the IWRM approach provides a general legal or policy framework for WRM,²⁹⁶ and owing to their nature, differences in interpretation are an unavoidable phenomenon within the context of water bodies. The existence of variations in understanding of the IWRM concept may provide a window of opportunity for specific legal and policy solutions. It may also avoid too many narrow interpretations. In fact, there are possible variations, even within the same river basin, that require different management perspectives.

3.3. Definition and core elements of IWRM

3.3.1 Definition

The widely used Global Water Partnership (GWP) policy document defines IWRM as ‘a process that promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems’.²⁹⁷ Integrated river basin management and

²⁸⁹ Biswas (n 277) 249.

²⁹⁰ *ibid.*

²⁹¹ *ibid.*, 249.

²⁹² *ibid.*, 250.

²⁹³ Nigel Watson, ‘Integrated river basin management: a case study collaboration’ (2004)4(2) *International Journal of River Basin Management*, 243.

²⁹⁴ Peter Downs and Kenneth Gregory, ‘How integrated is river basin management?’ (1991) 15(3) *Environmental Management*, 299–309.

²⁹⁵ *ibid.*

²⁹⁶ WWAP, *Integrated water resources management (IWRM) in action* (UNESCO 2009) 7.

²⁹⁷ WWF(n 268)

IWRM are related concepts.²⁹⁸ Similarly, by adapting the GWP definition of IWRM, *the World Wildlife Fund (WWF)* defines integrated river basin management as:

the process of coordinating conservation, management and development of water, land and related resources across sectors within a given river basin, in order to maximize the economic and social benefits derived from water resources in an equitable manner while preserving and, where necessary, restoring freshwater ecosystems.²⁹⁹

3.3.2 Core elements

To understand the strengths and weakness of IWRM, in-depth evaluation of its core elements are imperative.

3.3.2.1 Process

One of the key elements of IWRM is ‘process’, which can be understood as continuous reform in WRM.³⁰⁰ As a process, IWRM recognizes the fact that WRM reform is not an overnight function; rather, it is learned from experience over periods of time and changes with the context of specific river basins. Its legal landscapes and implementation practices are worked out on a step-by-step basis, and require updates with dynamism concerning water resources. There is no possibility of finding a perfect IWRM that is workable for all contexts.

The water resource pressures and security challenges are not identical in different countries, and even vary within the same river basin in different areas. This may suggest that countries could imaginatively design appropriate institutional arrangements within the context of the water bodies. Water policies and laws require adjustment to adapt to changes. Therefore, the responsiveness of the institutional arrangements is one of the key dimensions that IWRM aims to achieve.

²⁹⁸Robin Abell, Michele Thieme, Eric Dinerstein and David Olson, *A sourcebook for conducting biological assessments and developing biodiversity visions for ecoregion conservation. Volume II: Freshwater ecoregions*(World Wildlife Fund 2002) 16.

²⁹⁹ WWF (n 268).

³⁰⁰ WWAP (n 296) 6.

3.3.2.2 Collaboration

Integration is one of the key words that is attached to the integrated river basin management approach. The concept of integration is generally well received; it is desirable for different aspects of human life and performance – attractive, inspiring and affirming – but expansive enough to allow for different interpretations.³⁰¹ However, the word ‘integration’, within an IWRM approach, has lacked a clear meaning. Biswas describes this uncertainty by stating that ‘[e]veryone is for integrated water resources management; no matter what it means, no matter whether it can be implemented, or no matter whether it would actually improve water management processes’.³⁰² Watson notes that the idea of integrated river basin management is widely interpreted and understood as an improved coordination ‘among planning and management organizations without any fundamental reforms in existing institutional arrangements and systems of governance for land and water’.³⁰³ He argues that mere improved coordination among conventional institutional arrangements will not bring a change. The success of integrated river basin management is dependent upon collaborative institutional arrangements and decision-making, rather than simply improved coordination.³⁰⁴

In collaboration, persons with a stake must be involved in managing water resources through partnerships. A lack of collaboration among levels of decision-makers and actors negatively affects the sustainability of water resources.³⁰⁵ Collaboration is a non-hierarchical, polycentric natural resources management;³⁰⁶ the levels and actors integrate their functions without differences in their responsibilities. This scheme is believed to avoid or minimize fragmentation and overlapping efforts in WRM.³⁰⁷ Collaborative management may include stakeholders from government institutions, private companies, non-governmental organizations and interest groups, as well as individuals who have a stake in the development and protection of water resources, unlike the conventional technocratic-focused WRM.³⁰⁸ Collaborative WRM involves context-specific and problem-focused

³⁰¹ Kevin Collins, ‘Integration – what can I do: a system of perspective? Integrated water management’ Conference Paper (CIWEM, London, 21 October 2010).

³⁰² Asit K Biswas, ‘Integrated water resources management: is it working?’ (2008)24(1) *Water Resources Development*, 13.

³⁰³ Watson (n 293)243.

³⁰⁴ *ibid.*

³⁰⁵ *ibid.*, 15.

³⁰⁶ C Pahl-Wostl, M Craps, A Dewulf, E Mostert, D Tabara and T Taillieu, ‘Social learning and water resources management’ (2007) 12(2) *Ecology and Society*, 1, 5.

³⁰⁷ *ibid.*

³⁰⁸ *ibid.*

decision-making. This makes collaborative decision-making a social learning process.³⁰⁹ It provides legitimacy for these persons and institutions to be able to participate in and influence the decision-making process. Collaboration also enhances the provision of equitable and fair decisions by allowing a range of perspectives and interests to be paid attention to. As Biswas describes, water resource problems:

are becoming increasingly more and more interconnected and intertwined with other development-related issues, and also with social, economic, environmental, legal and political considerations, at local and national levels, and sometimes even at regional and international levels...water problems had become multi-dimensional, multi-sectoral and multi-regional, and were enmeshed with multi-interests, multi-agendas and multi-causes, which could be resolved only through an appropriate multidisciplinary, multi-institutional and multi-stakeholders coordination.³¹⁰

For instance, in the United States, different federal states work together within WRM through interstate compacts – agreements that are made between, or among, states that share water resources to coordinate water resource use and development.³¹¹ The compact scheme is used to enhance collaboration between different administrative states to ensure equitable water resource use, and aims to sustain water resources. This scheme is believed to enhance coordinated interstate WRM, beyond the administrative boundary demarcations.³¹² Once it obtains federal government approval, the agreement is a legally enforceable contract.³¹³

Furthermore, the essence of the compact indicates that the sharing of water resources is not only in the interest of federal states (local levels), but also of those states that do not share the water body. The higher level (national government) has a stake in determining the management, as the local-level agreement cannot affect the whole nation's interest in the water resources under concern. In the absence of the involvement of the federal government, the local levels may attempt to share water resources for their own local interest, at the cost of the national interest. This may increase water resource diversions and unsustainable utilization of water resources. The compact enables both central and local government bodies to establish a vertical and horizontal relationship, and it

³⁰⁹ *ibid.*

³¹⁰ Biswas (n 302) 13.

³¹¹ Noah Hall, 'Interstate water management and the great lakes – St Lawrence river basin water resources compact' (2008) The Great Lakes Environmental Law Centre <www.greatlakeslaw.org> accessed on 23 January 2011.

³¹² *ibid.*

³¹³ *ibid.*

enhances fair water resource use for the whole nation. This makes ensuring the equitable utilization of water resources the mandate of both the higher and lower levels. The involvement of both higher and lower levels is thus equally important; neither the decentralization nor the centralization of authority to a given level is an end in itself.

Moreover, because the earth is one interconnected hydrological system, the use and protection of local-level water resources may not be merely local in their nature. Rather, they have national and global dimensions. Therefore, the local challenges do not remain within that specific level; they extend and have larger implications at higher levels. The existence of this interconnection means, that WRM is not undertaken at one specific level in isolation or by a single sector with regard to an individual function. Instead, different levels of decision-making and regulators are involved. This suggests that a positive outcome in water security management is dependent on the shared responsibility and functioning of different levels at the scale of decision-making and the organizations within that level.³¹⁴

The overall goal of integration in WRM seems to be to minimize the risk of over-exploitation that endangers the sustainability of water resources. The essence of integration is that fragmented WRM is unlikely to bring about a change in the over-exploitation of water resources, and it aims to minimize the risk of unsustainable water resource use by decision-making, without a trade-off to mitigate the multiple needs of water resources. Importantly, the effectiveness of collaborative river basin management depends upon the effective technical solutions that enable cooperation among the concerned stakeholders; politics provide an enabling environment for WRM and implementing laws and institutions.³¹⁵ None of these elements stands by itself in the absence of the other two elements. The weakness of one of these elements affects the strength of collaboration in WRM. In shared water resources in particular, managing them without coordination by the countries sharing those resources is challenging. To avert a tragedy involving water resource, it is widely suggested that the riparian countries manage water resources in a coordinated manner.³¹⁶ A lack of coordination between states

³¹⁴ Secretariat of the Convention on Biological Diversity, *Transboundary water resources management: the role of international water resources agreement in implementation of the CBD* (CBD Technical Series no. 40, 2008) 4.

³¹⁵ Watson (n 295).

³¹⁶ Secretariat of the CBD(n 314) 6.

creates water insecurity.³¹⁷

However, collaborative WRM does not arise out of dilemmas. Both proponents and opponents of collaborative environmental management, including of water resources, use traditional centralized decision-making as a base for reference, to either advocate or challenge the collaborative approach. For example, Orts doubts that a centralized government acting alone can attain a suitable environmental solution.³¹⁸ He contends that, in many situations, centralized environmental management is less trustworthy when compared with collaborative environmental management.³¹⁹ He favours a collaborative environmental management scheme that involves different stakeholders; this is a more trustworthy, democratic management approach than traditional centralized environmental management. He further suggests that, in some situations, traditional centralized environmental management is preferable to the collaborative approach.³²⁰ He adds that collaborative environmental management is not able to replace the traditional centralized environmental approach, particularly with respect to some of the complex issues that require solutions from ‘big government’, rather than collaborative schemes.

Orts and Cogliane’s study suggests that complex environmental problems find a solution from a ‘big government’, but does not define what a ‘big government’ or ‘complex’ issues actually are. Here, environmental problems – whether complex or small – may need stakeholders’ efforts and local-level involvement. For instance, pollution issues with regard to transboundary water resources may be best managed through the collaboration of the stakeholders for different levels, who have an interest in addressing the big problems through collaboration, rather through than a centralized approach. The problem becomes large and complicated if it does not find solutions at the local level with the involvement of the stakeholders. A lack or ineffectiveness of stakeholder collaboration in WRM may affect the sustainability of water resources. The lack of common goals and collaboration leads each stakeholder to make decisions in the way he or she pleases.

³¹⁷ *ibid.*

³¹⁸ Eric Orts and Cary Coglianese, ‘Debate: collaborative environmental law: pro and con’ (Scholarship at University of Pennsylvania Law School Research Paper 2007) 199.

³¹⁹ *ibid.*

³²⁰ *ibid.*

On the other hand, Coglianese argues that collaborative environmental management is ‘not at all feasible for environmental public decision-making in real-world decisions’.³²¹ He further underlines the idea that collaborative environmental management is costlier than the traditional approach. In 1995, the US government adopted a policy document on environmental law that clearly advocates collaborative environmental management as being more cost-effective than the conventional approach. The policy document states that:

It is time to draw upon the lessons we have learned over the last 25 years to reinvent environmental protection for the 21st century. We have learned that the American people are deeply committed to a healthy environment for their children and communities. We have learned that pollution is often a sign of economic inefficiency and business can improve profits by preventing it. We have learned that better decisions result from a collaborative process with people working together rather than from an adversarial one that pits them against each other. And we have learned that regulations that provide flexibility – but require accountability – can provide greater protection at a lower cost.³²²

Coglianese’s argument overlooks existing facts about collaborative environmental management when he considers the collaborative approach as infeasible, costly and time-consuming, not least because the notion of feasibility is relative.³²³ Collaborative environmental management is a preferable scheme for harmonizing interests. It assists in building a common platform that imposes obligations on each stakeholder as to how to use and protect the relevant natural resources, rather than exploiting or managing them in isolation, in a manner that may harm the interests of other stakeholders or cause overlapping efforts. Collaborative environmental decision-making is an appropriate tool for regulating environmental problems that are particularly sophisticated in nature, and these problems often have many conflicts of interest. Collaboration among the levels and key actors facilitates and helps to find a balanced solution, if they take part in the negotiation process in a democratic manner. It may also help to minimize or avoid unnecessary contention and boost a healthy relationship. A collaborative environmental WRM platform also provides an opportunity for the stakeholders to be involved, share their views, learn experiences and enhance transparency.

The perception that assumes the collaborative approach is costly and time-consuming is an over-

³²¹ *ibid.*

³²² Bill Clinton, ‘Reinvention environmental regulation’ (State of the Union Address, Washington, January 1995) <<http://govinfo.library.unt.edu/upr/libray/rsreport/251a.html#overview>> accessed 17 December 2010.

³²³ *ibid.*

exaggeration for the following reasons. Firstly, most environmental problems are not commercialized or valued in economic terms. Secondly, the price of a solution that is attained through collaborative environmental management may not be valued in economic terms. Here, it is argued that the cost of collaborative WRM is necessary if collaboration is conducted at the level appropriate to regulate a given environmental problem, and the time it consumes is rational if the solution that is achieved harmonizes conflicting interests among stakeholders. A collaboration scheme, as a management scheme, is a crucial tool for uniting isolated efforts and enabling them to handle issues that are not solved effectively by a single government institution or level. It is believed that collaborative management enhances equitable and reasonable use, and imposes obligations that prevent the stakeholder from causing significant harm with regard to water resource development and protection.³²⁴

3.3.2.3 Participation

Water resource problems are complex:³²⁵ users are diverse;³²⁶ the dynamics of water resources are uncertain;³²⁷ the ecosystem is interconnected; and sources of problems are not specific. Therefore, providing one solution may not solve all ongoing water resource problems.³²⁸ Sometimes, a given action may trigger other unexpected problems.³²⁹ A government institution may not have all the necessary information and experts to manage natural resources, and stakeholder participation enhances natural resource management by sharing experiences.³³⁰ Thus, water resource problems may not find all their solutions from governments or single levels or institutions; rather, public and stakeholder participation is needed.³³¹

³²⁴Tom Raadgever and Erik Mostert, 'Transboundary river basin management – state-of-the-art review on transboundary regimes and information management in the context of adaptive management. Deliverable 1.3.1 of the Ne Water project' (2005)RBA Centre, TU Delft
<www.usf.uniosnabrueck.de/projects/newater/downloads/newater_wp> accessed 5 January 2013.

³²⁵C Pahl-Wostl, 'The implications of complexity for integrated resources management' (2007) 22 *Environmental Modelling & Software*, 561.

³²⁶JF Warner and JA Bolding, 'Going with the flow: river basins as the natural units for water management'(2008) 10(2) *Water Policy*, 121.

³²⁷ *ibid*, 131.

³²⁸ *ibid*.

³²⁹ *ibid*.

³³⁰ Erik Mostert, 'Social learning in European river management: barriers and fostering mechanisms for 10 river basins'(2007) 12(1) *Ecology and Society*.

³³¹ *ibid*.

Within the definition of integrated river basin management, ‘the coordinated development and management of water’ is incorporated as a major WRM direction.³³² The concept of coordination attempts to address the involvement of diverse stakeholders within WRM. This means participation is one of the core elements of integrated river management, which requires involving all relevant levels and citizens, providing access to information and giving the opportunity to participate in decision-making.³³³ Participation is described as ‘a legal procedure to give citizens a chance to give their opinion about projects and decisions’.³³⁴ The modes of participation may be categorized into rights to participation, access to information and access to justice in environmental matters.³³⁵ The idea of the right to participation entitles concerned persons, community members or non-governmental organizations to influence public authorities in their decision-making processes. Moreover, the right of access to information and participation gives the public the opportunity ‘to assert the right to live in an environment adequate for a person’s human health and well-being’.³³⁶ The right to access to information in environmental matters provides the public with space to challenge the fairness of development projects, thereby accommodating social equity, environmental sustainability and economic efficiency concerns. It imposes an obligation on the relevant government body to provide access to information to the applicant regarding those administrative decisions that impact on the environment, human health and safety.³³⁷

3.3.2.3.1 Significance of participation

The significance of public and stakeholder involvement in environmental decision-making is inevitable. It is often said that such involvement enhances the validity and legitimacy of government decisions;³³⁸ limits the discretion of administrative authorities, by giving the public and stakeholders

³³²WWF (n 268).

³³³United Nations Conference on Environment and Development(1992),principle 10.

³³⁴EU, *WFD CIS (2000/60/EC) guidance document no.8: public participation in relation to the Water Framework Directive* (Office for Official Publications of the European Communities 2003).

³³⁵ Aarhus Convention, ‘Access to information, public participation in decision-making and access to justice in environmental matters: preamble’. Denmark, 25 June 1998.

³³⁶ Jonathan Veschuuren, ‘Public participation regarding the elaboration and approval of Projects in the EU after the Aarhus Convention’ inTFM Etty and H Somsen (eds.),*Yearbook of European Environmental Law*, vol 4 (Oxford University Press 2005) 29.

³³⁷ibid.

³³⁸Jurgen Habermas, *Between facts and norms: contributions to a discourse theory of law and democracy* (MIT Press 1996) 228.

the opportunity to exert their influence on public authorities to render negotiated or mitigated decisions;³³⁹ and enhances the public acceptance of decisions that are made by government authorities.³⁴⁰ Stakeholder participation is also characterized as: a platform used to weigh conflicting interests and decision-making through the broader consideration of water resource use; the protecting of social interests, rather than individuals' needs, through balancing these interests; and a tool for conflict prevention and resolution among water resource users.³⁴¹ In situations where the government is part of the problem of unsustainable water resource use or exploitation, a participatory WRM model is one of the key schemes for regulating government behaviours. Participation creates a forum that helps to discuss and provide solutions that can mitigate the interests of different people.³⁴² Birnie and Boyle note that participatory decision-making promotes environmental justice and sustainable use of natural resources, as well as balancing the development and protection of natural resources.³⁴³

3.3.2.3.2 Drawbacks of participation

Public participation and stakeholder involvement in water resources may not be without drawbacks. The cost of participation is often regarded as disadvantageous. The people who have stakes in water use are too many; stakeholder participation demands a high cost if a stakeholder forum is actually needed to operate effectively, when compared with traditionally centralized schemes of natural resources management.³⁴⁴ The proper utilization of water resources may need relatively complex negotiation, which consumes time and money, in order for balanced solutions to be found. In particular, if countries are economically weak, with chronic water scarcity, it is not easy in practice to change stakeholder participation in WRM.

Obviously, competition between needs arises, and this makes it difficult for members of large groups to take part in the decision-making. This disadvantage may be managed through a representative mode of participation that involves some persons or groups who share interests, rather than involving

³³⁹Jonas Ebbeson, 'The notion of public participation in international environmental law' in Jutta Brunnee and Ellen Hey (eds)*Yearbook of International Environmental Law*, vol 8 (Oxford University Press 1997) 56.

³⁴⁰ Patricia Birnie and Alan Boyle, *International law and the environment* (Oxford University Press 2002) 261–64.

³⁴¹ Frank Jaspers, 'Institutional arrangements for integrated river basin management'(2005) 5 *Water Policy*, 243.

³⁴² *ibid.*

³⁴³ Birnie and Boyle (n 340).

³⁴⁴ Sarah Hendry, 'River basin management and water framework directive: in need of a little help?'(2008) 19 *Water Law*, 150.

the whole group.³⁴⁵The problems with participatory decision-making may not end simply by using a representative mode of participation, because there must be the right representation of stakeholders and fully vibrant participants. It has been noticed that, in the context where the environment is voiceless, nature may be in peril and the interest of future generations may not be protected.³⁴⁶ The voiceless interests are ignored, and the outcome for the environment is precarious. Those short-sighted and self-interested users continue benefiting until the water resources are ruined.³⁴⁷ Moreover, participants in natural resources management may not be in equal positions to influence and provide fair and balanced decisions, as a result of which, the dominant groups continue to generate their benefits through the disguise of participation.³⁴⁸

Furthermore, the selection process of participants may not be impartial, and the decision-making processes may allow some groups to impose their wishes on the other groups and public interests. Held states that: 'It is not the single, isolated individual who is active in historical and political processes, but rather human beings who live in definite relations with others and whose nature is defined through these relations.'³⁴⁹ Such participatory decision-making is neither negotiated nor democratic by its nature; rather, it serves the interests of a few individuals at the expense of public interest.³⁵⁰ Participation legitimizes local interest in the utilization of water resources. However, this must be subject to limitations to secure the protection of resources and to safeguard the interests of the whole nation. On the other hand, a completely decentralized participatory decision-making process is unorganized when it comes to protecting common interests.³⁵¹ The danger of this type of decision-making may not differ too much from the tragedy of the commons, which leads to uncontrolled resources being ruined by self-interested individuals.

³⁴⁵Philippus Wester, Douglas Merrey and Marna De Lange 'Stakeholder representation in the river basin management in Mexico and South Africa' (2003)30(19) *World Development*, 797.

³⁴⁶Stone (208) 172.

³⁴⁷Hardin (n 145) 1243–48.

³⁴⁸David Held, *Models of democracy* (3rdedn, Polity Press 2006) 107.

³⁴⁹*ibid*97.

³⁵⁰Susan Hanna and Jentoft (eds), *Right to nature: ecological, economic, cultural, and political principles of institutions for the environment* (Island Press 2009), 35–47.

³⁵¹*ibid*.

3.3.2.4 Subsidiarity

Participation favours decentralized natural resources management. The decentralization of power to the lowest appropriate level is justified because ‘the closer management is to the ecosystem, the greater the responsibility, ownership, accountability, participation, and use of local knowledge’.³⁵² The use of local knowledge is also assumed to be a tool that could enhance a more effective local steering by reducing transaction costs, helping stakeholders to learn from their experiences, and using traditional knowledge for maximizing natural resource conservation efforts.³⁵³ Participatory decision-making is a locally-led process that brings society to the centre of decision-making. Stakeholder participation is characterized as: a platform used to weigh conflicting interests and decision-making through the broader consideration of water resources use; for protecting of social interests rather than individuals’ needs through balancing these interests; and used as a tool for conflict prevention and resolution among water resources users.³⁵⁴ Participants go through various experiences and find out information about water resources to uncover solutions for water resources problems.³⁵⁵

The concept of subsidiarity is synonymous with the idea of devolving or decentralizing authority to a lower level.³⁵⁶ It aims for a transfer of functions from a higher to a lower level, and the idea embeds itself in the existence of multilevel in decision-making.³⁵⁷ The concept is also considered as a constitutional principle used to defend higher-level interventions.³⁵⁸ The lower levels use the concept as a shield to defend intervention from higher levels, and it gives relative autonomy to the former to

³⁵² CBD COP 5 and Nairobi, Kenya (2000) Retired sections: paragraphs 4-5. Principle 2: justification notes.

³⁵³ Ostrom (n 184) 90–105.

³⁵⁴ Patrick Huntjens, Louis Lebel, and Brian Furze, ‘The effectiveness Multi-stakeholder Dialogues on Water: Reflections on experiences in the Rhine, Mekong, and Ganga-Brahmaputhra Meghan river basins(2015) 10 Working Paper, June 2015, The Hague Institute For Global Justice, 1-3 <<http://www.thehagueinstituteforglobaljustice.org/wp-content/uploads/2015/10/working-paper-10-Effectiveness-multi-stakeholder-dialogues.pdf>> accessed on 6 April 2016 .

³⁵⁵ Maarten Wolsink, ‘River basin approach and integrated water management: governance pitfalls for the Dutch space-water-adjustment management principle’ (2006) 37 *Geoforum*, 473.

³⁵⁶ *ibid.*

³⁵⁷ Andrew Heywood, *Key concepts in politics* (Palgrave 2000) 237.

³⁵⁸ *ibid.*

choose and render decisions; however, it also recognizes the legitimacy of the higher levels to intervene when an issue is assumed to be best handled at the higher levels.³⁵⁹

For instance, subsidiarity legitimizes an EU (supranational level) takeover of decision-making from member states, or it can empower member states to maintain jurisdiction in a given matter.³⁶⁰ Owing to these mixed features, subsidiarity is considered to be a ‘double-edged’ sword.³⁶¹ Subsidiarity as decentralization aims to transfer power to the level that is located closest to the public, to enhance democracy, build trust and reduce higher levels of intervention, which are often considered unpopular by the public. Its wide recognition is supported by the idea that decentralization of power to a subordinate level improves governance.³⁶² It considers the national level or above as too remote to address local needs and interests within administrative decision-making.

The decentralized environmental management approach has been widely practised as a contemporary managerial model in the governance of natural resources, including water resources, through involving local people at the lowest possible level.³⁶³ Decentralization of power enables organizations at the lowest possible level to have the power, freedom and resources to discharge the duties imposed on them.³⁶⁴ It enhances stakeholder involvement in natural resources management, and the involvement of the public as partners is assumed to boost the success of natural resources conservation, through enhancing the enforcement of rules that are enacted for the sustainable use of a resource.³⁶⁵ It has often been said that the decentralized model of natural resources helps to include the needs and aspirations of different stakeholders. Subsidiarity favours decision-making at the level closest to the people.

Many development projects are determined at a local administrative level in water resource decision-making; land resource management is also local in its nature, and its proper involvement in water resources is an important aspect of the regulatory framework to consider. Notably, centralization may

³⁵⁹Jonathan Golub, ‘Sovereignty and subsidiarity in EU environmental policy’ (1996) 44 *Political Studies*, 686–703.

³⁶⁰*ibid.*

³⁶¹*ibid.*

³⁶²*ibid.*

³⁶³N Baral and J Heinen, ‘Decentralization and people’s participation in conservation: a comparative study from the Western Terai of Nepal’ (2007) 14 *International Journal of Sustainable Development & World Ecology*, 520–31.

³⁶⁴Ryan Stoa, ‘Subsidiarity in Principle: Decentralization of Water Resources Management’ (2014) 10(2) *Utrecht Law Review*, 33–34

³⁶⁵MA Aziz, ‘Co-management of protected areas without local knowledge and participation; a case study of Lawachara National Park’ (2008) 182–83.

impede the bringing of local people, the public and stakeholders to the centre of decision-making.³⁶⁶ Decentralization of WRM to the local level ‘will provide a clearer understanding of the issues in the catchment, and involves local communities in decision-making by sharing evidence, listening to their ideas, working out priorities for action and seeking to deliver integrated actions that address local issues in a cost effective way and protect the local resources’.³⁶⁷

Traditionally, the focus of WRM law was at national or river basin level, except for some forms of cooperation to regulate the behaviours of states in international water courses.³⁶⁸ There was no comprehensive water law that regulated in a coherent way the ranges of water threats. That meant that water security management had to be seen from national or river basin perspectives. The national level, however, is still considerably valid as an area for WRM, since states are the principal actors within regional and international politics.³⁶⁹

By reviewing the water security challenges faced by south-east England, for example, Rodda argues against the significance of the river basin approach in enhancing the security of water.³⁷⁰ Rodda contends against the decentralization of WRM to the river basin level. He believes that the constraint on water transfer in England is not a cost of infrastructure development, but that ‘probably more serious was the attitude that a regional or river basin approach rather than a national one was the appropriate way to tackle the nation’s utilization of its water resource’.³⁷¹ Rodda’s argument favours a more holistic WRM at a national level. Managing water supplies at the regional or river basin level enhances the control of water resources by the water companies in a fragmented manner.

His critical evaluation suggests the need to reshape the WRM system towards a national orientation, so as to overcome local resistance. The introduction of a flexible scheme allowing water transfer is an important aspect of WRM in the context of water scarcity, to enhance the balanced utilization of water resources; however, supply management may not be a primary management approach to water scarcity problems. Rodda attaches too much focus on water supply management through transfer

³⁶⁶ Environment Agency, ‘Pilot catchments’(quoted statements of Richard Benyon, Minister for Natural Environment and Fisheries, World Water Day, 22 March 2011).

³⁶⁷ *ibid.*

³⁶⁸ Philippe Cullet, ‘Water law in a globalised world: the need for a new conceptual framework’(2011) 23(2)*Journal of Environmental Law* (International Research Centre), 233.

³⁶⁹ Dan Tarlock and Patricia Wouters, ‘Reframing the water security dialogue’(2009) 20 *Water Law*,60.

³⁷⁰ J Rodda, ‘How can water resources in South East England be sustained?’ (BHS 10th National Hydrology Symposium, Exeter,2008), 123.

³⁷¹ *ibid.*

from river basins, where water resources are abundant, to river basins with a deficit; but abundance of water resources in the basins is relative, and the stability of the same quantity is uncertain with climate change. There may not be the same amount of water resources in the future.

WRM in scarce river basins primarily requires managing unsustainable water demand. Demand management may not be practical without the involvement of water resource users and companies involved in water abstraction in valuing water and using water resources efficiently. The impression is that this idea allows less possibility for national-level intervention in water supply management, by maintaining the river basin approach. If holistic WRM is to benefit in an equitable manner, the local people within the river basin must be informed about the water transfer's potential impact on their lives; their interests must not be ignored and they must be brought to the centre of water supply decision-making. Nationalizing decision-making about water supplies should not occur at the expense of river basin people's interests; rather, it should give due importance to the protection of local people's interests, although the protection of the interests of people and communities living outside the river basin areas is equally important.

This is why it is said that integrated river basin management may not happen out of political choice in ways that affect how water resources are developed and managed.³⁷² Depending on the context of the water resource challenges, water security may not be achieved in the real world simply by managing water resources within the river basin boundary demarcation. The endeavour to achieve social equity, economic efficiency and a healthy ecosystem that functions for the people who live within and outside the river basin level requires inclusive WRM, which takes into account competing interests. If integrated river basin management is understood as an approach for developing and protecting water resources for the people and ecosystems residing within the river basin, it is a disintegrative approach that reinforces the fragmentation in managing interests from outside the river basin, or limits the balanced utilization of the water resources of different river basins.

However, as WRM is distant from the local level, the real involvement of local people cannot be ensured, and sharing local experiences is hence limited. In particular, it undermines receptiveness to local people's ideas, and poses a difficulty in integrating their interests in WRM. Moreover, it impedes the provision of context-specific solutions.³⁷³ However, the decentralization of WRM

³⁷²Warner and Bolding (n 328) 121–38.

³⁷³ Environment Agency (n 366).

authority does not mean that solutions for all water resource problems can be obtained at the local or river basin level; some water resource solutions may be obtained from the national or international level. Water resource problems are dynamic,³⁷⁴ and decision-making levels change with time and place.

In addition, localized WRM also underestimates the interconnectedness of natural resources among both human and non-human communities. In particular, given the present climate changes, socio-economic development and diverse factors related to water resources quality and quantity, water resource decision-making needs a flexible management system. Some measures supporting local efforts can be supplemented from national or regional levels, or beyond these levels, based on the nature of the water resource problems. That makes the nature of the problem critical in determining the level where water resources are managed. Generally, national or supranational levels may provide a broad framework for the development and protection of water resources.³⁷⁵ At the grassroots level, water resource users and local communities are given a wider power to engage in decision-making, particularly on issues of a day-to-day nature.³⁷⁶ Regardless of the nature of the water resource problems, local-level involvement is inevitable – it provides legitimacy for local-level resource users. Ultimately, the outcomes of decisions at different levels add and contribute positive impacts and improvement to the sustainability of water resources.

Ecologically, there is no isolation between the beings within ecosystems merely through the river basin drainage divide. It is supposed that:

all living things exist in interrelated systems; nothing exists in isolation. The water environment system is web-like; to pluck one strand is to cause all to vibrate; whatever happens to one part has ramifications for all the rest. Our actions are not individual but social; they reverberate throughout the whole ecosystem.³⁷⁷

³⁷⁴ *ibid.*

³⁷⁵ John Butterworth, Jeroen Waner, Patrick Moriarty, Stef Smits and Charles Batchelor, 'Finding practical approaches to IWRM' (2010) 3(1) *Water Alternatives*, 70–71.

³⁷⁶ *ibid.*

³⁷⁷ A Fritsch, 'Environmental ethics: choices for concerned citizens', (1988) 12 *Harvard Environmental Law Review*, 313.

That is why, ‘over the last two decades, problems at national and basin level have emerged prominently within a global context’.³⁷⁸ Climate change may impact upon the availability of water beyond national administrative boundaries, and this creates doubt that isolated actions of states will ensure water availability:³⁷⁹

In a world of interconnected threats and challenges, it is in each country’s self interest that all of them are addressed effectively. Hence, the cause of larger freedom can only be advanced by broad, deep and sustained global cooperation among states. Such cooperation is possible if every country’s policies take into account not only the needs of its own citizens but also the needs of others. This kind of cooperation not only advances everyone’s interests but also recognizes our common humanity.³⁸⁰

Practically, it may not be possible to ensure water security by isolated national water policy and law.³⁸¹ Rather, water security management demands significant involvement and inclusion of different dimensions that affect availability of water at national, regional and international levels.³⁸² The existence of diverse interests in water resource development suggests the need to reform water law to facilitate public participation at all levels of WRM. People and ecosystems benefit if integrated river management is understood as an interconnecting idea beyond the watershed in the context of water scarcity. In this way, the coordination of local, national, regional and international levels is enhanced, and mutual interests are sustained.

3.3.2.5 Managing land and related resources

Another key element of IWRM is the scope of the issues that are involved; water resources are not the only management matter that needs addressing. Rather, management issues also encompass land and other related resources,³⁸³ which are interconnected with water resources. This is because the quality and quantity of water resources are affected by land-use practices; water sustainability first depends upon land use. Thus water resource conservation may not be successful without taking into consideration the major ecosystem factors that contribute to water degradation. For instance, diffuse

³⁷⁸Tarlock and Wouters (n 369)53 and 60.

³⁷⁹ Cullet (n 371)233.

³⁸⁰ Kofi Annan, ‘In larger freedom: towards development, security and human rights for all’, UN Doc A/59/2005.

³⁸¹ *ibid*, 234.

³⁸² *ibid*, 235.

³⁸³ Cunningham and Sinclair (n 132)51–81.

source pollutants ‘enter our waters over broad expanses of land...rather than from a discrete and identifiable point such as a pipe or ditch’, and this needs diverse and comprehensive integrated strategies.³⁸⁴ These strategies require land practice management, land zoning, planning and other diverse pollutant-management schemes.³⁸⁵

Generally, there are two interpretations regarding integration in WRM.³⁸⁶ The first of these considers that all connections and components of water resources and their ecosystems must be taken into account comprehensively. The other way of interpretation assumes the selective integration of major components and interconnections from existing linkages. This second approach is considered the practical construal of WRM,³⁸⁷ for it is not easy to manage all components of an ecosystem to protect and develop water resources.

3.3.2.6 Sustainable use

WRM is not merely an economic or environmental construct; it is also a social construct.³⁸⁸ Upon water resource use and development, a given country needs to consider all possible consequences of unsustainable resource exploitation. The IWRM definition accommodates the phrase ‘development which meets the needs of the present without compromising the ability of future generations to meet their own needs’. This idea supports balanced use of water resources in a way that secures long-term benefits for both present and future generations.

IWRM aims ‘to maximize the resultant economic and social welfare in an equitable manner’; it is a tool for achieving increased sustainability, leading towards sustainable development. Water development decision-making does not compromise the ‘sustainability of vital ecosystems’ of water resources. More specifically, WRM must be inclusive enough to address environmental, social and economic needs. This suggests the need to address water users’ interests and the protection of vital ecosystems, as water management is also about vital ecosystem use. This proposes a change from

³⁸⁴ibid.

³⁸⁵ibid.

³⁸⁶Bruce Hooper, ‘Integrated river basin management: a case for collaboration’ (2004) 2(4) *International Journal of River Basin Management*, 243.

³⁸⁶ibid.

³⁸⁷ibid.

³⁸⁸CBDCOP5, principle 10.

traditional utilitarian-oriented water management; in particular, WRM must not be anthropocentric-oriented. It suggests that human water development is not unsustainable. A 'right' to use water is subject to limitation to ensure the sustainability of water and its ecosystems. More specifically, furthering sustainability of water must require the use of water resources within environmental limits. IWRM recognizes both long-term water resource availability, and the right to use water subject to a limitation that qualifies the right. This suggests that IWRM prevents unsustainable water use practices and requires proper systems that minimize human impacts on the water environment, through regulation of water use and development. This may be done through regulatory demand rather than by enhancing the water supply. Unsustainable water use practices could be controlled to make water use less damaging to the water environment. The IWRM approach supposes that when the degree of integration of water management is greatest, the aggregated environmental, social and economic benefits increase.

3.4 Efforts to introduce IWRM at national and international levels

Effective IWRM requires both national and international measures. Water resources rarely respect administrative boundaries.³⁸⁹ In transboundary watercourses, administrative boundary-oriented IWRM schemes alone may not guarantee the enhancement of water resource security; importantly, mechanisms for regulating the behaviours of riparian states are required. In this respect, the introduction of comprehensive national, regional and international water policies and laws, as well as their coherent implementation, is imperative.

3.4.1 International efforts to introduce IWRM at national level

Primarily, the IWRM approach is an empirical concept, which has been developed from practice.³⁹⁰ In 1977, the UN Conference on Water was held in Mar del Plata, Argentina. The main goals of this conference was to assess the status of water resources; to ensure that an adequate supply of quality water was available to meet the planet's socio-economic needs; to increase water use efficiency; and

³⁸⁹ Aaron Wolf, 'Conflict and cooperation along international water ways' (1998) 1(2)*Water Policy*, 253.

³⁹⁰ WWAP, DHI Water Policy, UNEP-DHI Centre for Water and Environment, *Integrated water resources management in action* (2009), Part 1 of the Guidelines.

to promote preparedness, nationally and internationally, so as to avoid a water crisis.³⁹¹ This international water conference explicitly addressed the need for a coordinated management of water resources. It drew up an action plan which stated that ‘institutional arrangements adopted by each country should ensure that the development and management of water resources takes place in the context of national planning and that there is real coordination among all bodies responsible for the investigation, development and management’.³⁹² Mar del Plata was seen as one of the important events in the development of IWRM, but the coordinated WRM was largely seen as the duty of national governments, despite the fact that they might need support from international donors.³⁹³ The Mar del Plata plan did not address explicitly the issue of transboundary WRM.

Subsequently, the Rio Earth Summit, which was convened in June 1992, promulgated the Rio Declaration on Environment and Development and Agenda 21. In this summit, IWRM again gained international recognition. The Earth Summit underlined that fragmented water resources development and management were continuing to impede the sustainability of water, despite the Mar del Plata recommendations advocating the need for an IWRM at national level.³⁹⁴ As explicitly noted at the Rio summit, the problem was that ‘[t]he fragmentation of responsibilities for water resources development among sectoral agencies, is, however, proving to be an even greater impediment to promoting integrated water resources management than had been anticipated’.³⁹⁵ It further underlined the need to coordinate WRM, seeing ‘[t]he holistic management of freshwater as a finite and vulnerable resource, and the integration of sectoral water plans and programmes within the framework of national economic and social policy, are of paramount importance for the 1990s and beyond’.³⁹⁶ Most specifically, chapter 18 of Agenda 21 provides that: ‘The widespread scarcity, gradual destruction and aggravated pollution of freshwater resources in many world regions, along

³⁹¹United Nations Conference on Water, *Action Plan* (Marta del Plata, 14–25 March, 1977).

³⁹²*ibid*, Recommendation no. 2 on policy, planning and management.

³⁹³ Ministry of Agriculture, Nature and Food Quality, The Netherlands, ‘IWRM: for sustainable use of water 50 years of international experience with the concept of integrated water resources management’ (background document for the FAO/Netherlands Conference, Water for Food and Ecosystems, 4 October 2004).

³⁹⁴ Agenda 21, para. 18.6, ch.18.

³⁹⁵*ibid*.

³⁹⁶ *ibid*

with the progressive encroachment of incompatible activities, demand integrated water resources planning and management.³⁹⁷

Agenda 21 further describes the rationales for IWRM:

Integrated water resources management is based on the perception of water as an integral part of the ecosystem, a natural resource and a social and economic good, whose quantity and quality determines the nature of utilization. To this end, water resources have to be protected, taking into account the functioning of aquatic ecosystems and the perennality of the resource, in order to satisfy and reconcile needs for water in human activities.³⁹⁸

The essence of the rationales for IWRM in Agenda 21 suggests that the river basin is a complex and interconnected ecological system and, in terms of its water resources, there is a need to address water quality and quantity management and protection of water ecosystems. The 1992 Dublin Conference was also seen as one of the key historical events that encouraged IWRM.³⁹⁹ Most specifically, the Dublin Conference mapped out the prioritized concerns relating to freshwater resources management, and provided recommendations for these.⁴⁰⁰ Among four principles formulated by the Dublin Statement, the first principle states that:

Fresh water is a finite and vulnerable resource, essential to sustain life, development and environment. Since water sustains life, effective management of water resources demands a holistic approach, linking social and economic development with protection of natural ecosystems. Effective management links land and water uses across the whole of a catchment area or groundwater area.⁴⁰¹

Whereupon the development and protection of ecosystems, the context continuously changes, and WRM also needs changing in order to adapt to such dynamism. Such events need to be accommodated through the continuous revising of a regulatory approach within the dynamic context of the ecosystems.⁴⁰² Therefore, the ecosystem approach recognizes that there is no single best

³⁹⁷ Anil Agarwal et al. (2000) 'Integrated water resources management' (Technical Advisory Committee background paper 4), Stockholm: Global Water Partnership, 22 <www.gwp.org/Global/GWP-CACENA_Files/en/pdf/tec04.pdf> accessed on 25 March 2014

³⁹⁸ Agenda 21, chapter 18.

³⁹⁹ Watson (n 295) 243.

⁴⁰⁰ Bruce Mitchell, 'Integrated water resource management, institutional arrangements, and land-use planning' (2005) 37 *Environment and Planning A*, 1336.

⁴⁰¹ International Conference on Water and the Environment, *The Dublin Statement: Principle 1* (Dublin, 26–31 January 1992).

⁴⁰² *ibid*, Principle 7.

institutional arrangement to handle unsustainable natural resource use. Water resources planning and management are shaped with the changes in the context of such water resources.⁴⁰³ WRM is a social learning process, where experiences can be learnt by stakeholders using a platform.⁴⁰⁴

3.4.2 Transboundary water law and international norms

Internationally, there are a range of efforts to manage transboundary water resources in coordinated ways. However, in terms of the evolution of international water laws, these vary with the issues under concern during different periods.

The early development of a water law commenced with international water regulation concerning navigation and the use of hydropower.⁴⁰⁵ In 1921, the ‘Convention and statute on the regime of navigable waterways of international concern’ – or the Barcelona Convention– introduced rules regulating the navigational use of water.⁴⁰⁶ The concern that was raised by this Convention was limited to the use of an international river for navigation. Two years later, in 1923, the second international water convention, known as the ‘Convention relative to the development of hydraulic power affecting more than one state’, or the Geneva Convention, was adopted.⁴⁰⁷ Whilst this Convention considered non-navigational use as a legal concern of international affairs, its scope was limited in terms of the regulation of the use of Transboundary Rivers for hydraulic power. Both the above-mentioned conventions are concerned with specific water use regulations. These conventions did not give coordinated management of diverse water resource uses.

Under transboundary water resources utilization, there are principles that are considered to be unfair and inequitable—namely, absolute territorial sovereignty, territorial integrity and prior appropriation.⁴⁰⁸ Absolute territorial sovereignty is commonly called the Harmon Doctrine. The origin of the doctrine was related to the Rio Grande River dispute between the US and Mexico. The

⁴⁰³ Andera Gerlak, ‘Today’s pragmatic water policy: restoration, collaboration, and adaptive management along US rivers’ (2008) 21 *Society and Natural Resources*, 541.

⁴⁰⁴ *ibid.*

⁴⁰⁵ Salman A Salman, ‘The United Nations Watercourses Convention ten years later: why has its entry into force proven difficult?’ (2007) 32 *Water International*, 1–15.

⁴⁰⁶ League of Nations, Verbatim records and texts relating to the Convention on the regime of navigable waterways of international concern (Barcelona Conference 1921).

⁴⁰⁷ Convention relating to the development of hydraulic power affecting more than one state and protocol of signature (Geneva, 9 December 1923).

⁴⁰⁸ SalmanSalman, ‘The Helsinki Rules, the UN Water Courses Convention and the Berlin Rules: perspectives on international water law’ (2007)23(4) *Water Resources Development*, 267.

Harmon Doctrine was named after Judson Harmon, who was the Attorney General of the United States of America, and who gave his opinion in 1895. The Rio Grande has its source in the US, in the state of Colorado, through which it flows to New Mexico. The dispute between the US and Mexico rose when the US diverted the water from the river in 1895. In this transboundary water dispute, Mexico contended that the US water diversion was inconsistent with international law and the treaty that was concluded between the two countries in 1848.⁴⁰⁹ However, Attorney General Harmon, who advised the Secretary of State, argued that:

The rules of international law imposed upon the United States no duty to deny to its inhabitants the use of the water of that part of the Rio Grande lying wholly within the United States, although such use resulted in reducing the volume of water in the river below the point where it ceased to be entirely within the United States, the supposition of the existence of such a duty being inconsistent with the sovereign jurisdiction of national domain.⁴¹⁰

He also contended that ‘the rules, principles and precedents of international law imposed no liability or obligation on the United States’.⁴¹¹ He thought that the jurisdiction of the nation within its own territory was exclusive. He assumed that states are not liable to water resource exploitation within their administrative boundaries, despite such water use causing a significant damage on other riparian countries. This thinking failed to consider equity and fairness upon users of water resources. The doctrine subsisted for decades despite there being contention between Mexico and the US. However, in 1942, the US changed its reliance on this theory to exploit transboundary water shared with Mexico. For instance, in the negotiation between the US and Mexico concerning the Colorado River, the US Legal Advisor of the Department of State stated that:

The rights of the United States and Mexico in this situation cannot be determined by the simple criterion that the water has its source in the United States and may be utilized in this country. Such a rule, if sound or if applied, would derive all subjacent States of the normal and natural benefits of streams the world over. Our purpose should be to find a reasonable equation by which rights to the water may be equitably distributed.⁴¹²

⁴⁰⁹ J Austin, ‘Canadian – United States practice and theory respecting the international law of international rivers: a study of history and influence of the Harmon Doctrine’ (1959) 37 *Canadian Bar Review*, 405.

⁴¹⁰ JB Moore, *A digest of international law*, vol 1 (Government Printing Office 1906) 654.

⁴¹¹ *ibid.*

⁴¹² Green Hackworth, ‘Memorandum of the Legal Advisor of the Department of State’ (MS, Department of State, File FW 711.1216m/2111, 23 November 1942), in Marjorie M Whiteman (ed.), *Digest of international law*, (US Government Printing Office 1964) 953.

Subsequently, Mexico and the US concluded the treaty aiming to end transboundary surface water disputes in 1944.⁴¹³

The absolute territorial sovereignty principle advocates that upstream states use the water resources within their jurisdiction without any limitation.⁴¹⁴ This traditional principle understands that upstream users have an absolute right to serve their own interest, despite the use being harmful for those riparian users and their ecosystems that share the water resources. Similar to the theory of the tragedy of the commons, some of the riparian water use is unregulated in terms of promoting the common interests of water-sharing countries or communities or ecosystems. The idea is upstream-centric, rather than promoting the equitable use of water resources to enhance the security of water. Because of this, the absolute territorial sovereignty principle has been criticized as fundamentally unsound in enhancing the equitable use of water resources.⁴¹⁵

The second principle is that of territorial integrity, which is the opposite of the former rule, and establishes the rights of a downstream state by imposing an obligation on upstream states to respect the continuation of the natural flow of shared international water resources.⁴¹⁶ Territorial integrity restricts upstream states from affecting the natural flow of river water, and limits them with regard to equitable utilization. The third principle is called the ‘prior appropriation’ principle.⁴¹⁷ This principle establishes the right to water resources exploitation on the rationale of ‘first-come, first-served’, where the country that first started the development of shared water resources should continue to enjoy the same quality and quantity of such water resources. Inequitable water use may not only be exemplified by riparian states’ unregulated or unfair water resource sharing; it may happen within a country. For example, the traditional water abstraction permits in England gave perpetual rights for licences. The owner or possessor of the permit continues to enjoy their quantity of water according to what the permit allows.⁴¹⁸ This model is unlikely to consider water security or subsequent needs,⁴¹⁹

⁴¹³ A Utton, ‘The transfer of water from international border region: a tale of six cities’ (1991) 16 *North Carolina Journal of International of Commercial Regulation*, 477.

⁴¹⁴ Peter Gleick, ‘Whose water rights in the age of scarcity’ (blog post 2 August 2009) <<http://waterpolicy.net/WaterWired2.htm>> accessed 8 January 2013.

⁴¹⁵ H. A. Smith, *The economic uses of waters* (PK King and Son, 1931) 8.

⁴¹⁶ Salman (n 408) 628.

⁴¹⁷ *ibid.*

⁴¹⁸ Environment Agency, ‘Alternative ways to allocate water: final report’ <www.environment-agency.gov.uk/research/library> accessed 9 September 2012.

as the permit system is focused on protecting permit owners rather than enhancing the security of water resources.

3.4.2.1 The Helsinki Rules

Subsequently, in 1966, a development was observed in international water law. The International Law Association, a scholarly non-governmental organization, adopted the Helsinki Rules. The Helsinki Rules recognize a river basin as an indivisible hydrologic unit⁴²⁰ and provided international rules that help to manage all waters in the entire international basin, for both navigational and non-navigational water; and they brought the principles of equitable and reasonable use of water and the obligation not to cause significant harm to the fore.⁴²¹ The Helsinki Rules reflected the idea that every riparian state in an international drainage basin has the right to the reasonable use of the waters, but rejected unlimited sovereignty positions, such as absolute territorial sovereignty and absolute river integrity principles. The Rules adopted a principle that makes a riparian state's right to use water a qualified right, in order to protect common interest. In addition to providing a rule for water quantity management, they also introduced rules regulating failures in water quality. They imposed an obligation on the river basin states to 'prevent any new form of water pollution or any increase in the degree of existing water pollution... which cause substantial injury in the territory of co-basin states'.⁴²² The set of rules embodied in the Helsinki Rules are supportive in addressing fragmented water utilization; however, they do not address coordinated management of land and related resources to enhance sustainability of water. Ultimately, they do not recognize the protection of the water environment.

3.4.2.2 The Stockholm Action Plan for international cooperation and related resolutions

One of the important events for the introduction of a coordinated management of shared natural resources was the United Nations Conference on the Human Environment, which was held in Stockholm on 16 June 1972. The Conference aimed to protect and improve human environment. This

⁴¹⁹ *ibid.*

⁴²⁰ 'Helsinki Rules on uses of the waters of international rivers' (52nd Conference of the International Law Association held in Helsinki in August 1966), article II.

⁴²¹ *ibid.*, article IV.

⁴²² *ibid.*, articles IX–XI.

event introduced the Declaration that accommodated a range of principles and recommendations which were designed to influence and shape the behaviours of states. One of the products of the Stockholm Conference was the ‘Stockholm Action Plan’, which identified environmental issues that required international cooperation. One of these issues was WRM. The Declaration of the Conference urges the states to conduct ‘careful planning or management water resources’.⁴²³

Under principle 21, states have the sovereign right to exploit their own resources, but they have a duty to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states.⁴²⁴ This suggests that the government’s right in shared natural resources is a qualified right, in order to protect the common interests. As mechanisms to avoid fragmented utilization affecting the common interests, the states are expected to cooperate.⁴²⁵ Such cooperation can be established through multilateral or bilateral arrangements or other appropriate means, which are seen as an essential tool in order to ‘effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all spheres; in such a way that due account is taken of the sovereignty and interests of all states’.⁴²⁶ Regarding shared water resources, it recommends that the ‘governments concerned consider the creation of river-basin commissions or other appropriate machinery for cooperation between interested states for water resources common to more than one jurisdiction’.⁴²⁷ Through cooperation, the interests of all states on shared resources development are taken into account; and fragmented resource utilization, which leads to unsustainable resources management, is controlled.⁴²⁸

Subsequently, the United Nations General Assembly formulated a number of resolutions reaffirming coordinated management of the environment concerning the natural resources shared by two or more states. For instance, UN Assembly Resolution 3129 (XXVIII) reaffirms the states’ cooperation in the field of the environment concerning natural resources shared by two or more states.⁴²⁹ Furthermore, this Resolution suggests the introduction of a management system for the conservation and harmonious utilization of natural resources shared by two or more states; and it gives the right of

⁴²³ ‘Declaration’ (United Nations Conference on the Human Environment, Stockholm, 16 June 1972), principle 2.

⁴²⁴ *ibid*, principle 21.

⁴²⁵ *ibid*, principle 22.

⁴²⁶ *ibid*, principle 24.

⁴²⁷ *ibid*, recommendation 51.

⁴²⁸ *ibid*.

⁴²⁹ United Nations General Assembly, Resolution 3129 (XXVIII), ‘Co-operation in the field of the environment concerning natural resources shared by two or more states’ (New York, 13 December 1973).

concerned states to provide specific solutions through bilateral or regional arrangements.⁴³⁰ Similarly, the 1979 UN General Assembly Resolution promotes effective cooperation among states regarding the conservation and harmonious utilization of natural resources shared by two or more states.⁴³¹ It also recognizes the right of states to provide specific solutions on a bilateral or regional basis, and recalls that the principles have been drawn up for the guidance of states in the conservation and harmonious utilization of natural resources shared by two or more states.⁴³²

3.4.2.3 The Convention on the Law of the Non-Navigational Uses of International Watercourses

With growing tension between the water resource-sharing countries, the international community adopted the Convention which was designed to comprehensively regulate the behaviours of states with regard to non-navigational uses of international water courses.⁴³³ The Convention embodied many principles that were shaping conventional thinking. Among its core rules, the principle of equitable utilization is at the forefront. The Convention underlines the idea that ‘watercourse states shall in their respective territories utilize an international watercourse in an “equitable and reasonable” manner’.⁴³⁴

This principle clearly recognizes riparian states’ rights over water resources within their respective national boundaries. However, this right is conditioned by a respective duty that helps to control the possible impacts of one state’s water utilization on another riparian state. The same provision of the Convention, in the second statement, importantly added the right of riparian states to use and develop shared water resources ‘with a view to attaining optimal and sustainable utilization thereof and benefits there from, taking into account the interests of the watercourse states concerned, consistent with adequate protection of the watercourse’.⁴³⁵ This statement indicates that the right to use and develop shared water is relative to safeguarding the common interests of riparian states.

⁴³⁰United Nations General Assembly, Resolution 33/87, ‘Co-operation in the field of the environment concerning natural resources shared by two or more states’ (New York, 15 December 1978).

⁴³¹United Nations General Assembly, Resolution 34/186, ‘Co-operation in the field of the environment concerning natural resources shared by two or more states’ (New York, 18 December 1979).

⁴³²ibid.

⁴³³ Cullet (n 368)236.

⁴³⁴ UN, ‘Convention on the law of the non-navigational uses of international watercourses’ (1997), article 5/1.

⁴³⁵ibid.

The Convention further provides that the duty of watercourse states to cooperate encompasses ‘the use, development and protection of an international watercourse in an equitable and reasonable manner’.⁴³⁶ The underlining idea of the legislation is that cooperation regarding the utilization of water resources may not ensure the sustainability of water resources unless there is also cooperation with regard to its protection. Undoubtedly, the equitable utilization and protection of shared water demand comprehensive regional and national water policies and laws, whilst international law can provide guiding principles and a framework.

By bringing the equitable reallocation of shared water to the centre of the stage, the Convention introduced non-exhaustive lists of indicators that riparian states should follow. These lists provide core indicators to direct the determination of equitability, but the riparian states might consider further issues that they assume to be important in establishing reasonable water sharing within their specific circumstances. The visible drawback of this listing modality is that the riparian states may buy time to implement the Convention by contending the addition of more and more indicators for the reallocation of shared water. One of the central challenges to enforcing this, however, is quantifying equitable and reasonable water utilization in practical terms.⁴³⁷ It is fair to argue that equitability of water sharing may not be determined by the listings of the Convention alone. Further indicators may be developed at the regional and river basin levels.

According to the Convention, the non-exhaustive lists of indicators encompass: geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural nature; the social and economic needs of the watercourse states; the population dependent on the watercourse in the watercourse state; the effects of the use or uses of the watercourse in one watercourse state on other watercourse states; the existing and potential uses of the watercourse; the conservation, protection, development and economy of the water resources of the watercourse, and the cost of measures taken to that effect; and the availability of alternatives, of comparable value, to a particular planned or existing use.⁴³⁸

⁴³⁶ *Ibid*, article 5.

⁴³⁷ Peter Gleick, ‘Water and conflict: freshwater resources and international security’ (1993) 18(1) *International Security*, 106.

⁴³⁸ UN (n 434) article 6.

Upon determining what constitutes a reasonable and equitable use, ‘all relevant factors are to be considered together and a conclusion reached on the basis of the whole’.⁴³⁹ No one part of the list prevails over another. However, when there is conflict between a range of water uses, special priority is given to the ‘the requirements of vital human needs’ – in other words, ‘sufficient water to sustain human life, including both drinking water and water required for the production of food in order to prevent starvation’.⁴⁴⁰ Thus, each list of indicators is equally important in judging equitable water utilization.

The inclusion of these elements in water allocation suggests that riparian states are guided to make water sharing equitable rather than equal. Moreover, the new concepts to be taken into account in water allocation – prior and potential use and related aspects – have arguably changed the widely contested ‘historic right’ or ‘natural right’ over shared water utilization. Similarly, a number of ideas accommodated suggest that neither the conventional Harmon theory nor absolute territorial sovereignty is valid in water utilization. These new ideals in the Convention are fundamentally changing the status quo, maintaining the behaviours of riparian states on the grounds of ‘historic right’ or ‘sovereign right’ to use water resources within territorial boundaries. The indicators under the Convention are changing with time and context. The Convention intended that the allocation of water resources between riparian states observes changes in specific watercourses, so that no water allocation can be applied for over an unlimited period; rather, it needs regular negotiations to address emerging challenges.

Another core principle embodied under the Convention is the ‘no significant harm’ rule. This principle states that ‘watercourse states shall, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse states’.⁴⁴¹ This principle attempts to provide a regulatory scheme, in case the transcending nature of water utilization in one state has a significant impact on another riparian state. In fact, the principle explicitly recognizes that the states should utilize shared water in a way that

⁴³⁹ *ibid*, article 3.

⁴⁴⁰ *ibid*, article 10.

⁴⁴¹ *ibid*, article 7.

does not cause significant harm to co-riparian states. The idea further suggests the state's right to use water in a manner that is sustainable.⁴⁴²

Protective measures for water resources, including water system conservation, are critically important in maintaining or enhancing available water. In addition to regulatory principles regarding water quantity, this Convention further incorporates rules for the protection of water systems.⁴⁴³ These tasks may not be implemented by a single riparian state; cooperation between riparian states is unquestionable. The Convention provides that 'watercourse states, shall individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses'.⁴⁴⁴ It therefore incorporates the concept of sustainable development;⁴⁴⁵ and the inclusion of this notion suggests the need to conserve water resources whilst using them for socio-economic development and environmental protection.

The Convention also requires 'the establishment of a joint management mechanism which will provide mutual benefits for all the states'.⁴⁴⁶ These provisions imply that further steps are needed by the riparian states to implement the principles of the Convention. As a means of cooperative arrangements, the Convention imposes the establishment of joint mechanisms or commissions on member states; the regular exchange of data and information; and the notification of states sharing an international watercourse regarding planned measures to mitigate the adverse effects of the project.⁴⁴⁷ They obligate further organizational arrangements that facilitate implementation. These obligations include the protection and preservation of ecosystems; the prevention, reduction and control of pollution; and the protection and preservation of the marine environment.⁴⁴⁸ The inclusion of these obligations demonstrates the importance of engaging in measures enhancing water resources through protecting against water quality failure, as well as the protection and conservation of their ecosystems.

⁴⁴² LF Damrosch, L Henkin et al., *International law cases and materials*, (4th edn, American Casebook Series 2001) 1549.

⁴⁴³ UN (n 434), articles 520–26

⁴⁴⁴ *ibid*, article 20.

⁴⁴⁵ *ibid*, article 24.

⁴⁴⁶ *ibid*, articles 24–26.

⁴⁴⁷ *ibid*, articles 8–12

⁴⁴⁸ *ibid*, articles 20–26

The principles incorporated under the Convention are imperative in supporting the security of freshwater resources. The difficulty remains in the instruments for making it enforceable. More than a decade passed since the adoption of the Convention at a draft level, and it was not entered into force for nearly two decades.⁴⁴⁹ The Convention finally entered into force after Vietnam became the thirty-fifth signatory on 17 August 2014. This demonstrates that the international legal response to water security remains slow.

Despite this imperative contribution displayed by its rules, the full implementation of the principles embodied under the Convention required regional and national readiness and willingness to implement them, through establishing joint arrangements or incorporating the principles within national and regional water policy and law. Changing the Convention to handle real water security challenges demands the formulation of appropriate water and environmental policies at national and regional levels, which themselves need to be translated into action through the development of comprehensive national and regional water laws and the setting of standards; through the development of action plans for their implementation; and through continuous monitoring of the impacts achieved. However, many states do not sign or ratify the Convention, and its full implementation remains a problem.

3.5 UNEP and OECD non-binding rules

At international level, the United Nations Environment Programme (UNEP) has played a crucial role in the development of water law. One of the prime examples was the 1978 UNEP ‘Draft principles of conduct in the field of the environment for the guidance of states in the conservation and harmonious utilization of natural resources shared by two or more states’.⁴⁵⁰ These provided the guidance in the conservation and harmonious utilization of natural resources shared by two or more states.⁴⁵¹ This guidance recognized that states have the sovereign right to exploit their own resources, but they have

⁴⁴⁹ Cullet (n 368) 236.

⁴⁵⁰ ‘Report on the intergovernmental working group of experts on natural resources shared by two or more states on the work of its fifth session’ (Nairobi, 23 January–7 February 1978) (UNEP Governing Council Decision 6/14 of 19 May 1978) [hereafter called UNEP Draft Principles of Conduct].

⁴⁵¹ *ibid.*

a duty to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states.⁴⁵² Regarding shared natural resources, principle 1 addresses the need:

for States to co-operate in the field of the environment concerning the conservation and harmonious utilization of natural resources shared by two or more States. Accordingly, it is necessary that consistent with the concept of equitable utilization of shared natural resources, States co-operate with a view to controlling, preventing, reducing or eliminating adverse environmental effects which may result from the utilization of such resources. Such co-operation is to take place on an equal footing and taking into account the sovereignty, rights and interests of the States concerned.⁴⁵³

Similarly, the UNEP guideline under principle 2 underlined the need ‘to ensure effective international co-operation in the field of the environment concerning the conservation and harmonious utilization of natural resources shared by two or more States, States sharing such natural resources should endeavour to conclude bilateral or multilateral agreements between or among themselves’.⁴⁵⁴ It also suggests that states apply the guidelines in as legally binding a manner as necessary.⁴⁵⁵ At its twelfth plenary meeting, on 19 May 1978, the Governing Council UNEP adopted by consensus decision 6/14, entitled ‘Cooperation in the field of the environment concerning natural resources shared by two or more states’. By this decision the Council also invited the General Assembly to adopt the principles. Subsequently, on 18 December 1979, the General Assembly adopted, without a vote, Resolution 34/186, entitled ‘Co-operation in the field of the environment concerning natural resources shared by two or more states’.⁴⁵⁶

At the regional level, in Europe, the OECD adopted a number of non-binding recommendations. Some of these recommendations are related to the coordinated management of water resources. Most specifically, the OECD adopted the recommendations on coordinated management of trans-frontier pollution,⁴⁵⁷ diffuse pollution causing eutrophication⁴⁵⁸ and water management policies and instruments.⁴⁵⁹ The OECD recommendations provide comprehensive rules on WRM; most

⁴⁵² *ibid.*

⁴⁵³ *ibid.*, principle 3.

⁴⁵⁴ *ibid.*, principle 2.

⁴⁵⁵ *ibid.*

⁴⁵⁶ The General Assembly Resolution 34/186, ‘Co-operation in the field of the environment concerning natural resources shared by two or more states’, 18 December 1979.

⁴⁵⁷ OECD, ‘Recommendation of the Council on principles concerning trans-frontier pollution. Annex: Some principles concerning trans-frontier pollution’ (Paris, 14 November 1974).

⁴⁵⁸ OECD, ‘Recommendation of the Council on the control of eutrophication of waters’ (Paris, 14 November 1974).

⁴⁵⁹ OECD, ‘Recommendation of the Council on water management policies and instruments’ (Paris, 5 April 1978).

specifically, it recommends that member countries, in their national – and where possible, international – water management policies take into account the following principles:⁴⁶⁰

- Water resources should be managed on the basis of long-term plans
- WRM should address all relevant aspects of water quantity and quality, abstraction and discharge, supply and protection
- Authorities should promote the rational and equitable allocation of water resources among all users
- Authorities should promote applying appropriate regulatory and economic instruments, including licensing systems, and taking into account a hierarchy of real requirements in terms of quality and quantity, as well as any potential effects on the environment
- River basin-oriented management should be encouraged as providing an effective solution to water problems beyond the scope of local management, and where advisable, this should be considered in an international framework
- Using an appropriate combination of regulatory and economic instruments to control both pollution and wastage of water resources
- Charges for water abstraction and waste water discharge should thus be set at a sufficient level to have a significant incentive effect
- Strict regulatory, economic and technical controls should be enforced for certain categories of hazardous pollutants
- Authorities should facilitate public information and participation to promote more informed decision-making and to enlist public support for proposed activities

3.6 Case laws

The Secretary General of the United Nations has expressed the view that ‘[t]here has been general recognition of the rule that a State must not permit the use of its territory for purposes injurious to the interest of other States in a manner contrary to international law’.⁴⁶¹ As argued in this chapter, international water law and norms impose limitations upon the actions that one state may take, which could cause harm in the territory of another riparian state.

Traditionally, absolute territorial sovereignty and absolute river integrity principles would play a role to protect an interest of specific riparian states. Arguably, now, these principles do not ensure riparian states’ common interests. In any transboundary watercourse, riparian states – whether they are situated on the upstream or downstream parts of a water body – need to use water resources in a

⁴⁶⁰ibid.

⁴⁶¹*Survey of International Law* 34 (UN Doc. A/CN.4/1 Rev. 1) (1949).

way that promotes common interests. A riparian country has the right to use water resources; however, this right is qualified to protect interests of other riparian states. The riparian state must respect the rules of limitations. This was clearly observed from the arbitral tribunal decision of the Lac Lanoux case of 1957. In the early 1950s, France proposed to develop a hydroelectric project by diverting water from the Lanoux Lake into the Ariège River.⁴⁶² Lanoux drains into the Font-Vivre stream, one of the tributaries of the Carol River. However, the Carol River crosses the Spanish–French border and becomes a tributary of the Segre. Traditionally, Spain used the Carol River waters for irrigation.⁴⁶³ When France proposed the Lac Lanoux project, Spain objected its construction, and France agreed to offer monetary compensation and modify the project by returning to the Carol the same amount of water that was extracted for the reservoir. However, Spain rejected the offers that were made by the French.⁴⁶⁴

A dispute then broke out between the countries and the case was brought to the arbitral tribunal. In the arbitration process, upstream France claimed that it had a right to divert and use water, whereas downstream Spain objected on the grounds that the diversion damaged its right over a water resource. After investigating the claims of the parties, the arbitration tribunal passed a ruling which reflected the rights to reasonably use the waters of a transboundary river. The arbitration tribunal underlined the idea that ‘France is entitled to exercise her rights; she cannot ignore Spanish interests... Spain is entitled to demand that her rights be respected and that her interests be taken into consideration’.⁴⁶⁵ This decision demonstrated that equitable and reasonable utilization is imperative with regard to shared water. Eventually, the arbitral decision made possible the 1958 Lac Lanoux treaty, in which France and Spain agreed that water could be diverted out of the Carol River for French hydropower generation in the Lac Lanoux project, but a similar quantity of water had to be returned before the stream reached Spanish territory.

The most recent case that relates to transboundary water was a dispute over Danube River water utilization, often called the ‘Gabbíkovo–Nagymaros case’. The case was between Hungary and

⁴⁶² Sergei Vinogradov, Patricia Wouters and Patricia Jones, *Transforming potential conflict into cooperation potential: the role of international water law*, (UNESCO 2003) 4–5.

⁴⁶³ *ibid.*

⁴⁶⁴ *ibid.*

⁴⁶⁵ *Lake Lanoux Arbitration (France v Spain)*, 12 RIAA 281; 24 ILR 101, *Arbitral Tribunal*, (16 November 1957) 23, 24.

Czechoslovakia (at a later stage, Slovakia, as a successor state of Czechoslovakia).⁴⁶⁶ The story was that, in 1977, Hungary and Czechoslovakia entered into the bilateral treaty to construct a range of water development projects, such as hydropower generation and improved navigation, flood and ice control on the Danube River. Subsequently, the contracting parties (Hungary and Czechoslovakia) commenced the Gabčíkovo–Nagymaros project jointly. Hungary started to contend that the project completion would entail grave risks to the Hungarian environment and Budapest’s water supply. In 1989, Hungary suspended itself from involvement in the project implementation,⁴⁶⁷ while Czechoslovakia disavowed Hungary’s unilateral termination of the agreement as ineffective, insisting that Hungary comply with the obligations of the bilateral treaty. Ultimately, Czechoslovakia alone continued to construct the Gabčíkovo–Nagymaros project over the Danube without the involvement of Hungary. In 1993, the contending parties submitted the dispute to the International Court of Justice (ICJ) in The Hague.⁴⁶⁸ On the one hand, Hungary contended that Czechoslovakia had no right to exploit the Danube water unilaterally. It argued that the diversion of water by Czechoslovakia had ecological dangers, and that Czechoslovakia had violated the principle of equitable utilization and the principle of prohibiting causing significant harm.⁴⁶⁹ On the other hand, Slovakia denied, citing ‘ecological state of necessity’, Hungary’s claim to terminate the treaty; contended that it was unilaterally implementing the 1997 treaty without Hungary’s involvement; and that the water diversion, which caused a reduction in the flow of the Danube, was foreseen by the treaty.⁴⁷⁰ By investigating the parties’ claims, the ICJ acknowledged the concerns expressed by Hungary for its natural environment, and held that Hungary had a ‘basic right’ to an equitable and reasonable share of the resources of an international watercourse.⁴⁷¹ It also decided that Hungary’s termination of the treaty was ineffective and Slovakia’s actions should consider sustainable water development.⁴⁷² The Court also held that the contending parties adjust the Gabčíkovo–Nagymaros project to tackle environmental issues. The Court noted that there had been development in international environmental law since the 1977 Hungary and Czechoslovakia treaty, which was supportive of environmental protection and equitable and reasonable utilization of international

⁴⁶⁶ICJ, Judgment of 25 September 1997, General List no. 92, Gabčíkovo–Nagymaros Case, 1997.

⁴⁶⁷ *ibid*, para.22.

⁴⁶⁸ *ibid*, para.25.

⁴⁶⁹ *ibid*, para.40.

⁴⁷⁰ *ibid*, para.44.

⁴⁷¹ *ibid*, paras 78 and 111.

⁴⁷²ICJ, Judgment of 25 September 1997, General List no. 92, Gabčíkovo–Nagymaros Case, 1997.

watercourses.⁴⁷³ The Court also pointed out that newly developed norms of environmental law were relevant for the implementation of the 1977 treaty and that the parties could, by agreement, incorporate them. The parties needed to develop a joint contractual plan, in carrying out their obligations of 1977, to ensure that the quality of water in the Danube was not impaired and that nature was protected, taking new environmental norms into consideration. By inserting these evolving provisions in the treaty, the parties recognized the potential necessity to adapt the project. Consequently, the treaty was not static, and was open to adaptation with emerging norms.⁴⁷⁴ This court decision suggests that past and future water development treaties need to address environmental protection and common interests of the riparian countries. As was clearly stated within the ICJ decision on the dispute between Botswana and Namibia, a number of the principles of the 1997 UN Convention on the law of the non-navigational uses of international watercourses has evolved as ‘part of the *corpus* of international law’ even before the Convention came into force.⁴⁷⁵

3.7 Clean water and sanitation: a human right

Access to adequate clean water is a prerequisite for human wellbeing. It may not be possible to realize rules on human rights protection without ensuring the sustainable availability of adequate safe water. The 1992 Dublin Statement (principle 4) states that ‘water has an economic value in all its competing uses and should be seen as an economic good’.⁴⁷⁶ The principle declares water as an economic good; all users pay its costs. For this effect, the water services costs need to be internalized. Within this principle, however, ‘the basic right of all human beings to have access to clean water and sanitation at affordable price’ is recognized. Full cost-recovery may not be a proper solution for those people who cannot afford to pay. Water is not purely an economic good; rather, it has social dimensions. Water cost internalization needs to address the interests of the people who cannot afford to pay full water service costs. Under the Dublin principles, the right to water is not explicitly acknowledged as a human right. Instead, the principles implicitly recognize the human right to water since they explicitly recognize the need for access to adequate safe water. Ensuring

⁴⁷³ *ibid.*

⁴⁷⁴ *Republic of Hungary v Slovak Federal Republic*, case concerning the Gabčíkovo- Nagymaros Project, ICJ, Case no. 92, 25 September 1997

⁴⁷⁵ *Case Concerning Kasikili/Sedudu Island (Botswana v Namibia)*, ICJ, 13 November 1999; Separate Opinion of Judge Kooijmans, para.31.

⁴⁷⁶ Dublin Statement, principle 4, 1992.

access to adequate clean water is a prerequisite for realizing many of human rights which have already been enshrined in national, regional and international laws. The widely recognized human rights such as the right to life, health and development may not be fully attained without realizing access to adequate safe water.

The International Covenant on Economic, Social and Cultural Rights under Article 11 recognizes the right to an adequate standard of living. The same Covenant under Article 12 declares the right to health. Regarding the interpretation of these rights, the UN Committee on Economic, Social and Cultural Rights adopted General Comment no. 15.⁴⁷⁷ This UN official interpretation affirms that ‘the human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses’. GC15 further provides that ‘the human right to water is indispensable for leading a life human dignity. It is a prerequisite for the realization of other human rights’. It also addresses the sufficiency of water: an adequate quantity must be available between 15 and 25 liters in the water of rural communities in developing countries; safety and water must meet a standard set out for specific water uses (for instance, drinking water); and according to the WHO drinking water guidelines third edition water must be physically accessible within a reasonable distance and with affordability of price. Regarding obligations, GC15 underlines that ‘States have a constant and continuing duty to move as expeditiously and effectively as possible towards the full realization of the right to water’. Moreover, it urges states to take steps to ensure that no individual or groups of people are discriminated against, in terms of them securing safe water and sanitation. This comment makes it clear that states are the key actors to deliver adequate clean water.

The year 2010 saw another important remarkable event that brought authoritative confirmation of the human right to water and sanitation. On 28 July 2010, the UN General Assembly adopted Resolution 64/292, which explicitly recognizes ‘the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights’.⁴⁷⁸ This resolution was passed by a vote of 122 in favour, none against and 41 abstentions.⁴⁷⁹ Within the same year, the Human Rights Council adopted Resolution 15/9 of September 2010, which further confirms access to safe water and sanitation as a human right.⁴⁸⁰ The challenge that remains, however, is

⁴⁷⁷ The UN Committee on Economic, Social and Cultural Rights, 29th Session, November 2002 (GC15).

⁴⁷⁸ General Assembly, Resolution 64/292, UN Doc A/RES/64/292, 3 August 2010.

⁴⁷⁹ *ibid.*

⁴⁸⁰ Human Rights Council, Resolution 15/9, UN Doc A/HRC/RES15/9, 6 October 2010.

implementation. For instance, the Independent Expert reporting to the General Assembly underlines that the recognition given to water as human right is a breakthrough development, but it is only a step.⁴⁸¹ The real challenge is to implement the right and to change the lives of ‘billions of people who still lack access to water and sanitation’.⁴⁸²

The millennium development goals (MDGs) also set out the role of water in human development under Target 7C. The target aimed to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation. This target focused on improving access to clean water and sanitation. Setting out this target in the MDGs brought significant improvements to the access to clean water and sanitation,⁴⁸³ which focused the MDGs on helping human development.⁴⁸⁴ However, the United Nations World Water Development Report of 2012 indicated that pressures over water resources have increased considerably during the past decades; water withdrawals have tripled over the last 50 years, and the demand for water has dramatically increased across the globe.⁴⁸⁵ The Report also identified three main water consuming sectors: agriculture, industry and households, respectively.⁴⁸⁶ Human use and pollution are threatening the sustainability of water resources.⁴⁸⁷ These pressures will potentially limit sustainable development.⁴⁸⁸ This suggests that the focus on unsustainable water use practices should not be neglected if access to clean water and sanitation is to be achieved and sustainable development realized in the future. Yet, the MDGs do not explicitly accommodate specific goals and targets for the sustainability of water.

In the sustainable development goals’ (SDGs) drafting process, water was identified as a crucial issue. UNESCO’s International Hydrological Programme (IHP) recommends that ‘[i]n addition to fulfilling the human needs of clean water and sanitation, issues of overexploitation of freshwater resources, the growing water pollution problems worldwide and water-related risks should be taken into account in a post-2015 vision in order to reach global sustainable development’.⁴⁸⁹ It

⁴⁸¹ Independent expert on the issue of human rights obligations related to access to safe drinking water and sanitation at 60th Session of General Assembly, 25 October 2010 <www.ohchr.org/EN/News>.

⁴⁸² *ibid.*

⁴⁸³ *ibid.*, 2–3.

⁴⁸⁴ UNESCO International Hydrological Programme, ‘Water in the post-2015 development agenda and sustainable development goals. Water: a key for sustainable development’ (2014) (Discussion paper) 2.

⁴⁸⁵ WWAP, ‘The United Nations World Water Development Report 4: managing water under uncertainty and risk’ (UNESCO 2012).

⁴⁸⁶ UNEP, ‘State-and-trends of the environment: 1987–2007’ (2007), pp. 25-54

⁴⁸⁷ *ibid.*

⁴⁸⁸ UNESCO International Hydrological Programme (n 484) 2.

⁴⁸⁹ *ibid.*, 3

recommended that post-2015SDGs should provide a framework for the management of water resources beyond the MDGs that focused on access to clean water and sanitation.⁴⁹⁰ This suggests that water sustainability and sustainable development are interlinked, and that the SDGs needed to broaden the goals and targets for sustainable development in order to address water sustainability. Accordingly, UNESCO-IHP proposed a special goal to manage water resources, which it called ‘[a] global water goal: Ensure Water Security for Sustainable Development’.⁴⁹¹

Under this goal, five targets were set out:⁴⁹²

- Target 1: Achieve, by 2030, universal access to safe drinking water and sanitation for all
- Target 2: By 2030, reduce the water use in agricultural irrigation by 20%, industrial water use by 20%, and domestic water use by 15% and increase water productivity by 50% in all sectors, by adopting the water demand management approach, reducing water use
- Target 3: By 2030, increase by 50% the number of countries that have adopted and implemented policies and programmes for the public registration of water rights based on the IWRM approach
- Target 4: By 2030, reduce water pollution from main sources by 30% at the country level, by increasing wastewater collection and treatment in cities to at least 80%, increasing industrial wastewater treatment to at least 95%, reducing pollution
- Target 5: By 2030, reduce by half the loss of human life and property from water-related disasters, by improving the resilience of nations

The SDGs follow the MDGs, but aim to expand on the MDGs to address IWRM in order to ensure sustainable development. The draft SDG recommendations in WRM suggest there is a close link between water development and management; the right to clean water and sanitation may not be achieved without IWRM. Most specifically, the draft water security goal and its targets in the SDGs suggest introducing more IWRM than the MDGs, which focus on water supply to ensure access to

⁴⁹⁰ *ibid.*

⁴⁹¹ *ibid.*

⁴⁹² UNESCO International Hydrological Programme, ‘Water in the post-2015 development agenda and sustainable development goals. Water in the post-2015 development agenda: UNESCO-IHP proposal for a global goal on water in the SDGs framework’(2014) 3–6.

clean water and sanitation. The draft SDG recommendations advocating access to safe water and sanitation would be increased; water demand would be reduced; pollution would be controlled; and water resources would be efficiently used and WRM would be taken up at an appropriate level by following the IWRM approach. These ideas propose sustainable approaches, for integration, the clear allocation of rights and liabilities, for subsidiarity and local participation.

3.8 Conclusion of chapter

This chapter examined the notion of IWRM, international water law, case laws and human rights law in relation to access to clean water and sanitation, including MDGs. This study evaluated the post-2015 SDGs to understand the current positions at the international level. The main aim of the chapter was to explore key features of an effective management system for water resources.

The examination of the historical development of international water policy and law indicated that there have been evolutions in international policy and law, which were designed to manage national and transboundary water resources. The early international water laws focused on coordinating the development of transboundary water for specific uses; particularly, water uses for navigation and hydroelectric power developments. Mar del Plata brought remarkable development in WRM laws; and explicitly introduced the need for coordinated management of all water resources at national level. The Rio Declaration on Environment and Development and Agenda 21 re-recognized IWRM. The Declaration underlined the need for a coordinated WRM, while Agenda 21 further emphasizes integrated water resources planning and management; that is, an integrated water system management and water quantity and quality regulations.⁴⁹³ Effective management links land and water uses across the whole of a catchment area or groundwater area.

Subsequent international water law development (the Helsinki Rules) recognizes a river basin as an indivisible hydrologic unit, managing all waters in the entire international basin for both navigational and non-navigational uses. It brought to the forefront, the principles of equitable and reasonable use of water and the obligation not to cause significant harm. This informs a riparian state's right to use water is a qualified right, in order to protect the common interest. The Helsinki Rules provides guidelines for water quantity and water quality management.

⁴⁹³ Agenda 21, chapter 18.

The United Nations Conference on the Human Environment held in Stockholm (16 June 1972) introduced a declaration that accommodated a range of principles and recommendations designed to influence and shape the behaviours of states. The Stockholm Action Plan identified environmental issues that required international cooperation. This action plan under principle 21 recognises the government's right in shared natural resources is a qualified right and it suggests States are expected to cooperate through establishing multilateral or bilateral arrangements or other appropriate means. Similarly, the UN Assembly Resolution 3129 (XXVIII) reaffirms the states' cooperation in the field of the environment concerning natural resources shared by two or more states.⁴⁹⁴ The 1979 UN General Assembly Resolution reaffirms the need for effective cooperation among the states regarding to shared water resources by two or more states. The 1997 Convention on the Law of the Non-Navigational uses of International Watercourses (which was designed to comprehensively regulate the behaviours of states with regard to non-navigational uses of international water courses) embodied many principles that were shaping traditional thinking. Among the core rules embodied in the Convention were the principles of equitable and reasonable use and the 'no significant harm' rule. Protective measures for water resources, including water system conservation, are critically important in maintaining or enhancing available water. The Convention also incorporates the concept of sustainable development.

At international level, UNEP also played a crucial role in the development of water law. One of the prime examples was the 1978 'Draft principles of conduct in the field of the environment for the guidance of states in the conservation and harmonious utilization of natural resources shared by two or more states'. Accordingly, states cooperate with a view to controlling, preventing, reducing or eliminating adverse environmental effects which may result from the utilization of such resources. At the regional level, in Europe, OECD adopted a number of non-binding recommendations which provided comprehensive rules on WRM. Its recommendations informs water resources should be managed on the basis of long-term plans, and should address all relevant aspects of water quantity and quality, abstraction and discharge, supply and protection. The authorities should promote the rational and equitable allocation of water resources among all users and apply appropriate regulatory and economic instruments. Moreover, the OECD recommends river basin-oriented management

⁴⁹⁴United Nations General Assembly, Resolution 3129 (XXVIII) on 'Co-operation in the field of the environment concerning natural resources shared by two or more states'(New York, 13 December 1973).

should be encouraged, and where advisable, this should be considered in an international framework. It also requires strict regulatory, economic and technical controls to be enforced for certain categories of hazardous pollutants; and that authorities should facilitate public information and participation to promote more informed decision-making and to enlist public support for proposed activities.

The evaluation of the arbitration tribunal's decision about the Lac Lanoux transboundary water dispute between France and Spain demonstrated that riparian states are entitled to exercise their rights without ignoring other riparian states' interests. The decision suggests that equitable and reasonable utilization is imperative with regard to shared water. The Gabčíkovo–Nagymaros case, which involved Hungary and Czechoslovakia, indicated how the contending parties had to adjust the Gabčíkovo–Nagymaros project to tackle environmental issues. The Court decision in this case noted that there were developments in international environmental law, which were supportive of environmental protection and equitable and reasonable utilization of an international watercourse. The Court also suggested out that newly developed norms of environmental law were relevant for the implementation of the 1977 treaty and that the parties could, by agreement, incorporate them.

Another important development in international law came in the year 2010, which brought authoritative confirmation of the human right to water and sanitation. On 28 July 2010, the UN General Assembly adopted Resolution 64/292. The Resolution explicitly recognizes the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights. The MDGs also set out the role of water in human development under Target 7C. The target intended to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation. The United Nations World Water Development Report of 2012 indicated that pressures over water resources have increased considerably. Particularly, the water withdrawals have tripled over the last 50 years, and the demand for water has dramatically increased across the globe.⁴⁹⁵ The Report suggests that unsustainable water use practices should not be neglected if access to clean water and sanitation is to be achieved and sustainable development realized.

In the SDG drafting process, the sustainability of water was identified as a crucial issue. The analysis in this chapter suggests that the SDGs follow the MDGs, but aim to expand on the MDGs to address

⁴⁹⁵ WWAP (n 485).

IWRM in order to ensure sustainable development. The draft SDG recommendations in WRM advocate there is a close link between water development and management; the right to clean water and sanitation may not be achieved without IWRM. Its recommendations imply that access to safe water and sanitation should be increased; water demand should be reduced; pollution should be controlled; and water resources should be efficiently used and WRM taken up at an appropriate level by following the IWRM approach. These ideas propose sustainable approaches, for integration, the clear allocation of rights and liabilities, for subsidiarity and local participation.

The investigation of the water literature in this chapter has drawn up, as key features of an effective management system for water resource quality protection and quantity management, collaboration, participation, subsidiarity and water system management are core elements of the notion. The investigation on modern water policy has also identified as key features equitable and reasonable use, no significant harm, responsive water allocation, integration, water cost internalization and subsidiarity.

Chapter Four: WRM policy and law in the European Union

4.1 Introduction

Europe is considered as being endowed with adequate water resources, in terms of the status of their availability.⁴⁹⁶ However, the EU is not safe from water scarcity or drought threats. In 2003, over 100 million of the population and a third of Europe's territorial coverage were exposed to drought.⁴⁹⁷ Similarly, in 2011 and 2012, large parts of southern, western and northern Europe were exposed to drought.⁴⁹⁸

In those years, the rainfall was too low when it is compared with a normal year. In addition to droughts, water scarcity is becoming a widespread phenomenon in the EU. The WEI of the European Commission attaches 'water scarcity' to a human problem.⁴⁹⁹ In normal year, the water resources exploitation values are below 20 percent and as such, water abstraction is considered sustainable.⁵⁰⁰ It has been estimated that at least 11 per cent of Europe's population and 17 per cent of territorial areas are experiencing water scarcity problems. Across the EU, water scarcity has begun to extend to areas that were not affected previously.⁵⁰¹ Unless action is taken quickly, up to half of the EU's river basins will be affected by water scarcity and stress by 2030.⁵⁰² A long-term imbalance between demand and supply is becoming more marked in the EU.⁵⁰³ Predictions over the future of water indicate escalating water scarcity, which is frightening unless responsive measures are introduced, updated and implemented quickly and effectively.

⁴⁹⁶European Commission, 'Water scarcity and droughts in the European Union: EU action on water scarcity and drought, 2012 water scarcity and droughts –policy review' <http://ec.europa.eu/environment/water/quantity/scarcity_en.htm>accessed 8 September 2013.

⁴⁹⁷European Commission, 'Communication from the Commission to the European Union Parliament, the Council, the European Union and Social Committee and the Committee of the Regions: a blueprint to safeguard Europe's water resources' COM (2012) 0673 Final

<http://ec.europa.eu/prelex/detail_dossier_real.cfm?CL=en&DosId=202113>accessed 8 October 2013.

⁴⁹⁸European Commission, 'Communication from the Commission to the European Parliament, the European Economic and Social Committee and the Committee of the Regions on the review of the European water scarcity and drought policy' COM (2012) 0672 Final <www.europarl.europa.eu/registre/doc_autres_institutions/commission-europeenne/com/2012/0672/com-com%28012%290672—En.pdf>accessed 8 October 2014.

⁴⁹⁹European Commission (n 497).

⁵⁰⁰ibid.

⁵⁰¹European Commission (n 27)18.7.

⁵⁰²European Environment Agency, 'Europe needs to use water more efficiently', 13 March, 2012 last modified: 29 November 2012 11:09 AM.

⁵⁰³European Commission(n 498).

This vulnerability has forced the EU to consider how to tackle both temporary water availability problems due to drought and long-term water demand and supply imbalances. Over the last three decades, the EU has adopted a range of water resources laws and policies that have set institutional arrangements and established organizational structures. Many of the conventional water law and policy had focused on non-water-security issues and were fragmented, but a significant shift in the management system for water resources was introduced with the adoption of the WFD and with the subsequently introduced Communications within the EU.⁵⁰⁴In 2000, the EU introduced a WFD which was more progressive and comprehensive than its predecessors.⁵⁰⁵ More awareness in water politics has been observed since the 2003 drought; this can be observed from the introduction of water policy options for drought and water scarcity. In 2007, the European Commission adopted a Communication on water scarcity and droughts, which accommodated water policy options, and set the priorities for managing water scarcity and drought challenges.⁵⁰⁶ The Communication was accompanied by three follow-up reports, which indicated achievements and yearly progress.⁵⁰⁷ In 2012, the European Commission extensively analysed the WFD implementation within the EU and also assessed a ‘blueprint’ for EU water law reform.

The main objectives of the assessment in this chapter are to understand whether the EU, as a supranational body, has in place an effective management system for the sustainability of water resources, and to assess the extent to which the key features of an effective WRM system are reflected in the EU’s water policy and law. Moreover, the insights from the discussion in this chapter provide inputs to assess the AU’s own WRMPs. Similarly, the English WRM system partly derives from laws and policy formulated by the EU. It cannot be possible to understand the English system without understanding the EU system. Accordingly, the discussion in this chapter reviews the water resources policy and law, which are designed to make water sustainably available, for water supply purposes within the EU. To understand the development in the water law of the EU, the first section of the chapter reviews both past and present water policy and law and specifically, the earlier water laws can be compared with the WFD. Finally, the discussion will draw inferences from water

⁵⁰⁴ Ben Page and Maria Kaika, ‘The EU Water Framework Directive: Part 2 policy innovative and shifting choreography of governance’ (2003) 13 *European Environment*, 2–6.

⁵⁰⁵ *ibid.*

⁵⁰⁶ Ecologic, ‘Report on EU water saving potential, June 2007’ <www.ecologic.eu/2175> accessed 8 October 2014.

⁵⁰⁷ European Commission, (2008) final 875; European Commission (2010) 228 final; and European Commission (2011) final 133.

resources policy and law and the extent to which they reflect the key features of an effective management system for water resources.

4.2 Early EU management system for water resources

4.2.1 Substantive rules

To explore the new development under the WFD, it is useful to examine the past water laws of the EU. Historically, EU water legislation has developed in three stages.⁵⁰⁸ Early European water legislation began with a surface water directive in 1975; that is, the directive that formulated standards for those rivers and lakes used for drinking water abstraction.⁵⁰⁹ The first Drinking Water Quality Directive was adopted in 1980, with binding quality targets for drinking water.⁵¹⁰ The ‘first wave’ introduced quality objectives on bathing waters⁵¹¹ and for waters used in harvesting fish and shellfish.⁵¹² The main aim of this water policy phase was to protect public health and combat market distortions.⁵¹³ This stage’s main emission control element was the Dangerous Substances Directive,⁵¹⁴ In 1976, the Community introduced the Dangerous Substances Control Directive, which was designed to regulate pollution of water by dangerous substances.⁵¹⁵ Through this Directive, pollutants are classified into lists I and II. For chemical substances under List I, the Directive introduced the setting of a fixed discharge level of pollutants in the given surface water bodies which could be discharged by obtaining authorization from the member state concerned.⁵¹⁶ For the List II substances, the Directive imposed an obligation on member states to adopt programmes that reduced the discharge of these pollutants into any surface water.⁵¹⁷ The legislation allows member states to create programmes with measures for this list of chemicals. The control of discharge of List I substances into groundwater is stricter than into surface water, as they must be

⁵⁰⁸ Page and Kaika (n 504) 2.

⁵⁰⁹ European Commission, ‘Introduction to the new EU Water Framework Directive’ (last updated 22 April 2015) <http://ec.europa.eu/environment/water/water-framework/info/intro_en.htm> accessed 14 July 2015.

⁵¹⁰ *ibid*; and see also Council Directive 76/80 relating to the quality of water intended for human consumption [1980] OJL 129/42.

⁵¹¹ Council of Directive 76/160 concerning the quality of bathing water [1976] OJL 31/1.

⁵¹² Council Directive 79/923 on the quality required of shellfish waters [1979] OJL 281/42.

⁵¹³ EUROLIMPACS, ‘European Policies and International agreements affecting Catchment Management Report’ (2005) ,9 <file:///C:/Users/Ayele/Downloads/Deliverable_036.pdf> accessed on 14 July 2015

⁵¹⁴ European Commission (n 509).

⁵¹⁵ Council Directive 76/464 on pollution caused by certain dangerous substances discharged into the aquatic environment of the community [1976] OJL 24/55.

⁵¹⁶ *ibid*, article 3 (1); see also preamble, paragraph 8.

⁵¹⁷ *ibid*, para 11, article 7.

prevented from reaching ground water. For List II pollutants, the obligation upon the member states is the same as for surface waters.⁵¹⁸

In 1988, the Frankfurt ministerial seminar on water reviewed the existing water laws, and identified gaps that needed to be filled.⁵¹⁹ This resulted in the development of a second generation of water legislation.⁵²⁰ For instance, in 1991, two water laws – the Urban Waste Water Treatment Directive (UWWTD) and the Nitrates Directive – addressing water pollution by nitrates from agriculture were introduced. The UWWTD aimed to regulate ‘collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors’.⁵²¹ The main objective of the urban waste treatment directive was ‘to protect the environment from the adverse effects of urban waste water discharges’.⁵²² The UWWTD was designed to control human wastewater. To implement this Directive, member states were obliged to develop the necessary infrastructure to control urban waste management.⁵²³

The Agricultural Nitrates Directive, on the other hand, was adopted to control water pollution from agricultural ‘run-off’.⁵²⁴ This was a new development in the EU water law. Before the enactment of this legislation, EU water law did not focus on managing diffuse source pollution, which deteriorates the quality of water resources and their availability. The Nitrates Directive aimed to protect ground and surface waters from diffuse source pollution caused by the use of nitrogen (nitrates) through establishing best agricultural practice.⁵²⁵ The Directive required each member state to: designate the nitrate vulnerable zones of all land draining to waters that were affected by nitrate pollution; establish a voluntary code of good agricultural practice to be followed by all farmers throughout the country; and establish a mandatory action programme of measures for the purposes of tackling nitrate loss from agriculture.⁵²⁶ This action programme was to be applied either within nitrate vulnerable

⁵¹⁸ Giorgos Kallis and Peter Nijkamp, ‘Evolution of EU water policy: a critical assessment and a hopeful perspective’ (1999) 27 *Series Research Memorandum*, p.3 <<http://degree.ubv.uu.nl/repec/vua/wpaper/pdf/19990027.pdf>> accessed on 21 May 2015

⁵¹⁹ European Commission (n 509).

⁵²⁰ *ibid.*

⁵²¹ Council Directive 91/271 concerning urban waste –water treatment OJL135/40.

⁵²² *ibid.*, article 11.

⁵²³ *ibid.*

⁵²⁴ Council Directive 91/676 concerning the protection of waters against pollution caused by nitrates from agricultural sources, OJL 375/1, article 3.

⁵²⁵ *ibid.*, article 4.

⁵²⁶ *ibid.*, article 3.

zones or throughout the whole country. Interestingly, this legislation brought to attention the impact of agricultural land-use practices on water resources quality. However, the implementation of these directives depended upon the member states affected by the pollution.⁵²⁷ Despite the spill-over effect beyond the political boundary coverage, water quality management was national boundary-oriented and decision-making was fragmented.⁵²⁸

As the discussion in this section demonstrated, the early Community water laws focused on water quality management. Moreover, these water regimes from suffered weaknesses, including incoherence.⁵²⁹ The water laws were piecemeal, scattered among a range of legislations. Owing to these problems, in the middle of 1995 the EU began to rethink its past approach to WRM. The rationales for this reform are:

Whilst EU actions of the past such as the Drinking Water Directive and the Urban Waste Water Directive can duly be considered milestones, European Water Policy has to address the increasing awareness of citizens and other involved parties for their water. At the same time water policy and water management are to address problems in a coherent way.⁵³⁰

Reliance on incoherent and dated water laws was not seen as an effective solution to conserving the water resources.⁵³¹ The essence of the need for legislative reform was to take comprehensive action to tackle water resource challenges.

4.2.2 Subsidiarity in environmental management

Water resources are one of many environmental media. The EU, in its first Environmental Action Programme, identifies five different levels: local, regional, national, Community and international. Among these levels, the Action Programme emphasizes that environmental decisions need to be taken at the level 'best suited to the type of pollution and to the geographical zone to be protected'.⁵³² The environmental mandate is dependent on the specific environmental problem. The idea clearly limits arbitrary environmental decision-making concerning function allocation. Similarly, the third

⁵²⁷ Page and Kaika (n 504) 3.

⁵²⁸ European Commission, Environment, 'Introduction to the new EU Water Framework Directive' (last updated 23 February 2012).

⁵²⁹ *ibid.*

⁵³⁰ *ibid.*

⁵³¹ Page and Kaika (n 504) 3.

⁵³² The First Environmental Action Programme [1973] OJ C 112.

Environmental Action Programme asserts: ‘the Community level should be reserved for those measures which can be most effective there.’⁵³³ The Action Programme suggests that the Community should handle some environmental problems that are reserved for it to implement. Such environmental issues are directly handled by the Community rather than member states and the Action Programme makes clear the need for a shared competence over environmental matters.

In subsequent Community legislation, the Community is empowered to takeover some environmental mandates if best suited to the level. The Single European Act states that the ‘Community shall take action relating to the environment to the extent to which the objectives...can be attained better at Community level than at the level of individual member states’.⁵³⁴ A similar phrase is included within the Maastricht Treaty. It provides that the Community handles environmental issues in the ‘areas which do not fall within its exclusive competence ...only if and in so far as the objectives of the proposed action cannot sufficiently be achieved by the member states’.⁵³⁵ The EU’s mandate is clearly limited to handling defined issues. The Maastricht Treaty also declares that environmental decisions are to be taken ‘as close as possible to the citizens’.⁵³⁶

Generally, the Community environmental regimes favour determination of decision-making level on a case-by-case basis unless specific issues are exclusively given to the Community level. This gives a considerable degree of flexibility for the Community and member states. They enable the EU to take environmental decision-making jurisdiction at any time if that specific environmental objective is best achieved at EU level rather than by the member states. This discretion in mandate allocation may allow the Community to take over environmental decision-making jurisdictions from the member states. On the other hand, it may also allow the member states to challenge such takeover if they can achieve better results at the national level.

More importantly, all the above-mentioned EU environmental legal and policy documents, in principle, favour environmental decision-making at the member state level, except those functions exclusively entrusted on the Community. They support decentralization of natural resources

⁵³³ *ibid.*

⁵³⁴ Single European Act [1987] OJEC 161/11, articles 130r through 130t; article 100a of the Treaty (now articles 174–76 and article 95 under the Treaty of Amsterdam).

⁵³⁵ Maastricht Treaty, 1992 31 ILM, 256–57.

⁵³⁶ *ibid.*

management. However, in matters falling to the jurisdiction of the member states, the environmental regimes were left to their discretion to decide the specific level that is ‘better’ or ‘best suited’ to handle an environmental concern. Naturally, these regimes favour decentralization of environmental management depending on the nature of the problem. Arguably, the Community environmental laws do not focus on integrated environmental management. By their nature, however, some environmental problems may need the coordinated involvement at local, national, Community and international levels.⁵³⁷ The use of a single level may not provide sound solutions for some environmental problems.⁵³⁸

4.3 Introduction of the EU Water Framework Directive

IWRM favours a holistic approach to manage water across the river basin.⁵³⁹ At the EU level, the WFD is the key legal instrument for water security management, which introduced the principles of IWRM and planned to achieve ‘good status’ in all the European water bodies by 2015. In contrast, traditional EU water legislation, achieving good status under the WFD, is applied to all waters across river basins.⁵⁴⁰ Under the WFD, ‘good status’ is a general requirement for all surface waters to meet; they are expected to meet both ecological protection and general minimum chemical standards, introduced to manage water resources pressures within a defined period of time.⁵⁴¹

To enhance the sustainability of water through protection against pollution, the WFD set the water quality objectives that member states are expected to achieve. With regard to surface water, the member states must achieve the target chemical concentration status. WFD divides water into ‘good’ or ‘failing’ chemical status.⁵⁴² Surface water meets a good chemical status if the concentration of pollutants listed as priority substances does not exceed the required environmental quality standards.⁵⁴³ Similarly, the good chemical status of groundwater is examined in a similar fashion to surface water with regard to chemical concentration; however, the member states are obligated to take necessary measures that limit or prevent the discharge of pollutants into the groundwater.⁵⁴⁴ In

⁵³⁷ Hooper (n 386) 5.

⁵³⁸ *ibid.*

⁵³⁹ Biswas (n 302).

⁵⁴⁰ European Commission (n 509).

⁵⁴¹ *ibid.*

⁵⁴² WFD, article 2(21).

⁵⁴³ *ibid.*, articles 4(1) (a), 2(21), 16(7) and Annex IX.

⁵⁴⁴ Environmental Quality Standards Directive, article 4(1) (b)(I).

principle, direct chemical discharge into groundwater is prohibited. The exception arises if the laws expressly give the right to the state to discharge chemicals into groundwater for specific purposes.⁵⁴⁵ The rationale for this strict regulation may lie with the difficulty of cleaning once the chemical enters the groundwater. Good status under the WFD is not only about water quality; it is also about water flow, water ecology and its morphology. The WFD objective of good status is necessary to ensure long-term availability of sufficient water of good quality. Achieving good status for all waters within the EU will enhance healthy water ecosystems. This legalization aimed to protect the interests of both humans and healthy water ecosystems. WFD is an IWRM instrument; it requires the member states to manage water resources at river basin scale.

WFD was intended to create an overall framework for water resources across the EU. It developed coherent and integrated water policy and law that would have applicability throughout the EU's member states. The WFD was transposed into the member states' legislation and implemented within a defined period of time. This framework directive is an invaluable legal instrument for harmonizing WRMPs of the member states. The WFD has also consolidated a number of fragmented WRM regimes.⁵⁴⁶ This legislation accommodates various changes in the WRM systems and organizational remits of WRM law which have brought a remarkable shift when compared with the first and second phases of water regimes. Similarly, in 2007, the Communication from the Commission to the EU Parliament issued policy options for water sustainability.⁵⁴⁷ Under this Communication, institutional arrangements for water efficiency management were assumed to be at the heart of sustaining water resources, whilst supply management was supported as a last resort when demand aspects are used exhaustively.⁵⁴⁸

4.3.1 Management system for regulating sustainability of water resources

4.3.1.1 EU intervention in water quantity management before the WFD

A clear legal basis for water resource policies and law-making is key to understanding the level of the EU's intervention in formulating rules harmonizing WRM. Under the treaty establishing the

⁵⁴⁵ *ibid.*

⁵⁴⁶ Jan Jans and Hans Vedder, *Environmental law* (3rd edn, Europa Law 2008) 42.

⁵⁴⁷ European Commission (2007) 414 final (n 27)18.7.

⁵⁴⁸ Jans and Vedder (n 546) 349.

European Economic Community (EEC), there was no precise provision that had given legal competence for the EEC to take legislative measures in environmental matters.⁵⁴⁹ As part of the environmental media, water resources had experienced this problem. In those days, it was supposed that environmental concerns were not a priority for the EEC.⁵⁵⁰ It is only since the 1960s and 1970s that environmental concerns began to receive the EEC's attention.⁵⁵¹

This does not mean that in the early days, the EEC had not taken any legislative measures with regard to environmental issues. Practice indicated that, often, environmental legislation could be adopted under general articles.⁵⁵² The EEC used a flexible approach – either ex Article 100 (now Article 94 EC) or ex Article 235 (now Article 308 EC) or a combination of the two – to take legislative measures.⁵⁵³ Accordingly, the EEC used establishing and monitoring the common market as a legal basis of its competence in environmental matters, or ‘if action by the Community should prove necessary to attain, in the course of operation of the common market, one of objectives of the Community and this Treaty has not provided the necessary powers, the Council shall, acting unanimously on a proposal from the Commission and after consulting the European Parliament, take the appropriate measures’.⁵⁵⁴

With the entering into force of the Single European Act in 1987, the legal basis of the environmental policy issues was inserted into the Treaty.⁵⁵⁵ Similarly, the Treaty on the Functioning of the European Union (TFEU) accommodates legal competence – that the EU can take legislative measures to protect the environment, according to the aims under concern. TFEU contains a number of provisions for the protection of the environment. For instance, Article 3(3) calls on the EU to promote a high level of protection and improvement to the quality of the environment. Similarly, Article 11 directs that environmental protection requirements must be integrated into the definition and implementation of the EU's policies and activities – in particular, with a view to promoting sustainable development.

⁵⁴⁹Peter Davies, *European Union Environmental Law: an introduction to key selected issues* (Ashgate Publishing Limited 2004) 1.

⁵⁵⁰ *ibid.*, 2.

⁵⁵¹ *ibid.*

⁵⁵² Levente Borzsak, ‘The impact of environmental concerns on the public enforcement mechanism under EU law: environmental protection in the 25th hour’ (2011) *Kluwer Law International*, 113.

⁵⁵³ Davies (n 549) 3.

⁵⁵⁴ TEEU, Ex Article 235(Article 308).

⁵⁵⁵ TFEU, Articles 191–92.

Now, the legal basis for the EU's actions regarding all environmental issues is Article 192 of the TFEU.⁵⁵⁶ Since water is one form of environmental media, the competence to take legislative measures regarding environmental concerns includes WRM. Under Article 192, there are two different procedures that the EU follows in environmental decision-making, depending on the nature of the relevant concerns. The legal competence of the EU under Article 192 requires 'the ordinary legislative procedure' involving jointly the European Parliament and the Council of the EU, mostly acting by qualified majority but, in cases of certain defined issues, requiring 'special legislative procedure' of unanimous voting in the Council.⁵⁵⁷ There were differences in the interpretations of this provision in practice. This left uncertainty regarding the legal basis of the EU to bring forward legislative measures on WRM.⁵⁵⁸

This difference, however, found an answer from the decision of the Court of Justice.⁵⁵⁹ Specifically, the Court of Justice rendered guidance in the dispute *Spain v Council* that could be followed in the future.⁵⁶⁰ Both parties contended the scope of application of the phrase 'management of water resource'. The Council viewed it with a narrow interpretation, whereas Spain viewed the phrase through an expanded interpretation, encompassing every aspect of WRM. In particular, Spain contended that an approval of the conclusion of the Convention on cooperation for the protection and sustainable use of the River Danube should have been adopted by unanimous voting, since the Convention was related to the management of water resources.⁵⁶¹ On the other hand, the Council argued that the measures should have been adopted by a qualified majority.⁵⁶² The Court of Justice investigated different versions of languages used to implement the phrase, and finally determined the scope of application of unanimous voting in WRM as limited to that of 'the quantitative aspects of the use of those resources, or in other words, measures related to the management of limited resources in its quantitative aspects and not those concerning the improvement and the protection of the quality of those resources'.⁵⁶³

⁵⁵⁶ Ludwig Kramer, *EU environmental law* (7th edn, Sweet& Maxwell 2011) 252.

⁵⁵⁷ TFEU, Article 192(2).

⁵⁵⁸ Kramer, (n 556) 252.

⁵⁵⁹ Court of Justice, *Spain v Council* (C36/98)(2000)ECR I-779.

⁵⁶⁰ *ibid.*

⁵⁶¹ *ibid.* Spain based its argument under ex Article 130s(2) (now Article 175(2)) and the second sentence of ex Article 228(2) or the TFEU, Article 192(2).

⁵⁶² *Ibid.* The Council based its argument under ex Article 130s(1)(now Article 175(1)) and the first sentence of ex Article 228(2).

⁵⁶³ *ibid.*, para.52 of judgment.

The core statements of the Court of Justice's opinion in the dispute underlined the idea that the management of water resources does not cover 'every measure concerned with water, but covers only measures concerning the regulation of the use of water and the management of water in its quantitative aspects'.⁵⁶⁴ It concluded that the principal purpose of the Convention on cooperation for the protection and sustainable use of the River Danube was the protection and improvement of water quality, and the Council was right to adopt measures through a qualified majority. In all legislative measures that principally focus on non-quantitative WRM, the EU does not require unanimous voting.

The Court of Justice's position was subsequently confirmed under the Treaty of Nice, which was signed in 2001 and entered into force on 1 February 2003. This Treaty listed some measures to pass through unanimity in Council. Among the list of issues, the 'quantitative management of water resources or affecting, directly or indirectly, the availability of those resources' required unanimity by the Council and consultation with the EU Parliament prior to adoption.⁵⁶⁵ When the EU's measures principally affect quantitative aspects of water resources, the measures must be unanimously adopted under Article 175(1), whereas in all other cases, qualified majority voting of the Council under Article 175(2) is required.

The Nice Treaty has made two things clear: firstly, it limited the unanimous voting for aspects of water quantity; and secondly, it does not encompass all water quantity concerns, but rather those measures that are 'affecting' water quantity.⁵⁶⁶ The introduction of a measure regulating water quantity, therefore, would require the unanimous consent of all member states. This implies that the member states have more interest in controlling community measures on those water quantity measures that affect their national interests regarding the water resources. The availability of the unanimity procedure gives the member state the power to veto whenever the EU attempts to introduce such measures that would principally affect water quantity.⁵⁶⁷ This suggests that the WFD affects quantity, but is principally about quality.

The reading of the Court of Justice's decision and the Treaty of Nice demonstrates that the unanimity procedure is required in measures principally designed to harmonize water allocation and water

⁵⁶⁴ *ibid*, para. 55.

⁵⁶⁵ The Treaty of Nice (2003), Article 175(2) EC(b).

⁵⁶⁶ Davies (n 549)17.

⁵⁶⁷ *ibid*.

transfer rules, but that those measures that do not relate to water quantity management, directly or indirectly, follow the ordinary procedure of qualified majority. As a matter of WRM, water quantity management is at the centre of enhancing water security, in addition to water quality and water system management.

The implication of the strict procedures regarding water quantity measures as the legal basis for the EU's remit is that its role in water allocation is limited to water quality management; there may be a fear among member states of fully passing their power regarding water allocation determination to the EU. The unanimity may allow member states to control any move by the EU to adopt legal measures principally related to water quantity management. Certainly, it empowers the member states to play more roles, and permits states to resist measures affecting their national interests. This issue may give rise to doubt about the role of the EU in introducing water quantity management rules, although it may be argued that the Treaty does not limit water quantity management to those measures that do not affect the availability of water resources, since it allows all measures protecting and improving the availability of water resources to follow qualified majority voting. The unanimity voting is fundamentally limited to legislative measures focusing on water quantity management.

This way of thinking is clearly demonstrated under the introduction of the EU's WFD. The purpose of the WFD is 'primarily concerned with the quality of the waters concerned'.⁵⁶⁸ The 'control of quantity is an ancillary element in securing good water quality and therefore measures on quantity, serving the objective of ensuring good quality, should also be established'.⁵⁶⁹ The quotes suggest that water quantity management under the WFD is widely seen from the point of view of water quality management. For instance, the WFD underlines the idea that 'good water quality will contribute to securing the drinking water supply'.⁵⁷⁰

This does not mean that the Directive does not regulate water quantity aspects. It encompasses quantitative water measures as an ancillary purpose.⁵⁷¹ For instance, the WFD provides rules for water abstraction regulation, in that 'the overall principles should be laid down for control on the abstractions and impoundment in order to ensure the environmental sustainability of affected water

⁵⁶⁸WFD, para. 19,preamble.

⁵⁶⁹ *ibid.*

⁵⁷⁰ *ibid*, para.24.

⁵⁷¹ WFD preamble,para.19.

systems'.⁵⁷² In water abstraction, 'quantitative status' is defined as 'an expression of the degree to which a body of groundwater is affected by direct and indirect abstractions'.⁵⁷³ No single provision was introduced under the WFD that fundamentally addresses the concern of water allocation or water transfer. This is why the WFD was adopted through qualified majority rather than unanimity.⁵⁷⁴

The problem in the future implementation of WRM within the EU lies when the competent authority of the river basin comes to manage water resources; there will be a clear challenge in implementing IWRM unless there are special schemes for water quantity management within each river basin for that effect. However, despite the EU having legal competence to adopt measures regulating or harmonizing the WRM rules of EU member states, it may not be practically possible to bring complete harmonization within all the EU's WRM.

In many instances, the water resources may transcend the member states' administrative boundaries and be shared by non-member states. Although the EU may influence non-member states or regions to create supportive water policies and laws, this involvement depends on the existing WRM treaties or cooperative arrangements. Often, regions and countries may have their own priorities and agendas. This may be another challenge that the EU's WRM has to face. Obviously, this demonstrates the importance at an international level to provide sound water policies and laws to shape national and regional water laws.

4.3.1.2 Water cost-recovery as a mechanism for WRM

Institutional arrangements for water efficiency are considered as the primary focus for reducing water wastage leading to water security threats.⁵⁷⁵ Water security management in the EU is approached by using a range of schemes. The major institutional arrangements use water demand and supply management, but water demand management comes first, and the water supply option follows when demand management has been used exhaustively.⁵⁷⁶ Efficient water utilization makes a positive contribution towards enhancing water security.⁵⁷⁷

⁵⁷² *ibid*, article 11.

⁵⁷³ *ibid*, para 2.

⁵⁷⁴ Davies (n 549)17.

⁵⁷⁵ European Commission (n 497).

⁵⁷⁶ European Commission (n 498).

⁵⁷⁷ European Commission (497)

For efficient water utilization, water pricing is seen as a key economic regulatory scheme for incentivizing water users. It assists in controlling water consumption.⁵⁷⁸ The ‘right price-tag’ on water services accommodates the full cost of such services.⁵⁷⁹ Pricing may not be a crucial tool for the users and the companies that generate unregulated short-term benefits from water resources.⁵⁸⁰ It shapes their utilizing of water in a way that contributes to common interests.

In water politics, internalizing the costs of water services and resources is disputed. Solanes notes that water is a special natural resource that makes it difficult for market forces such as demand and supply to regulate and allocate for its users.⁵⁸¹ Likewise, Bach considers water as a heritage which must be protected through internalizing the costs of water services.⁵⁸² Unregulated natural resources exploitation exacerbates over-exploitation, leading to ruin.⁵⁸³ Water cost internalization helps to curb the tragedy of the commons.⁵⁸⁴ A resistance to water cost internalization seems to emanate from the social dimension of access to water resources. The basic assumption of internalizing the water service costs is an economic premise that seeks to fully internalize prices of services and water resources, thereby pushing up prices –as a result of which, demand will go down. The more the cost of water increases, the more consumption drops, since water is a price-elastic economic good.⁵⁸⁵ Under-pricing will lead to the over-exploitation of water resources by failing to provide a responsive incentive that shapes the behaviours of water users.⁵⁸⁶

In December 2008, the first follow-up report to the Communication was adopted.⁵⁸⁷ Whilst this follow-up report identified some encouraging progress at the EU and national levels, it suggested that

⁵⁷⁸ Page and Kaika (n 504) 5.

⁵⁷⁹ *ibid.*

⁵⁸⁰ Hardin (n 145).

⁵⁸¹ Miguel Solanes and Fernando Gonzalez-Villaral, ‘The Dublin principles for waters as reflected in comparative assessment of institutional and legal arrangements for integrated water resources management’ (1999) <www.gwp.org/gwp/liberary/Tac3.pdf> accessed 20 January 2011.

⁵⁸² Simone Bach, ‘Perspectives for European water management law report of conference in Brussels’ (2008) 5(3)(4) *JEEPL*, 341–48.

⁵⁸³ Hardin (n 145).

⁵⁸⁴ Olivem Brandes, Steven Renzetti and Kirk Stinchcombe, ‘*Worth every penny: a primer on conservation-oriented water pricing*’ (POLIS Project on Ecological Governance, University of Victoria 2010) 1; see also Cole (n 168) 18.

⁵⁸⁵ *ibid.*

⁵⁸⁶ *ibid.*

⁵⁸⁷ European Commission (2008) 875 final, 19 December 2008.

there was more to do if water security is to be achieved within the EU.⁵⁸⁸ There are ranges of water uses in Europe. Amongst the types of water uses, on average, 44 per cent of total water abstraction is used for agriculture; 40 per cent for industry and energy production; and 15 per cent for the public water supply.⁵⁸⁹ Drinking water demand is the lowest in water consumption when compared with other sectors.

In the EU, some countries have a long tradition of water services pricing.⁵⁹⁰ The water supply costs were not being covered effectively⁵⁹¹ and because of this, the introduction of water pricing schemes was highly debated and faced resistance when the WFD was adopted in 2000.⁵⁹² However, the WFD introduced a rule for water pricing. Under the WFD, member states are under an obligation to develop water pricing as a requirement.⁵⁹³ Member states have to 'take account of' the principle of recovery of costs of water services and to ensure the adequate contribution of water users to the cost of water as an economic regulatory tool.⁵⁹⁴ In cost-recovery, the WFD did not come with rules that support strong applicability throughout the EU's member states. However, the full cost-recovery aspiration was curtailed by incorporating the vague requirement 'to take into account the principle of recovery of cost', thereby giving wide room for discretion. The member states' duty is not to implement cost-recovery; it is limited to taking into account the principle, meaning that its implementation is dependent on the willingness of each member state to act. The member states are obliged to internalize the costs of water services, including the environmental and resource costs.⁵⁹⁵

The practice has shown that within the water bodies of the EU, cost internalization is not materialized effectively.⁵⁹⁶ For the purpose of cost internalization, the scope of water services is often limited to drinking water and waste water treatment; this excludes regulation of major water consuming sectors, including water abstraction for agriculture.⁵⁹⁷ As an economic incentive, the

⁵⁸⁸ *ibid.*

⁵⁸⁹ European Environment Agency, 'Water use by sectors. All economic sectors need water; agriculture, industry and most forms of energy production are not possible without water' (last modified 18 February 2008, 12:34 PM) <www.eea.europa.eu/themes/water/water-resources/water-use-by-sectors>. accessed on 08 March 2013

⁵⁹⁰ *ibid.*

⁵⁹¹ Page and Kaika (n504) 5

⁵⁹² *ibid.*

⁵⁹³ WFD, article 9.

⁵⁹⁴ *ibid.*

⁵⁹⁵ WFD, article 9.

⁵⁹⁶ European Commission (n 498).

⁵⁹⁷ *ibid.*

scope of the application of water pricing needs to accommodate the realm of non-drinking water, and it also needs to accommodate environmental and resources costs.⁵⁹⁸

Within the EU, there is no common definition of water services; member states define it in their own way, using a narrowing conceptualization.⁵⁹⁹ With regard to water consumption by the agricultural sector in the EU, ‘operational costs for the provision of water are only partly recovered for 10 member states and capital costs are often subsidized. An important share of water abstractions for agriculture in the EU is not priced, even in water stress areas, and there is no financial mechanism for recovering the environmental and resource costs of individual abstractions or for giving incentives to using water more efficiently’.⁶⁰⁰

Although water services require the inclusion of environmental and resource costs, both types are left unconsidered;⁶⁰¹ drinking water facilities are not financially strong enough to ensure water efficiency. This makes the setting of water prices ineffective in enhancing the sustainability of water. In the EU, water pricing is not widely used and is hardly implemented beyond the sectors of drinking water supply and waste water treatment.⁶⁰² Water cost internalization policies do not generally take into account the level of sensitivity of water security challenges.⁶⁰³ Even with regard to drinking water, some member states have a long tradition of free drinking water provision. This has left major water usages not being properly regulated through water pricing. Lack of proper water pricing for non-drinking water may likely encourage inefficient water utilization, leading to water wastage.

The third follow-up report to the Communication on water scarcity and droughts in the EU indicated that in many of the EU member states, including the UK, water tariffs have been introduced recently or are under development in order to ensure water services’ cost-recovery.⁶⁰⁴ Compliance with water cost-recovery pricing remains a problem. Under the EU, the Commission is responsible for ensuring

⁵⁹⁸ *ibid.*

⁵⁹⁹ *ibid.*

⁶⁰⁰ *ibid.*

⁶⁰¹ *ibid.*

⁶⁰² European Commission (n 27).

⁶⁰³ *ibid.*

⁶⁰⁴ European Commission, ‘Water scarcity and droughts in the European Union. Report from the Commission to the European Parliament and the Council: third follow-up report to the Communication on water scarcity and droughts in the European Union’, European Commission (2007) 414 final SEC(2011) 338 final.

implementation of the European legislation.⁶⁰⁵ When a member state fails to comply with the EU law, the Commission has authority to take action for non-compliance, either by taking its own measures or referring the case to the European Court of Justice.

In water cost-recovery non-compliance, there have been many instances in which the Commission has taken actions against member states. The Commission either sends a reasoned opinion to ask a member state to comply, or refers the case to the Court of Justice for the non-compliance.⁶⁰⁶ In 2012, the Commission sent a reasoned opinion to ask Austria to comply with the principle of cost-recovery for water services.⁶⁰⁷ In 2011, similar action had been taken against Belgium, Denmark, Finland, Ireland and Sweden for incorrectly implementing the concept of water services.⁶⁰⁸ In 2012, the Commission referred Germany to the Court over incomplete cost-recovery for water services. Whilst Germany was of the opinion that water cost-recovery ‘should apply only to the supply of drinking water and the disposal and treatment of wastewater, the Commission considers that Germany’s exclusion of other relevant activities such as hydropower from the definition of water services hinders the full and correct application of the Water Framework Directive’.⁶⁰⁹ The case was sent to the European Court of Justice in 2012. By its action, the European Commission claimed that ‘the Federal Republic of Germany had failed to fulfil its obligations under the WFD, and in particular under Article 2(38) and Article 9 thereof, by excluding certain services (for example, impoundment for the purposes of hydroelectric power generation, navigation and flood protection, abstraction for the purposes of irrigation and for industrial purposes, as well as personal consumption) from the concept of ‘water services’.⁶¹⁰ The Court underlined that the Commission based its action around the interpretation to be given, in its view, rather than providing the Court with the evidence to allow the alleged failure to fulfil obligations to be established, and thus it dismissed the action as inadmissible.⁶¹¹

⁶⁰⁵TFEU, article 258; Euratom Treaty, article 106a.

⁶⁰⁶European Environment Agency, ‘Environment infringement cases’
<http://ec.europa.eu/environment/legal/law/press_en.htm>. accessed on 12 February 2014

⁶⁰⁷ibid.

⁶⁰⁸ibid.

⁶⁰⁹ibid.

⁶¹⁰European Court of Justice, case C-525/12, *European Commission v Federal Republic of Germany*.

⁶¹¹ ibid.

The WFD member states have the obligation to conduct an economic analysis of water use.⁶¹² Each member state, within its national boundary demarcation, conducts economic analysis by using technical specifications.⁶¹³ The WFD favours water cost internalization within the political boundary demarcation of each member state, even if the water resources are shared between member states. Member states feel that economic regulation beyond the administrative boundary hampers their national sovereignty.⁶¹⁴

Localized water pricing is supposed to assist in accommodating local variations, and encourages the inclusion of socio-economic development and environmental sustainability policies.⁶¹⁵ National boundary demarcation-oriented water pricing was intended to accommodate variations within member states.⁶¹⁶ For water pricing, the member states may consider social, environmental and economic effects.⁶¹⁷ However, the localized nature of water pricing contradicts the idea of WRM at the basin level. The principle of a hydro-boundary-based WRM is watered down when it comes to core demand management. This means that the same water body can be subjected to different water pricing.

As each member state has discretion with regard to its water pricing, some progressive states may use effective water pricing, whereas others may not. For instance, implementation of cost internalization varies within a shared river basin. The nature of this water pricing is patchy in terms of implementation. The policy priorities of a country affect water pricing and may create difficulty in holding accountable member states' failure to introduce proper water pricing. The outcome of water pricing within the basin is unlikely to be effective in shared basins, unless they have at least some common criteria to guide them in setting up water pricing within their jurisdictions.

Translating intent into action is fundamental to make effective water policy and law within the EU scope. The differences across countries and the disparities of their institutional and economic capacities may lead to unbalanced implementation of the EU's water policy and law. These challenges to implementation can often be overcome by introducing the EU-level implementation

⁶¹² WFD, article 5.

⁶¹³ *ibid.*, articles 11; article 5, Annex VI, Annex III.

⁶¹⁴ Page and Kaika (n 504) 5.

⁶¹⁵ *ibid.*

⁶¹⁶ *ibid.*

⁶¹⁷ WFD, article 9.

strategies. In the WFD, the Common Implementation Strategy (CIS) is seen as a scheme to enhance common understanding between member states upon the implementation of WFD rules; the rules under CIS are soft guidelines, rather than providing binding rules.⁶¹⁸

Despite the CIS potentially playing a positive role in the implementation of coherent water pricing in shared water bodies, its effectiveness was doubted.⁶¹⁹ The implementation of the soft rules developed by the CIS through member states is not a substitute for the role of the EU in engaging in enforcement through the Commission.⁶²⁰ CIS does not have the status of binding legislation.⁶²¹ It may be necessary for legislation to enhance the CIS guidelines to make them obligatory;⁶²² in particular, the soft rules of CIS need care to avoid misinterpretation of its original intentions within water law through the guise of developing common ground for implementation.

Development of water pricing policies that provide adequate incentives for users to utilize water efficiently is a key measure of the WFD.⁶²³ However, the progress made by the member states was not promising.⁶²⁴ In some member states, metering of water consumption is not fully implemented within some sectors; for instance, in agriculture in many areas, water is charged only to a limited extent.⁶²⁵ Despite cost-recovery being implemented to a greater or lesser extent in households and industry, very few member states have implemented a transparent recovery of environmental and resource costs.⁶²⁶

Another problem related to water efficiency is leakage management. For instance, water leakage problems within the EU member states vary between 7 per cent to 70 per cent – or more.⁶²⁷ Although it may not be possible to avoid leakage altogether, introducing schemes that minimize water wastage

⁶¹⁸European Commission (n 497).

⁶¹⁹ibid.

⁶²⁰ibid.

⁶²¹EU, European Communities, 2007 Common Implementation Strategy for the Water Framework Directive (2000/60/EC): Guidance document no. 16. Guidance on groundwater in drinking water protected areas, 2.

⁶²²European Commission (n 497).

⁶²³ European Commission, 'Report from the Commission to the European Parliament and the Council on the implementation of the Water Framework Directive (2000/60/EC): river basin management plans' (text with EEA relevance) SWD (2012) 379 final, 10–11.

⁶²⁴ ibid.

⁶²⁵ ibid.

⁶²⁶ ibid.

⁶²⁷European Commission (n 497).

through leakage within the EU may contribute to reducing water security challenges. The idea of sustainable economic leakage levels is considered to mitigate such leakage problems within member states.⁶²⁸ Despite the benefits of this scheme within member states and water bodies, its implementation may not be realized without setting out compliance mechanisms that regulate the efficiency of the infrastructures that are used in water development.

4.3.1.3 Water abstraction

Over-abstraction of water is one of the threats to the sustainability of water resources.⁶²⁹ The WFD incorporated a rule designed to control water abstraction,⁶³⁰ as well as a rule that regulates the off-take of quantities of groundwater. The rule demands that member states must take into account a long-term average water recharge level for groundwater, to limit or prevent over-exploitation that affects the sustainability of water quantity in a given river body.⁶³¹ This legal limitation attempts to balance the abstraction of water resources. To this end, the quantitative status of groundwater is judged by using the water abstraction and recharge data of a given groundwater body. By this analysis, groundwater can be considered as poor if the exploitation exceeds the long-term average rate of its recharge.⁶³² The WFD therefore requires groundwater abstraction control.

Despite the WFD's introduction of the idea of the water within a river basin achieving a 'good status' in terms of its quantity and quality, it lacks a consistent application scheme for regulating surface water over-abstraction – although flow must be sufficient to enable good ecological status, as defined in the WFD. However, in England, around 50 per cent of surface waters are subject to morphological pressures.⁶³³ In the EU, around 15 per cent of surface water bodies are in unknown ecological status.⁶³⁴ In some member states, more than 50 per cent of surface water bodies are in unknown ecological status.⁶³⁵

⁶²⁸: *ibid.*

⁶²⁹ Hardin (n145)1243–48.

⁶³⁰ WFD, article 11.

⁶³¹ WFD, article 4 b(ii).

⁶³² WFD, article 11.

⁶³³ European Commission, 'Commission Staff Working Document. Member State: United Kingdom accompanying the document report from the Commission to the European Parliament and the Council on the implementation of the Water Framework directive (2000/60/EC); River basin management plans', COM (2012) 670 final, 9.

⁶³⁴: *ibid.*, 7.

⁶³⁵: *ibid.*

The WFD does not provide clear guidance on the levels of surface water flows.⁶³⁶ There is not yet a common definition for the surface water flow within the EU, although there is some EU-wide inter-calibration.⁶³⁷ There had been progress in the development and application of assessment methods of ‘good ecological’ status within EU member states, but some countries showed important gaps.⁶³⁸ For instance, in England, the availability of water resources for abstraction is assessed through the Catchment Abstraction Management Strategy approach.⁶³⁹ This may help to determine how much water is sustainably available for protecting ecological flow. However, there has been a lack of coherent measures on water flow within the EU.⁶⁴⁰

Moreover, the implementation of water abstraction requires metering, or registering and pricing. An efficient abstraction requires measuring the volume of water used.⁶⁴¹ The flat rate tariff settings hardly provide an incentive for the sustainability of water. In some EU member states, ‘in some sectors, such as agriculture or households, metering of water consumption is not fully implemented’.⁶⁴² Through properly unmetered water exploitation, setting prices may or may not achieve ‘the right price-tag’ for cost-recovery. Properly unmetered and unregistered water utilization may not ensure efficient allocation and fairwater usage, and the likely danger is that water consumers exploit water as much as they can without worrying about common interests. The quantity of water utilization is not well regulated by economic instruments and the price imposed is an estimate that may not reflect the actual price of water usage.

Over-abstraction of water is a significant problem in many water bodies.⁶⁴³ The failure to use proper water pricing is regarded as ‘an environmentally-harmful subsidy’, which potentially exacerbates water insecurity.⁶⁴⁴ For instance, water abstraction for agriculture is inefficiently regulated within the EU.⁶⁴⁵ There is an over-estimation problem in existing water bodies which opens the way for over-

⁶³⁶ Environment Agency, *River basin management plan. Thames River basin district. Annex E: action appraisal and objectives* (December 2009).

⁶³⁷ European Commission (n 497).

⁶³⁸ *ibid.*

⁶³⁹ Environment Agency, *Managing water abstraction* (2013) 7.

⁶⁴⁰ European Commission (n 633) 9.

⁶⁴¹ *ibid.*, 11.

⁶⁴² *ibid.*

⁶⁴³ European Commission, Communication from the Commission to the European Parliament and the Council addressing the challenge of water security and droughts in the European Union, Brussels, COM/2007/ 414 final, 18.7, 2007).

⁶⁴⁴ *ibid.*, 9.

⁶⁴⁵ *ibid.*

abstraction.⁶⁴⁶ In practice, member states that control water abstraction effectively are rare in number. However, there are some progressive states in terms of implementing water abstraction control. For instance, in France, ‘irrigators have to be equipped with water meters whenever they go beyond abstraction thresholds. In the period 2000–2003, the level of equipment rose from 54% up to 71%, representing 85% of the overall irrigated land’.⁶⁴⁷ In England, there are comprehensive water abstraction control mechanisms.⁶⁴⁸ Any person who abstracts more than 20 cubic metres (approximately 4,400 gallons) a day needs an abstraction licence.⁶⁴⁹ Large direct users are metered and charged by the volume of water they abstract. Abstraction is charged in agricultural, domestic and public water supplies, and in industrial and energy production.⁶⁵⁰ But these good practices may not protect the water in shared water bodies unless other riparian countries take similar measures. Effective water abstraction control requires the commitment of *all* riparian member states.

4.3.1.4 Protecting water bodies and regulating land use

The protection of water resources also requires the protection of their ecosystems.⁶⁵¹ Human-induced pressures on the water ecosystems affect the sustainability of water resources. For instance, the Berlin Conference Report underlines ‘waters as parts of ecosystems that cannot be managed effectively except by giving careful attention to the intimate interconnections of the parts of the system’.⁶⁵² Porter notes that ‘the quantity of water resource begins on the land. Hence water use first depends upon land uses’.⁶⁵³ Similarly, Fisher notes that protection of water resources requires protection of their ecosystems.⁶⁵⁴ He suggests that sustainable water resources cannot be achieved only through the conservation of water.

The WFD provides detailed criteria to achieve good ecological status of surface water under Annex V. This approach gives recognition to the protection of the water environment as part of water

⁶⁴⁶ *ibid.*

⁶⁴⁷ European Commission (n 27).

⁶⁴⁸ Environment Agency, *Abstracting water: a guide to getting your licence* (2008) 1–12.

⁶⁴⁹ *ibid.*

⁶⁵⁰ Environment Agency (n 648) 1–29.

⁶⁵¹ Berlin Rules on Water Resources (2004), articles 3(1), (6), 6, 22–29, 56(1), 57(3), 58(1), 62, 66(a) and 68–71.

⁶⁵² International Law Association, *Berlin Conference Report* (2004) 2.

⁶⁵³ Keith Porter, ‘Should governmental water responsibilities flow downwards?’ (2005) 16(2) *Journal of Water Law*. Pp.49-57

⁶⁵⁴ Douglas Fisher, ‘Land water irrigation and: hydrological and legal relationships in Australia’ (2005) 16(1) *Journal of Water*. pp.14-22

protection. Based on their ecological condition, surface waters are generally classified into high, good, moderate, poor and bad.⁶⁵⁵ The ecological quality of a ‘good’ status within the river basin can be determined by examining anthropogenic impacts on the aquatic environment. Surface water acquires good ecological status if the modification on the biological community in the watershed is only slight, when compared with areas of the biological community that would be expected to have conditions of minimal human impact.⁶⁵⁶ For this purpose, the diversity and abundance of fauna and flora are used as main elements to categorize the extent of the modification of surface water ecosystems.⁶⁵⁷ As a parameter, the legislation provides the use of present day conditions of biological diversity within a river basin level and the past conditions in the absence of anthropogenic impacts within a river basin level.⁶⁵⁸

Achievement of the ecological objectives of the Directive is one of the key aspects for enhancing the sustainability of water resources. Moreover, the WFD obligates the member states to designate and make a register of protected areas.⁶⁵⁹ This model recognizes the management of water systems, which had received little or no attention in the conventional Union water laws. Water resources under the category of surface or groundwater are given special protection; such areas are designated for: the use of human consumption; protection of economically significant aquatic species; recreational importance; their nutrient sensitivity; and the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natural 2000 sites.⁶⁶⁰

Designation of protected areas protects water from pollution or human-induced pressures. This enhances the availability of water resources by reducing the cost of water treatment; for instance, in England and Wales, water pollution is one of the causes that increase the cost of treatment.⁶⁶¹ As the

⁶⁵⁵ Jesper Andersen, Daniel Conley and Søren Hedal, ‘Palaeoecology, reference conditions and classification of ecological status: the EU Water Framework Directive in practice’(2004) 49 *Marine Pollution Bulletin*, 283–90.

⁶⁵⁶ *ibid.*

⁶⁵⁷ H Jekel, ‘Sustainable water management in Europe –the Water Framework Directive’ (2005) 46 *NATO Science Series*, 12–127.

⁶⁵⁸ Martin Griffiths, *The European Water Framework Directive: an approach to integrated river basin management*(European Water Association 2002).

⁶⁵⁹ WFD, article 6.

⁶⁶⁰ *ibid.*, Annex IV.

⁶⁶¹ National Audit Office, *Tackling diffuse pollution in England*(July 2010), 4–5<www.nao.org.uk/publications/1011/water_quality.aspx>accessed 6 September 2011.

water resources are exposed to human pressures, it may be unsafe for habitats or species that need special protection. The environmental objectives of protected areas are the same as those for surface water and groundwater, unless the member state concerned adopts stringent standards and objectives. The same deadline for river basin planning and implementation applies to the protected areas as for other categories of river basins, unless the Community legislation specifies a special period,⁶⁶² or the state is granted an extension due to exceptional circumstances.⁶⁶³

Land-use practices have impacts on the quantity and quality of water resources.⁶⁶⁴ Adapting activities that demand water quantity to that of available water resources remains problematic – this suggests the need to introduce land-use regulation that takes into account the context of the water body.⁶⁶⁵ As land uses are unregulated, this exacerbates threats to water security.⁶⁶⁶ Regulated and planned land use enhances the efficiency of water use. It helps to mitigate water allocation and to balance land use with the available water resources.⁶⁶⁷ The implication of land use on water efficiency suggests pushing the boundaries of the conventional thinking which attempts to regulate water resources through water policies and law separately. In the EU, ‘more than 90% of the RBMPs [river basin management plans] assessed indicate that agriculture is a significant pressure in the basin, including diffuse or point source pollution by organic matter, nutrients, pesticides and hydromorphological impacts’.⁶⁶⁸ However, the RBMPs developed by the member states do not accommodate determined measures to address agriculture land-use pressures.⁶⁶⁹ This suggests land-use management is a key to the sustainability of water.

4.3.1.5 Pollution regulation

In addition to water quantity challenges, a situation of water scarcity can also arise from water quality failures due to diffuse or point source pollutions.⁶⁷⁰ These reduce the availability of safe

⁶⁶²WFD, article 4(1) (c).

⁶⁶³WFD, article 4

⁶⁶⁴ ibid.

⁶⁶⁵ ibid.

⁶⁶⁶ ibid.

⁶⁶⁷ European Commission(n 498).

⁶⁶⁸ European Commission (n 497) 12.

⁶⁶⁹ ibid

⁶⁷⁰European Commission, ‘Water scarcity and droughts in the European Union’(last updated 21 September 2012).

water.⁶⁷¹ Pollution is one of the human-induced causes that affects the sustainability of water resources in the world.⁶⁷² It increases the cost of water treatment and puts constraints on availability of water.⁶⁷³ As water pollution and pressures impacting on water quality are minimized, the availability of clean water resources is increased for human and non-human consumption.

Water law is progressive in the EU.⁶⁷⁴ Pre-WFD, the water law established rules that regulated pollutant emissions and human waste water discharge.⁶⁷⁵ Before the introduction of the EU's WFD, a range of fragmented laws had been adopted to regulate diffuse and point source pollution. The WFD may be seen as a key instrument of the IWRM that introduced comprehensive pollution control mechanisms. To achieve the objectives of water quality, the WFD accommodated rules regulating both point and diffuse sources of pollution.⁶⁷⁶ Concerning point source surface water pollution, the legislation requires member states to ensure the protection of water from pollution by controlling emissions and setting environmental quality standards for pollutants, which limit their discharge, with periodic reviews and updates.⁶⁷⁷ The emission controls must be carried out by adopting the best available techniques that are available on the market, and a technology that is cost-efficient.⁶⁷⁸ By 2008, the EU identified thirty-three chemical substances, in addition to eight chemical substances previously identified under past water laws, to be regulated in terms of their discharge levels.⁶⁷⁹ Moreover, each effluent discharger must act according to the terms and obligations of their discharge permit certificate. The Directive also enforces control of diffuse source water pollution that emanates from the uncontrolled use of fertilizers, pesticides and other pollutants through adopting best agricultural practices, input control and land-use management.⁶⁸⁰ However, the assessment report

⁶⁷¹ European Commission (n 633).

⁶⁷²⁶⁷² United Nations Department of Economic and Social Affairs, *International decade for action: water for life 2005-2015* (2012).

⁶⁷³ National Audit Office (n 661) 4–5.

⁶⁷⁴ David Aubin and Frédéric Varone, 'European Water Policy. A path towards an integrated resource management' (2002) *EUWARENESS*, 7–9.

⁶⁷⁵ *ibid.*

⁶⁷⁶ Environmental Quality Standards Directive, article 10 (1); (3) (g).

⁶⁷⁷ *ibid.*

⁶⁷⁸ *ibid.*, articles 10 and 16.

⁶⁷⁹ *ibid.*, articles 4, 10, 11 and 16 and Annexes V, VIII, IX and X of the directive addressing chemical pollution; Directive 2008/105/EC of 16 December 2008 establishing environmental quality standards for the 33 first priority substances.

⁶⁸⁰ Environmental Quality Standards Directive, article 10(3) (h) and Annex V.

on industrial pollution implementation success, carried out in 2012, indicated that there were too many permits that had emission limit values that were not in line with best available techniques.⁶⁸¹

Despite the WFD obliging water bodies to achieve a ‘good’ chemical status, the chemical status of a considerable number of water bodies is unknown.⁶⁸² In the EU, around 40 per cent of surface water bodies are of unknown chemical status.⁶⁸³ In some member states, more than 50 per cent of their water bodies’ chemical status is unknown, and chemical monitoring is insufficient in many other states.⁶⁸⁴ The monitoring and assessment of chemical status remains inefficient in a considerable number of member states.⁶⁸⁵ There are significant pollution pressures within the EU and, often, implementation is a key challenging factor in many water bodies.⁶⁸⁶ Around 38 per cent and 22 per cent of water bodies in the EU are still under threat of point and diffuse pollution, respectively.⁶⁸⁷ The pollution regulation rules fail to bring about the effective protection of water resources. More than 90 per cent of the RBMPs assessed within the EU indicated that agriculture is a significant pressure in the basin, including contributing to diffuse or point source pollution.⁶⁸⁸ However, in general, the RBMPs do not accommodate determined action upon these pressures.⁶⁸⁹ The implementation of the Nitrates Directive is relatively advanced in the old EU member states, but significantly less in those that have joined the EU since 2004.⁶⁹⁰ Furthermore, the Nitrate Directive is variably applied within old and new member states.⁶⁹¹ The implication is that existing laws to regulate diffuse pollution need the robust actions of all member states.

⁶⁸¹ European Commission, Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC) River Basin Management Plans (Text with EEA relevance) {SWD(2012) 379 final, 10.

⁶⁸² *ibid.*

⁶⁸³ *ibid.*, 7.

⁶⁸⁴ *ibid.*, 7.

⁶⁸⁵ *ibid.*

⁶⁸⁶ *ibid.*

⁶⁸⁷ *ibid.*

⁶⁸⁸ *ibid.*

⁶⁸⁹ *ibid.*

⁶⁹⁰ *Ibid.*, 10.

⁶⁹¹ *ibid.*

4.3.2 Collaboration in WRM

4.3.2.1 Introduction of the river basin management approach

At the EU level, there was no water law designed to manage transboundary water resources between member states before the adoption of the WFD. The laws and organizational structures were administrative boundary-oriented and fragmented, other than the ones that had been governed by the treaties agreed between states sharing a water body.⁶⁹² The EU WFD has brought considerable change in the conventional WRM organizational structural architecture of the EU; it places WRM at the river basin boundary level.⁶⁹³ Through the river basin arrangement, the WFD has arguably brought WRM into the limits of the natural geographical and hydrological unit-watershed boundary. The river basin is a system of natural resource pools, where water resources are interconnected with the land and related resources. It is a physical unit, with various interactions and competing interests that put pressure on the water environment. These rationales, under the EU WFD, have shaped the traditional administrative boundary-oriented WRM towards a watershed-oriented WRM. Upon completion of the first cycle of the WFD implementation period, however, the river basin approach was criticized for its inability to accommodate local needs in the planning process of water resources.⁶⁹⁴

Markedly, river basin-based water resources planning and management were contested for their failure to accommodate ‘local issues and locally planned action’.⁶⁹⁵ It is believed that the EU river basin management approach ‘shifted the main responsibility for local water issues from the municipal level to the regional or supra-regional levels’.⁶⁹⁶ However, the WFD stresses the necessity to involve ‘different decision-making levels that influence water resources and water status be it local, regional or national, for an effective management of all waters’.⁶⁹⁷ This Directive considers the possibility of involving the levels below and beyond the river basin in WRM. The WFD underlines that the ‘success of this

⁶⁹² Jans and Vedder (n 546) 348.

⁶⁹³ *ibid.*

⁶⁹⁴ Damian Crilly, ‘The catchment based approach –pilot phase’ (CIWEM, Catchment Delivery Conference, London, 23 November 2011).

⁶⁹⁵ *ibid.*

⁶⁹⁶ Ingela Andersson, Mona Petersson and Jerker Jarsjö, ‘Impacts of the European Water Framework Directive on local-level water management: case study Oxunda catchment/Sweden’ (2011) 29(1) *Land Use Policy*, 73–82.

⁶⁹⁷ WFD, preamble.

Directive relies on close cooperation and coherent action at Community, Member State and local level'.⁶⁹⁸

Water resources planning and management at the river basin stage may not mean that all WRM needs to be handled by a single river basin institution. Instead, it favours the establishment of a competent authority which facilitates coordinated WRM. Similarly, the WFD emphasizes that member states must take measures related to WRM and pollution control 'as close as possible to the locations where water is affected or used'.⁶⁹⁹ The levels of water resource decision-making can be decided case by case; however, it must be at the closest appropriate level to handle the specific water challenge. The idea of cooperation in the WFD assumes the necessity of multilevel governance, through vertical links between the levels affecting water resources, and horizontal links between the countries sharing a water body. No one single institutional arrangement can effectively manage all water resource problems. The competent authority facilitates the coordinated WRM; and for this purpose, each member state must designate or establish a competent authority responsible for coordinating the implementation of obligations which are stipulated under the WFD.⁷⁰⁰

Upon the planning and management of water resources, each member state must consider the implications beyond its national boundary limits. Through this orientation, the WFD harmonizes the water policy and law of member states. They are expected to manage water resources on the geographic boundary of their water drainage area coverage, which can vary among river basins. Arguably, the whole river basin area's coverage can be managed in coordination, as if within the national administrative boundary demarcation. Under the WFD, water classified as 'good' or in a non-deterioration status is not judged simply by considering the river basin status within each member state's national jurisdiction. Pollution, water over-use or degradation of the aquatic environment by one of the states sharing a basin may affect all other states. An individual state's success in shared WRM may not resolve the degradation of water resources, unless all riparian states engage in coordinated management and water resource use. The WFD therefore imposes the obligation on member states to manage shared water through coordination.⁷⁰¹

⁶⁹⁸ *ibid*, preamble para.14.

⁶⁹⁹ *ibid*, preamble, 13.

⁷⁰⁰ *ibid*, articles 3(1) and (2).

⁷⁰¹ *ibid*, articles 3 and 13.

Across Europe, there are 64 transboundary water bodies that connect member states or non-member states.⁷⁰² The EU shares many transboundary river basins with non-member states. The problems may be more complex when the water resources are shared with a non-EU member state. In instances where a river basin crosses a boundary of a non-EU member state, the EU member state's obligation is to endeavour to secure cooperation through bilateral agreements.⁷⁰³ Such cooperation is increasingly dependent on the willingness of the non-EU member state and the nature of their agreement. Regarding water resources shared between member states, the political boundary demarcation is of little concern in shared WRM between such member states. The obligation of cooperation in shared WRM between member states is relatively strict, in comparison with cooperation with non-member states.⁷⁰⁴ The member states must cooperate with each other in designating river basins and assigning competent authorities.⁷⁰⁵ This obligation is indispensable in the enhancement of integrated water resources protection and development.

Arguably, EU hydro-politics has created a new geographic decision-making level that stands independent of administrative boundaries. Both internationally, and with regard to water resources shared between member states, the failure of cooperation between states that share a river basin may not be an excuse to implement a WFD obligation, and a member state may implement this obligation within its administrative boundary of coverage, a sub-unit of a river basin.⁷⁰⁶ To this end, the Directive requires member states to identify the river basin's national, regional or international level, and set up appropriate administrative structures for its governance.⁷⁰⁷ The EU WFD hence requires each member state to establish the river basin district within its own jurisdiction, or via a coordinated management for the water bodies that transcend national boundaries.⁷⁰⁸

⁷⁰² Wolf (n 143) 404–08.

⁷⁰³ WFD, article 3(4).

⁷⁰⁴ *ibid.*

⁷⁰⁵ *ibid.*

⁷⁰⁶ *ibid.*, article 3(5).

⁷⁰⁷ *ibid.*, articles 3(2), 3(3) 3(4) and 3(5).

⁷⁰⁸ *ibid.*

4.3.2.2 Stakeholder involvement in the WFD

Participation is a key tool that gives the public the opportunity to challenge the fairness of development projects accommodating social equity, environmental sustainability and economic efficiency concerns.⁷⁰⁹ The WFD underlines how the success of sustainability of water resources depends on participatory decision-making.⁷¹⁰ It provides two classes of participants in river basin management: interested parties and the public.⁷¹¹ The Directive does not give a definition that assists in identifying interested parties from the members of the public; however, the WFD's CIS uses 'broad public' as the term for the public or general public, defining the concept as 'members of the public with only a limited interest in the issue concerned and influence on its outcome'.⁷¹² This definition adds further confusion by defining 'the public' on the basis of 'a limited interest' in the issue.⁷¹³

To avoid this vagueness, the CIS provides general guidelines to help when selecting stakeholders. These factors include: the specific issue concerning water management, which the stakeholder represents; stakeholder involvement as part of a government body; users and victims of possible measures; capacity of engagement of stakeholders; and stakeholders' representation in political, social and environmental contexts.⁷¹⁴ Similarly, the Aarhus Convention defines 'public' as 'one or more natural or legal persons and, in accordance with national legislation or practice, their associations, organisations or groups'.⁷¹⁵ It comprises any persons, natural or legal, or groups, organizations or associations that can be determined only through national legislation or practice.

The Aarhus Convention defines 'public concerned' as 'the public affected or likely to be affected by, or having an interest in the environmental decision-making'.⁷¹⁶ This description considers non-governmental organizations promoting environmental protection and any person meeting

⁷⁰⁹Aarhus Convention (n 335).

⁷¹⁰WFD, preamble para.14.

⁷¹¹ibid, article 14.

⁷¹²EU (n 334).

⁷¹³ibid.

⁷¹⁴ibid.

⁷¹⁵Aarhus Convention (n 335) article 2(4).

⁷¹⁶ibid, article 2(5).

requirements set under a given national law as an organization or person with an interest.⁷¹⁷ However, the above definition does not provide a detailed description of the roles of participants. Generally, the concept of participation refers to those public ‘activities that are more or less directly...aimed at influencing... the actions’ that a government takes in its decision-making process.⁷¹⁸ From the IWRM point of view, public participation is an action of the public or stakeholder taken to influence the decision-making of a competent authority. It is not ‘ceremonial’ or simply to ‘support’ a government agenda; instead, it is aimed at challenging water resources decisions.⁷¹⁹

Commonly, stakeholder selection and participation is based on people and organizations that have a stake in their socio-economic development and environmental protection.⁷²⁰ The philosophical underpinning for participation of the stakeholder is that participation must contribute to balancing the diverse environmental, economic and social interests, and so enhance sustainable water resources utilization.⁷²¹ Under the CIS, all stakeholders are divided into professionals, authorities, local groups, non-professional organized entities and individual citizens, farmers and companies.⁷²² Under the WFD, each member state has an obligation to encourage the active involvement of all interested parties in the implementation of the Directive and the development of RBMPs.⁷²³ The involvement of stakeholders may start from the initial planning to the overall implementation process. The level of their involvement is not limited and is at the discretion of member states. Once they have been identified, stakeholders are involved throughout the implementation process; however, the WFD does not set out the specific roles that interested parties are expected to play. Rather, the vague term of ‘active involvement’ is used and it is not specified how such active involvement is practically reflected. The CIS document discloses that interested parties’ involvement is limited to an advisory role.⁷²⁴

⁷¹⁷ibid.

⁷¹⁸Sydney Verba and Norman Nie, *Participation in America: political democracy and social equality* (University of Chicago Press 1987) 2–8.

⁷¹⁹ibid.

⁷²⁰ibid.

⁷²¹European Commission, Environment, introduction to the new EU Water Framework Directive (last updated 23 February 2012).

⁷²²EU (n 334).

⁷²³WFD, article 14.

⁷²⁴EU (n 334).

In the case of public participation, member states are obliged to ensure that competent bodies inform and consult the public, including water users, regarding the timetable and work programme for the production of RBMPs and updates.⁷²⁵ To this end, each member state must publish and make available draft river basin plans and, before these are finalized, they are required to gain opinions and comments from the general public. This suggests that participatory resource management can be meaningful in the water resources governance only if governments release accurate, timely and usable information to the public. The scope of participation is limited to providing written comments and opinions on the draft river basin plan and its update documents.⁷²⁶ Public participation is limited to information provision or consultation regarding river basin planning. It is unclear whether potential participants are involved in other implementation processes. The obligation of the member state is limited and soft;⁷²⁷ member states can implement as they see fit, using subsidiarity, and can give interested parties a stronger role if they wish. The WFD's CIS document extends the scope of consultation to the provision of written comments, possibly including dialogues with the public in workshops and in a wide range of meetings.⁷²⁸ The CIS suggests public participation to allow people to influence the outcome of plans and the working process.⁷²⁹

4.4 Conclusion of chapter

This chapter makes an assessment of the extent to which the key features of an effective management system for water resources are reflected in the EU's water policy and law. The discussion in this chapter has revealed the genesis and development of the WRM regime in the EU, and has also indicated the significant intervention of the EU in the development of water policy and law.

The WFD is a piece of legislation that has the potential to enhance sustainability of water resources in the EU. It can be seen as comprehensive, accommodating many of IWRM features. The WFD sets out an overall framework for water management in the EU, and the main tools that it has designed for its implementation are the RBMPs and their associated programme of measures. Likewise, the EU introduced the CIS to minimize the incoherent implementation of the WFD throughout member states'

⁷²⁵ WFD, article 14.

⁷²⁶ *ibid.*

⁷²⁷ *ibid.*; see also EU (n 334).

⁷²⁸ EU (n 334).

⁷²⁹ *ibid.*

water bodies. The drought in 2003 also initiated more concerns surrounding water politics; this can be observed from the introduction of water policy options for drought and water scarcity. In 2007, the European Commission adopted a Communication on water scarcity and droughts, which accommodates water policy options. It sets out the priorities for managing water scarcity and drought challenges. The Communication, which is supportive of the WFD, was accompanied by three follow-up reports to indicate achievements and yearly progress.

The review in this chapter identified those key features of an effective management system for water resources that are reflected in the EU's WFD and soft laws. These key features include: taking account of the context of specific water resource threats; water quality protection; reasonable water abstraction; water demand and supply management; integration; water cost internalization; subsidiarity; participation; collaboration and the CIS. Clearly, these key features and the RBMP activities within the EU have triggered the member states into bringing substantial reforms in WRM. However, its ultimate success will depend on the extent of implementation. The investigation of these key implementation features in this chapter suggests that the outcomes within member states are mixed; some member states perform better than others.

Over the last three decades, the EU as a supranational body has adopted a range of water resources policy and law that aim to reform WRMPs. In the EU, water law development is progressive and can be divided into three generations. Many of the first and second generation water laws were focused on quality issues. They were characterized by providing standards for different types of water use, controlling industrial emissions and regulating human waste water discharges, with the objective of protecting market distortion and ensuring public health. At these two stages, whilst the EU provided binding water legislation concerned with the regulation of quality problems, the level of the EU's intervention in WRM was not significant enough to address the current water sustainability challenges; that is, the scope of intervention was too narrow to manage multifaceted water security challenges. The range of key features of an effective WRM system, which was mapped out in Chapters Two and Three of this thesis, was not reflected within these stages of the water law. The water policy and law were fragmented, and water quality protection measures lay within administrative boundaries, unless there were treaties that governed shared WRM.

Subsequently, the EU has revised the water law and has attempted to reflect in it some of the key features of an effective WRMP. More specifically, in 2000 the EU introduced the WFD, a more progressive and comprehensive directive than its predecessors. While quality regulation has been a core part of EU water law since the 1970s, the WFD introduced an overall objective that the member states needed to achieve a ‘good’ status in all water bodies. The WFD affects water quantity but is principally about quality: it provides rules on water pollution regulations from different sources; from point source pollution regulation through to emissions regulation and the use of best available techniques; for diffuse pollution awareness creation schemes; chemical use control; and expanding best agricultural practices. It also obligates member states to designate protected areas regarding water resources that are used for particular purposes. Nevertheless, the key features controlling water quality challenges – that is, the ‘full compliance’ to the WFD’s pollution protection rules – has not been achieved; implementation is therefore a key challenge within the EU.

Good status is not just about pollution affecting the quality of water, but it is also about flow and ecology and morphology. However, the WFD does not provide a definition for ‘flow’ – which must be sufficient to enable good status – and it instead puts into place water abstraction control. The WFD incorporates a rule that regulates the off-take of quantities of groundwater. Upon water abstraction, the member states must take into account a long-term average water recharge level for groundwater, in order to regulate over-abstraction. The practices within member states suggest that water abstraction regulation is inefficient. There is an over-estimation problem in existing water bodies, which opens the way for over-abstraction. The legislation also aims to protect healthy water ecosystems and the sustainability of water resources. It intends to control human impacts on the water and its ecosystem. Achieving good status under the WFD requires good ecological status, but practices indicate that agricultural land-use management remains a problem within the EU in terms of water resources sustainability. Ultimately, the RBMPs do not address agricultural land-use pressures effectively.

As a market instrument, the WFD introduced a rule for water pricing. However, the full cost-recovery aspiration was weakened by incorporating the vague requirement ‘to take into account the principle of recovery of cost’; thereby giving too much room for discretion for each member state. Some progressive states may use effective water pricing, whereas others may not; and implementation of cost internalization varies within shared river basins. The discussion in this chapter on water pricing rule implementations has also shown that cost internalization has not materialized effectively. The

notion 'water services' is interpreted differently within member states, by the exclusion of regulation of major water consuming sectors. Since many member states have failed to transpose the WFD effectively, the Commission has taken its own actions for non-compliance and has referred each case to the European Court of Justice.

Another key feature under WFD is participation. Upon RBMP preparations, the WFD requires the participation of stakeholders as a crucial tool in WRM. Under the WFD, the scope of participation is limited to providing written comments and opinions on the draft RBMPs. The WFD's CIS document extends the scope of consultation to the provision of written comments. The CIS suggests public participation to allow people to influence the outcome of plans and the working process. However, it is unclear whether potential participants are actually involved in the implementation processes. Likewise, the participatory implementation was criticized for its inability to address local needs in the process of RBMP development.

Generally, in early water policy, the water resource problems were seen as administrative boundary-oriented. As the environmental policies discussed in this chapter reveal, WRM policies allow decision-making at the lowest appropriate level unless the mandate is exclusively given to the EU level. In principle, decision-making is determined on a case-by-case basis. The EU discharges the mandates that are exclusively given to it. In most cases, determining the level best suited for water resources decision-making is left to the respective member state. Water as a medium of the environment shares the same approach to management. One of the basic shifts brought by the WFD within the EU was that the water resources should no longer be administered along political or administrative boundaries alone; rather, the management plans were set out and implemented on the boundaries of river basins. The WFD obliges member states to manage water resources at the river basin level in a coordinated fashion, in both transboundary and non-transboundary water bodies, although different levels are involved in WRM. The RBMP is used as a tool to address water resource challenges across a basin, and allows water resources to be managed on different scales in a coordinated fashion. This also suggests that enhancing water security may not be achieved through an isolated, fragmented and incoherent management system within political boundaries; although, when designing the institutional arrangements, the context of the country or region to which such institutional arrangements are introduced may need to be taken into account.

Chapter Five: The WRM system in England

5.1 Introduction

The EU WFD sets a target to achieve at least ‘good status’ in all water bodies by 2015, while in some cases the achievement of good status may be delayed until 2021 or 2027. The WFD includes requirements for both RBMPs and stakeholders in water planning. The WFD stipulates that ‘Member States shall encourage the active involvement of all interested parties in the implementation of this Directive, in particular in the production, review and updating of the river basin management plans’.⁷³⁰ Interested parties are defined as ‘any person, group or organization with an interest or “stake” in an issue, either because they will be directly affected or because they may have some influence on its outcome...Essential to active involvement is the potential for participants to influence the process’.⁷³¹ The EU member states were also expected to transpose the WFD into their water law and implement its programme measures within a defined period of time. In the UK, the EUWFD obligation to set out RBMPs was implemented by the Water Environment (WFD England and Wales) Regulations 2003. This suggests that the WFD is also part and parcel of England’s water law.

In Chapter Four, discussion of the EU water law focused on examination of the part of the WFD which uses the RBMPs as a key tool. The RBMPs provide the framework to understand and manage water security pressures in an integrated way.⁷³² They are decisive devices for protecting and improving the water environment to meet the good status objective under WFD.⁷³³ The RBMPs were published for the water bodies of England and Wales in December 2009. The publication showed that 26 per cent of water bodies in England and Wales were at ‘good’ status, and set out measures proposed to bring improvement to 32 per cent by 2015.⁷³⁴

⁷³⁰WFD, article 14(1).

⁷³¹European Commission, *The Common Implementation Strategy guidance document on participation* (EC 2003) 10–11.

⁷³² Angling Trust, RSPB and WWF: ‘Protecting the UK’s rivers’ (parliamentary briefing, November 2014) 1 <http://assests.wwf.org.uk/downloads/rbmp_parliamentary-briefing.pdf>.

⁷³³DWI and Environment Agency, *Joint Drinking Water Inspectorate and Environment Agency guidance: the contribution of the water supply (water quality) regulations to the implementation of the Water Framework Directive in England & Wales* (18 June 2012) 6.

⁷³⁴ Angling Trust et al. (n 732) 1.

WRM and water services are two different concerns. The former is concerned with water resource issues such as water quantity, quality and ecosystem. On the other hand, water services management is related to water provision services. Despite these two issues being governed by different areas of law, the management systems share common features in supporting the sustainability of water. In England, about 10 per cent of freshwater resources are abstracted (excluding abstraction to support power generation), although there are variations in the level of withdrawals in different parts of the country.⁷³⁵ For instance, in south-east and eastern England, more than 22 per cent of water resources are abstracted.⁷³⁶ From this amount, almost half per cent is abstracted by the water companies.⁷³⁷ This demonstrates that a high percentage of total consumption is delivered by the water companies. In England and Wales, water companies abstract almost half of the total amount taken from non-tidal waters.⁷³⁸ The water companies are also major dischargers. They set out the services and improvements they intend to provide for better sewage treatment and to reduce the impact of water abstraction.⁷³⁹ Accordingly, the water companies play a most important role in river basin management planning under the WFD, since they are vertically integrated and are major abstractors and dischargers. They are counted amongst the crucial stakeholders in delivering the necessary improvements in water bodies within the RBMP programmes of measures; they are involved ‘in the management and protection of the water environment’;⁷⁴⁰ and they play a significant role in WFD implementation.⁷⁴¹ This chapter discusses what the service providers are doing to enhance the sustainability of water. More specifically, the chapter investigates the roles of the water companies and in this context, assesses the extent to which the key features of an effective WRM system are reflected in England’s water policy and law.

With these objectives in mind, the themes of the chapter are organized into three main sections. To understand the context of water resources in England, the first section assesses the availability of such resources. The section reviews the natural availability of water and the human-induced factors affecting the security of water. In the second section, the traditional water services provision

⁷³⁵ Environment Agency (n 117) 5.

⁷³⁶ *ibid.*, 9

⁷³⁷ *ibid.*, 7

⁷³⁸ *ibid.*

⁷³⁹ Environment Agency, *The Water Framework Directive and Planning: initial advice to planning authorities in England and Wales* (February 2006).

⁷⁴⁰ DWI and Environment Agency (n 733).

⁷⁴¹ Environment Agency (n 739).

institutional arrangements are investigated to explore the development of WRM law. The third section assesses contemporary water services and resource management institutional arrangements. Finally, inferences are drawn to form a conclusion on the extent to which the key features of an effective WRM system are reflected in English water policy and law.

5.2 WRM institutional arrangements in England

5.2.1 Water resources availability and human pressures in England

The UK – a union of England, Wales, Scotland and Northern Ireland – is one of the EU member states. The jurisdiction over matters in the UK is characterized by a ‘centralized unitary state although there has been devolution of jurisdictions’ with regard to different issues since 1998.⁷⁴² Under the devolution framework, key matters are reserved for handling by the central government, while others are transferred to the Assembly of Wales/Northern Ireland and the Scottish Parliament.⁷⁴³ The devolution of power, however, is not given to the same degree in Scotland, Northern Ireland or Wales;⁷⁴⁴ for instance, there was more devolution in Scotland compared with other administrations.⁷⁴⁵ In England there is no devolution over its arrangements except for some devolution to the Greater London area. The UK government is responsible for all England’s issues.⁷⁴⁶

⁷⁴² Sarah Hendry, ‘Water resources management and protection in the UK’ in Mariachiara Alberton and Francesco Palermo(eds),*Environmental Protection in Multi-layered Systems Comparative Study from Water Sector* (Martinus Nijhoff Publishers 2012) 409 <<https://books.google.com>> accessed 28 November 2012; see also Northern Inland Act 1998, c.47, Scotland Act 1998, c.46, Government of Wales Act 1998, c.38, Government of Wales Act 2006.

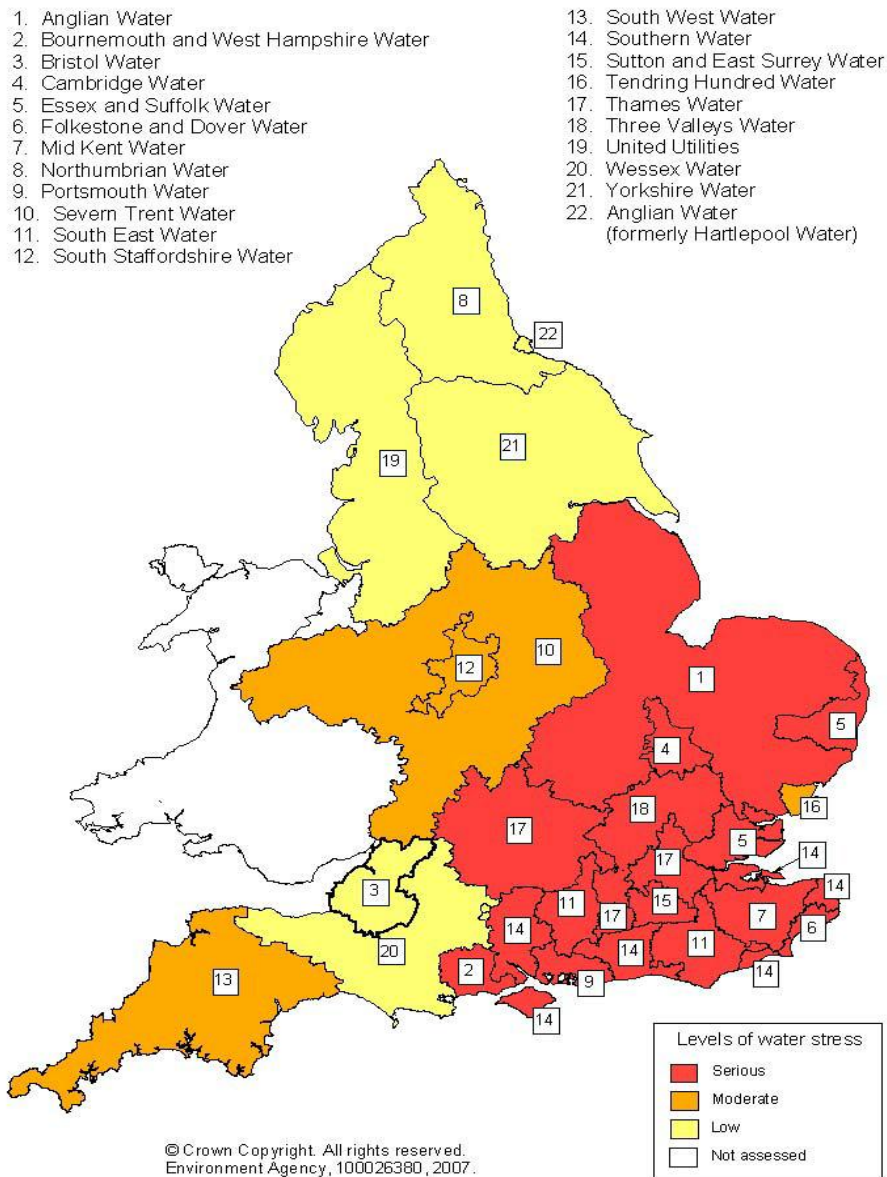
⁷⁴³ Helen Holden, ‘The UK devolved legislatures: some comparisons between their powers and work’, House of Commons Library (last updated 2007) 4 and 5 <www.parliament.uk/business/publications/research/>accessed 24 November 2012.

⁷⁴⁴ Elin Royles, ‘Intergovernmental relationships: Wales and the UK, politics cymru’ (2011). Retrieved November 2012 <www.polticscynru.com/en/cat2/article2/> last accessed 4 September 2013.

⁷⁴⁵ Hendry (n 742) 409–10.

⁷⁴⁶ *ibid.*

Map 2⁷⁴⁷



⁷⁴⁷ Environment Agency, Areas of water stress: final classification (2007) p.4
<https://www.iwight.com/azservices/documents/2782-FE1-Areas-of-Water-Stress.pdf> accessed on 16 February 2016

England is not immune from water security challenges. Map 2 shows that most of south-east and eastern England suffers from serious water stress. Among water stress zones, the Thames, Southern Water, Cambridge Water, Portsmouth Water and Mid Kent Water are mentionable. Parts of the south west and a number of central England's regions are designated as under 'moderate' water stress. These parts of England might need responsive solutions. The map also informs us that only a small number of water zones are under low water stress.

In 2013, each water body was re-designated based on the status of its available water.⁷⁴⁸ This resource zone water stress classification explains how Thames Water, Southern Water and some other areas are now under serious water stress.⁷⁴⁹ Water resources are not evenly distributed throughout England.⁷⁵⁰ The country is characterized by a very wet west and a drier eastern half of the country.⁷⁵¹ For instance, the Thames River basin district is one of the driest river basins in the UK, and its rainfall level is below the national average.⁷⁵² The river basin suffers from severe water shortages, particularly in dry or drought periods. In addition to uneven distribution and drought problems in England, water bodies are exposed to human-induced pressures.⁷⁵³

In England, human-induced water pressures come from over-abstraction and pollution.⁷⁵⁴ For instance, in the Thames River basin district during drought periods, approximately 80 percent of its water flow is abstracted.⁷⁵⁵ The human-induced water quality failures are caused by point and diffuse pollution sources.⁷⁵⁶ Point source pollution can be handled by using regulatory mechanisms that shape the behaviour of firms, industries and people. Point source pollution control is believed to be

⁷⁴⁸ Environment Agency and Natural Resources Wales, *Water stressed areas – final classification* (July 2013) 6.

⁷⁴⁹ *ibid.*

⁷⁵⁰ Clare Johnson and Jhon Handmer, 'Water supply in England and Wales: whose responsibility is it when things go wrong?' (2002) 14 *Water Policy*, 347–48.

⁷⁵¹ Malcolm Newson, *Land water and development: sustainable management of water systems* (2^{ed} edn, Routledge 1997) 294.

⁷⁵² *ibid.*

⁷⁵³ Defra, *Water for life: water and natural environment* (Defra, 8 December 2011).

⁷⁵⁴ *ibid.*

⁷⁵⁵ Environment agency (n 748) 35

⁷⁵⁶ The Comptroller and Auditor General Environment Agency, *Tackling diffuse water pollution in England*, 8 July 2010.

more effective in comparison with the management of diffuse pollution.⁷⁵⁷ As the categories indicate, diffuse source pollution comes from diverse unidentifiable sources, whereas point source comes from a specific, identifiable source that can be easily traced. Diffuse pollution comes from diverse sites of land use, particularly from agricultural purposes. Diffuse source pollution is challenging to regulate, as it is due to the cumulative effect of pollution arising from day-to-day activities over a large area and from not one source. No one farmer is responsible, and many are committed to protecting and enhancing the environment.⁷⁵⁸ It is not easy to manage by government regulation; its sources are difficult to find; and it requires a huge expense to manage the problem.⁷⁵⁹ Diffuse pollution is one of the major threats to water quality in England;⁷⁶⁰ it may deteriorate groundwater quality; create long-term water reduction; and increase the costs of the drinking water supply in England.⁷⁶¹

Another cause for water shortfalls is an increase in the number of the population. In England, the increase in population adds extra demand for water. For instance, in England and Wales since 1970, there has been a 30percent increase in the number of households.⁷⁶² By 2016, an increase in extra households is projected that will lead to a significant rise in water demand.⁷⁶³ It is expected that two million new homes will be constructed to meet such population increases; within this number, approximately 375,000 homes will be constructed in the Thames River basin district, where water resources are already under stress.⁷⁶⁴ Based on present groundwater assessments, the Thames River basin district groundwater is fully exploited throughout its watershed.⁷⁶⁵ The UK Water White Paper describes how water resources are already under pressure; there is likely to be less water available for people, businesses and the environment.⁷⁶⁶ In future, water shortages will not be limited to the south and east of England;⁷⁶⁷ rather, it is likely that there will be water resource shortages in the other parts of the country.

⁷⁵⁷ Defra, 'Diffuse pollution in water' (page last modified 24 January 2012).

⁷⁵⁸ *ibid.*

⁷⁵⁹ *ibid.*

⁷⁶⁰ *ibid.*

⁷⁶¹ M Knapp, 'Diffuse pollution threats to groundwater: a UK water company perspective' (2005) 38 *Quarterly Journal of Engineering Geology and Hydrology*, 39–51.

⁷⁶² Department for Communities and Local Government and Defra, *Water efficiency in new buildings* (2007).

⁷⁶³ *ibid.*

⁷⁶⁴ Environment Agency (n 748) 9.

⁷⁶⁵ *ibid.* 9.

⁷⁶⁶ Defra, Water White Paper, 8 December 2011.

⁷⁶⁷ *ibid.*

5.2.2 Traditional WRMPs

5.2.2.1 Fragmented and decentralized WRM

The WRM in England is not a new trend. There have been considerable developments in WRM policy and legal frameworks since the early nineteenth century. However, the evolution of water utilities' management law has not shown straightforward development from public to private, or from private to public, control. Historically, late eighteenth and early nineteenth centuries, the water industries were predominantly owned by private firms.⁷⁶⁸ In 1831 and 1832, during the Industrial Revolution, a massive epidemic of cholera broke out in Britain in major industrial cities.⁷⁶⁹ Many people, particularly the urban poor, were exposed to dangers to their health.

At the time, it was difficult to hold anyone responsible. There was confusion in finding out the main source of the problem and thus making it liable, whether this was a factory or a city, with regard to the pollution of streams.⁷⁷⁰ This disastrous social problem, coupled with a lack of accountability, attracted Edwin Chadwick to undertake a study. The study subsequently showed that environmental deterioration and poor sanitation were responsible for the ongoing social and health problems.⁷⁷¹ Chadwick's study also proposed that central government should take responsibility for ensuring a healthy environment, and that a single local administrative body should be responsible for water supplies, sewerage and other related sanitation issues and problems.⁷⁷²

Subsequently, the Public Health Act 1848, which emphasized social and environmental concerns, was introduced; and the taking over of private sector water supplies by the municipalities was justified on the grounds of public health.⁷⁷³ Through this law, the elected local boards were entrusted

⁷⁶⁸ William Maloney and Jeremy Richard, *Managing policy change in Britain: the politics of water* (Edinburgh University Press 1995) 7.

⁷⁶⁹ Elizabeth Fee and Theodore Brown, 'Public Health Act of 1948' (November 2005) 83(1) *Bulletin of the World Health Organization*, 866–67.

⁷⁷⁰ *ibid.*

⁷⁷¹ *ibid.*

⁷⁷² *ibid.*

⁷⁷³ Greg Barrett and Margaret Wallace, 'An institutional economics perspective: the impact of water providing on water conservation in England and Australia' (2011) 25 *Water Resources Management*, 1328.

with a range of responsibilities within their districts.⁷⁷⁴ At this stage, it seemed the government lacked confidence in private water firms to be able to make a greater contribution to the social problems. Through public health initiatives, almost 81 per cent of the water industry was brought under the control of local authorities by 1905.⁷⁷⁵ The public sectors dominated water service provision from the mid-nineteenth century. However, this Public Health Act was not successful. The noted cause for its failure was the lack of ‘effective means of monitoring pollution and specialized mechanism for enforcement of the law’.⁷⁷⁶

5.2.2.2 Commencement of integration

The Local Government Act of 1858 was introduced and extended the authority of local boards to construct sewerage works outside their districts if that was deemed necessary for appropriate sewerage removal.⁷⁷⁷ This law interconnected the localities. In 1945, the Water Act further introduced the rule that called for the amalgamation of scattered and inefficient statutory or non-statutory water undertakings through mergers, either with the consent of the firms or compulsorily.⁷⁷⁸ Through this Water Act, the ‘statutory water undertakers’, consisting of local authorities and the statutory water companies, undertook the responsibility to supply water.⁷⁷⁹ At this stage, the mandates for local authorities to provide water originated from different legislation, and this lacked coherence. In addition to this, a lack of ministerial supervision to ensure proper implementation of this water law also made it unsuccessful.⁷⁸⁰

It was found that the water supply facilities were too small and fragmented and, being more decentralized, were more susceptible to insecure water supplies.⁷⁸¹ More fragmented water service facilities lead to unbalanced water utilization, which is unsustainable.⁷⁸² At the time, the scattered water sectors failed to provide improved water for the growing demands.⁷⁸³ One aim of the water firms’ mergers was to interconnect the water service of one locality with another. The unwise use of

⁷⁷⁴ William Howarth and Donald McGillivray, *Water pollution and water quality law* (Shaw & Sons 2001) 70.

⁷⁷⁵ Barrett and Wallace (n 773) 1328.

⁷⁷⁶ *ibid*

⁷⁷⁷ Howarth and McGillivray (n 774) 72.

⁷⁷⁸ The Water Act 1945, ss.8,9.

⁷⁷⁹ Howarth and McGillivray(n 774) 80.

⁷⁸⁰ *ibid*, 81.

⁷⁸¹ Nigel Arnell, ‘Climate change and water resources in Britain’ (1998) 39*Climate Change*, 84.

⁷⁸² Mitchell (n 400) 1338.

⁷⁸³ Barrett and Wallace(n 773) 1328.

water by a given group or individual had impacts on other water resource users. In addition, development of efficient water resources needed efficient water facilities and, operationally, it was not easy to regulate fragmented water facilities. The Act introduced a bigger supply zone to water services through merging the small utilities.

The problem with the water industries' merger was that it lacked a definition for large and efficient water services localities. However, the small utilities merger to establish a bigger supply zone did not mean a cross-basin transfer, although the Act did not stipulate the scope of the merger.

Until the enactment of the River Board Act 1948, water pollution concerns were managed in a fragmented manner. In the case of inter-county rivers, each county council might be involved in regulating pollution within its district, but this did not provide assurance of the protection against water pollution.⁷⁸⁴ This necessitated in reducing the number of local authorities by replacing them with river boards. Through the River Board Act, responsibility was conferred to the river boards to control pollution at the watershed of the river.⁷⁸⁵

The Water Act 1963 brought further reform within the water industry. Through this Act, the primary responsibility for water services was assigned to the 29 river authorities and local authorities, private companies and the Water Resources Board.⁷⁸⁶ The Minister of Public Health and the Minister of Housing and Local Government were jointly entrusted with policy matters regarding the proper use of water resources and their conservation.⁷⁸⁷ The Act entrusted the river authorities with the power to handle the regulatory functions of both water supply and sewerage facilities, whereas local authorities were made responsible for the operational aspects of water supply and sewerage, although private companies remained as operators of water supply facilities. Meanwhile, the Water Resources Board was entrusted with the responsibility of advising central government and the main water agencies.⁷⁸⁸

⁷⁸⁴ *ibid*, 83.

⁷⁸⁵ *ibid*, 84.

⁷⁸⁶ Water Act 1963, C.38.

⁷⁸⁷ *ibid*.

⁷⁸⁸ Johnson and Handmer (n 750) 349.

5.2.2.3 Introduction of watershed boundary-oriented water utilities management

Before the introduction of the Water Act 1973 in England and Wales, there were 29 river authorities; 98 different water undertakings, including 64 local authorities; 101 joint water boards consisting of groupings of local authorities and 33 private statutory water supply companies, with over 1,300 county boroughs and county district councils; and 24 joint sewerage boards that were involved in water and sewerage management.⁷⁸⁹ The wide distribution of water resource responsibilities led to the over- or under-utilization of water resources, and this endangered the security of water.⁷⁹⁰ Along with the intention of integrating these fragmented water and sewerage organizations and functions, the Water Act 1973 also brought more consolidation and reorganization of the structures.⁷⁹¹ It established ten regional water authorities and entrusted these with diverse regulatory and operational functions.⁷⁹² The Act allowed local authorities to work as agents for the regional water authorities.⁷⁹³ The new organizational structure has been characterized as changing the administrative boundaries and localized water supply and sewerage systems into a regionalized, river basin boundary-oriented approach.⁷⁹⁴

This Act brought two noble developments with regard to WRM: firstly, it reduced its administrative fragmentation; and secondly, it introduced WRM within watershed boundary demarcations.⁷⁹⁵ However, the legislation was criticized for conferring a broad range of regulatory and operational functions: '[t]o the extent, the fundamental problem of conflicts of interests was recognized in the 1973 Act.'⁷⁹⁶ The regional water authorities were 'abstractors and dischargers, regulation enforcers and service providers, polluters and environmental guardians'.⁷⁹⁷ Because of this, regional water authorities were characterized as being both a 'poacher and gamekeeper', which made it difficult for them to act properly. Whilst regionalization has been a beneficial approach in minimizing the fragmentation of WRM, it might have undermined local concerns. For instance, with water regionalization, the local authorities and river authorities lost their responsibilities. Subsequently, the

⁷⁸⁹ Howarth and McGillivray (n 774) 80–95.

⁷⁹⁰ Mitchell (n 403) 1340.

⁷⁹¹ Barrett and Wallace (n 773) 1328.

⁷⁹² *ibid.*

⁷⁹³ Water Act 1973 s.15(1).

⁷⁹⁴ Jans and Vedder (n 546) 42, 348–49.

⁷⁹⁵ Howarth and McGillivray (n 774) 94.

⁷⁹⁶ *ibid.*

⁷⁹⁷ Johnson and Handmer (n 750) 349.

Water Act 1989 divided regulatory responsibilities and the water supply and sewerage services. It then entrusted regulatory responsibilities to the National River Authority, and the water and sewerage services to private water companies.⁷⁹⁸ The water companies have a statutory duty to maintain adequate supplies of wholesome water, whereas regulatory functions are entrusted to various government institutions.⁷⁹⁹

5.2.3 Introduction of water utilities divestiture and sustainable approaches

5.2.3.1 Utilities divestiture

In England, upon the full divestiture of the water industry in 1989, the transfer of the water industry was criticized for being driven by ideology rather than the aim of enhancing water security.⁸⁰⁰ The transfer of ten public regional water authorities through divestiture (sale of assets) was grounded in the idea that the private sector would be more efficient – that private companies would be better able to finance the large investments needed – and divestiture would create competition. There was also a perception that divestiture might assist to mobilize private capital when the government was facing a budget shortage.

The paradox, however, is that competitiveness is restricted because water supply is a natural monopoly. Likewise, inter-basin water transfers have environmental and political consequences, and pumping water is expensive relative to its unit price; so usually, it is not economically sensible. Private water companies could not therefore have the room for competition. The water sector was under a natural monopoly during public and private controls, and divestiture did not bring a change to this monopoly. Because of this, the water sector divestiture has been characterized under the idiom of ‘Thatcherism’. For instance, Hassan notes that the drives for water sector divestiture were for both ideological and economic reasons.⁸⁰¹

Another problem following water utility divestiture was that public participation became limited. It was argued that information that was once available to the public was transferred to the private

⁷⁹⁸ Water Act 1989, s.15.

⁷⁹⁹ Water Industry Act 1991, s.2, s.6, ss.67–68(1A), ss.77–78; see also Environment Act 1991 s.4.

⁸⁰⁰ Maloney and Richard (n 768) 55–110.

⁸⁰¹ John Hassan, *A History of Water in modern England and Wales* (Manchester University Press 1998) 176.

companies and handled by them. Moreover, water divestiture is blamed for giving water companies the opportunity to limit information and reduce the involvement of consumers.⁸⁰² On the other hand, supporters justify water divestiture by citing state failure, water scarcity and the lack of capital to provide secure water to its users.⁸⁰³ The future may not be the same as the past, and new institutional arrangements are required to develop strategies to enhance the security of water.⁸⁰⁴ Divestiture was viewed as a tool to enhance the security of water and to improve the water supply for growing water demands. A water industry owned by the public is highly subsidized by tax, rather than a fair cost that reflects its services.⁸⁰⁵ Although the private companies are not primarily aiming for social equity, the internalization of water costs is seen as enhancing water security.

For instance, England's 1989 water divestiture has been justified on the following grounds. First, the difficulty in financing an improved quality of water to a growing number of people, and the obligation of EU member states to comply with the high quality standards of drinking water, were factors that contributed to the full divestiture of the water industry.⁸⁰⁶ Second, as Bakker also notes, the regional water authorities were incapable of providing the expected improved quality of water supply and sewerage management. Public-owned water utilities were challenged by limited budgets, the inability to raise capital and competing government priorities. Third, the ageing water and waste water infrastructures could neither meet the growing demands, nor comply with the commitment of the new water quality standards that the country was expected to meet.⁸⁰⁷ The argument of Bakker hence highlights the problem of water cost-internationalization challenges. However, this does not mean that public water utility ownership is free. For instance, the water utilities in Scotland are in a public system, but the water services are not free. In England, there is full cost-recovery for piped water services, leaving aside a resource cost. There are separate charging schemes that provide cross-subsidy to enhance affordability. The water and sewerage undertakers are obliged to accommodate social tariffs; they reduce charges for individuals who would otherwise have difficulty in paying their full water services costs.⁸⁰⁸ This demonstrates that England's water laws clearly allow cross-subsidy

⁸⁰² Barrett and Wallace (n 773) 1326.

⁸⁰³ Karen Bakker, 'From state to market? Water merchandization in Spain' (2002) 34 *Environment and Planning A*, 772.

⁸⁰⁴ Arnell (n781) 106.

⁸⁰⁵ Bakker (n 803) 770.

⁸⁰⁶ *ibid.*

⁸⁰⁷ Johnson and Handmer (n 750) 351–52.

⁸⁰⁸ Flood and Water Management Act 2010 s.44; see also Water Industry Act 1991 s.143.

in the water cost-internalization process, although they do not allow for a direct subsidy from taxation.

Debates for and against water divestiture have shown powerful arguments on both sides. However, demanding to exploit water resources as free resources, or without paying fair prices, may take us back to the tragedy of the commons.⁸⁰⁹ On the other hand, it may be unwise to develop a framework that considers water resources as a purely commercial commodity, governed by market forces such as demand and supply. If water resources are a pure commodity, their access depends upon the capacity to pay, and the water service payments would hence depend on the willingness to pay.

5.2.3.2 Separation of regulatory and utilities service provision

The private water industry may not want to manage demand; so, to reduce demand would increase the cost of the water supply, thus reducing revenue.⁸¹⁰ As water is exposed to ‘state failure’, it is also equally exposed to ‘market failure’.⁸¹¹ Neither water divestiture nor public control is a panacea for sustaining water resources. In such contexts, the key concerns are how to mediate and strike a balance to ensure the security of water resources in both public and private water services companies. This leads to questions of how the economic, social and environmental issues are reflected in the institutional arrangements of WRM, and how they are regulated upon fully privatizing the water industry in England.

This necessitates an evaluation of how the regulatory and operational responsibilities were allocated after the full divestiture of the water industry, and how the private water industry would be controlled to mitigate overriding commercial interests. It was noted by Howarth and McGillivray that primarily, and to ‘a great extent, underfunding and lack of competitiveness were perceived to be the problems and private sector styles of management were perceived to be solutions’.⁸¹² As discussed elsewhere, the regional water authorities were entrusted with both regulatory and water services responsibilities under the 1973 Water Act;⁸¹³ but these responsibilities were conflicting in their nature.

⁸⁰⁹Hardin (n 145)1243–48.

⁸¹⁰Barrett and Wallace(n 773) 1326.

⁸¹¹Karen Bakker, ‘A political ecology of water privatization’ (2003) 70 *Studies in Political Ecology*, 40.

⁸¹²Howarth and McGillivray (n 774) 98.

⁸¹³Lester Hunt, Edward Lynk, ‘Privatization and efficiency in the UK water industry: an empirical analysis’ (2009) 57(3)*Oxford Bulletin of Economics and Statistics*.

In 1986, a full water industry divestiture agenda was sought.⁸¹⁴ The White Paper prepared for this purpose stated that divestiture would encourage the water services companies ‘to compete effectively in fields where they can do so. Where this is not practical the government’s aim is to introduce a system of regulation which will stimulate a competitive approach. Profit is a more effective incentive than Government controls’.⁸¹⁵ Initially, privatization was sought to include the regulatory functions of WRM. In response to the proposal of the privatization of the water industries, a fear was subsequently expressed regarding the regulatory aspects.⁸¹⁶ In relation to this fear, Howarth contends that ‘[a]lthough integrated management of the water cycle within the public sector had allowed water utilities to undertake full control over water supply, sewerage treatment and a diverse range of other water functions, the model rise to disquiet when applied a entity privatized water industry’.⁸¹⁷ In addition to the concerns of law enforcement, the designation of regulatory functions to the private sector was feared to generate a possible conflict of interests.⁸¹⁸

Moreover, objections were raised regarding regulation of the aquatic environments that were of significance to European Community interests, and the private sector’s capacity to act as a ‘competent authority’ to implement the EU directives.⁸¹⁹ Subsequently, the operational and regulatory functions were separated, and regulatory functions remained under government organizations, whereas operational utility functions were transferred through divestiture.⁸²⁰ As a consequence, WRM functions were divided into two parts: the water supply and sewerage services on the one hand, and regulatory and law enforcement functions on the other.⁸²¹ After that, the regulatory functions remained under public control, and diverse statutory regulatory bodies were established to mitigate conflicting interests, whereas the water and sewerage services became fully privatized.⁸²² This reform brought a clear separation between regulatory and operational functions, whilst favouring full divestiture of the water utility sector with strong public control.

⁸¹⁴Department of Environment White Paper, February 1986.

⁸¹⁵ibid.

⁸¹⁶Department of Environment Consultation Paper, July 1987.

⁸¹⁷ William Howarth, *The law of the National River Authority* (National Rivers Authority and the Centre for Law in Rural Areas, University College of Wales, Aberystwyth, 1990) 2.

⁸¹⁸ibid.

⁸¹⁹ ibid, 98.

⁸²⁰ibid.

⁸²¹ibid.

⁸²² ibid 97.

5.2.4 The roles of regulatory bodies, water undertakers and other stakeholders in WRM

To protect consumers and the environment from overriding monopolized economic interests and to ensure sustainable water resource utilization, a diverse range of regulatory mechanisms were designed to control the functions of the private water and sewerage companies in England. The major bodies involved in the management include the water undertaker, the Secretary of State for the Department for Environment, Food and Rural Affairs (Defra), the Environment Agency, the Water Services Regulation Authority (WSRA), the Drinking Water Inspectorate (DWI) and the Consumer Council for Water (CCWater). The roles of these organizations and institutional arrangements are indispensable and supportive, because a weakness in any institution or organization may affect the sustainability of water.

Particularly, in the WRMP preparation, publication and implementation stages, Defra, the water resource regulators and other stakeholders shape the plan into an efficient system to secure water resources in England. Even in Scotland, where water services remain within the public water sector, the regulatory framework is similar to that of England. For instance, the Water Industry Commission of Scotland acts as an economic regulator, the Drinking Water Regulator acts as a water quality watchdog, and the Environment Agency regulates the environmental aspects of water companies.⁸²³ The implication is that the nature of the water supply controlled by the public may not be guaranteed a proper WRM in the absence of appropriate regulatory schemes. As there is tragedy in unregulated water services in private utilities, there is tragedy also in unregulated public utilities.

5.2.4.1 The water undertakers

5.2.4.1.1 Water abstraction and discharges

As for other water users, the abstraction regime also applies to the water companies. When water companies abstract water from their resource zones, they have statutory obligations to comply with. All water undertakers must comply with the terms of water abstraction in their licences.⁸²⁴ Regarding

⁸²³ Ofwat, 'Water today, water tomorrow', <www.ofwat.gov.uk/pricereview/pr14/customer/> accessed on 8 November 2012.

⁸²⁴ Water Resources Act 1991, chapter II part II.

water conservation, the water undertakers have a statutory duty to conserve water⁸²⁵ and to promote the efficient use of water by its customers.⁸²⁶ A water undertaker reviews the impacts of its water abstraction and discusses Natura 2000 sites with the Environment Agency.⁸²⁷ Water undertakers also have the obligation to protect against the impacts of water abstraction on biodiversity.⁸²⁸ They have a statutory obligation to restrict or ban specific water uses, which they supply temporarily when there is a drought.⁸²⁹

5.2.4.1.2 Developing long-term WRMPs

The WRMPs are key tools to secure the long-term resilience of water undertakers' supply systems, since they help the undertakers to take steps for the purpose of enabling them to meet, in the long term, the need for the supply of water to consumers. As the plans accommodate a range of measures to manage water resources in sustainable ways, and to increase efficiency in the use of water and reduce its demand so as to reduce pressure on water resources, they provide key tools for the implementation of RBMP ideals. They are crucial in controlling pressures on the water resources. This reflects how the WRMPs are relevant to both water resources planning and to water security.

On the other hand, as elsewhere discussed, the water companies in England are private commercial bodies that, alongside water supply duties, are allowed to organize their affairs to secure a 'fair return' upon capital investment, subject to the scrutiny of prices by the WSRA Ofwat (Office of Water Services). This commercial context for meeting public obligations is a key operational aspect of England's privatized water structure. Under the Water Industry Act 1991, water companies have a statutory duty to maintain adequate supplies of wholesome water for purposes such as drinking, cooking or food preparation, or for use in premises in which food is produced.⁸³⁰ To meet this duty,

⁸²⁵ Water Industry Act 1991, s.3(2).

⁸²⁶ Water Industry Act 1991, s.93A.

⁸²⁷ Conservation of Habitats and Species Regulation 2010, article 9(5).

⁸²⁸ Natural Environment and Rural Communities Act 2006, s.40.

⁸²⁹ Water Industry Act 1991, s.76.

⁸³⁰ Water Industry Act 1991, s.6; s.68(1A); see also Water Act 2003, ss.101(1), 105(3), sch.8 para.18(3); SI2005/2714, article 3(c)(with sch. para.8); Water Supply (Water Quality) Regulations 2000 no. 3184, article 4(1).

the water undertakers are expected to develop an efficient and economic system for water supplies.⁸³¹ They must comply with the conditions set out upon their appointments.⁸³²

As a statutory requirement, specifically, the water undertakers must prepare and publicize their WRMPs ‘to be able, and continue to be able, to meet its statutory obligation’.⁸³³ The WRMPs are the water companies’ long-term assessments indicating the vulnerability of water resources, which help companies to make sure that they can respond flexibly to future uncertainties, such as the impacts of climate change, population growth and changes in demand.⁸³⁴ The WRMPs are made through taking assessments of specific water resources zones and availability to meet the ranges of demands.⁸³⁵ The water resources zone is understood as ‘an area within which the management of water supply and demand is largely self-contained (apart from agreed bulk transfers of water)’.⁸³⁶ As their parameter, the water companies take into account schemes to meet water demand and supply balances ‘at the period during which water resources zone supply balances at their lowest’.⁸³⁷

The implication is that the water companies must prepare and maintain their WRMPs, and their strict obligation to follow suggestions that within:

the privatized water industry that exists in England and Wales, there is an intricate balance of responsibilities involved in securing that objective. The ‘options’ available to water supply companies for reducing demand and enhancing supply are far from being matters of purely discretionary commercial judgment on their part.⁸³⁸

Through a WRMP, the water companies should show ‘how they intend to maintain the balance between demand for water and its supply’.⁸³⁹ Private water companies should predict the availability of water and ensure a sustainable water supply.⁸⁴⁰ The WRMP is considered as the main scheme for regulating water security challenges in England.⁸⁴¹ Generally, the water companies are expected to

⁸³¹ Water Industry Act 1991, s.37(1).

⁸³² Water Industry Act 1991, s.6(2).

⁸³³ Water Act 2003 s.62, which interpolated ss.37A–D in the Water Industry Act 1991.

⁸³⁴ Defra, Ofwat, Environment Agency and Llywodraeth Cymru Welsh Government, *Water resources planning guidance: principles for developing a water resources management plan* (June 2012) 8.

⁸³⁵ *ibid.*, 12.

⁸³⁶ *ibid.*

⁸³⁷ *ibid.*

⁸³⁸ Howarth (n 69) 358.

⁸³⁹ Environment Agency, Defra, Welsh Government and Ofwat, *Water resources planning guidelines* (interim update, October 2012) 2 <www.environment-agency.gov.uk/waterplans> accessed 20 October 2012.

⁸⁴⁰ *ibid.*

⁸⁴¹ Howarth (n 69).

use a ‘twin-track’ approach, which encompasses diverse options from both demand and supply management schemes, such as leakage management, water metering, infrastructure development, recycling, desalination and establishing interconnections within the water company’s water resources zone and beyond its geographic boundary demarcation.⁸⁴²

In 2007, the Water Resources Management Plan Direction introduced detailed rules, which specified that a WRM should address the following: demand and supply forecast in relation to climate change; implications of population growth on water demand in its supply area; restrictions on, or prohibition of, water supplies during drought periods; and water metering.⁸⁴³ Moreover, the water companies are obliged to prepare a drought plan to complement their WRMP.⁸⁴⁴ This Plan accommodates the options and measures that water companies consider for short-term water availability challenges when there is a drought,⁸⁴⁵ and includes temporary measures that they use to prohibit or restrict specific water uses.⁸⁴⁶ The water undertakers are also obliged to provide reasons for their choice of specific measures among others.⁸⁴⁷

In its WRMP, a water undertaker estimates the quantity of water required to meet water demands; the measures to take, or to continue to take, for water supply purposes; the timing for implementing the specified measures; and other concerns specified by the Secretary of State.⁸⁴⁸ The water undertakers ‘consider all options for meeting their supply and demand balance when preparing water resources management plans, opportunities for trading water, or other cross boundary solutions’.⁸⁴⁹ In the beginning, the water company lists all the options for its water resources zone to meet the demand for the planned period, including water deficit or surplus. In particular, a water company identifies unconstrained lists of options, then feasible lists and then, finally, it must determine preferred lists of options to supply secure water for the planned period.⁸⁵⁰ The preferred options are used as the ‘final

⁸⁴²Environment Agency, *Water resources planning guidelines: the guiding principles for developing a water resources plan*(July 2012).

⁸⁴³ The Water Resources Management Plan Direction 2007.

⁸⁴⁴Environment Agency(n 842).

⁸⁴⁵Water Industry Act 1991, s.76;see also Environment Agency (n 842).

⁸⁴⁶*ibid.*

⁸⁴⁷ The Water Resources Management Plan Direction 2007,s.3.

⁸⁴⁸ Water Industry Act 1991, s.37A (3).

⁸⁴⁹Defra (n 766) 46.

⁸⁵⁰Environment Agency et al. (n 839) 128–30.

planning solution' for a specific water resources zone.⁸⁵¹ This option should then be justified economically, socially and environmentally.⁸⁵²

Upon preparing the water resources plan, the water companies pass through a long process consisting of 18 stages.⁸⁵³ Further details on the consultation process and requirements were introduced under the Water Resources Management Plan Regulations 2007.⁸⁵⁴ In the early stages of the WRMP preparation, the water undertaker must consult the Environment Agency, the WSRA, the Secretary of State and licensed water suppliers.⁸⁵⁵ The regulatory bodies, policy providers and the Secretary of State play advisory roles at this stage to shape the WRMP. The water undertakers also obtain directions on any matter, as well as a prescription on the format and the issues that should be included in the WRMPs from the Secretary of State.⁸⁵⁶

Once the water companies finish the draft plan, they state whether any information contained in the draft document is, or might be, commercially confidential, and they send it to the Secretary of State to determine the exclusions.⁸⁵⁷ The Secretary of State then decides on the matters that are commercial or confidential and any information that they consider may affect national interest if it is publicized.⁸⁵⁸ Afterwards, the water undertaker publishes the draft plan in the way prescribed by the Secretary of State or, if there is no such prescription, brings it to the attention of those persons likely to be affected by inviting representations.⁸⁵⁹

Following this, a water undertaker provides a statement of reply to the representations, and it may amend its draft plan accordingly. However, in the instances when the Secretary of State is dissatisfied with regard to a draft plan meeting the criteria, this may result in an inquiry or public hearing.⁸⁶⁰ Finally, after incorporating the issues raised from publication of the draft plan and

⁸⁵¹ *ibid*, 131–32.

⁸⁵² *ibid*, 132.

⁸⁵³ Environment Agency(n 842).

⁸⁵⁴ Water Resources Management Plan Regulations 2007 (SI 2007/727), Regulation 5.

⁸⁵⁵ Water Industry Act 1991, s.37A(8).

⁸⁵⁶ Water Industry Act 1991, ss.37A–D.

⁸⁵⁷ Water Industry Act 1991, s.37B(1)(a).

⁸⁵⁸ Water Industry Act 1991, s.37B (2) and (10).

⁸⁵⁹ Water Industry Act 1991, s.37B(3).

⁸⁶⁰ Water Industry Act 1991, s.37B (5), (6).

complying with any directions given by the Secretary of State, through obtaining permission from the Secretary of State, the water undertaker publishes the final version of its WRMP.⁸⁶¹

Obtaining permission and publishing the WRMP are considered as an indication that a company has met its statutory requirements in preparing and maintaining a WRMP.⁸⁶² However, the preparation of this plan may not be an end to securing water resources availability. It is increasingly dependent upon the implementation of the plan by the water undertakers and other stakeholders. The water regimes do not provide clear statutory obligations regarding meeting water sustainability objectives that are enforceable against water companies, except in the procedural requirement to develop a WRMP. Howarth records his reservations on the implementation of the water resources plan as follows:

The approach that has been provided for is entirely procedural in character and it should be noted that having a plan in place, by itself, does nothing to address water security concerns. Everything depends upon the specific implementing actions taken by water supply companies in furtherance of those plans. Much the same reservations that have been expressed about the reluctance of companies to plan for actions which are contrary to their commercial interests arise in relation to disincentives actually to undertake the actions set out in a plan. The peculiarity of the water resources planning system is that implementation of plans seems to be placed in a legal void.⁸⁶³

Once the final version of the WRMP is publicized, it is effective for the period it was prepared for. However, the WRMP may be revised before the time to which it relates expires.⁸⁶⁴ The water companies carry out a revision annually. In particular, when there is a fundamental change in the circumstances that the plan is proposing to address, the water undertaker is directed by the Secretary of State; or, if other events arise, the WRMP will be revised.⁸⁶⁵ This makes the water resources plan a flexible tool, which can be amended over and over again, with changes in the context of the water resources zone.

⁸⁶¹ Water Resources Act 1991, ss.37A and B.

⁸⁶² Howarth (n 69).

⁸⁶³ *ibid.*

⁸⁶⁴ Water Resources Act 1991, s.37 (5), (6).

⁸⁶⁵ Water Resources Act 1991, s.37.

5.2.4.2 The Department for Environment, Food and Rural Affairs

In WRM, discretion can be avoidable, since there is a range of mixed objectives that water resources regulators and governments are striving to achieve. This makes discretion critical; and while discretion itself is not problematic, its abuse can affect the sustainability of water.

Water resources abstraction in parts of England is unsustainable.⁸⁶⁶ In some parts of the country, the water stress level is moderate or serious.⁸⁶⁷ England's water policy considers intervention in water security challenges through the use of an intertwined approach; that is, water demand and supply management to achieve the sustainability of water resources whilst protecting against water quality failures.⁸⁶⁸ There are no clear schemes developed to internalize cost regarding non-drinking water usage. The WRMP's obligation is limited to drinking water. Water cost internalization is one of the instruments for the management of water demand; however, it is not effective in England since water metering is not a compulsory requirement, except in those areas where resources are in stress.⁸⁶⁹

To implement water security policy and law, Defra has a range of responsibilities within WRM. Defra delivers its responsibilities by itself or through its regulatory agencies, such as the DWI and the Environment Agency, which regulate the safety of water quality for human consumption and protect water resource environments, respectively. In principle, the authority to regulate drinking water quality rests upon the Secretary of State, but this duty is exercised through the Chief Drinking Water Inspector.⁸⁷⁰

Regulators are not political appointees that handle some politically sensitive issues in WRM; in some instances, the water resources regulators may be conferred with regulatory responsibilities with many objectives. Managing these concerns in water resources regulation needs an understanding of the diverse interests to enable a balancing of the interests involved.⁸⁷¹ The government (i.e. Defra) gives guidance and directions to the regulators and water undertakers. Through these schemes, Defra plays a mediating role 'between the water companies, consumers, regulators, politicians and the European

⁸⁶⁶Defra (n 117) 20.

⁸⁶⁷ibid.

⁸⁶⁸ ibid, 1–8.

⁸⁶⁹ibid, 26–28.

⁸⁷⁰Water Industry Act 1991, s.67 and s.77(3)–(4) and 213(4) power exercised SI 1991/2790.

⁸⁷¹ Karen Bakker, 'Water governance and water users in privatised water industry: participation in policy making and water provision; a case study of England Wales' (2005) 3(1) *International Journal of Water*, 38–40.

Union'.⁸⁷² For water companies, the provision of guidance enhances consistency and common understanding in the implementation of their statutory obligations.⁸⁷³ Defra also plays a role in auditing the water companies' capabilities of meeting emergency management.⁸⁷⁴ Defra's WRM role, therefore, must ensure the balance of the overall goals expected to enhance sustainable development.

Moreover, the Secretary of State has the statutory mandate to give policy guidance and issue directions to all the regulators. For instance, they provide policy guidance for both water undertakers and the WSRA on social tariffs to allow special treatment for those water customers who may not be able to afford to pay the cost of water services; but everyone else is charged with full cost-recovery for all the capital and operational costs.⁸⁷⁵ This role implicates that price internalization, in services provision, is not an end in itself. It aims to contribute to sustainable development.⁸⁷⁶ To make price internalization responsive, the Secretary of State provides policy guidance to the WSRA with regard to social and environmental concerns.⁸⁷⁷ The Flood and Water Resources Management Act 2010 incorporates a similar statutory obligation for Defra to perform.⁸⁷⁸ This role is closely related to the above-mentioned role with regard to issuing social and environmental guidance.⁸⁷⁹ The provision of this guidance allows the water undertakers to consider special arrangements for social groups or people who cannot afford to pay. Through this guidance, the Secretary of State shapes the delivery of the authority's water price review to contribute towards environmental and social policy aspirations.⁸⁸⁰

In principle, all water services customers are expected to pay fair prices for the water services they are obtaining.⁸⁸¹ However, in England, only 30 per cent of households' water services are fitted with meters.⁸⁸² It is believed that a 10 per cent reduction in water use has been observed by fitting water meters.⁸⁸³ At the current time, except in those areas where resources are under stress, introducing

⁸⁷² Johnson and Handmer(n750) 350.

⁸⁷³ Defra, 'Review of water resources plan process'(final report, June 2011) 6.

⁸⁷⁴ *ibid.*

⁸⁷⁵ Water Industry Act 1991, s.143.

⁸⁷⁶ Water Act 2003 s.2(3)(e).

⁸⁷⁷ Water Industry Act 1991 s.2A inserted by the Water Act 2003, ss.40, 105(3).

⁸⁷⁸ Flood and Water Resources Management Act 2010, s.44.

⁸⁷⁹ Water Industry Act 1991, s.2A inserted by the Water Act 2003, ss.40, 105(3).

⁸⁸⁰ Water Industry Act 1991,s.2A 1(b) inserted by the Water Act 2003, ss.40, 105(3).

⁸⁸¹ Water Industry Act 1991, s.2; and s.39 of the Water Act 2003, s.39

⁸⁸² Defra (n 117) 26.

⁸⁸³ *ibid.*

metering is not a compulsory requirement for water companies.⁸⁸⁴ Because of this, it is difficult to say whether water customers are paying a fair price for what they are using. There is the possibility of under- or over-payment for the water services they are receiving. This makes it doubtful whether water resources' institutional arrangements, in relation to cost internalization, are responsive enough to shape the behaviours of unwise water customers. However, the water companies pay the price for the volume of water they abstract. As one of the major water abstractors, each company pays a charge, which is volume-related, to the Environment Agency, and it will have to meter its abstraction for the Environment Agency as a license condition.

In addition to policy guidance, Defra appoints or replaces water undertakers, and they are expected to carry out their duties according to the conditions in their appointment or replacement regarding how they exercise their functions.⁸⁸⁵ The Secretary of State may pass an enforcement order to secure compliance if water companies contravene statutory or other requirements.⁸⁸⁶ The implication of this mandate is that the Secretary of State has an influential power over water companies to hold them accountable when they fail conditions set out under their appointment or statutory obligations.

In practice, however, there is no clear implication that Defra itself is involved directly in regulating the behaviours of water companies. The present Defra roles seem to tend more towards policy formulation and provision of guidance in order to direct the water regulators and companies. Direct regulatory roles are played by the water regulators. For instance, a water undertaker is a company that is appointed by the Secretary of State, or by the Director General of Ofwat with the consent or authorization of the Secretary of State, to carry out water services in specific areas.⁸⁸⁷ Once a water undertaker is appointed, its obligations emanate from the appointment document and the law.⁸⁸⁸

When water is under stress due to drought, Defra has a mandate to issue a drought order. It implements the laws and policies of WRM that relate to hosepipe bans for non-domestic water use.⁸⁸⁹ For instance, in 2010, when many parts of England experienced drought, Defra issued an order

⁸⁸⁴ *ibid* 26–28.

⁸⁸⁵ Water Resources Act 1991, ss. 6, 7, 12.

⁸⁸⁶ Water Industry Act 1991, s.18(1).

⁸⁸⁷ Water Industry Act 1991, s.6.

⁸⁸⁸ Water Industry Act 1991, s.6 (2)–(5).

⁸⁸⁹ Flood and Water Management Act 2010, s.36, (76)(3).

banning a diverse range of non-domestic water uses.⁸⁹⁰ Such an order affects both water undertakers and water users until it is lifted. They must respect the ban when they are exercising their rights and obligations.

To conserve water resources, Defra has the power to designate protected areas for water resources.⁸⁹¹ It has a mandate to protect available water resources from human-induced impacts that can lead to water quality failure. Water undertakers have an obligation to conserve water⁸⁹² and protect the water environment⁸⁹³ and biodiversity.⁸⁹⁴ When water abstractions are damaging water resources and their environment, the Secretary of State may order abstraction licences to be curtailed by the Environment Agency without any payment or compensation.⁸⁹⁵

5.2.4. 3 The Environment Agency

As its name indicates, the Environment Agency is a guardian and watchdog to ensure that water utilization does not harm the environment.⁸⁹⁶ The Environment Agency was created by the Environment Act 1995 to protect or enhance the environment and promote sustainable development'.⁸⁹⁷ The Environment Agency is conferred with responsibility to protect the environment from unregulated human actions,⁸⁹⁸ while the local authorities regulate issues designated to them to protect water quality.⁸⁹⁹ The mandate allocation has made clear the roles of the Environment Agency and the local authority. A single regulator handles the specific, regulated facilities of all activities through a single permit, if such facilities are engaged in different regulated activities. The regulators (the Environment Agency and local authority) take steps to remove the risk

⁸⁹⁰ Statutory Instruments, no. 2231, Water Industry, England and Wales, The Water Use (Temporary Bans) Order 2010.

⁸⁹¹ Water Resources Act 1991, s.87.

⁸⁹² Water Industry Act 1991, s.3(2).

⁸⁹³ *ibid.*

⁸⁹⁴ Natural Environment and Rural Communities Act 2006, s.40.

⁸⁹⁵ Water Act 2003, s.25(3).

⁸⁹⁶ Hadrian Cook, *The protection and conservation of water resources: a British perspective* (John Wiley & Sons Ltd 1998) 55.

⁸⁹⁷ Environment Act 1995, s.4.

⁸⁹⁸ Environmental Permitting (England and Wales) Regulations 2010, Part 3, Regulations 32–35.

⁸⁹⁹ *ibid.*

and charge back the cost to the operator.⁹⁰⁰ This implies that the rule allows the regulators to take early measures against regulated facilities.

The Environment Agency is entrusted with regulatory roles to ensure the sustainability of water resources, and it is required to conserve water from over-abstraction and to prevent pollution.⁹⁰¹ It regulates all persons and institutions, including water undertakers that engage in or are already involved in the abstraction of water resources. The Environment Agency has a regulatory duty to ensure that water abstractions are dealt with effectively to enhance the sustainability of water. When water abstractions are damaging to Natura 2000 sites⁹⁰² or to biodiversity,⁹⁰³ or are seriously damaging water levels, the Environment Agency may modify or revoke water abstraction licences.⁹⁰⁴ It takes measures against water abstractors ‘in the interests of greater efficiency’ with regard to the use of water resources.⁹⁰⁵

5.2.4.3.1 Responsive water allocation

Through the Water Act 2003, the Environment Agency is entrusted with a duty to enter into arrangements with permit holders to enhance the proper utilization of water resources.⁹⁰⁶ These arrangements may set the revocation or variation of water abstraction.⁹⁰⁷ This measure is invaluable in regulating the behaviour of water abstractors. The Environment Agency also takes measures necessary to limit drought problems.⁹⁰⁸ The Water Act 2003 introduced three schemes for dealing with drought situations: drought permits, ordinary drought orders and emergency drought orders.⁹⁰⁹ The drought orders from the Secretary of State and drought permits from the Environment Agency affect the water companies’ domestic water supplies differently from other abstractors.⁹¹⁰ The restrictions on water abstraction focus to non-domestic water uses, which are

⁹⁰⁰ *ibid*, part 6, Regulations 57–66.

⁹⁰¹ Water Resources Act 1991, s.19.

⁹⁰² Conservation of Natural Habitats and Species 2010, article 9(5).

⁹⁰³ Natural Environment and Rural Communities Act 2006, s.40.

⁹⁰⁴ Water Resources Act 1991 s.51 and s.52; see also Water Act 2003, s.27.

⁹⁰⁵ Water Act 2003, s.26.

⁹⁰⁶ Water Act 2003, s.28.

⁹⁰⁷ Water Act 2003, s.29(3).

⁹⁰⁸ Water Industry Act 1991, ss.77,78.

⁹⁰⁹ Water Act 2003 ss.64–65.

⁹¹⁰ Flood and Water Management Act 2010, s.36; see also the Drought Direction 2011 Para. Water Use (Temporary Bans) Order 2010.

called ‘hosepipe bans’.⁹¹¹This suggests the primacy given to the domestic water supply. The Water Act 2003 also introduced a statutory requirement for water companies to prepare, maintain and publish drought plans.⁹¹²The drought plans are crucial to both water resources planning and to water security. They set out how the Environment Agency will manage water resources for the environment and people during drought periods. It accommodates a range of actions necessary for responding against a drought. More specifically, the plans set out how a water company will continue to meet its duties to supplying water.

Developing responsive permit systems for water abstraction that may limit the over-use of water is one of the tools for sustaining water. Traditionally, in England, the water abstraction permits were designed to protect the economic interests of permit holders through a ‘first-come, first-served’ principle.⁹¹³ The water regime was designed when water resources in England were perceived to be in surplus, and the population number was considerably smaller.⁹¹⁴ In England and Wales, at present, the Environment Agency nationally administers more than 50,000 licences that are obtained by different sectors.⁹¹⁵ From this number, more than 80 per cent of these permits are without a time limit.⁹¹⁶ These licences are not sufficiently responsive to take immediate measures when water resources availability is at risk, unless compensation is paid for the permit owners or possessors,⁹¹⁷ as they grant a historic right to the permit owner or possessor. The system did not accommodate the contemporary pressing water shortage concerns.⁹¹⁸

Therefore, water law in England was traditionally based on protecting private rights, which gave perpetual rights over water to those who held permits. This system is not appropriate to respond to current water shortage problems. The Water Act of 2003 introduced a time-bound permit system.⁹¹⁹ This new system requires permits to be issued on a time-limited basis, starting from July 2012. In effect, the permit holders will no longer be entitled to claim compensation for any changes in their

⁹¹¹Flood and Water Management Act 2010, s.36.

⁹¹² Water Industry Act s.39B, as inserted by the Water Act 2003 s.63.

⁹¹³ Environment Agency (n 418).

⁹¹⁴ *ibid.*

⁹¹⁵ *ibid.*

⁹¹⁶ Anglican Water and Frontier Economics, *The main report: a right to water? Meeting the challenges of sustainable development*(February 2011).

⁹¹⁷ Environment Agency (n418).

⁹¹⁸ *ibid.*

⁹¹⁹ Water Act 2003, s.19.

water abstraction permits under the circumstances determined by law.⁹²⁰ The introduction of the new water abstraction system has many implications. Firstly, it shows that despite the water property rights of permit holders over specific volumes of water, water permits need to be seen differently from other property rights. Secondly, public interests in the environment prevail over the property rights of individual licence holders. The reform brought a shift in focus from private rights to public rights, and made it clear that water is a public good, and that there is a necessity to control water on the grounds of environmental protection.⁹²¹

The new water regime provides abstraction permits which normally expire after 12 years from their issuance with a common end date.⁹²² The Environment Agency updates permits by considering the level of water resources in the catchment at any time.⁹²³ However, the Water Act of 2003 does not fully shape the old permit system automatically. Changing this traditional permit system is due in the next Parliament, to take effect in the 2020s.⁹²⁴ Until then, the Water White Paper promises to make better use of existing tools, while attempting to handle complex contemporary water resources problems.

5.2.4.3.2 Water quality protection

Water pollution increases the cost of water treatment and constrains the availability of water.⁹²⁵ For instance, it has been estimated that water pollution alone costs England and Wales up to £1.3 billion per year.⁹²⁶ In addition to water abstraction regulation, the Environment Agency controls water pollution. Generally, water pollution comes from two sources: point and diffuse sources. The former type of pollution comes from a particular identifiable source, including factories, storm sewers or pollutant discharges in discrete sites. In contrast, diffuse source pollution comes from multiple dispersed sites.⁹²⁷ A regulatory system may not easily control diffuse pollution unlike point source

⁹²⁰Water Act 2003, s.27.

⁹²¹ Getches (n 157) 15.

⁹²² Environment Agency, *How time limits on abstraction licences work*(31 August 2010).

⁹²³ *ibid.*

⁹²⁴ ‘Water White Paper, lacks ambition and urgency, warns Environment Food and Rural Affairs Committee’, 5 July 2012.

⁹²⁵ National Audit Office(n 661) 4–5.

⁹²⁶ *ibid.*, 4.

⁹²⁷ Defra (n 763).

pollution.⁹²⁸ One measure to manage diffuse source pollution is the creation of awareness amongst farmers of the best farming practices. In England and Wales, the Catchment Sensitive Farming Project, which is voluntary in nature, is seeking to tackle agricultural diffuse pollution.⁹²⁹ In this project, the farmers are voluntarily engaged in gaining advice and receiving incentives. This approach does not use coercive regulation to tackle diffuse pollution problems; instead, it gives emphasis to actions taken at the grassroots level and integrates with other catchment delivery mechanisms. For instance, the example of the Wessex Catchment in England shows how the Catchment Sensitive Farming Project has been conducted at a very local level within small areas to control the nitrate problem.⁹³⁰ The project aims ‘a low cost, sustainable solution to the pollution of drinking water’.⁹³¹ Naturally, however, the lower level catchment (or below) is seen as appropriate to manage diffuse pollution problems.

In addition to direct pollution control and awareness creation, designations of protected zones are used to protect water resources from pollution.⁹³² The Environment Agency may ask the Secretary of State to designate areas as water protection zones.⁹³³ For instance, in 1999, a water protection zone was designated in the River Dee.⁹³⁴ Moreover, a code of good agricultural practices has been developed and is used in the protected zones.⁹³⁵

Waters are also affected by waste from different sources. Water quality failures from sewage discharges and urban waste water may be addressed by issuing standards and introducing a permit system. Discharge authorizations are referred to as ‘Environmental Permits’ in England. They set out standards to minimize the adverse effects of waste water on the receiving environment. In other words, they are the regulatory schemes for controlling waste water discharge into the environment. The waste water treatment aims to return much cleaner waste water, thereby protecting the

⁹²⁸ Environment Agency, *Diffuse source pollution* (Environment Agency 2012).

⁹²⁹ Bob Middleton, ‘Delivering outcomes catchment sensitive farming’ (CIWEM, Catchment Delivery Conference, London, 23 November 2011).

⁹³⁰ Luke de Vial, ‘Catchment management in at Wessex water emerging lessons’ (CIWEM, Catchment Delivery Conference, London, 23 November 2011).

⁹³¹ *ibid.*

⁹³² Water Resources Act 1991, ss. 92, 93, 94.

⁹³³ Water Resources Act 1991, s.87.

⁹³⁴ National Audit Office(n 671)31.

⁹³⁵ Water Resources Act 1991,s.97.

environment and human health from the adverse effects of the discharge of waste water.⁹³⁶ The Environment Agency issues discharge consent and permit systems.⁹³⁷ Through the permit system, the Environment Agency can control water quality failures, and the water companies are mainly involved in water quality management by using this scheme. The Environment Agency is entrusted with the responsibility to regulate water quality deterioration through pollution, effluent discharge or sewerage.⁹³⁸ The ten English and Welsh sewerage companies are responsible for waste water treatment from sewage, and are the main waste water treatment service providers.⁹³⁹

5.2.4.4 The Water Services Regulation Authority

Through the Water Act 1989, the Director General of Water Services was appointed by the Secretary of State.⁹⁴⁰ The Secretary of State, through the Director General (who worked as a regulatory arm for the Secretary of State), conducted the economic regulation of water services.⁹⁴¹ Subsequently, on 1 April 2006, the WSRA – a regulatory body replacing the Director General of Water Services – was established.⁹⁴²

Under an existing arrangement, the WSRA has its own board, including chairman, chief executive, two executive directors and four non-executive directors.⁹⁴³ Under the arrangements provided for by the Water Act 2003, the accountability of the regulator was transferred to the board, to oversee how the WSRA carried out its functions and effectively met its statutory requirements.⁹⁴⁴ The WSRA is a non-ministerial government department, accountable to Parliament, although it reports annually to the Secretary of State.⁹⁴⁵ While the WSRA is independent from direct ministerial department

⁹³⁶ Defra, 'Waste water treatment in the United Kingdom – 2012 implementation of the European Union Urban Waste Water Treatment Directive', 91/271/EEC (2012) 19.

⁹³⁷ Water Resources Act 1991, s.89.

⁹³⁸ Water Resources Act 1991, s.84; Environment Act 1995 ss. 2(ii), 5.

⁹³⁹ Defra (n 936) 4.

⁹⁴⁰ Water Act 1989, s. 5(1)

⁹⁴¹ Water Act 1989, ss.4–5, s.7; see also s.2(2) Water Industry Act 1991.

⁹⁴² Water Industry Act 1991 s.1A; see also s.34(1) Water Act 2003.

⁹⁴³ Ofwat, 'Protecting consumers, promoting value and safeguarding the future' <www.ofwat.gov.uk> accessed 23 November 2012.

⁹⁴⁴ *ibid.*

⁹⁴⁵ *ibid.*

control,⁹⁴⁶ it obtains the guidance of Defra with regard to social and environmental matters.⁹⁴⁷ The independence of Ofwat seems qualified to allow government to intervene in its regulatory remit, to ensure a range of interests that the government aspires to achieve from economic regulation.

5.2.4.4.1 The remit of the WSRA

Ofwat is the principal economic regulator, although it is expected to meet the requirements of the Environment Agency when setting prices. The WSRA is entrusted with many economic regulator powers and responsibilities. Amongst its main responsibilities are: protecting the interests of consumers; promoting effective competition, wherever appropriate; ensuring that the functions of water companies are properly carried out, and that the water companies are able to finance their functions by providing a reasonable rate of return on their capital; and ensuring that companies with water supply licences properly carry out their functions.⁹⁴⁸ The WSRA discharges its statutory obligation through the use of different schemes.

To regulate the costs of drinking water services, it reviews water service prices every five years and sets a maximum price and economic leakage targets, and ensures that companies provide water for a long period.⁹⁴⁹ Its regulatory functions aim for a sustainable water service delivery, with high quality water services management, and to develop innovative water industries that enhance the security of water resources.⁹⁵⁰ In particular, price setting has the following three objectives. Firstly, it ensures the sustainability of finance to provide the services; it gives an opportunity for the water companies to be inspected as to whether they have sufficient capital to run the water services.⁹⁵¹ Secondly, it protects customers from the abuse of water companies imposing unfair prices using their monopoly position.⁹⁵² Thirdly, it ensures that customers are paying a fair price to the water services as an

⁹⁴⁶ Defra, 'Statutory social and environmental guidance to the water services regulation authority (Ofwat)' (August 2008) 3 <www.defra.gov.uk> accessed 27 September 2013.

⁹⁴⁷ Water Industry Act 1991, s.2A inserted by s.40 of the Water Act 2003.

⁹⁴⁸ Water Industry Act 1991, s.2; see also s. 39 of the Water Act 2003.

⁹⁴⁹ OFWAT, The economic regulator of the water sector in England and Wales, <<http://www.ofwat.gov.uk/about-us/our-duties/>> accessed on 25 July 2015

⁹⁵⁰ Barrett and Wallace (n 773) 1330–34.

⁹⁵¹ Ofwat (n 943).

⁹⁵² Michal Gal, *The ecology of antitrust preconditions for competition law enforcement in developing countries* (New York University School of Law 2004) 22–38.

incentive to reduce water wastage.⁹⁵³ The Ofwat statutory remits are fully limited to the regulation of the water companies.

In addition to price setting, regulation by the WSRA ensures that the companies plan ahead to minimize the risk of water insecurity in their areas, and to consider how to meet challenges. Thus the regulatory functions of the Authority would seem to have the obligation to balance the interests of consumers – by regulating fair prices – and companies, by reviewing the maximum price limit for the water companies to return a fair profit that sustains their investment.

To meet the interests of both water consumers and water companies, the WSRA needs to carry out a genuine investigation of social and economic demands. In the absence of economic regulation, private water companies may focus on supply management through infrastructure development, rather than demand management. To avoid such a perception, the Authority set up leakage targets and an obligation for the companies to create awareness of valuing water. For instance, the water companies are expected to meet economic leakage targets set for 2010–2015.⁹⁵⁴ The statutory obligation, which states that ‘protecting the interests of consumers; wherever appropriate, promoting effective competition’,⁹⁵⁵ suggests that the primary aim of the Ofwat regulatory role seems more focused on protecting consumers by regulating the water companies that abuse their natural monopoly position.

5.2.4.4.2 Procedural obligation

Through the Water Act 2003, the responsibility of the water services’ economic regulator was redefined by the introduction of consumer-focused regulation. Under this Act, the interpretation of the concept of ‘consumer’ was extended to include both existing and future water users’.⁹⁵⁶ The WSRA is thus expected to consider present and future water users’ interests upon exercising its regulatory functions. Moreover, the Water Act 2003 introduced another duty that the Authority

⁹⁵³ Ofwat (n 943).

⁹⁵⁴ Ofwat, ‘Protecting consumers, promoting value and safeguarding the future’ (20 June 2008) PN 16/08.

⁹⁵⁵ Water Industry Act 1991, s.2; and s.39 of the Water Act 2003.

⁹⁵⁶ Water Industry Act 1991, s.2(4); Water Act 2003, ss.39(5), 105(3); SI2005/2005, article 2(f).

follows when exercising its economic regulatory functions – to perform regulatory functions in a manner that contributes to the achievement of sustainable development.⁹⁵⁷

With the introduction of this idea, the WSRA is obliged to take into account diverse interests, in order to achieve mixed objectives. Whenever the Authority takes regulatory measures relating to price review, it has the duty to exercise its regulatory functions in order to contribute to sustainable development, and its regulatory functions must balance economic efficiency,⁹⁵⁸ social equity (affordability and fairness)⁹⁵⁹ and environmental sustainability.⁹⁶⁰ The economic regulator itself must ensure that its primary regulatory functions are performed through a trade-off with the non-economic interests of water services. Failure to strike the balance may entail the regulatory body being held liable for its performance. In this regulatory model that has been introduced, the economic regulator must – upon setting water prices – take into account the social and environmental consequences of the price review.

The danger, however, may be that the Water Act 2003 creates overlapping regulatory objectives, which makes it difficult to hold an economic regulator accountable. There is the possibility that the WSRA may justify any of the actions it takes by referring to its mixed regulator objectives. This may create uncertainty and inconsistency in the Authority's regulatory decisions, even in similar issues. Another concern that one may observe from the regulatory functions of the Authority is the question over whose responsibility it is to ensure sustainable development. Although the inclusion of the idea of sustainable development as a principle to guide economic regulators is novel in itself, the regulator has a wide discretion to shape decisions it thinks ensure 'sustainable development'.

It is necessary to examine how statutory schemes have been designed to implement the Authority's regulatory roles in a consistent manner and what mechanisms are available on how to prioritize regulatory objectives. The Water Act 2003 imposed the duty upon the Secretary of State to issue policy guidance on social and environmental matters and to review this policy guidance to allow the

⁹⁵⁷Water Industry Act 1991, s.39 as amended by s.40(1) of the Water Act 2003.

⁹⁵⁸*ibid.*

⁹⁵⁹Water Industry Act 1991 as amended by s.39 (2C) of the Water Act 2003.

⁹⁶⁰Defra, 'Statutory social and environmental guidance to the water services regulation authority (Ofwat)' (August 2008) 8<www.gov.uk/government/organisations/department-for-environment-food-rural-affairs> accessed 8 May 2013.

WSRA to handle diverse regulatory objectives through trade-off.⁹⁶¹ This policy guidance may assist the Authority's economic regulatory remit to balance a range of competing interests. Moreover, Defra, by providing the guidance on the social and environment concerns, may determine how politically sensitive issues are to be handled by the Authority.

The WSRA must also be expected to exercise its regulatory functions by taking into account the principles of best practices and that activities should be transparent, accountable, proportionate, consistent and targeted.⁹⁶² However, there was reservation in the Authority's economic regulatory performance in following these guiding principles. For instance, the stakeholders' comment under the independent review, which had been conducted with the sponsorship of Defra, indicates that the Authority's decision-making lacked transparency; it has 'remote organisation views on the companies, often without adequate explanation, through the price control process'.⁹⁶³

5.2.4.4. 3. New development on the roles of the WSRA

On 27 June 2013, the Water Bill was introduced into the House of Commons, and received Royal Assent on 14 May 2014. The Water Act 2014 brought some significant reform to the management system of water resources in England by focusing on some specific issues. The Water Act 1991 was amended in 2014, with the driving forces for the reform being climate change, a growing population and changes in the behaviour of water customers. The Water White Paper declared the need to 'reform the aspects of the current system which institutionalize short-term thinking and make it difficult to adopt solutions which would deliver a more joined-up, resilient water resources system'.⁹⁶⁴ The Strategic Policy Statement also declared that the water law reforms needed to secure the long-term resilience of the systems (including the natural systems) on which our essential water and sewerage services rely. The water law also needed to promote action to respond effectively to pressures on the environment – including climate change, population growth and changes in behaviour, as mentioned above. The law brought change in the ways of addressing present and future

⁹⁶¹Water Industry Act 1991, s2A; see also Water Act 2003 ss.40,105(3);SI2005/968,article 2(g).

⁹⁶² Water Industry Act 1991, s2(4) and Water Act 2003, ss.39(5),105(3);SI2005/968,article 2(f).

⁹⁶³ Defra, 'Review of Ofwat and consumer representation in the water sector' (2011) 6

www.gov.uk/government/organisations/department-for-environment-food-rural-affairs>accessed 10 June 2014.

⁹⁶⁴Defra, *Updating the general duties with respect to the water industry to reflect the UK Government's resilience priorities* (Defra 2013) 1.

challenges. While the Water Act 2014 does not give a definition for the term ‘resilience’, Defra defines the notion as ‘the ability of a system to withstand shocks and continue to function’.⁹⁶⁵

Under the Water Act 2014, one key reform is the introduction of new statutory duties for Ofwat, which impose a primary duty to further the ‘resilience objective’. The Act aims to develop a resilient, sustainable and customer-focused management system for water resources. Section 2 of the Water Industry Act 1991 (the general duties with respect to the water industry) has been reformed as a primary duty to secure resilience for Ofwat. The Water Act 2014 has also reformed the regulatory responsibility of Ofwat fundamentally. The law brought resilience as a key objective of Ofwat, and this new primary duty of resilience will require Ofwat to secure the long-term resilience of the systems (including the natural systems) on which our essential water and sewerage services rely; to promote actions to respond effectively to pressures on the environment (including climate change), population growth and changes in behaviour; to ensure long-term planning (25 years) and investment; to promote measures to manage water sustainably; and to reduce demand and therefore pressure on water resources.⁹⁶⁶ This water law reform changed the duration of the WRM planning system that had tended to focus on short-term planning (that is, a five-yearly periodic planning).

5.2.4.5 The Consumer Council for Water

The Customer Service Committees were established by the Water Act 1989 with the intent of protecting consumers following the divestiture of water services in England. Each Customer Service Committee had its own chair and ten to 20 public members.⁹⁶⁷ The chair of the Committee was appointed by the Director General (Ofwat).⁹⁶⁸ The Customer Service Committees were seen as a ‘water voice’ to protect consumers.⁹⁶⁹ Their mandate emanated from the law or order of the Director General.⁹⁷⁰ The introduction of this institutional arrangement reflected the need to give consumers a voice in service provision (i.e. standards and prices).

⁹⁶⁵ *ibid.*, 2.

⁹⁶⁶ Water Act 2014, subsection (2A)(e).

⁹⁶⁷ Water Act 1989, s.6.

⁹⁶⁸ *ibid.*

⁹⁶⁹ *ibid.*

⁹⁷⁰ *ibid.*

The Customer Service Committees represented the interests of all the customers in the water supply.⁹⁷¹ As discussed elsewhere, public participation in privatized or publicly owned industries might be important for enhancing the involvement of water resource users in WRM,⁹⁷² but the Committees' functioning roles went beyond participation. The Committees, who were representing the interests of the users, became consumer guardians and privatized water industry regulators. Practically, although the Committees were not influential actors in decision-making,⁹⁷³ their functions extended to complaint hearings against water companies. This system introduced a user-oriented regulation which, it was often said, might affect the sustainability of resources by focusing on users' interests.⁹⁷⁴

Through the Water Act 2003, the Consumer Service Committees were replaced by the CCWater.⁹⁷⁵ Under the direction of the Secretary of State, the Council has the authority to establish committees for relevant water companies and to alter these if it is considered appropriate.⁹⁷⁶ The Council acts as a 'voice of water' and is a 'research-based' consumer advocacy body.⁹⁷⁷ The CCWater is entrusted with diverse functions: it establishes committees that provide advice and information on matters affecting consumers in relation to water services;⁹⁷⁸ it prepares proposals, and also provides advice and information about consumer matters to the Secretary of State;⁹⁷⁹ and it investigates complaints regarding matters which appear to affect the interests of consumers.⁹⁸⁰

In the traditional arrangement of Consumer Service Committees, there was the perception that due concern was not given to environmental aspects or economic concerns.⁹⁸¹ To avoid such misunderstandings, under the Council mandates, the Water Act 2003 introduced a new approach, which imposes upon the Council a duty to perform its obligations in accordance with the principle of 'sustainable development'.⁹⁸² With this arrangement, the CCWater has the duty to ensure sustainable

⁹⁷¹ Water Industry Act 1991, s.28.

⁹⁷² Mostert (n 330).

⁹⁷³ Bakker (n 871)42–46.

⁹⁷⁴ Hanna and Jentoft (n 350) 35–47.

⁹⁷⁵ Water Industry Act 1991(c.56), s.27A, now Water Act 2003ss. 35(1) 105 (3); SI2005 /968, articles 2(a),4(b) (with sch.para.8).

⁹⁷⁶ Water Industry Act 1991, s.27A, now s.32 (Water Act 2003).

⁹⁷⁷ Bakker (n 871) 40.

⁹⁷⁸ *ibid.*

⁹⁷⁹ Water Industry Act 1991s.27E; Water Act 2003, ss.35.

⁹⁸⁰ Water Industry Act 1991, s.29; Water Act 2003ss.46(1), 105 (3) SI2005/2714, article 2(7).

⁹⁸¹ Gill Own, 'Sustainable development duties: for UK economic regulators'(2005) 14*Utilities Policy*, 2012.

⁹⁸² Water Industry Act 1991, s. 27A(12), now the Water Act 2003 s.35.

development under its framework of decision-making, and to follow the policy guidance and directions given by the Secretary of State. The Council should take into account the present ‘consumers’ and the future water users in the areas. Through this thinking, the CCWater’s responsibility is modified to consider WRM beyond the present water consumers. Moreover, the Council is expected to consider some social groups who need special protection to enhance their access to water.⁹⁸³ It is also under the obligation to respect legal obligations; as it is under the supervision of the Secretary of State, it should therefore follow its policy guidance and directions. The Council must discharge its functions by following the government objectives of sustainable development and, at the same time, it must protect consumers’ interests. The CCWater must exercise its functions by encompassing the ideals of environmental or economic interests.

The paradox is that now, strictly speaking; the CCWater is not a body that solely protects consumer interests. Rather, it has obligations to protect economic efficiency and the sustainability of water resources. This indicates that although a primary function of the Council is motivated by consumer protection, it must also be expected to ensure protection of social, environmental and economic interests. The problems for the CCWater in implementing its functions are numerous; there are possible conflicts among these underpinning pillars. The protection of the environment requires the full internalization of costs, which will raise water prices. Arguably, the protection of consumer interests means enhanced access to clean water by limiting the increase of prices. On the other hand, sustainable development may require high quality water, which costs more to supply. The consumer protection power is under scrutiny for rendering proper judgements to ensure the sustainability of water and social equity, whilst policing water companies for consumer and economic interests. Unless there is clear policy guidance on how the Council should perform this multifaceted role, the discretion allowed enables it to make inefficient provisions, which will not enable it to realize any of its objectives. Perhaps, it may be difficult for the CCWater to know how to prioritize these incompatible objectives.

To avoid isolated consumer protection functions, the CCWater works in coordination with the WSRA and the Secretary of State.⁹⁸⁴ Through this coordination, the Council shares information to enhance the effectiveness of its functions.⁹⁸⁵ The Water Act 2003 imposes an obligation that requires

⁹⁸³ Water Industry Act 1991, s.27(c), s.27B(1), Water Act 2003, s.35.

⁹⁸⁴ Water Industry Act 1991, s.27B(1) now the Water Act 2003, s.35.

⁹⁸⁵ *ibid.*

the Council to enter into a memorandum of understanding with the above-mentioned regulatory and policy-making bodies.⁹⁸⁶ This indicates that, although the water services regulators need to exercise their respective functions, the nature of water problems needs a coordinated approach, requiring the CCWater and the regulators to work in partnership with regard to matters common to all of them. The memorandum of understanding may help to mediate the conflict of roles within the regulatory functions.⁹⁸⁷ However, the CCWater and its predecessors are mainly concerned with price and service standards for consumers, whilst the wider aspects of regulation lie with Ofwat and the Environment Agency.

The CCWater protects consumers, but this may not necessarily be considered as participation. However, in its Price Review 2014, Ofwat introduced a new system called Consumer Challenge Groups (CCGs), with the aim of enhancing engagement with customers.⁹⁸⁸ The CCGs are drawn from local groups of customer representatives and other stakeholders.⁹⁸⁹ The members of the groups include businesses, local authority organizations representing customers with specific needs (for example, Age UK or Citizens Advice), the Environment Agency, Natural England and the DWI.⁹⁹⁰ CCGs were established with the purpose of challenging the water companies' business plans.⁹⁹¹ This new scheme enhances the customers' representatives and stakeholders powers to challenge and shape the water company's overall business plan.

5.2.4.6 The Drinking Water Inspectorate

Under the Water Industry Act of 1991, the Secretary of State has the responsibility for prescribing the standards for water that is used for different purposes.⁹⁹² Regulation of drinking water supplies is given special attention. Under the water legislation, water companies have the statutory duty to supply wholesome water for purposes such as drinking, cooking or food preparation, or for use in

⁹⁸⁶ *ibid.*

⁹⁸⁷ *ibid.*

⁹⁸⁸ CCWater, 'Customer Challenge Groups –

PR14' www.ccwater.org.uk/waterissues/pr14/ccgpr14/#sthash.IxD4ElcO.dpuf > accessed on 8 August 2015

⁹⁸⁹ *ibid.*

⁹⁹⁰ *ibid.*

⁹⁹¹ *ibid.*

⁹⁹² Industry Act 1991, s.67 and s.77(3)–(4) and 213(4) power exercised SI 1991/2790.

premises in which food is produced.⁹⁹³ The supply of a wholesome quality of water is expected when the water company supplies it to consumers.⁹⁹⁴

‘Wholesomeness’ is defined by using standards that set out how the water quality should be safe for human health.⁹⁹⁵ In particular, water for the specified human demands must not contain excessive concentrations or values of particular properties, elements, organisms or substances.⁹⁹⁶ The standards are derived from the EU Drinking Water Directive.⁹⁹⁷ The Annex under this Directive provides a detailed account of the biological, chemical and physical parameters that drinking water must fulfil.⁹⁹⁸ The EU member states are accountable for achieving their drinking water quality standards.

As mentioned, under the privatized water industry in England, the Secretary of State is entrusted with ensuring that water companies are providing wholesome drinking water.⁹⁹⁹ The Secretary of State discharges the duty of regulating drinking water quality through the DWI.¹⁰⁰⁰ The Water Act 2003 gives the authority to the Secretary of State to designate the Chief Inspector of Drinking Water.¹⁰⁰¹ At present, on behalf of the Secretary of State, the DWI has the responsibility to ensure that the water companies are meeting drinking water quality standards;¹⁰⁰² it ascertains the quality and sufficiency of drinking water supplied by them.¹⁰⁰³

Initially, the water companies themselves carry out testing to ensure that the water they are supplying complies with quality standards. Through this regulatory scheme, the water companies play a ‘self-monitoring’ role. They must make all the results of their testing available to the general public via their public record. One of the main responsibilities of the DWI is in providing reassurance about the quality of drinking water and that water companies are meeting all statutory water quality

⁹⁹³Water Industry Act 1991, ss.6, s.68(1A); Water Act 2003 ss.101(1), 105(3), sch.8 para.18(3);SI2005/2714,article 3(c)(with sch.para.8); and also Water Supply (Water Quality) Regulations 2000no. 3184, article 4(1).

⁹⁹⁴Water Industry Act, s.68 (1) (b); Water Act 2003, ss.101 (1), 105(5), sch.8 para. 18(2)(c); SI 2005/2714, article 3(c)(with sch.para.8).

⁹⁹⁵ Water Supply (Water Quality) Regulations 2000no. 3184, article 4, Annex I.

⁹⁹⁶ibid.

⁹⁹⁷ Drinking Water Directive 98/83/EC, article 4.

⁹⁹⁸ Drinking Water Directive 98/83/EC, Annex I.

⁹⁹⁹ Water Industry Act 1991, ss.67, s.69.

¹⁰⁰⁰ Water Industry Act 1991 s.86 1(b); Water Act 2003, ss.101(1),105(3);SI2004/641,article 3(m)6(with article sch.3).

¹⁰⁰¹ Water Industry Act 1991 s.86(1A) (1B); Water Act 2003, ss.57(3),105(3);SI2004/641,article 3(m)(with article 6sch.3).

¹⁰⁰²ibid.

¹⁰⁰³Water Act 2003, s.57.

obligations. Moreover, the water companies must notify the Secretary of State or the Chief Drinking Water Inspector of events may affect the quality or sufficiency of the drinking water they are supplying.¹⁰⁰⁴ The Chief Inspector investigates each event and where necessary, he or she may institute proceedings for non-compliance against the water companies.¹⁰⁰⁵

The duties imposed upon the companies with regard to drinking water indicate that they are expected to supply high quality water. This obligation requires the water companies to increase their water production costs. The high costs for the companies in supplying good quality drinking water means that the water consumers must be expected to pay a higher price for their drinking water. The companies have the obligation to internalize the water supply cost. Practically, while there is the impression that the water companies are intensely regulated, this intense regulation is heading water companies towards being ‘community mutual’ or ‘non-profit bodies’.¹⁰⁰⁶ However, economic regulation is a key tool for internalization of water costs: consumers need to pay fair prices for their water services, and to receive high quality water.¹⁰⁰⁷ Broadly speaking, the WSRA, the CCWater and the DWI share some objectives, although they have their own different mandates in protecting customers’ interests. Ultimately, they need to create a relationship that enhances the implementation of these common objectives whilst still allowing each party to discharge its responsibilities.

5.3 The roles of government and regulators in WRMPs

On the development and implementation of water resource plans, Defra, the Environment Agency and the WSRA play invaluable roles, although the responsibilities of each of them vary. Defra may direct the water companies with regard to what measures and options they may include, and format the WRMPs that are followed.¹⁰⁰⁸ In the early stages of WRMP preparation, Defra is one of the bodies that plays an advisory role with regard to the regulators.¹⁰⁰⁹ Once the water undertaker has finished a draft WRMP, Defra determines the exclusion of matters that appear commercial or

¹⁰⁰⁴Water Industry Act 1991, s.202; see also The Water Industry (Suppliers’ Information) Direction 2009, article 1(a),4(1) and 9(1).

¹⁰⁰⁵Water Act 2003, s.57.

¹⁰⁰⁶Bakker (n 871) 40.

¹⁰⁰⁷Johnson and Handmer (n 750) 357–59.

¹⁰⁰⁸Water Industry Act 1991, ss.37A–D.

¹⁰⁰⁹Water Industry Act, s.37 (8), inserted by the Water Act 2003 ss. 62, 105(3).

confidential, as well as those that might affect national security if they are publicized.¹⁰¹⁰ Following the publication of the draft WRMP, interested groups send representations to the Secretary of State and they are then forwarded to a water company.¹⁰¹¹ Defra will consider each water company's plan and statement of response to determine whether there should be a public hearing or an inquiry.¹⁰¹² The Secretary of State may direct companies to make changes or to publish a new plan.¹⁰¹³ However, the role of Defra in the implementation stage is unclear once the final version of the WRMP is published; although has a government body, the mandates of Defra shape the WRMPs to meet government policy aspirations.

The Environment Agency is involved in the WRM development process in its very early stages. At the pre-consultation stage of the draft WRMP, the Environment Agency is consulted by the water companies with regard to the substance of the plan.¹⁰¹⁴ Specifically, a water company should work closely with the Environment Agency local to the water resources zone where the plan is going to be applied.¹⁰¹⁵ The Agency provides advice to the water companies, through the water resources planning guidelines that assist water companies in being aware of what they are expected to accommodate to meet the terms of their statutory requirements for WRMP preparation and publication.¹⁰¹⁶ Following the publication of the draft WRMP, the Environment Agency may make representations regarding the substance of the plan.¹⁰¹⁷ Through this representation, the Agency challenges the water resources plan in accommodating the water resources zone context, considers the area that the plan covers, and identifies whether the plan provides appropriate predictions to ensure a balance between the needs of customers and the environment.¹⁰¹⁸ This allows the Environment Agency to play a key regulatory role in influencing water companies to take maximum care to include options that enhance the security of water resources. In particular, the Environment Agency provides advice to the Secretary of State when there is a need for the water companies to

¹⁰¹⁰ Water Industry Act, s.37 B(1) (a)

¹⁰¹¹ Water Industry Act, s.37 B(3)

¹⁰¹² Water Industry Act, s.37 B(5)–(6)

¹⁰¹³ Water Industry Act, s.37.

¹⁰¹⁴ Water Industry Act 1991, s.37 A (8)(b).

¹⁰¹⁵ Environment Agency et al. (n 839) 20.

¹⁰¹⁶ Environment Agency (n 852).

¹⁰¹⁷ Water Industry Act 1991, s.37B (3) (b).

¹⁰¹⁸ Environment Agency et al. (n 849) 20 and 33.

prepare a drought plan or a revised WRMP.¹⁰¹⁹ When the WRMP needs a hearing or inquiry, the Environment Agency represents the view of the government.¹⁰²⁰

In cases where water abstraction is damaging to the environment, the Environment Agency requires the water company ‘to find and implement solutions, and notify what changes’ are required to avoid unsustainable water abstraction.¹⁰²¹ While a pre-consultation with the Environment Agency and other regulators with regard to WRMPs is preferred, to avoid the possibility of needing a draft WRMP inquiry – which incurs more costs – providing consultancy and regulating water companies are seen as two conflicting roles.¹⁰²² The Environment Agency is both an advisor to the water companies at the pre-consultation stage, and an opponent at the inquiry stage, as well as a campaigner and regulator in WRM; these roles make its function in the WRMP confusing.¹⁰²³ The view of the water companies, as noted by Davies and Daykin, suggests that they are increasingly doubtful as to whether pre-consultation with the Environment Agency adds value to their WRMPs.¹⁰²⁴

Another regulator involved in the water resource plan development and implementation is the WSRA. Prior to the preparation of a draft WRMP, the water companies consult the WSRA.¹⁰²⁵ Through this early stage involvement, the Authority provides advice on matters that are going to be incorporated to balance water demand and supply, as per the updated water resources planning guidelines.¹⁰²⁶ Following the publication of the draft WRMP, the WSRA, as an interested regulator, may make representations to the Secretary of State, as well as challenges with regard to the content of the draft plan.¹⁰²⁷ It will scrutinize whether the WRMPs has taken into:

account the opportunities to share resources with neighbouring water companies; fully and consistently explored options to manage demand; enabled third parties to propose options to balance supply and demand and assessed these options consistently with other options; taken account of the views of customers in producing their plans; estimated fully the costs

¹⁰¹⁹ Water Industry Act 1991, s.39B 6(b) and (11).

¹⁰²⁰ Environment Agency(n 842).

¹⁰²¹ Environment Agency et al. (n 839) 40.

¹⁰²² Ann Davies and Suzie Daykin, ‘Review of water resources management plan process’ (2011) 47

www.gov.uk/government/uploads/system/uploads/attachment_data/file/69359/pb13653-water-resources-reveiw.pdf accessed 9 July 2012.

¹⁰²³ *ibid.*

¹⁰²⁴ *ibid.*, 27.

¹⁰²⁵ Water Industry Act 1991, s. 37 A (8)(b).

¹⁰²⁶ Environment Agency(n 842).

¹⁰²⁷ Water Industry Act 1991, s. 37B (3)(b).

and benefits of the range of options considered; determined the best value solutions to balance supply and demand, taking account of climate change and the need for sustainability and resilience.¹⁰²⁸

Once the final version of the WRMP is published, its implementation needs funding. At this stage, the role of the Authority is decisive. Through its price review regulatory role, the WSRA allows a water company to secure a fair return for its investment.¹⁰²⁹ In practice, however, there has been a tendency for the Authority to fail to allow the water companies to finance the measures identified and agreed with government. For instance, in 2010, an independent review commissioned by the Secretary of State for Environment, Food and Rural Affairs and Welsh Ministers assessed that the WSRA was fit for the purpose in light of future challenges.¹⁰³⁰ In this review, South East Water commented on its frustration with the Authority, and that:

Ofwat's stance was to separate itself from this process and to decide independently the best solutions. This has left a number of companies in the somewhat perplexing situation of having a WRMP signed off and agreed by the Secretary of State but unfunded in its price determination. It is unclear whether this is an issue of process or one of conflicting duties in terms of setting policy but nevertheless it is one that should not be repeated in the future price setting reviews.¹⁰³¹

In England, water leakage is one of the concerns in respect of water availability. Grekos notes that the water companies need to do more to reduce leakage and that the companies should make best use of existing resources.¹⁰³² Moreover, the UK government has set out its water security aspirations for 2030 regarding how to meet the water consumption reduction to 130 litres per person per day; and while some water companies have incorporated leakage reduction options to meet this target through their WRMPs, it was noted that 'Ofwat did not consider the outcomes as statutory obligations when it comes to funding decisions'.¹⁰³³ The inclusion of options under the WRMP itself is not guaranteed to secure water resources unless there is funding for the justified and preferred options. However, the 2014 price review process changed much of the process, in part as a response to criticisms of Ofwat.¹⁰³⁴ Similarly, the Water Act 2014 brought fundamental reform to Ofwat's duties. Ofwat has a

¹⁰²⁸Environment Agency(n 842).

¹⁰²⁹Water Industry Act 1991, s.2; see also s.39 of the Water Act 2003.

¹⁰³⁰Defra (n 964) 3.

¹⁰³¹Defra (n 964) 17.

¹⁰³²Grekos (n 98) 49.

¹⁰³³Defra (n 964) 44.

¹⁰³⁴Ofwat (n 823).

primary duty to further the ‘resilience objective’ and it must discharge its regulatory functions in a manner that develops a resilient, sustainable and customer-focused management system.¹⁰³⁵

As has been suggested by the ‘review of Ofwat and consumer representation in the water sector’, Ofwat needs to set out a sensible price review that minimizes the burden on water undertakers in carrying out the measures that they are planning for discharging their statutory obligation through the WRMP.¹⁰³⁶ Setting out detailed options within the WRMP by itself may not bring a solution to water resource problems, unless there is funding for the preferred options that is justified by the water companies and other regulators in securing water resources. In those areas where the Environment Agency has not yet covered sustainable abstraction programmes, the water companies voluntarily take measures to reduce harm to the environment.¹⁰³⁷ For their reduction of environmentally unsustainable abstraction, the water companies will obtain an incentive from Ofwat through the abstraction incentive mechanism.¹⁰³⁸ There is no punitive measure from Ofwat to the water companies if their abstraction is environmentally harmful in the above-mentioned areas.¹⁰³⁹ The implication is that the water companies may not behave to achieve sustainable abstraction if the benefits they obtain from non-compliance are more than the incentives they obtain from Ofwat to reduce unsustainable abstractions in such areas.

Under the WRMP preparation process, the involvement of the CCWater is unclear compared with other regulators’ involvement in the early stages of plan development, although it may be argued that the Council may express its voice during the representation stage. As ‘the consumer voice’, its involvement in the water resources planning may help the water undertakers to incorporate the interests of consumers. The involvement of the CCWater forms an inception of the WRMPs that may enhance implementation of the plans.

5.4 Collaboration between government, regulators and regulated water companies

WRM is not performed by a single person or organization; rather it needs different stakeholders to work together.¹⁰⁴⁰ As discussed in this section, in England’s WRM, there are a number of

¹⁰³⁵ Water Act 2014, subsection (2A)(e).

¹⁰³⁶ Davies and Daykin (n 1022) 1–4.

¹⁰³⁷ Environment Agency et al. (n 839) 20.

¹⁰³⁸ *ibid.*

¹⁰³⁹ *ibid.*

¹⁰⁴⁰ Environment Agency (n 366).

stakeholders (government, regulators, water companies and consumer representatives). The WSRA is entrusted with economic regulation, and the DWI and the Environment Agency are entrusted with the responsibility of drinking water and environmental quality, respectively.¹⁰⁴¹ Defra (the government department) provides guidance that directs the regulators' functions. Although these regulatory functions differ in their nature, they have increasing interrelated goals in ensuring water sustainability. Through the Water Act 2003, the water regulators (the Secretary of State, Welsh Ministers, the WSRA and the Environment Agency) have a statutory duty to exercise and coordinate their functions to make arrangements for promoting cooperation, the exchange of information between them, and consistency of treatment of matters which affect them all.¹⁰⁴²

In 2010, an independent review was commissioned by Defra to assess Ofwat and consumer representation in the water sector. In this review, Northumbrian Water criticized the isolated decision-making of the regulators, particularly Ofwat. It stated that:

It is not acceptable for companies to be placed in the position where the regulator can enforce delivery of an output but another regulator will not allow the company to recover the cost of so-doing. Most issues are managed with good faith but greater clarity on the respective roles of the various regulators would be helpful. For instance, is the DWI the final arbiter of drinking water quality requirements or is it legitimate for Ofwat to constrain requirements to meet affordability objectives.¹⁰⁴³

The findings of the review showed that there was an implication of separated functioning among regulators. In particular, the findings further underlined that changes are needed in the way that Ofwat behaves; Ofwat needs to engage more constructively and effectively with the full range of stakeholders in the sector and to be more transparent in its decision-making.¹⁰⁴⁴ As an economic regulator, independence is a key value to Ofwat; however, independence in decision-making does not necessarily mean that each regulator should act in isolation.¹⁰⁴⁵ The regulated water companies, government and other regulators share the objective of enhancing water security, although each body

¹⁰⁴¹ Defra (n 964) 8.

¹⁰⁴² Water Act 2003, s.52.

¹⁰⁴³ Davies and Daykin (n 1022) 17.

¹⁰⁴⁴ *ibid*, 5.

¹⁰⁴⁵ *ibid*.

has been conferred with different statutory obligations. Ofwat and other regulators should therefore work jointly with other stakeholders to achieve their regulatory objectives.¹⁰⁴⁶

Similarly, the recent review carried out regarding the WRM process noted that there is a hurdle in developing the WRMP process through the involvement of the Environment Agency and Ofwat.¹⁰⁴⁷ The water companies expressed their dissatisfaction, ‘where the Agency agreed to support an option it considered to be environmentally beneficial while Ofwat then appeared to challenge it – in dialogue as part of the WRMP process’.¹⁰⁴⁸ The expressed view against Ofwat indicates that there is a lack of common interpretation or understanding between regulators in achieving the sustainability of water. Although each water regulator has its own statutory obligation that it strives to achieve, the outcome of water sustainability may not be achieved without an appropriate trade-off between competing interests. However, the 2014 Ofwat price review and the Water Act 2014 exist in part to respond to criticisms of Ofwat.¹⁰⁴⁹ They introduced new systems for Ofwat to work in collaboration with other stakeholders to realize resilience building.

Effective WRM needs collaboration among stakeholders,¹⁰⁵⁰ which is viewed as ‘a means of solving shared problems, where parties get together to define the problem, establish an agenda and implement a solution’.¹⁰⁵¹ Collaboration is also a key device in bringing diverse interest groups to an understanding.¹⁰⁵² The existence of clear statutory roles by itself may not guarantee the enhancement of the security of water resources. Rather, it requires a clear system that creates a working relationship between diverse stakeholders.

At present, water security and sustainability are major concerns in England.¹⁰⁵³ The UK government has expressed this concern in its *Future Water* policy document.¹⁰⁵⁴ The government has a role in creating a system that establishes a relationship between regulators and the regulated to tackle the water security threats. The above-mentioned isolated functioning of regulators¹⁰⁵⁵ may not be

¹⁰⁴⁶ *ibid.*

¹⁰⁴⁷ *ibid.*, 50–51.

¹⁰⁴⁸ *ibid.*, 51.

¹⁰⁴⁹ Ofwat (n 823); see also Water Act 2014, subsection (2A)(e).

¹⁰⁵⁰ Watson (n 293) 243.

¹⁰⁵¹ Nicholas Kimani, ‘A collaborative approach to environmental governance in East Africa’ (2009) 22(1) *Journal of Environmental Law*, 33.

¹⁰⁵² Crilly (n 694).

¹⁰⁵³ William Howarth (n 69).

¹⁰⁵⁴ Defra (n 117).

¹⁰⁵⁵ Defra (n 1022) 17.

improved without appropriate guidance from the government to shape the behaviour of stakeholders. It may need appropriate guidance from the government to ensure collaboration, which may bring cohesion between the different policy regulators (social, environmental and economic) and legal frameworks. However, collaboration in WRM does not mean working through agreements to implement all responsibilities. Stakeholders' collaboration needs caution to allow each regulatory body to meet its responsibilities.¹⁰⁵⁶

5.5 River basin management plans in England

The WFD requires its member states to establish programmes of measures that are designed to reduce pressures and achieve good water status by 2015.¹⁰⁵⁷ The initial implementation phase of WFD began in 2000 and ended in 2015. The member states are compelled to conduct an evaluation of the human pressures and impact analysis of each river basin district.¹⁰⁵⁸ The Environment Agency 'by such date as the appropriate authority may direct, prepare and submit to the appropriate authority a river basin management plan for each river basin district'.¹⁰⁵⁹ The RBMPs contain detailed assessments of water quality, quantity status and the human pressures and risks on water resources.¹⁰⁶⁰ RBMPs consist of a process by which water resource pressures are understood and managed in an integrated manner across a river basin district.¹⁰⁶¹ In 2009, the RBMPs were published for the river basin district in England. In England and Wales, there are 11 river basin districts.¹⁰⁶²

Under English law, the river basin district is defined as 'an area identified by regulation 4(1), being the main unit for the management of river basins for the purposes of the Directive and being made up of a river basin or neighbouring river basins, together with associated groundwater, transitional waters and coastal water'.¹⁰⁶³ The identification of these districts means that management decisions

¹⁰⁵⁶ Biswas (n 302) 22.

¹⁰⁵⁷ WFD, article 4.

¹⁰⁵⁸ WFD, article 5.

¹⁰⁵⁹ The Water Environment (Water Framework Directive)(England and Wales) Regulations 2003, s.11.

¹⁰⁶⁰ Oliver Fritsch and David Benson, 'Integrating the principles of integrated water resources management? River basin planning in England and Wales' (2013) *International Journal of Water Governance*, 277.

¹⁰⁶¹ Angling Trust et al. (n 732).

¹⁰⁶² Environment Agency, 'River basin management plans (RBMPs)' (21 December 2015 update) <www.gov.uk/government/collections/river-basin-management-plans#current-river-basin-management-plans>.

¹⁰⁶³ The Water Environment (Water Framework Directive)(England and Wales) Regulations 2003, s.2(1)b

regarding water resources would not be made in a fragmented manner. The RBMPs are designed to ensure the management of an entire river basin district. Since March 2011, an integrated catchment-based approach has been under development in England, which enhances RBMP implementations.¹⁰⁶⁴ The integrated catchment management approach integrates quantitative and qualitative aspects of water pressures, and addresses all water uses and pressures in an integrated manner. The catchment scale ‘is large enough to add value at a strategic level but small enough to encourage local scale engagement and action’.¹⁰⁶⁵ The integrated catchment management approach helps to bridge the management of water resources on local and river basin district scales.¹⁰⁶⁶ In 2014, the government issued statutory guidance on the practical implementation of the WFD to be set in England.¹⁰⁶⁷ This guidance gives an increased emphasis on the catchment-based approach to WRM.¹⁰⁶⁸ Managing water resources at local level is considered to help local stakeholders to identify context-specific problems and to set out their solutions.¹⁰⁶⁹ This approach enhances understanding of water pressures of a specific catchment.

The successful implementation of RBMPs for water scarcity problems relies on the effective participation of stakeholders. Participation is one key element for a successful river basin management planning process.¹³ The WFD requires the member states to take measures to promote ‘active involvement of all parties’ in the planning process.¹⁰⁷⁰ In England, the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 requires public participation upon preparing RBMPs.¹⁰⁷¹ In 2009, England established RBMPs for a number of river basin districts. During the preparation of these RBMPs, the Environment Agency carried out consultations with a diverse range of stakeholders. Among these, the water, energy and industrial companies, charities, local government, non-governmental organizations, wildlife groups and the public are mentionable.¹⁰⁷² In England and Wales, to ensure public participation, river basin district liaison

¹⁰⁶⁴ Environment Agency, ‘River basin management plans (2015 proposed update)’, 45 <www.environment-agency.gov.uk>. accessed on 12 march 2014

¹⁰⁶⁵ *ibid*,54.

¹⁰⁶⁶ *ibid*.

¹⁰⁶⁷ *ibid*, 2.

¹⁰⁶⁸ *ibid*,44.

¹⁰⁶⁹ *ibid*, 46.

¹⁰⁷⁰ EU WFD, article 14.

¹⁰⁷¹ The Water Environment (Water Framework Directive)(England and Wales) Regulations 2003, s.12.

¹⁰⁷² Environment Agency, ‘Water for life and livelihoods. Proposed update to the river basin management plan’. Record of consultation and engagement (2015) 13

panels were set up at the regional and national levels.¹⁰⁷³ Stakeholder meetings and workshops were also held.¹⁰⁷⁴ In England, the catchment-based approach has been established to facilitate local communities' participation at grassroots level.¹⁰⁷⁵

The recent assessment on the implementation of RBMPs in England shows that in terms of surface waters, there are some water bodies that are subject to significant pressures, although there have been some improvements on their status.¹⁰⁷⁶ These pressures include pollution from point and diffuse sources, abstraction and hydromorphological alterations.¹⁰⁷⁷ In almost all river basin districts, there were significant pressures of diffuse source pollution, point source pressures and over-abstraction.¹⁰⁷⁸ The assessment report also shows that, in England and Wales, the information collected does show a split between pollutions emanating from diffuse and point sources.¹⁰⁷⁹ This has made it difficult to determine 'which sectors are responsible for which pressures'.¹⁰⁸⁰

5.6 Conclusion of chapter

This chapter examined England's water policy and law in order to understand the extent to which the salient features for an effective WRMP are reflected in the country's water policy and law. The discussion in this chapter, on the context of water resources, has demonstrated that water resources are not evenly distributed in the country. Some parts of the country are humid, whereas other parts are not. In some parts of England, the water stress level is moderate or serious. There is no self-sufficiency in availability of water resources according to place and time. The evaluation in this chapter has shown that some river basin water resources are already over-abtracted; there is likely to

www.gov.uk/government/uploads/system/uploads/attachment_data/file/470784/Record_of_consultation_and_engagement_2015_final.pdf.

¹⁰⁷³Fritsch and Benson (n 1060) 273.

¹⁰⁷⁴ European Commission, Commission staff working document member state: United Kingdom accompanying the document report from the Commission to European Parliament and the Council on the implementation of the WFD (2000/60/EC). River basin management plans, COM (2012) final670, 6.

¹⁰⁷⁵ Environment Agency, 'River basin management plans (RBMPs)' (21 December 2015 update)

12 <www.gov.uk/government/collections/river-basin-management-plans#current-river-basin-management-plans>.

¹⁰⁷⁶ WFD, 'Assessment of member states' progress in the implementation of programmes of measures during the first planning cycle of the Water Framework Directive. Member state report: United Kingdom(UK)' (March 2015) 7–10.

¹⁰⁷⁷ *ibid.*

¹⁰⁷⁸ *ibid.*

¹⁰⁷⁹ *ibid.*

¹⁰⁸⁰ *ibid.*

be less water available for people, businesses and the environment.¹⁰⁸¹ The evaluation has also demonstrated that water resources abstraction, in some parts of England, is unsustainable. The discussion in this chapter focused on the water companies and their roles, since they are major abstractors and dischargers; and the chapter also evaluated other issues relevant to enhancing water security. Accordingly, water companies are a key stakeholder with a major role in carrying out the programme measures of RBMPs, which are described under the EU WFD.

In England, addressing water security is not strictly a new concern, but is rather becoming a more important issue with the growing water shortage. The WRM policy and law are changing considerably, and are moving towards preparedness and resilience building with the development of WRM and drought plans. The recent Water Act 2014 also introduced new statutory duties for Ofwat, including imposing a primary duty to further the ‘resilience objective’. The development of WRM and drought plans address two fundamental issues: whether water of adequate quality will be available to sustain the wellbeing of society; and whether society is adequately protected from extreme droughts through the development of different plans, which proactively address the water shortage challenges.

In addition, the evaluation in this chapter has shown that each water undertaker has a statutory requirement to prepare and publicize the WRMP and ‘to be able, and continue to be able, to meet its statutory obligation’ of drinking water.¹⁰⁸² Water undertakers are obliged to prepare the WRMPs, which help companies to make sure that they can respond flexibly to future uncertainties. The plans are made through long-term assessments of specific water resource zones and the availability of water resources to meet a range of demands.¹⁰⁸³ Upon developing the WRMPs, the water undertakers are obliged to consider a ‘twin-track’ approach, which encompasses diverse options from both demand and supply management schemes, including establishing interconnections between the involved water company’s water resources zone and beyond its geographic boundary demarcation. This indicates the use of bulk water transfer as one element of WRM to tackle water security challenges. However, the preparation of WRMPs may not be an end to securing water resources availability. Achieving water security is increasingly dependent upon the implementation of the plan; but while the WRMP is central in enhancing the security of water, it is ultimately a procedural

¹⁰⁸¹ Defra, Water White Paper, 8 December 2011.

¹⁰⁸² Water Act 2003 s.62, which interpolated ss.37A–D in the Water Industry Act 1991.

¹⁰⁸³ Defra et al. (n 834) 12.

requirement. The water law does not set out a clear rule that imposes an obligation on water undertakers regarding implementation.

Under the Water Act 2003, it is a statutory requirement for water companies to prepare, maintain and publish drought plans.¹⁰⁸⁴ The drought plans are crucial to both water resources planning and to water security. The plans set out how the Environment Agency will manage water resources for the environment and people during drought periods, and how a water company will continue to meet its duties to supply water. To manage drought challenges, the Environment Agency takes measures necessary to limit these. Different schemes are used for dealing with drought situations: drought permits, ordinary drought orders and emergency drought orders.¹⁰⁸⁵ The drought orders from the Secretary of State and drought permits from the Environment Agency affect the water companies' domestic water supplies differently from other abstractors.¹⁰⁸⁶ The limitations on water abstraction focus on non-domestic water uses (hosepipe bans), and this suggests that primacy is given to the domestic water supply. Both the WRM and drought plans are key tools to secure the long-term resilience of water undertakers' supply systems. They help the water companies to take steps for the purpose of enabling them to meet, in the long term, the need for the supply of water to consumers. As the plans accommodate a range of measures to manage water resources in sustainable ways – and to increase efficiency in the use of water and reduce its demand in order to reduce pressure on water resources – they are crucial tools for the implementation of RBMP ideals. This suggests that the WRM and drought plans are relevant to both water resources planning and to water security. As the water companies devise these plans, the water laws are how these companies are regulated in discharging their obligations.

The review in this chapter demonstrates that the challenge in England is thus not only one of securing enough safe water, but also one of protecting the water and its ecosystem against polluting activities. Water security is also linked to the protection of water resources from sewage discharges and urban waste water, and point and diffuse source pollution. This chapter has also shown that water qualities are affected by waste from different sources. Particularly in England, water quality failures from sewage discharges and urban waste water are addressed by issuing standards and the

¹⁰⁸⁴ Water Industry Act s. 39B, as inserted by the Water Act 2003 s.63.

¹⁰⁸⁵ Water Act 2003 ss.64–65.

¹⁰⁸⁶ Flood and Water Management Act 2010, s.36; see also the Drought Direction 2011 Para. Water Use (Temporary Bans) Order 2010.

introduction of a permit system. Environmental Permits set out standards to minimize the adverse effects of waste water on the receiving environment. These permits aim to return much cleaner waste water to the environment, thereby protecting it and human health from the adverse effects of the discharge of waste water.¹⁰⁸⁷ Through the permit system, the Environment Agency can control water quality failures due to waste water, with the English sewerage companies (the main waste water treatment service providers) responsible for waste water/sewage. The English water law reflects many substantive rules that are designed to control both point and diffuse source pollution.

In England, the Environment Agency has a mandate to prevent water quality failure (pollution). Some of the measures which are used to control diffuse source pollution include establishing protected areas and the creation of awareness amongst farmers to use the defined best farming practices. Codes of best agricultural practices have also been developed and are used in the protected zones. However, the examination in this chapter reveals that diffuse pollution remains a significant challenge, and the implementation of codes of practice for diffuse pollution control is weak. This suggests that the problems of diffuse pollution challenges are not simply due to the absence of law, but its implementation.

This chapter has also demonstrated that, in principle, all water service users are expected to pay fair prices for the water services they obtain; also, cross-subsidy is used to allow special treatment for those customers who may not be able to afford to pay the full cost of water services. However, in England, less than a third of households are fitted with water meters and, except in those areas where resources are under stress, introducing metering is not a compulsory requirement for water companies. Because of this, it is difficult to say whether water users are paying a fair price for what they are using. However, this does not mean water abstraction is free; as major water abstractors, the water companies pay the price for the volume of water they abstract to the Environment Agency, as a licence condition.

Developing responsive permit systems for water abstraction was sought to limit the over-use of water. To this end, the Water Act of 2003 introduced a time-limited permit system.¹⁰⁸⁸ The introduction of the new water abstraction system suggests that, despite permits giving property rights over the volumes of water, water permits need to be seen differently from other property rights to protect the

¹⁰⁸⁷ Defra (n 964).

¹⁰⁸⁸ Water Act 2003, s.19.

environment and public interests. The reform reflects the necessity to control water on the grounds of the environment. However, the Water Act of 2003 does not fully shape the old permit system automatically.

In England and Wales, the voluntary Catchment Sensitive Farming Project seeks to tackle agricultural diffuse pollution.¹⁰⁸⁹ In this project, the farmers gain advice and receive incentives. The evaluation in this chapter reflects how this project gives emphasis to actions taken at the farm level and integrates them with other catchment delivery mechanisms. For instance, the Wessex Catchment in England shows how the project has been conducted at a very local level within small areas to control the nitrate problem.¹⁰⁹⁰ This demonstrates the subsidiarity principle in the practices of WRM in terms of diffuse pollution.

The analysis in this chapter shows that the Water Act 1973 was criticized for conferring a broad range of regulatory and operational functions. According to the Act, the regional water authorities were ‘abstractors and dischargers, regulation enforcers and service providers, polluters and environmental guardians’.¹⁰⁹¹ Because of this, regional water authorities were characterized as being both ‘poacher and gamekeeper’. Subsequently, the operational and regulatory functions were separated; regulatory functions remained under government organizations, whereas operational utility functions were transferred through privatization.¹⁰⁹² The reform has brought a clear separation between regulatory and operational functions.

Providing water services requires an understanding of the diverse interests to enable a balance of the interests involved.¹⁰⁹³ Water services provision may not be performed by a single person or organization; it needs different stakeholders in its involvement. The Secretary of State gives policy guidance and issues directions to the regulators; while Ofwat is mandated as the principal economic regulator, although it must meet the requirements of the Environmental Agency when setting prices. Ofwat as an economic regulator controls the natural monopolies in the water services provisions. In addition to these regulatory bodies, the statutory body CCWater is concerned with price and service standards for customers; while the DWI controls the quality of drinking water, and measures it

¹⁰⁸⁹ Middleton (n 929).

¹⁰⁹⁰ de Vial (n 930).

¹⁰⁹¹ Johnson and Handmer (n 750)349.

¹⁰⁹² *ibid.*

¹⁰⁹³ Bakker (n 871) 38–40.

against the directives and regulations, enforcing these rules wherever water companies provide drinking water.

In England's water services provision, there are a number of stakeholders; for example, the WSRA is entrusted with economic regulation, while Defra provides policy guidance that directs the regulators' functions. Although these regulatory functions differ in their nature, they have increasingly interrelated goals in ensuring water security. Through the Water Act 2003, the water regulators (the Secretary of State, Welsh Ministers, the WSRA and the Environment Agency) have the statutory duty to exercise their functions to make arrangements for promoting cooperation and the exchange of information, as well as consistency of treatment of matters which affect them.¹⁰⁹⁴

As many institutions are involved in water services provision and regulation, effective water services management needs collaboration among stakeholders. The existence of clear statutory roles by itself may not guarantee the enhancement of the security of water resources; rather, it requires a clear system that creates a working relationship between diverse stakeholders. However, in practice, there is the suggestion that the WSRA works in isolation.

While it is particularly important for the economic regulators to discharge their regulatory roles independently, there should be an appropriate mechanism to help the regulators and stakeholders to coordinate their functions in order to enhance the overall goal of water security. Similarly, in 2014 Ofwat was reformed in order to address such security challenges. The water companies' water security assessment has been shaped through regulators' participation in the planning process. The discussion in this chapter suggests that participatory development in WRMPs is therefore believed to enhance their implementation.

Chapter Six: Water security management institutional arrangements in the AU

6.1 Introduction

Inharmonious institutional arrangements for WRM and disparities in implementation may affect a country's endeavours to ensure the sustainability of water. In water resource governance, bilateral and multilateral water treaties at river basin or regional level are often at the centre of cooperation-

¹⁰⁹⁴ Water Act 2003, s.52.

building, since they promote a bottom-up approach. The water treaties at the scale of the river basin may also play key roles in managing water resources. Noticeably, however, not all cooperation at river basin or regional level may ensure the sustainability of water; rather, the effectiveness may be measured by how the cooperative arrangements themselves are designed to make such arrangements more inclusive and more comprehensive for addressing the threats to water security.

As discussed in Chapters Four and Five, the WRM institutional arrangements in the EU are considerably evolving towards a more integrated and harmonized approach, with implementation of the WFD CIS. The EU has strong legislative competence to intervene and manage water resources within its member states. Contemporary EU water policy and law favour an integrated river basin approach to avoid fragmented WRM. Based on these insights, it could be argued that the AU could increase sustainable water use by enhancing legislative competence to intervene in WRM within its own member states.

The main objectives of the evaluation in this chapter are to understand how the AU intervenes in WRM within its member states and whether, as a supranational body, it has in place effective WRMPs for the sustainability of water resources. This chapter thus presents assessments of the development of water policies and laws within the AU, while also exploring some of the roles at regional and river basin level in managing water resources in terms of the effectiveness of their WRM institutional arrangements. To investigate the institutional arrangements for water security management in the AU, its remit in its institutional arrangements for WRM is reviewed, to understand whether the Union has significant legislative competence.

Chapter Six is organized into six sections. The first introductory section is followed by one that discusses the availability of water resources (including shared resources) within the AU. The third section discusses some regional and river basin institutional arrangements which attempt to address water resources problems. The fourth section makes an assessment of the measures that have been taken by the AU member states to address water security challenges at national levels. The fifth section evaluates past and present legislative competences of the AU. The final section of the chapter draws a conclusion with suggested policy options for the AU's institutional arrangements for water resources.

6.2 The context of water security in Africa

6.2.1 Availability of water resources

The Abuja Declaration on water states that '[e]ffective water resources management must be underpinned by knowledge and understanding of the availability of the resource itself, the uses to which water is put, and the challenge facing the managers at all relevant levels of administration'.¹⁰⁹⁵ In terms of the status of the availability of water resources, at the regional level, the African continent is supposed to be relatively abundant.¹⁰⁹⁶ Africa is home to both the world's longest river, the Nile, and the second largest river by its water flow and basin size, the Congo. There are many other water bodies on the continent, and it is believed that Africa is endowed with abundant freshwater resources.¹⁰⁹⁷

Paradoxically, Africa is today exposed to numerous problems that leave the continent and its people continuing to live in trouble, decade in, decade out. There are many pressing issues to which Africa as a continent is vulnerable;¹⁰⁹⁸ environmental, economic and social challenges, for instance, are becoming common within the continent.¹⁰⁹⁹ Particularly, the distribution of the water resources is uneven across the continent. The region's water resources are exposed to intense spatial and temporal variability.¹¹⁰⁰ In many parts of Africa, the challenges to the security of water resources are expected

¹⁰⁹⁵ AMCOW, 'Status report on the application of integrated approaches to water resources management in Africa' (2012) 2–3
<www.amcowonline.org/index.php?option=com_content&view=article&id=262&Itemid=141&lang=en> accessed 1 February 2013.

¹⁰⁹⁶ AMCOW, 'The Abuja ministerial declaration on water: a key to sustainable development in Africa: preamble' (Abuja, Nigeria, 29–30 April 2002).

¹⁰⁹⁷ Economic Commission for Africa (n 87) 55.

¹⁰⁹⁸ Julius Ihonvbere, 'Agenda for African unity in 1990s: the all African students' (Conference, Peter Clark Hall, University of Guelph, Ontario, Canada, 27 May 1994) <www.hartford-hwp.com/archives/30/033.html> accessed 1 May 2013.

¹⁰⁹⁹ *ibid.*

¹¹⁰⁰ Oregon State University (n 86).

to become critical.¹¹⁰¹ The water scarcity threat in Africa is now becoming one of the serious threats that affects the stability and wellbeing of the continent.¹¹⁰²

Many African countries are experiencing water scarcity.¹¹⁰³ The total renewable water resource per capita of many countries demonstrates how many of the countries are categorized as being in a zone of water stress or scarcity.¹¹⁰⁴ Almost a quarter of the region's population lives in a water-stressed country, and the threats will continue to rise unless proper measures are in place.¹¹⁰⁵ Very few African countries' water per capita is over 13,000 cubic metres, whereas many countries' are below 1,000, which is classified as being under water scarcity.¹¹⁰⁶ It has been estimated that around three million people per year die due to the lack of safe drinking water and sanitation in Africa.¹¹⁰⁷ The number of people in Africa without access to improved sanitation is growing. In 1990, the population that did not have access to sanitation was 430 million, but in 2006 this figure rose to 589 million.¹¹⁰⁸ In Africa, '[e]very day more children die from dirty water than HIV/AIDS, Malaria, water and accidents put together'.¹¹⁰⁹ A single drought exposes millions of people to water-related problems.¹¹¹⁰ Particularly, the water security threats are likely to be higher in the sub-Saharan African countries,¹¹¹¹ with Ethiopia being one of those countries that is exposed to water scarcity threats.¹¹¹²

¹¹⁰¹ *ibid.*, 'Number of agreements per international basins'.

¹¹⁰² Peter Gleick, 'The world's water: the biennial report on freshwater resources' (*The World's Water*, vol7, Woodrow Wilson Centre), videopresentation <www.youtube.com/watch?feature=player_embedded&v=ORNuY-NdwkA> accessed 21 April 2014.

¹¹⁰³ Economic Commission for Africa, (n 87).

¹¹⁰⁴ AMCOW (n 1095) 3.

¹¹⁰⁵ *ibid.*, 136.

¹¹⁰⁶ *ibid.*

¹¹⁰⁷ Smakhtin et al. (n 89).

¹¹⁰⁸ UNICEF, 'A snapshot of sanitation in Africa: a special tabulation for Africa based on preliminary data from the WHO/UNICEF Joint Monitoring Programme for water supply and sanitation' (2008) 5 <www.who.int/water_sanitation_health/monitoring/africasan.pdf> accessed on 21 April 2014.

¹¹⁰⁹ Trevor Manuel, The Shotha, "'Majini ni Uzima" – Water is life!' Statement of Hon. Trevor Manuel, the Minister at the Office of South Africa President Jacob Zuma (2nd Africa Water Week, 2009) <www.amcow-online.org/index.php?view=article&id=302%3Amonrovia-water-declaration-&format=pdf&option=com_content&Itemid=164&lang=en> accessed 08 March 2013.

¹¹¹⁰ *ibid.*

¹¹¹¹ Valerie Ndaruzaniye, 'Water security in Ethiopia: risks and vulnerabilities assessment' (2011) *GWI*, 1–5 <www.gwiwater.org/sites/default/files/pub/Water%20Security%20in%20Ethiopia%20.%20Risks%20and%20Vulnerabilities%27%20Assessment.pdf> accessed 23 October 2013.

¹¹¹² *ibid.*

In Africa, a considerable quantity of the water used is wasted due to an inefficient governance system,¹¹¹³ and water resources are exposed to human-induced pressures that affect their availability.¹¹¹⁴ Because of such human-induced pressures, many water bodies on the continent are exposed to unsustainable use and quality deterioration.¹¹¹⁵ Water ecosystems are threatened to the extent that the availability of water resources is put at risk and their quality deteriorates, in terms of providing safe water for humans and other species dependent on it.¹¹¹⁶ Many of the water bodies in the region are also exposed to water pollution, which further deteriorates their quality for a range of uses.¹¹¹⁷

These problems are a constraint on the continent's sustainable development, so Africa has a common interest in combating such challenges. Consequently, the AU's intervention in regulating the factors hampering sustainable development at the member state level is invaluable for promoting the shared interests that the continent aspires to, since the isolated and fragmented endeavours of the Union's member countries alone may not bring much reform in shared issues. However, despite the average water withdrawal in Africa being relatively low,¹¹¹⁸ this opportunity has not been used to enhance water security.

6.2.2 Transboundary water resources in Africa

Globally, there are approximately 261 international water basins, and an unknown number of transboundary aquifers.¹¹¹⁹ From this figure, there are around 80 water bodies in Africa.¹¹²⁰ Moreover, over 38 aquifers are transboundary.¹¹²¹ In addition, more than 50 major watersheds, river basins and lakes are shared by two or more countries.¹¹²² Many of these water bodies are shared by more than two regional states.¹¹²³ Some river basins, like the Congo (Zaire), Nile, Zambezi and Niger,

¹¹¹³Smakhtin et al. (n 89) 57.

¹¹¹⁴Economic Commission for Africa (n 142).

¹¹¹⁵ibid.

¹¹¹⁶ibid.

¹¹¹⁷AMCOW (n 1095).

¹¹¹⁸Economic Commission for Africa, *Water in Africa: management options to enhance survival and growth* (2006) 3.

¹¹¹⁹Jesse Hamner and Aaron Wolf, 'Patterns in international water resources treaties: the transboundary freshwater dispute Tata, environmental law and policy' (1997)*Year Book 1998: Colorado Journal of International Environmental Law and Policy*.

¹¹²⁰Economic Commission for Africa (n 142) 9; see also Oregon State University (n 86).

¹¹²¹AMCOW, 'Status report on the application of integrated approaches to water resources management in Africa' (2012) 3 <www.unwater.org/rio2012/report/index.html>last accessed 3 September 2013.

¹¹²²ibid.

¹¹²³Oregon State University (n 86).

are shared by more than nine states.¹¹²⁴

On the African continent, particularly in sub-Saharan Africa for instance, the River Nile connects the AU's member states, which are considerably interlinked by their shared water bodies.¹¹²⁵ Naturally, shared water bodies cannot be managed effectively in isolation.¹¹²⁶ In addition to the shared nature of the water bodies, the impact of water insecurity is not limited to within the administrative boundary of each member state.¹¹²⁷ Rather, it may affect countries within the AU, whether the water bodies are shared or not. Water resources may be transboundary, or their impacts may reach beyond the national or river basin level, extending the effect on the AU's sustainable development agenda. For instance, in 2012, hundreds of thousands of people were affected in Somalia by a single drought, and migrated to neighbouring the countries of Ethiopia and Kenya.

Inharmonious institutional arrangements for WRM and disparities in implementation may affect the countries' endeavours to ensure the sustainability of water. In such circumstances, the sustainability of water resources may not be effectively achieved by the unilateral and isolated institutional arrangements that are introduced by single countries. Based on these insights, it could be argued that the AU member states may achieve sustainable water use by introducing cooperative arrangements that regulate riparian states' water use and protection.

6.3 Regional and river basin institutional arrangements in Africa

Globally, trends in the governance of shared water bodies are exemplified by thousands of treaties that have been made to enhance cooperation in water use and protection. Since the year 805 and up to 1984, for example, over 3,600 international water treaties were formulated; but most of these water treaties were related to navigational water uses.¹¹²⁸ They are hardly comprehensive – rather, they focus on specific issues, particularly water allocation.¹¹²⁹

¹¹²⁴ Oregon State University, 'Transboundary freshwater dispute database: AFRICA: international river basin register' <www.transboundarywaters.orst.edu/> accessed 26 April 2013.

¹¹²⁵ AMCOW (n 1095) 10.

¹¹²⁶ Mark Giorano, 'International river basin management: global principles and basin practices' (Abstract from thesis for Doctor of Philosophy in Geography, Oregon State University 2002).

¹¹²⁷ AMCOW (n 1121) 3.

¹¹²⁸ Hamner and Wolf (n 1119) 1998.

¹¹²⁹ *ibid.*

Coordinated management of transboundary basins is a better way to manage water resources,¹¹³⁰ though it is not new in Africa. There have been some endeavours to manage water resources with the objective of coordinated management through regional agreement, which have focused on a particular region's WRM and river basin agreement – that is, a treaty signed by the riparian states of specific transboundary rivers. For instance, the Niger Basin Agreement was signed in 1963, and subsequently, the Niger River Commission was established in 1964. In 1980, the Commission was replaced by the Niger River Authority. The member states of the Authority are Algeria, Benin, Burkina Faso, Cameroon, Chad, Guinea, Ivory Coast, Mali, Niger, Nigeria and Sierra Leone. The objective of the Niger River Authority is to promote cooperation among the member countries and to ensure integrated development in the fields of water quality, hydropower, navigation, fishing, flood control, economic development, joint management, irrigation, infrastructure and technical cooperation. Another important transboundary River Basin Authority is the Lake Chad Basin Commission, which was established on 22 May 1964. The member states are Cameroon, Central African Republic, Chad, Niger and Nigeria. The Commission is a regional government organization, which was designed to manage the basin water resources and resolve disputes that might arise over the lake water resources. The Commission initiates, promotes and coordinates water and other natural resources development and management in the basin.

Similarly, the Southern African Development Community (SADC) also implemented a WRM agreement. In August 1995, the SADC introduced the Protocol on Shared Watercourse Systems to the region and this came into force in September 1998. The Protocol is a legally binding document on the SADC member states.¹¹³¹ It provides the legal and broad policy framework for cooperation on WRM: to respect and apply the existing rules of general or customary international law relating to the utilization and management of the resources of shared watercourse systems and, in particular, to respect and abide by the principles of the community of interests in the equitable utilization of those systems and related resources. It promotes and facilitates sustainable, equitable and reasonable utilization of the transboundary watercourses, harmonization and monitoring of legislation and policies, and aims to ensure equitable sharing of water as well as efficient conservation of scarce resources.¹¹³² The Protocol was revised in 2000 and this version came into force in February 2003.

¹¹³⁰United Nations Conference on Water (n 393).

¹¹³¹SADC, 'Protocol on shared watercourse systems' (1998), preamble.

¹¹³²*ibid*, articles 1 to 4.

This revised Protocol recognized, as its sources, the rules of Agenda 21 from the United Nations Conference on Environment and Development regarding WRM; the Helsinki Rules on the Uses of the Waters of International Rivers; and the work of the International Law Commission on the non-navigational uses of international watercourses.¹¹³³ However, this Protocol is not relevant to the Ethiopian WRM issues since the country is not a member of the SADC and neither does it lie within its region.

Many treaties concerning African water resource uses do not comprehensively address their security challenges in a coordinated way.¹¹³⁴ Despite the existence of many water bodies, ‘very few shared waters are jointly managed and in many respects, the issues of water rights and ownership of international waters remain unresolved, and national interests tend to prevail over shared interests’.¹¹³⁵ Noticeably, the regulation of water quality and quantity does require treaties for shared water bodies.¹¹³⁶ In the African region, some river basin treaties are influenced in many ways by its colonial legacy. Colonial governments have determined many of the African water bodies’ governance systems and national boundaries.¹¹³⁷ For example, the two major treaties which established the governance system for the Nile water resources were formulated in 1929 and 1959. The former treaty was agreed between Egypt and the British government during the colonial period,¹¹³⁸ and has since been widely contested by many of the river basin’s riparian states.

The arguments for and against the treaty are rooted in different perspectives. The opposition against the treaty primarily considers it as non-progressive and not comprehensive for ensuring long-term water availability. Its scope is limited to allocating shared water in a perpetual manner. Moreover, it lacks the involvement of all riparian states, since it was made between a colonial government and an independent African state.¹¹³⁹ The treaty has noticeably tended to serve the discrete interests of colonial governments with regard to water allocation, by deviating from equitable uses of water.¹¹⁴⁰

¹¹³³ SADC, ‘Protocol on shared water course systems in the Southern African Development Community (SADC) region’ (2003), preamble paras. 2 and 3.

¹¹³⁴ Economic Commission for Africa (n 142) 9.

¹¹³⁵ *ibid.*, 10.

¹¹³⁶ Economic Commission for Africa (n 1120) 1.

¹¹³⁷ Jonathan Lautze and Mark Giordano, ‘Transboundary water law in Africa: development, nature, and geography’ (1999) 15(4) *International Journal of Water Resources Development*, tables 2 and 5, 1051.

¹¹³⁸ Makonnen (n 14) 239.

¹¹³⁹ Lautze and Giordano (n 1138), tables 2 and 5, 1059–61.

¹¹⁴⁰ *ibid.*

Through this treaty, Egypt was given a monopoly over control of the Nile water. One of the supportive arguments for this treaty focuses on its establishment of ‘historic rights’, particularly for Egypt. This claim uses the water shortage scenario in Egypt as its argument, rather than that of any other riparian states. Moreover, it attaches the water security of Egypt to surface water allocation, and the treaty allows an inequitable water share.

By focusing on surface water, these arguments fail to appreciate the options available for the security of water. The latter treaty was post-colonial by its time of formulation, and Egypt and Sudan agreed to extend the rights and obligations indicated in the former treaty. This rendered it a complementary treaty, which may not stand by itself. In particular, the countries agreed to control all the Nile water by the discourse of full utilization, and they extended the amount of the quotas that were established by the former treaty.¹¹⁴¹ Similar to the former treaty, the 1959 treaty also did not involve the other riparian countries and, because of this lack of inclusiveness of the riparian countries, arguments for and against these treaties are common in Africa’s post-colonial water debates.¹¹⁴²

The problems of these treaties in the African region, particularly in east Africa, are threefold. The existing water treaties are neither comprehensive nor do they promote equitable water use in some sub-regions. Instead, they are positioned towards specific priority concerns or inequitable water use. Firstly, the treaties focus on the allocation of specified amounts of water to the downstream countries: Egypt and Sudan. Both treaties exclude the riparian states, which are major contributors of water. The treaties also failed to establish equitability and fairness in the utilization and development of water resources, and focus instead on inequitable water sharing rather, than managing water resources.¹¹⁴³ They fixed the quantity of surface water in terms of the amounts that Egypt and Sudan are supposed to abstract from the River Nile. The problem of such a treaty is that it undermines possible variations in water quantity.

Water resources within a given water body are unpredictable. As population growth demands more water to satisfy human needs and healthy ecosystems, sustaining these quantities of water may not be achievable, as water amounts will not rise proportionally with population growth. Rather, water levels may decrease considerably with such a phenomenon. Sensible water allocation policies and

¹¹⁴¹ Treaty on the use of Nile water resources, 1379 (8 November 1959) Annex 3.

¹¹⁴² Hailu Wolde Giorgs, *Nile water dispute*(translated from Amharic) (Addis Ababa University EC 2001), XVII.

¹¹⁴³ Kenfe Aberaha, *The Nile Issue: the question of equitable water sharing?*(translated from Amharic) (EC 1999) 45.

laws may need to consider water flow and flexibility, as well as variations in the flow. When the water amount changes considerably, how can these treaties continue to deliver that same fixed amount of water to these countries? In addition, by focusing on surface water, the treaties failed to appreciate the groundwater resources. Each riparian state defines the amount of water needed based on surface water, rather than comprehensively analysing both surface and groundwater, as well as recycling and desalination options. In general, WRM options were not really considered. Through this failure, an overdependence on surface water has been created, and other options available to enhance water security are being undermined. These treaties were not shaped by the core principles that would enhance the security of water in the region.

On 14 May 2010, four of the Nile riparian states (Ethiopia, Tanzania, Uganda and Rwanda) signed the Nile CFA(2010) in Entebbe, Uganda and, five days later, Kenya also joined.¹¹⁴⁴ On 28 February 2011, Burundi joined these five states by signing the CFA. The CFA lays down some basic principles for the protection, use, conservation and development of the Nile basin. The CFA establishes the principle that each Nile basin state has the right to use, within its territory, the waters of the Nile river basin, and lays down a number of factors for determining equitable and reasonable utilization. The CFA incorporated many international water law principles such as equitable and reasonable use, no significant harm and issues of cooperation, at the forefront. Accordingly, the CFA endeavours to set up a WRM legal framework for its riparian states. The Framework is one of the key sub-regional initiatives aiming to manage shared Nile water resources in Africa. It aims to bring in more than ten African countries. The CFA is a good start for developing a bottom-up approach to WRM at a sub-regional level. Many of the Nile riparian states have already signed the CFA; however, the scope of application of the CFA is limited to the management of the Nile water resources. Despite the many riparian states that have signed this agreement, the majority of them have yet to ratify the agreement. Moreover, Egypt and Sudan are unwilling to sign and ratify the CFA, thereby creating a deadlock; and ultimately, the CFA is not inclusive of all riparian states.

Many African water bodies are, at present, without treaties regulating their use.¹¹⁴⁵ The lack of institutional arrangements for WRM that establishes cooperative arrangements can ‘undermine the

¹¹⁴⁴ Salman MA Salman, ‘The Nile Basin Cooperative Framework Agreement: a peacefully unfolding African spring?’ (2013) 38(1)*Water International*, 17–29.

¹¹⁴⁵ Oregon State University, ‘Transboundary freshwater dispute database: Number of agreements per international basins’ (2001) <www.transboundarywaters.orst.edu/> accessed 26 April 2013.

potential benefits to the continent’ unless such arrangements are in place and are implemented effectively.¹¹⁴⁶ This means that riparian countries can exploit water resources in uncoordinated ways, which may exacerbate water security threats. Even if there are mechanisms to manage water resources within each administrative boundary level, such arrangements may lack a holistic approach that considers ‘freshwater as a finite and vulnerable resource’, which demands integrated management.¹¹⁴⁷ The water management of a country may lean towards specific concerns for its own national policy prioritization, rather than equally promoting the common interests of all riparian states. Few river basins ‘have effective institutional arrangements for consultation and cooperation’, and procedures ‘for avoiding or resolving international disputes over water are largely lacking’.¹¹⁴⁸ In addition, introducing institutional arrangements that ensure the adequate quantity and quality of water resources for the environment and life-supporting ecosystems is a difficult task.¹¹⁴⁹ Similarly, it is challenging to bring reform to water resource institutions for national and transboundary water basins, as well as securing regional cooperation on water quantity and quality issues.¹¹⁵⁰

6.4 Disparities in water policies and laws

In the AU member states, the introduction of water policies and laws has been growing over the last ten years. Many African countries have already introduced water policies and laws that encompass a range of water security management systems. However, the state of these developments varies considerably between countries. Experience shows that, once African countries formulate water policies, it takes years to adopt an integrated water law that translates policy into practice.¹¹⁵¹

Even if many African countries have formulated water policies and law, the comprehensiveness of these instruments is dependent on the priority given to them by each country, as well as the country’s strength and commitment to introducing an effective WRM system. A recent empirical study of African WRM indicated that the introduction of water policies and laws is not coherent between countries, and that implementation outcomes are too mixed.¹¹⁵² For instance, at present, ‘most

¹¹⁴⁶ *ibid.*

¹¹⁴⁷ United Nations Conference on Environment and Development (n 334), chapter 18 of Agenda 21.

¹¹⁴⁸ *ibid.*

¹¹⁴⁹ *ibid.*

¹¹⁵⁰ *ibid.*

¹¹⁵¹ AMCOW (n 1095) 10.

¹¹⁵² *ibid.*, 11.

countries in Africa [are] developing new water policies with an Integrated Water Resources Management (IWRM) approach, which accommodates key features of an effective management system for water resources. However, these policies should require enacting law that accommodate these key features to implement. Some countries have managed to develop them while others are at different stages due to various reasons'.¹¹⁵³ Many countries in Africa are still without an effective management system for water resources and, in most of the AU member states, the law is not yet fully implemented.¹¹⁵⁴

6.5 Legislative competence of the AU in WRM

6.5.1 The traditional remit

As an organized regional government structure, the African political administration commenced with the establishment of the Organization of African Unity (OAU) in 1963.¹¹⁵⁵ The establishment of the OAU set out the foundations for the African countries to work together for the common interest, beyond a too narrow, nationalistic agenda. Under the African Charter that established the OAU, the core objectives were to provide coordinated support to emancipate the African countries, which were under colonial domination, and to help resistance against racism.¹¹⁵⁶ Through the African Charter, the OAU was mandated to provide support for the African countries under colonial rule.¹¹⁵⁷ As a driving force, the OAU worked with the assumption that Africa could not be liberated unless the entire continent had gained independence and was free from any form of racism.¹¹⁵⁸

In addition to these core objectives, the OAU aimed to raise the social, health, nutrition and sanitation standards of the African people; giving support to the United Nations and demanding an active share in world trade were also mentioned.¹¹⁵⁹ These objectives seem to cover too many issues to be appended to the OAU mandates. However, the OAU was criticized for its failure to address the

¹¹⁵³ *ibid.*, 17.

¹¹⁵⁴ *ibid.*, 11.

¹¹⁵⁵ Organization of African Unity, Resolutions adopted by the first conference of independent African heads of state and government (Addis Ababa, Ethiopia 22–25 May 1963).

¹¹⁵⁶ *ibid.*, agenda item II.

¹¹⁵⁷ The African Charter, 1963, article 20(3).

¹¹⁵⁸ *ibid.*

¹¹⁵⁹ *ibid.*

many problems faced by African people.¹¹⁶⁰ Ihonvbere claims that the ‘African Unity was given a weak and mediocre expression in the creation of a toothless clawless lion in a decorated cage in the name of the Organization of African Unity (OAU) in 1963’.¹¹⁶¹ Moreover, doubt over the OAU’s ability to meet its core objectives has been expressed, in that the ‘African Unity conceptualised and articulated as practical cooperation at political, social and cultural levels remains more of a dream than reality’.¹¹⁶² One of the constraints to realizing coordination in Africa was the fact that the African countries were defensive in surrendering to some of the considerable issues that demanded the OAU’s intervention for the common interests of the continent.¹¹⁶³

Further frustration with the OAU was expressed thus:

It is a shame that this has been the same theme for all the Pan-African Conferences since 1990 and meetings and conferences organized by the OAU and other bodies. Yet Africa and Africans are very far from the goal in spite of thousands of pages in declarations and the adoptions of countless charters. Not only is Africa very far from unity on any front, it is today the most marginal, the most oppressed, the most exploited, the most debt-ridden, the most unstable, and the most denigrated continent in the world.¹¹⁶⁴

6.5.2 Contemporary remit

Decades after the establishment of the OAU, the Constitutive Act of the African Union was signed in 2000, and the AU was established to replace the OAU.¹¹⁶⁵ Through this Act, many new ideas transforming the OAU’s institutional arrangements have been introduced. In particular, the AU’s mandates have been extended; amongst other things, the AU aims to achieve the following:

- A greater unity and solidarity between the African countries and the peoples of Africa
- To accelerate the political and socio-economic integration of the continent
- To promote and defend common positions on issues of interest to the continent and its peoples

¹¹⁶⁰ Ihonvbere (n 1098).

¹¹⁶¹ *ibid.*

¹¹⁶² *ibid.*

¹¹⁶³ *ibid.*

¹¹⁶⁴ *ibid.*

¹¹⁶⁵ The Constitutive Act 2000, article 2.

- To encourage international cooperation, and promote peace, security and stability on the continent
- To promote democratic principles and institutions, popular participation and good governance
- To promote sustainable development at the economic, social and cultural levels, as well as the integration of African economies
- To promote cooperation in all fields of human activity; and to raise the living standards of African peoples and coordinate and harmonize the policies between the existing and future regional economic communities, for the gradual attainment of the objectives of the AU.¹¹⁶⁶

The above-mentioned list of functions entrusted to the AU suggests that the legislative competence of the Union is increasingly focused on non-water resources issues. Even in non-water issues, the mandate was limited to ‘promotion’ of the member states, rather than direct intervention. Having this legislative competence may have its own positive impacts in shaping the member states’ behaviours, but it is argued that a mere ‘promotion’ competence may not be enough to regulate unsustainable water use within the AU. As noted by Hardin, ‘promotion’ may be equated with ‘verbal claim’ to stop unwise resources exploitation, as opposed to introducing coercive regulatory arrangements.

Through the Constitutive Act, different bodies and specialized agencies were established. These include the Assembly, the Executive Council, the Commission, the Pan-African Parliament and the Court of Justice was established to run the AU’s affairs.¹¹⁶⁷ The Assembly was composed of heads of state and governments of African countries, and it has the mandate to impose sanctions on member states when they fail to comply with the obligations of the AU.¹¹⁶⁸ Amongst other things, the Executive Council coordinates and makes decisions regarding water resources and irrigation policies.¹¹⁶⁹ In addition, there are a number of specialized technical committees that are conferred to run a range of functions in specific areas.¹¹⁷⁰ Within its field of competence, each committee prepares projects and programmes for the AU and submits them to the Executive Council; it ensures the supervision, follow-up and evaluation of the implementation of decisions taken by the bodies of

¹¹⁶⁶ *ibid*, article 3.

¹¹⁶⁷ *ibid*, article 5.

¹¹⁶⁸ *ibid*, articles 6 and 23.

¹¹⁶⁹ *ibid*, article 13.

¹¹⁷⁰ *ibid*, article 14.

the AU; it ensures the coordination and harmonization of projects and programmes of the AU; it submits to the Executive Council, either on its own initiative or at the request of the Executive Council, reports and recommendations on the implementation of the provisions of this Act; and it carries out any other functions assigned to it for the purpose of ensuring the implementation of the provisions of the Act.¹¹⁷¹

Subsequently, the AU adopted organizational structures that established the New Partnership for Africa's Development (NEPAD), which also recognized the extension of the mandates of the AU.¹¹⁷² NEPAD stressed that there were many pressing challenges that the people of the continent were facing and that needed to be addressed by the AU through coordinated efforts.¹¹⁷³ Overall, NEPAD reinforced the AU's mission, amongst others, for poverty reduction and the promotion of sustainable development.¹¹⁷⁴ Since the establishment of the AU and the introduction of NEPAD, the principle of sustainable development has been one of the key guiding principles, in addition to regional integration, that the AU follows.

Eventually, NEPAD was replaced by an agency called the New Partnership for Africa's Development Agency (NEPAC), which handles cross-cutting issues to address NEPAD's objectives. NEPAC works to address issues such as the food crisis that leads to social unrest, climate change and natural resources management, to ensure efficient policy responses within the continent.¹¹⁷⁵ In its institutional arrangements for natural resources management, NEPAC promotes adaptive management, participatory decision-making and an ecosystem-based approach.¹¹⁷⁶ In addition, the Agency envisages addressing incoherent natural resources' governance and promoting a system management approach that supports the prevention of loss of biodiversity, fragmented habitats and a decline in ecosystems.¹¹⁷⁷

The above review of the Constitutive Act that established the AU and NEPAD demonstrates that the AU's legislative competences have been considerably expanded from the conventional ideas of the

¹¹⁷¹ *ibid*, article 15.

¹¹⁷² Declaration on the Implementation of the New Partnership for Africa's Development (NEPAD) (2001).

¹¹⁷³ *ibid*.

¹¹⁷⁴ *ibid*.

¹¹⁷⁵ AU, 'NEPAC strategic direction 2010–2013: facilitating the delivery of high quality programmes and projects to promote Africa's development and regional integration' (25 May 2010) 6.

¹¹⁷⁶ *ibid*.

¹¹⁷⁷ *ibid* 7.

OAU. However, the wordings of the legislative competences of the AU seem to be too weak, and focus more on promotion and facilitating rather than direct intervention. Addressing the drawbacks of natural resources management, including water resources, may need a significant legislative competence in the AU's intervention, rather than its simply promoting the desire to bring reform.

The African ministers responsible for water in 41 African countries met in Abuja, Nigeria, on 29–30 April 2002 and established the African Ministerial Conference on Water (AMCOW).¹¹⁷⁸ AMCOW was constituted through the collaboration and commitment of African governments, regional institutions, civil society groups, development cooperation partners and financial institutions, all working towards the Africa Water Vision 2025.¹¹⁷⁹ AMCOW's organizational set-up consists of a Council of Ministers, responsible for water; an Executive Committee, constituted by three ministers from each of AMCOW's sub-regions (West Africa, Eastern Africa, Central Africa, North Africa and Southern Africa); a Technical Advisory Committee; and sub-regional structures.¹¹⁸⁰ The Executive Committee is advised by a Technical Advisory Committee; it ensures that decisions of the Council are implemented and is also responsible for the development of work programmes.¹¹⁸¹

AMCOW has the duty to provide political leadership, policy direction and advocacy for the protection, management and wise utilization of all Africa's water resources; to enhance the security of water for sustainable development; and to maintain Africa's ecosystems to meet the goals of both Africa Water Vision for 2025 and NEPAD.¹¹⁸² AMCOW has been conferred with responsibilities for facilitating sub-regional, regional and international cooperation, through the coordination of issues relating to water policies and actions among African countries; for providing assistance in the delivery of national, sub-regional and regional programmes to translate the Africa Water Vision 2025 into action; for providing a mechanism for monitoring the progress of the implementation of major regional and global water resource, supply and sanitation initiatives; and for promoting sub-regional and basin and/or sub-basin cooperation. AMCOW also provides a forum for dialogue with UN

¹¹⁷⁸ AMCOW, African Regional Coverage, 'Institutions: African Ministers' Council on Water (AMCOW)' <<http://africasd.iisd.org/institutions/african-ministers-council-on-water-amcow/>> accessed on 12 March 2014

¹¹⁷⁹ *ibid.*

¹¹⁸⁰ *ibid.*, under title B, 'Institutional arrangements'.

¹¹⁸¹ *ibid.*, African Regional Coverage(n 1189).

¹¹⁸² *ibid.*, under the title 'Mandate'.

agencies and other partners on water issues; champions Africa's involvement in global and continental studies about climate change and its impacts, and its development of regional observation networks; facilitates information exchange; and aims to develop policies and strategies for addressing the water issues in Africa.¹¹⁸³

6.5.3 The current state of WRM institutional arrangements

6.5.3.1 The African Water Vision 2025

Enhancement of water security in the AU demands fundamental changes in the outdated institutional arrangements for WRM at both national and regional levels.¹¹⁸⁴ Since the AU replaced the OAU, considerable endeavours have been undertaken to reform institutional arrangements for WRM through the AU's intervention. At the AU level, WRM was mainly considered by adopting the Africa Water Vision for 2025,¹¹⁸⁵ which provides a blueprint for institutional arrangements for WRM.

As the essence of the continent's water resource institutional arrangements, it underlines the need for 'an Africa where there is an equitable and sustainable use and management of water resources for poverty alleviation, socio-economic development, regional cooperation, and the environment'.¹¹⁸⁶ Under this core vision statement, ten major issues have been defined to address water security challenges on the African continent. These include sustainable access to safe and adequate water supplies and sanitation to meet the basic needs of all; sufficient water for food and energy security; adequate water for sustaining ecosystems and biodiversity, both in terms of quantity and quality; reformation of institutions that deal with water resources to create an enabling environment for the effective and integrated management of water in national and transboundary water basins, including management at the lowest appropriate level; water basins that serve as a basis for regional cooperation and development, and are treated as natural assets for all within such basins; an adequate number of motivated and highly skilled water professionals; an effective and financially sustainable system for data collection and assessment; dissemination of national and transboundary water basins;

¹¹⁸³ *ibid.*

¹¹⁸⁴ Economic Commission for Africa (n 143) 1.

¹¹⁸⁵ *ibid.*

¹¹⁸⁶ *ibid.*

effective and sustainable strategies for addressing natural and man-made water resources problems, including climate variability and change; the finance and pricing of water to promote equity, efficiency and sustainability; and, above all, political will, public awareness and commitment for sustainable WRM.¹¹⁸⁷ As an implementation framework:

[the] vision calls for a new way of thinking about water and a new form of regional cooperation. At the regional level, it calls for partnership and solidarity between countries that share common water basins. At the national level, it will require fundamental changes in policies, strategies and legal frameworks, as well as changes in institutional arrangements and management practices. It will necessitate the adoption of participatory approaches, management at the lowest appropriate level, and the mainstreaming of gender issues and the concerns of the youth. At the global level, it will call for assistance from Africa's development partners in mobilizing seed funding for priming the urgent developments needed to underpin sustainable management of the region's water resources.¹¹⁸⁸

The Africa Water Vision document reflects some key features as a management system for water resources. This vision document calls for member states to reflect in their water policies and laws the key features of an effective WRMP, such as: equitable and sustainable use; demand and supply management; water quality protection; integration; cooperation and collaboration; and participation and subsidiarity. The vision is comprehensive, in terms of encompassing water security as a central concern for sustainable development and in calling the AU member states to bring about a fundamental change in their WRM systems. Despite the Africa Water Vision recognizing that water security is at the heart of the AU's social and economic development and environmental sustainability, the status of the AU's legislative competence to intervene in shaping the water laws and policies of the member states and ensuring implementation is unclear. The AU's Water Vision is about calling the member states, rather than reflecting the key features into water policy and law; it leaves the reflection and implementation of the key features of an effective WRMP to the discretion of its member states.

The above quote suggests that it should be member states at the national or river basin levels who manage water resources, by introducing new water policies and laws. The AU's Water Vision calls for its member states to transform their institutional arrangements for WRM, for both water bodies that are confined within member states' national administrative boundaries and those that are

¹¹⁸⁷ *ibid.*

¹¹⁸⁸ *ibid.*, 2.

transboundary, rather than calling for the AU itself to provide binding laws and common implication strategies that may be used as a general framework for WRM law, which would shape the water laws and practices of the continent in a coherent way. This suggests that the Africa Water Vision may remain an impractical dream unless the member states can incorporate the key features of an effective WRM system into their legislation and introduce proper institutional arrangements and organizational structures to implement them.

6.5.3.2 Declarations

After the adoption of the African Water Vision for 2025, the AU also adopted a dozen water declarations. Among them, the 2002 Abuja Declaration underlines the sustainability of water as key to the sustainable development of the continent.¹¹⁸⁹ The Declaration considers water resources as being at the centre of social and economic development, and the environmental sustainability of national, regional and international development.¹¹⁹⁰ Moreover, the Declaration recognizes institutional arrangements for WRM as one of the challenges to water security within the continent, and encourages member states to manage shared water resources in a coordinated way.¹¹⁹¹

Similarly, the Ouagadougou Declaration and Plan of Action on Employment and Poverty Alleviation expresses concerns about sustainable livelihoods for the African population.¹¹⁹² The Ouagadougou Declaration calls for member states to introduce programmes and policies enhancing sustainable development.¹¹⁹³ Likewise, the 2008 AU Continental Social Policy Framework provides guidance to member states with regard to the promotion of rights and ensuring welfare. In 2008 alone, three declarations, which were directly related to WRM, were adopted – the eThekweni Declaration on Sanitation,¹¹⁹⁴ the Tunis Declaration on Accelerating Socio-Economic Growth Through Water

¹¹⁸⁹ AMCOW, (n 1096).

¹¹⁹⁰ *ibid*, para. 4.

¹¹⁹¹ *ibid*, para.6.

¹¹⁹² AU, Ouagadougou Declaration and Plan of Action on Employment and Poverty Alleviation (2004).

¹¹⁹³ *ibid*.

¹¹⁹⁴ AMCOW, ‘AfricaSan Ministerial Statement: The eThekweni Declaration’ (Durban, South Africa, 18–21 February 2008).

Security¹¹⁹⁵ and the Sharm-el-Sheikh Declaration¹¹⁹⁶ – amongst other concerns with regard to meeting the MDGs in relation to water security.

Moreover, in 2012, AMCOW would make a decision that aimed at ‘strengthening Africa’s water management functions at a sub-regional level’, which has been defined as a scale for cooperative arrangements.¹¹⁹⁷ This decision aims for each sub-region to manage its own water resources. Markedly, this decision suggests that WRM systems through treaties between countries – and at sub-regional level – may make their own contribution to the security of water if they are sufficiently comprehensive and can accommodate the pressures that threaten the sustainability of water resources.

Recently, the Monrovia Water Declaration was adopted, which accommodates a range of issues in respect of institutional arrangements for WRM.¹¹⁹⁸ Through this and many others, the AU heads of state and governments have entered into a range of commitments to enhance the security of water resources. These declarations set a hallmark start to implement the Africa Water Vision. As Hendricks states, ‘[i]n fact as we stand here today we cannot, and should not, allow ourselves to just adopt yet another Ministerial Statement without making very firm and tangible commitments for a “call to action” and ensuring that effective mechanisms are put in place to monitor implementation’.¹¹⁹⁹

Water sustainability threats are often on the agenda for AMCOW to bring into its discussions, but they do not go beyond the usual declarations that seek verbal demands for the AU member states or sub-regional levels to commit themselves to ensuring water sustainability.¹²⁰⁰ None of the declarations adopted made an attempt to introduce a comprehensive water law that provides binding water instruments for member states. The AU-level strong legislative intervention through water laws, within African WRM, remains an unaddressed concern, despite it potentially being at the heart of influencing the continent’s institutional arrangements for WRM.

¹¹⁹⁵ AMCOW, ‘Tunis Ministerial Declaration: Accelerating socio-economic growth through water security’(26–28 March 2008).

¹¹⁹⁶ AU, Assembly/AU/ Decl.1 (XI), ‘Decisions, declarations, tribute and resolution’(Sharm El-Sheikh 1July 2008).

¹¹⁹⁷ AMCOW, Decisions of the 8th meetings of the General Assembly of African Ministers’ Council on Water (Cairo 14 May 2012).

¹¹⁹⁸ AMCOW, Monrovia Declaration (29 January 2013).

¹¹⁹⁹ Lindiwe Hendricks, Minister of Water Affairs and Forestry, Republic of South Africa, Closing remarks at Istanbul, cited by Bai-MassTaal; Executive Secretary, ‘Action plan for implementation of regional commitments on water security and sanitation’(AMCOW EXCO, Stockholm Water Week, August 2009).

¹²⁰⁰ *ibid.*

With these ineffective soft laws and soft approaches, AMCOW and the AU have put themselves outside of a practical water resources governance system, leaving each national government, or riparian country, to bring reforms. Practically, the member states' performance in terms of bringing reform with regard to water resources has mixed outcomes: some countries register progressive reform, although these reforms are not comprehensive in their nature, while many countries remain very far from bringing about considerable reform.¹²⁰¹ The implementation of the reforms is generally incoherent, fragmented and isolated, even in river basins that are shared between countries.¹²⁰² Through such institutional arrangements and organizational remits, the AU might not alter its vision, which is currently just a dream of sustaining water resources. Nor will declaration after declaration bring genuine solutions for the contemporary threats to African water resources. If water security in Africa is to be enhanced, the AU must have legislative competence to adopt comprehensive water laws and ensure their implementation.

Despite the pivotal role of the AU member states in ensuring water security in their administrative boundaries or river basins, the AU's intervention in ensuring that member states have coherent policies, laws and strategies to implement this is invaluable. The nature of such institutional arrangements for WRM may bring fundamental changes that transform the level of intervention by the AU. For this, the AU may need strong legislative competence that empowers the introduction of comprehensive water law. This approach allows a governance system that involves multiple levels—the AU should provide a WFD for member states and ensure implementation, whilst allowing each member state to adopt the water policies and laws that are context specific, but shaped to manage the water resources at river basin level, whether the water body ends within the national boundary levels or is transboundary by nature. Setting the water policy directions by themselves are not solutions for enhancing the water security of Africa.¹²⁰³ The policies must be accompanied by proper institutional arrangements, and they need to be implemented.

¹²⁰¹ AMCOW (n 1121).

¹²⁰² *ibid.*

¹²⁰³ F Folifac, 'National water policies and water services at the extreme. What challenges must be faced in bridging the gap: learning from south Africa experience' (2007)1 *African Water Journal*, 15.

6.6 Conclusion of chapter

Water scarcity in Africa is a threat to the continent's social, economic and environmental sustainability.¹²⁰⁴ Its impacts are not necessarily limited to the administrative boundaries within specific member states; they might transcend and affect the common interests of the river basin countries and the whole African continent. Therefore, the separate endeavours of a member state at its own administrative boundary may not significantly halt the threats to water security. This gives an insight into the fact that, at the river basin and regional scale, and as a supranational body, the AU has a critical role in shaping its regions' WRMPs in order to enhance water security.

This chapter reviewed the status of the management system for water resources within the AU, including some regional and river basin arrangements, in order to understand the extent to which the AU has implemented the key features of an effective WRM system. The review in this chapter indicated that on the national scale, some African countries have already developed integrated water policy and law. However, the water policies and laws are not shaped by the AU-level laws but are, instead, fragmented and incoherent; their comprehensiveness to accommodate key features of an effective management system depends on the countries' prioritized concerns and capacities, and other related factors. The introduction of an effective WRMP within national-level water law and policy is not bad as such, as long as it addresses water resources threats and is implemented; however, it is unlikely to accommodate interests beyond the local needs. The possibilities of disregarding the interests of the wider communities beyond their administrative boundary are likely to be high. Such policy and law may not be effective in addressing the interests of the AU or river basin countries. The reform processes also pass through different paths, and inclusiveness varies based on policy priority. Although some countries may share water bodies, they may not have the mechanisms for sustaining their water resources.

IWRM at the regional or river basin level is a key to enhancing water security.¹²⁰⁵ This chapter suggests that the river, as a coordinated transboundary water resource, is not new in Africa. There have been some endeavours to manage water resources through regional agreement, which focused on a particular region's WRM and river basin agreement, such as a treaty that is signed by the

¹²⁰⁴ Economic Commission for Africa (n 1120) 2.

¹²⁰⁵ United Nations Conference on Water (n 393).

riparian states of a specific transboundary river. In water resources governance, bilateral and multilateral water treaties are often at the centre of cooperation-building. The investigation in this chapter indicated that not all cooperation ensures the sustainability of water; rather, the effectiveness may be measured by how the cooperative arrangements themselves are designed to make such arrangements more inclusive and more comprehensive for addressing the threats to water security. Many traditional water treaties may not sufficiently address contemporary threats to water security. In particular, they had been designed to regulate specific water resource issues, and some of them encourage inequitable water use, which is one of the threats to the security of water. Because of this, it is important to introduce regional and river basin arrangements that enhance water security. Similarly, it is also crucial to enhance the AU's intervention in WRM to promote its common interests.

Traditionally, the major legislative competences of the OAU were limited to giving support in a coordinated manner in order to alleviate the colonization and racism threats to which many of the African countries were exposed. Its competence would therefore be fully different from the EU. During this period, the preferred approach upon implementing these objectives was non-interventionist within its member states' internal affairs. Introduction of an effective WRM system was not the mandate of the OAU, though each member state might separately introduce water policy and law that it assumed appropriate for the sustainability of water.

However, post-colonial Africa has changed the AU's mandate in intervening in some issues that were previously the remit of individual member states. With the establishment of the AU and NEPAD, competences were extended to intervening in issues that affect the sustainable development of the continent. However, the wordings of the legislative mandates of the AU and NEPAD seem to be too weak and focus more on promotion and facilitation, rather than direct intervention. Addressing the drawbacks of natural resources management, including water resources, may need significant regional intervention, rather than simply promoting and expressing the desire to bring reform.

To tackle water scarcity threats, the AU made some efforts in its aim to reform the continent's WRM systems. Notably, the AU adopted the Water Vision that accommodates some key features of an effective WRMP. Subsequently, AMCOW and the heads of government of African countries have formulated a range of declarations that call for the implementation of the Africa Water Vision. Since 2000, the AU has adopted a dozen WRM declarations.

The AU has made some significant moves on water policy and law development following on from the establishment of the African Union. However, the extent of development in water policy and law remains weak at the regional scale, when one assesses the state of the AU's water law along with the insights drawn from the EU's water policy and law. The finding of this chapter is that, despite water resources in the African continent being under a frightening threat of scarcity, the AU does not have strong legislative competence law to intervene in WRM when compared with the EU. Too many years are spent in endless conferences that provide declaration after declaration, rather than introducing water legislation and formulating clear implementation action plans that accommodate features of an effective WRMP. Through such declarations, practically, it may not be possible for the AU to implement a water vision that incorporates such effective features of a WRM system that addresses the water security threats. The root problem for this weakness may emanate from the legislative mandate of the AU, which is highly restricted in developing water law. In order to enhance the sustainability of water resources in the Union, the legislative mandate of the AU may need to expand in a way that allows the Union to intervene strongly in developing a water framework that imposes a duty on the member states to transpose its water policy and law in a more harmonized fashion.

This chapter argued that contemporary African water security issues may partly be due to the AU's legislative competence problems in providing an effective WRM system, and not only due to the failure of its member states. To tackle the fragmentation and incoherence of the water policies and laws between member states, the AU needs to have a strong legislative competence. As water security is a regional threat and has regional implications, the AU should thus have strong legislative competence to intervene at that level. In particular, the AU should have the mandate to provide a comprehensive water law, which in turn provides a general framework for member states to reform their national laws, policy instruments and water treaties. Through such institutional arrangements, each member state may play its part; but all the water law and policy instruments of the AU's member states should be harmonized, and the implementation of strategies should be introduced to hold accountable those member states that fail to act according to the AU's legislation.

Such legislative competence to introduce model AU law may limit member states from giving their own concerns priority, rather than the long-term common interests of the AU. It also not only provides direction, but also avoids confusion in the understanding of why the given legislation is

issued.¹²⁰⁶ It would help the evolution of laws that are directed to those problems that demand solutions.¹²⁰⁷ The provision of a comprehensive water policy and law by the AU would be supportive of its integration endeavours, and can change those member states' water laws and policies that are now too fragmented, isolated and incoherent to be likely to enhance the security of water resources. Moreover, the introduction of a model law is likely to speed up the adoption and implementation of an effective WRM system throughout the AU. It would help to harmonize its member states' water policies and laws, in order to enhance water security.

However, this model water law would need to provide a water framework that is general enough to allow member states to shape within their local contexts. A model law is not something to be copied. Rather, it should be adapted to the contexts and the actual water resource pressures of each specific country; it should also accommodate the key features of an effective WRMP. Thus, the introduction of a model water law for of the AU countries does not mean that each of them should introduce a 'one-size-fits-all' water legislation, but that the AU's member states should integrate this legislation based on their responsiveness, and harmonize their national laws with the core principles of the AU's water framework legislation. Such legislation should be complemented with the CIS of the AU to minimize the risk of inconsistencies upon implementations.

Chapter Seven: Water resources and WRM systems in the context of Ethiopia

7.1 Introduction

The assessment undertaken in Chapters Four and Five of this study has demonstrated that there are new developments in the WRMPs of the EU and England. These water policy and law developments are partly attached to the growing water shortage, and the insights gained from their discussion suggest that ensuring the security of water requires, amongst other things, an effective management system for water resources. Likewise, Chapter Six reviewed the state of the AU's water policy and law in affecting the water security of its member states.

¹²⁰⁶ Bernard Black and R Kraakman, 'A self-enforcing model of corporate law 1911–1982' (1996) 109 *Harvard Law Review*, 1.

¹²⁰⁷ *ibid.*

Ethiopia is one of the AU member states. This chapter reviews the availability of such water resources, and the rationale for the discussion in this context is primarily to evaluate whether water security is the main challenge in Ethiopia. The chapter investigates the features of WRMPs under water policy and law. It might be difficult to understand the effectiveness of existing WRM systems without having knowledge of the context of such water resources. In Ethiopia, agriculture is estimated to account for more than 90 percent of all water withdrawals.¹²⁰⁸ Many communities are also served by direct abstraction from the resources.

This chapter also examines past and present systems for WRM in Ethiopia in order to conduct an assessment and explore the extent to which the key features of an effective WRM are reflected in the current Ethiopian water policy and law that regulate water security challenges. For this purpose, Chapter Seven investigates developments in water resources policy and law within two distinct periods: the developments until the 1990s are categorized under the traditional model; while the contemporary category refers to the developments in policy and laws since the 1990s.

Traditional water regimes are reviewed to evaluate the drives for their development, the extent to which water policy and law address challenges in water security, and the rationales for their change. Contemporary water law and policy developments are examined to understand the extent to which the Ethiopian water policy and law reflect the key features of an effective management system for water resources. The main themes in this chapter are organized into three sections. The first section reviews availability and factors affecting the security of water resources. The second section reviews the water regimes and mandates of different institutions. Finally, the chapter draws a conclusion.

7.2 Availability of water resources and factors affecting the security of water resources in Ethiopia

Relatively speaking, Ethiopia is endowed with abundant water resources and because of this; the country has metaphorically been called ‘the water tower of east Africa’. Amongst the 12 river basins that the country has, many of them cross national administrative boundaries and drain several east African countries.¹²⁰⁹ The country’s river basins provide a total of an estimated 122 billion m³ of

¹²⁰⁸ FDRE MOWR, Agricultural Water Management Information System of Ethiopia (AWMISSET) <www.mowr.gov.et/AWMISSET/Water_resource.html> accessed 20 June 2015.

¹²⁰⁹ FDRE (n 141) 4.

water run-off annually, and an estimated 2.6–6.5 billion m³ of groundwater potential.¹²¹⁰ In fact, an average of 1,575m³ of water per person per year is available.¹²¹¹

But paradoxically, the country faces continuous challenges of drought and food insecurity.¹²¹² One of the causes of these problems is that the country is unable to utilize its water resources.¹²¹³ Moreover, the country’s water resources are exposed to a great deal of spatial and temporal variability.¹²¹⁴ The variability of water resources extends from extreme drought with an acute shortage of water resources to high floods.¹²¹⁵ Table 1 shows figures for the availability of water, indicating that water resources vary by basin.¹²¹⁶

Table 1: Surface water resources of major river basins in Ethiopia¹²¹⁷

No.	Name of river basin	Catchment area (km ²)	Annual run-off (billion m ³)
1	Abbay	199,912	52.6
2	Awash	112,700	4.6
3	Baro-Akobo	74,100	23.6
4	Genale Dawa	171,050	5.80
5	Mereb	5,700	0.26
6	Omo-Ghibe	78,200	17.90
7	Rift Valley Lakes	52,740	5.60
8	Tekezze	89,000	7.63
9	Wabe Shebelle	200,214	3.15
10	Afar-Danakil	74,000	0.86
11	Ogaden	77,100	0
12	Aysha	2,200	0
	Total	1,136,816	12,200

¹²¹⁰Seleshi Bekele Awulachew, Aster Deneke Yilma, Makonnen Loulseged, Willibald Loiskandl, Mekonnen Ayana and Tena Alamirew, ‘Water resources and irrigation development in Ethiopia’ (Working Paper 123), International Water Management Institute(2007) xi.

¹²¹¹ibid.

¹²¹² Kenfe Aberaha, *The issue of Nile: Fairness in water allocation?*(2007) 317 [This source is a translation from the Amharic version of the book by Professor Kenfe Aberaha].

¹²¹³ibid.

¹²¹⁴Awulachew et al.(n 1210).

¹²¹⁵ The World Bank, *Ethiopia: managing water resources to maximize sustainable development, country water resources assistance strategy* (2006) 2 and 58.

¹²¹⁶AMCOW, ‘Water security and climate resilient development’ (Technical Background Document 2012).

¹²¹⁷ MoWR, Surface water resources of major river basins in Ethiopia, 2012

The detailed study made by the British Geological Survey suggests that the context of water security challenges in Ethiopia varies from place to place.¹²¹⁸ The study underlines the fact that, in the highland parts of the country:

water security is generally higher however, as springs are more numerous and demand (from people and livestock) is relatively low. In lowland areas the aquifer is larger, but water security is undermined by limited (and poor quality) surface water, restricted access to the aquifer via boreholes, and greater demands. Boreholes are also subject to mechanical failure. Increase in demand can put stresses on individual groundwater sources, but are unlikely to affect the resources as a whole.¹²¹⁹

Among the 12 river basins, eight water bodies are actual river basins; one is a lake basin; and the remaining three are dry basins with no or insignificant flow out of water.¹²²⁰ Some river basins have little or no water run-off. For instance, the Awash River basin catchment area covers an area of 110,000km² and has a total length of 1,200km.¹²²¹ The majority of the Awash River basin, in the downstream areas, experiences hot and dry climatic conditions, which have a direct implication on the quality and quantity of the water resources. This basin district is amongst the driest river basins in Ethiopia.¹²²²

As can be observed from Map 3, the surface water run-off varies significantly within different parts of the river basin district. In the eastern catchment of the basin, there are no streams that contribute to surface run-off. On the other hand, the western highlands and parts of the middle valley and of the lower valley are concentrated with streams, compared to other segments of the Awash River basin district. The uplands and upper valley have medium stream coverage. In the lower plains, there are few streams running to Lake Abe. This map does not reveal the groundwater distribution in the catchments; the groundwater distribution of the country is under study.¹²²³

¹²¹⁸ AM MacDonald, RC Calow, AL Nicol, B Hope and NS Robins, 'Ethiopia: water security and drought' (British Geological Survey, Natural Environment Research Council, Technical Report WC/01/0, 2001).

¹²¹⁹ *ibid.*

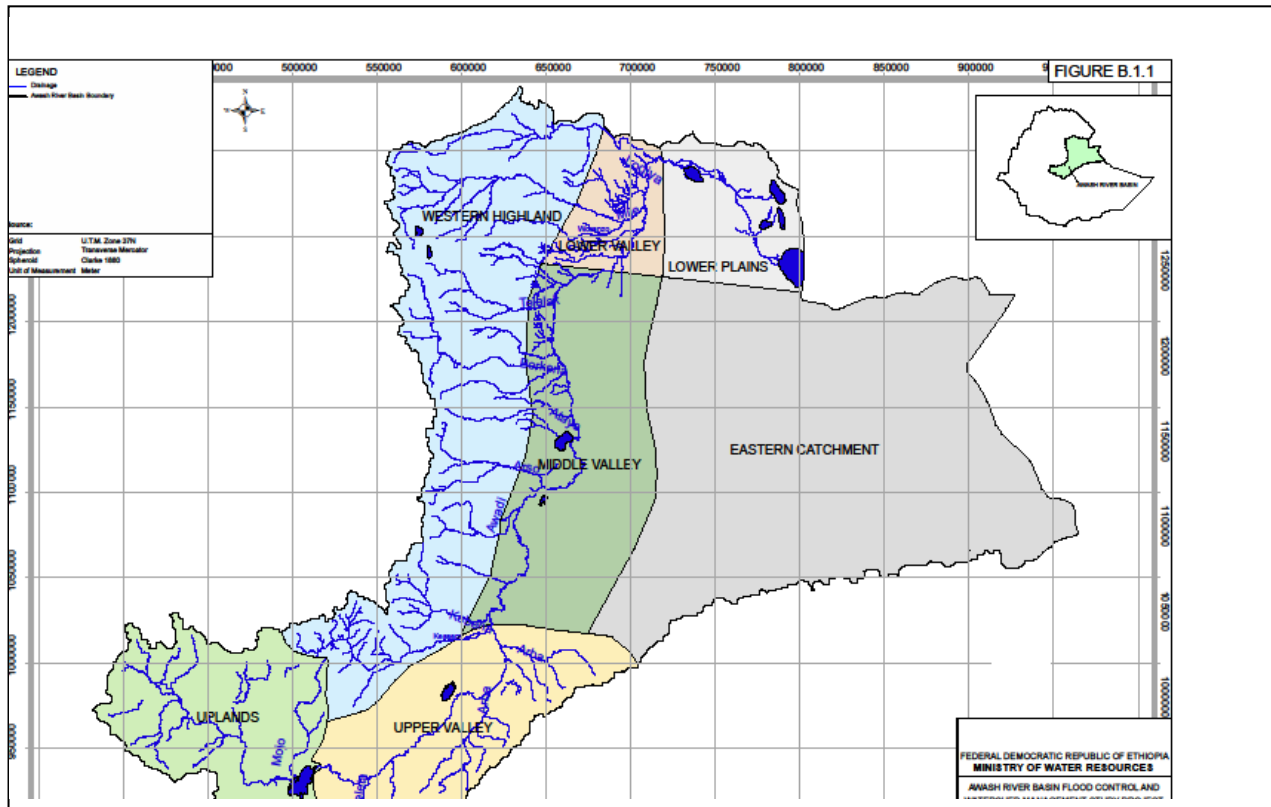
¹²²⁰ MoWR, *Surface water resources of major river basins in Ethiopia* (MoWR 2002).

¹²²¹ MoWR, *Master plan for the development of surface water resources in the Awash basin* (MoWR 1998) 6.

¹²²² MoWR, 'National water development report for Ethiopia' (final, December 2004) 132.

¹²²³ MacDonald et al. (n 1218).

Map 3: Awash River Basin District¹²²⁴



In this basin district, the highlands receive a rainfall of 1,000mm/year, which decreases to 200mm/year in the lowlands.¹²²⁵ The Awash River basin district's surface water run-off is relatively low compared with other basin water resources.¹²²⁶ In this river basin district, there is often a scarcity of surface water during the dry season;¹²²⁷ therefore the downstream arid and semi-arid areas suffer continuously with drought.¹²²⁸

In addition to the natural unavailability of water resources, human-induced factors are the major evidential threats to water resources security in Ethiopia.¹²²⁹ The level of human pressures varies

¹²²⁴ MoWR, Awash River Basin Flood Control and Watershed Management Project, published on 06 October 2006

¹²²⁵ Newson (n 751) 177–79.

¹²²⁶ MoWR (n 1224).

¹²²⁷ Interview with Mohammed Ali Mohammed, Director of Technology Transfer Program Directorate, the FDRE Environmental Protection Authority, 16 August 2011.

¹²²⁸ *ibid.*

¹²²⁹ Tenalem Ayenew, *Natural lakes of Ethiopia* (Addis Ababa University Press, 2009) 161.

from basin to basin. For instance, the water resources of the Awash River basin district are relatively highly utilized for a range of development purposes in comparison to other basins in the country.¹²³⁰ Some of the human pressures that affect the scarcely available water resources make them unsuitable for human use and biodiversity.¹²³¹

Available data indicates that the future challenges to water security in Ethiopia are increasingly terrifying when compared with some of its neighbouring countries.¹²³² With a rapidly growing population, the per capita availability of water is rapidly diminishing more than ever before (see Table 2).¹²³³ With the growth of the population, the demand for water for basic human needs increases.¹²³⁴ Drought and competing demands to supply water exacerbate water security.¹²³⁵ Kenfe Hailemariam’s prediction of climate change has shown that it will bring major changes in the availability of water in the Awash River basin district.¹²³⁶ He anticipated that the water run-off may decrease or increase with significant changes in the precipitation of water into the river basin.¹²³⁷

Table 2: The prediction of water security in Ethiopia¹²³⁸

Country	Population 1995 (millions)	Population 2025 (millions)	GNP per capita 1996 (US \$)	Population below the poverty line (1US\$/day) (PPP) (%)	Per capita water availability 1990 (m ³)	Per capita water availability 2025 (m ³)
Burundi	6.4	13.5	170		655	269
DRC	43.9	104.6	160		359,803	139,309
Egypt	62.9	97.3	1,090	7.6	1,123	630
Ethiopia	55.1	126.9	100	33.8	2,207	842
Kenya	28.8	63.4	320	50.2	636	235
Rwanda	8	15.8	190	45.7	897	306
Sudan	28.1	58.4			4,792	1,993
Tanzania	29.7	62.9	170	16.4	2,924	1,025
Uganda	21.3	48.1	300	50	3,759	1,437

¹²³⁰ Aberra and Deksios, ‘Ethiopia’s water resources’ (2001) 18 *Water & Development* (quarterly magazine of the Ethiopian MoWR in Amharic).

¹²³¹ Howarth (n 69) 357.

¹²³² Manas Chatterji, Saul Arlosoroff and Gauri Guha, *Conflict management of water resources* (Ashgate Publishing Ltd 2002) 146.

¹²³³ *ibid.*

¹²³⁴ William Howarth (n 69).

¹²³⁵ Aberaha (n 1212) 336–37.

¹²³⁶ Kenfe Hailemariam, ‘Impacts of climate change on the water resources of Awash River basin, Ethiopia’ (1999) 12 *Climate Change Research*, 95.

¹²³⁷ *ibid.*

¹²³⁸ Chatterji et al. (n 1232).

7.3 WRMPs under Ethiopian policy and law

7.3.1 Constitution

7.3.1.1 Water resources management

In the Ethiopian legal system, the Constitution is the supreme law that provides the general legal framework. All other legislation, practices and decisions must follow the rules and road-maps that are set out by the Constitution. Any ‘law, customary practices, and decisions made by state organ or public officials inconsistent with Constitution are null and void’.¹²³⁹ The constitutional law is the key legislation for investigating and exploring the state of direction in the present water resources law. The 1995 Ethiopian Constitution was adopted with the intention of providing remedies to the drawbacks of past regimes with respect to political, social and economic aspects.¹²⁴⁰ In particular, this Constitution aspires to serve as a recipe to rectify past mistakes and to set the road-map that has been transforming the country. It determines the jurisdiction over WRM and defines the jurisdiction of the level of government that is responsible for ensuring the sustainable use of water resources.

Through the 1995 FDRE Constitution, natural resources, including water resources, are entrusted to ‘the State and the People of Ethiopia’.¹²⁴¹ There are two entities that are mentioned under the Constitution as the owners of water resources: the first nation and the people of the country. Regarding land resources, the Constitution provides protection to land owners, peasants and pastoralists from the displacement of their land unless an advance payment of compensation is made in cases where land is disposed of for public purposes.¹²⁴² But regarding other natural resources, there are no clear constitutional rules conferring such prerogatives for the possessors or persons with interests.

The concept of ownership of natural resources by ‘the State and the people of Ethiopia’ under the Constitution remains unclear in terms of what this means in practical terms.¹²⁴³ Damtie, the Ethiopian legal scholar, uses two strands of interpretation for these two terms. First, he argues that natural resources in Ethiopia cannot be owned through private ownership. Through this lens, he contends

¹²³⁹ Constitution of the FDRE, no.1/1995, article 9, sub article 1.

¹²⁴⁰ Constitution of the FDRE, Preamble.

¹²⁴¹ Constitution of the FDRE, no.1/1995 article 40, sub article 3.

¹²⁴² Constitution of the FDRE, no.1/1995 article 40, sub articles 4 and 5.

¹²⁴³ Mellese Damtie, ‘Land ownership and its relationship to sustainable development’ (2009) III, *Ethiopian Business Law Series*, Faculty of Law Addis Ababa University, 32–38.

that the conceptualization of the ownership of natural resources by ‘the State and People of Ethiopia’ may be considered as ‘public ownership’, which considers putting water resources within the public domain. Public ownership right over the water resources is supportive of a qualified right in order to protect long-term public interest over the water resources.¹²⁴⁴

Local-level involvement could enhance a more effective natural resources management;¹²⁴⁵ the closer that natural resources management is to the lower level, the more it also enhances local people’s participation.¹²⁴⁶ Participation favours a decentralized natural resources management that also enhances decentralization of power to the lowest appropriate level.¹²⁴⁷ The second strand of the interpretation considers that the ownership of natural resources is vested in both the state and the people of Ethiopia as two distinct entities. Damtie further argues that the inclusion of the phrase ‘the people of Ethiopia’ as an owner of natural resources may be intended to recognize the rights of indigenous peoples. His second interpretation gives local people the powers and authority to have control over their respective natural resources. With this understanding, arguably, the FDRE Constitution entrusts the powers to control water resources to the federal, regional or local levels and to local people. This interpretation is supportive of the idea of an inclusive governance system, that is, nested systems that allow a range of stakeholders to manage water. It is justifiable to argue that responsive WRM may not materialize without introducing a more inclusive approach to water resources for stakeholders.¹²⁴⁸

Under the section of the Constitution that defines the powers and authorities of the levels of government, the federal government is entrusted with the power to enact laws for the utilization and conservation of land and other natural resources, including water resources, whilst the regional states’ powers are limited to administering land and other natural resources in accordance with federal laws.¹²⁴⁹ The Constitution does not give the power or discretion to the regional states and local people to determine the administration of natural resources upon formulating policy and enacting law. Exceptionally, in rural land administration, the regional states are entitled to enact laws that provide detailed rules for facilitating the implementation of the law enacted by the federal government.

¹²⁴⁴ David Getches (n 157)10.

¹²⁴⁵ Ostrom (n 184) 90–105.

¹²⁴⁶ CBD COP 5, and Nairobi, Kenya, 2000 Retired sections: paragraphs 4-5. Principle 2 Justification Notes.

¹²⁴⁷ *ibid.*

¹²⁴⁸ Pahl-Wostl and Hare(n 208) 193–94.

¹²⁴⁹ Constitution of the FDRE, articles 51(5) and (2)d.

However, the federal government may delegate the power to manage natural resources to the regional states.¹²⁵⁰ In natural resources management, the decentralization of powers in policy formulation and law enacting is considered only in exceptional situations, and with the discretion of federal government, to determine the matters being delegated.

With regard to WRM, the Constitution entrusts power to the federal government to ‘determine and administer’ the utilization of the waters, rivers or lakes linking two or more states or crossing the boundaries of the national territorial jurisdiction.¹²⁵¹ This provision implies that, in principle, interstate WRM is constitutionally centralized, unless the regional states obtain the mandate through delegation.¹²⁵² In this way, the administration of natural resources, particularly water resources, may be seen as a positive measure for avoiding the localized water utilization that leads to the inequitable share of water resources, particularly of interstate water resources.¹²⁵³ The federal government decides upon such delegation and how it works. This authority may also be revoked if the lower level is not performing its functions effectively. By its own discretion, federal government transfers some of its responsibilities for WRM to the regional states. A strict reading of the FDRE Constitution could suggest that regional states may have the exclusive power to manage water resources that are confined within their respective administrative boundaries, according to the laws that are enacted by the federal government. Through this understanding, both federal government and respective regional states have the jurisdiction to manage non-interstate water; the federal government enacts the laws and the regional states implement them.

Article 51 (11) of the Constitution states that federal government ‘shall determine and administer the utilization of waters or rivers and lakes linking two or more states or crossing the boundaries of the national territorial jurisdiction’.¹²⁵⁴ In this statement, the word ‘linking’ does not have a single interpretation. From a water resources point of view, ‘linkage’ may be established when a water course or water body crosses the administrative boundaries of two or more states, or crosses a national boundary jurisdiction. The ‘linkage’ may also be established by the watershed or social and economic benefits that a river or water body provides, though the Constitution does not give any clue. The broader consideration of the ‘waters, rivers or lakes’ link may encompass all water resources and

¹²⁵⁰ Constitution of the FDRE, article 52, sub article 2(d) and articles 50(8),50(9).

¹²⁵¹ Constitution of the FDRE, article 51(11).

¹²⁵² Constitution of the FDRE, article 52, sub article 2(d).

¹²⁵³ Rodda (n 370); see also Gleick (n 414).

¹²⁵⁴ Federal Constitution of Ethiopia, article 521 sub article 11

ecosystems in the country. For instance, one of the senior officials in the Ministry of Water and Energy Resources argued that the mandate to conduct the administration of all water resources in Ethiopia is entrusted to the federal government.¹²⁵⁵

Fekahmed Negash believes that this concept of ‘linkage’ in the Constitution does not mean that waters, rivers or lakes are left for the administration of regional states. He contends that all water resources in the country interlink two or more regional states or cross national administrative boundaries, either through surface water or groundwater or both. He suggests that regional states do not have a constitutional mandate to determine and administer water resources unless they obtain power from the federal government through delegation. Another senior government official, also from the MoWE, confirmed that constitutionally, WRM is centralized.¹²⁵⁶ He believes that the mandate to administer water resources in Ethiopia is conferred upon the national government, and the involvement of regional government in WRM is limited to circumstances in which the authority is delegated by the federal government. He contends that water resources are not the resources of specific groups. Rather, they are owned and administered for the interest of all the people in the nation. Federal government, therefore, conducts WRM on behalf of the people of the nation. This interpretation may be seen to undermine local people’s interest.

Practically, centralized WRM may not be responsive in addressing the interests of local water resource users.¹²⁵⁷ Firstly, the federal government may not have its own sectors that handle the human pressures of water resources at a local level throughout the water bodies in the country. They are situated further away than the regional and local levels in terms of providing quicker solutions for water resource problems. Naturally, neither local nor central government alone is effective in handling water resource problems.¹²⁵⁸ There must be a role for both central and local levels to engage in WRM.¹²⁵⁹

The solution for water security challenges is a multiple scale-oriented model that accommodates the interests of different levels. The success of WRM is dependent on the collaborative efforts of diverse

¹²⁵⁵ Interview with Fekahmed Negash, Directorate Director of Basins Management Administration in the FDRE Ministry of Water and Energy Resources, 9 August 2011.

¹²⁵⁶ Interview with Zewdu Tefera, Director Directorate of Legal Affairs, FDRE Ministry of Water and Energy Resources, 23 August 2011.

¹²⁵⁷ Dessalegn Rahmato, *Water resources development in Ethiopia: issues of sustainable and participation* (Forum for Social Studies 1999); see also Newson (n 751) 179.

¹²⁵⁸ Butterworth et al. (n 375) 70–71.

¹²⁵⁹ *ibid.*

stakeholders.¹²⁶⁰ Some water resource concerns may be handled at a higher level, whereas others could be handled at a lower level.¹²⁶¹ The regional states or levels and local people exert an influence on water resources development and protection, whether the water body is interstate or transboundary in its nature. The consideration of interstate or any shared WRM as the exclusive mandate of federal government ignores the existing facts. Even a river basin plan may not create a concrete picture without considering the needs and interests of local and national levels.

A RBMP is composed of many separate projects, plans and needs, which are brought together by coordinating the functions of different sectors and levels of government.¹²⁶² The foundations for the RBMP are the plans for diverse projects and units, which bring together efforts for water utilization and protection. For instance, in the USA, Trelease noted that this was why shared water resources were not managed exclusively by the federal government.¹²⁶³ Rather, the regional states and other administrative levels below them play their own role in WRM.¹²⁶⁴

7.3.1.2 The right to clean water as a human right

The 1995 Ethiopian Constitution states that ‘the People of Ethiopia as a whole, and Nation, Nationality and People in Ethiopia in particular, have the right to improved living standards and the right to sustainable development’.¹²⁶⁵ The Constitution also pledges that ‘all international agreements and relations concluded, established or conducted by the State shall protect and ensure Ethiopia’s right to sustainable development’.¹²⁶⁶ The Constitution further underlines that ‘the basic aim of development activities shall be to enhance the capacity of citizens for development and to meet their basic needs’.¹²⁶⁷ As part of sustainable development and meeting basic needs, the Constitution places environmental and water issues at the centre. Under Article 44(1) the Constitution recognizes environmental rights: ‘all persons have the right to a clean and healthy environment.’¹²⁶⁸ It also imposes an obligation that the ‘Government shall endeavour to ensure that all Ethiopians live in a

¹²⁶⁰ Secretariat of the CBD (n 314) 4.

¹²⁶¹ Golub (n 359) 686–703.

¹²⁶² Frank J. Trelease, ‘A model state water code for river basin development’ (1954) *Western Water Law*, 301.

¹²⁶³ *ibid.*

¹²⁶⁴ *ibid.*

¹²⁶⁵ Ethiopian Constitution 1995, article 43(1).

¹²⁶⁶ *ibid.*, sub article 3.

¹²⁶⁷ *ibid.*, sub article 4.

¹²⁶⁸ *ibid.*, article 44(1).

clean and healthy environment'.¹²⁶⁹To this effect, the design and implementation of programmes and projects of development should not damage or destroy the environment.¹²⁷⁰ However, the environmental protection concerns may not be something that is left for the government alone to implement. It is the duty of both the government and citizens.¹²⁷¹ Stakeholders' participation is one of the crucial tools; the involvement of citizens to protect and conserve their environment is paramount. In terms of their participation in decision-making, the Constitution states that 'People have the right to full consultation and to the expression of their views in the planning and implementations of environmental policies and projects that affect them directly'.¹²⁷² Participation enables people to realize their rights to a clean environment, clean water, to meeting basic needs and discharging their obligations. Participation is also a key tool to hold the government accountable for its failure to discharge its obligations.

A small number of African countries do recognize the right to clean water as a human right. Ethiopia is amongst these countries. In Ethiopia, the right to clean water is enshrined in its 1995 Constitution, which states that '[t]o the extent the country's resources permit, policies shall aim to provide all Ethiopians access to public health and education, clean water, housing, food and social security'.¹²⁷³ None of the previous versions of the Constitution explicitly mentioned this right. As the Constitution is a supreme law of the country, it is used as a legal foundation for policies, legal instruments, plans and developments in addressing such rights.

It was nearly twenty years ago when Ethiopia gave recognition to the right to clean water, and imposed an obligation on both government and its citizens to protect their environment. Its inclusion under the national constitutional document signifies the government's political commitment to protect this right. The recognition of the right to clean water under the Constitution brought the issue of water as a priority matter to the forefront, and gives a legal foundation for its protection. It also forces the state to formulate policies, laws and plans that facilitate implementation of this right. Failure to do so would hold it accountable. However, what remains to be done is defining how the right would be implemented within the economic and technical limitations of the country. The

¹²⁶⁹ *ibid*, article 92 (1).

¹²⁷⁰ *ibid*, article 92 sub article 2.

¹²⁷¹ *ibid*, article 92(4).

¹²⁷² *ibid*, article 92(3).

¹²⁷³ *ibid*, article 90 sub article 1.

effective implementation of the right to clean water also depends on the will and capacity of the government and other stakeholders.

7.3.2 Policies and strategy

7.3.2.1 Policies

Ethiopia's Constitution imposes an obligation on its government to protect the environment.¹²⁷⁴ After the introduction of the Constitution, three central policy instruments – the environmental and water policies and the national water sector strategy – were adopted to introduce the policy directions for WRM. In 1997, an environmental policy was formulated to guide the environmental governance system in Ethiopia.¹²⁷⁵ This first attempt to set out a comprehensive policy provides a road-map with respect to environmental concerns, including WRM. The policy's emphatic goal is on ensuring the sustainable use of natural resources.¹²⁷⁶ It advocated that to ensure long-term use of resources means taking into account context-specific resources.¹²⁷⁷ As a scheme to ensure the sustainability of water resources, the policy document incorporates WRM through quality and quantity regulation.¹²⁷⁸ In 1999, a WRM policy, which provides a general framework for a water regime, was formulated.¹²⁷⁹ This policy document underlined, *inter alia*, the past water sector problems, such as a lack of water strategy, the inefficient utilization of water and unrealistic water development plans.¹²⁸⁰

Prior to the adoption of the water policy, it seems that the prevailing perception in Ethiopia was that water resources in the country were abundant. The WRM policy, however, underlined the fact that water resources are uneven and exposed to variation by place and time.¹²⁸¹ Through this policy, it is now understood that the water resources in the country are scarce and finite.¹²⁸² One of the key features of this policy is that it underlines the importance of adhering to IWRM for the development and protection of the country's water resources.¹²⁸³ The policy document outlined the context of the country's drinking water and coverage as being nominal, and needing aggressive measures to ensure

¹²⁷⁴ *ibid*, articles 43,44, 92.

¹²⁷⁵ FDRE, Environmental Policy of Ethiopia, 1997.

¹²⁷⁶ *ibid*, section, 2.1.

¹²⁷⁷ *ibid*, section 2.2.

¹²⁷⁸ *ibid*, section 3.4.

¹²⁷⁹ FDRE, Ethiopian Water Resources Management Policy, 1999.

¹²⁸⁰ *ibid*, preamble.

¹²⁸¹ *ibid*.

¹²⁸² *ibid*, section 2.1.1.3.

¹²⁸³ *ibid*, section 2.1.1.

an adequate, reliable and clean water supply.¹²⁸⁴ As the driving model, water demand and supply management was introduced with diverse accompanying schemes.¹²⁸⁵ The policy favours water demand management through introducing approaches that allow efficient utilization of water resources.¹²⁸⁶ In particular, when there is a risk of water scarcity and where there are competing demands, the minimum amount of water resources is reserved for human consumption, livestock and the environment.¹²⁸⁷ When abstracting groundwater, a quantity of the water is regulated through developing rules and standards to determine the limit of water resources exploitation.¹²⁸⁸

Moreover, water pricing has been introduced to recognize water in both economic and social terms.¹²⁸⁹ The policy favours the need to use the full cost-recovery and ‘willingness to pay’ models, for drinking water cost internalization for the water users living in towns, whereas it suggests cost-recovery for the maintenance of facilities for the rural communities.¹²⁹⁰ The internalization of costs aims to achieve the protection, conservation and efficient use of water resources.¹²⁹¹ As part of a social concern, affordability to pay is incorporated within the water pricing for rural communities to enhance their access to improved water.¹²⁹² The policy assumes that rural people are unable to pay the full cost, which is more than the cost of the maintenance of facilities.

However, the policy document does not seem to recognize the urban poor, whose access to clean water may be constrained if the full cost-recovery principle is applied in practice. Neither does the policy consider cross-subsidy to address access to water for the urban poor. In setting up the water tariff, the local circumstances of the communities are taken into account;¹²⁹³ however, the income situation of each individual customer does not affect the pricing. In the case of non-drinking water, for instance (such as industrial water use), the pricing policy is that the ‘user pays’.¹²⁹⁴ This classification suggests that the users will be expected to pay the full cost of the amount of water used.

¹²⁸⁴ *ibid*, sections 2.3.1 and 2.3.1.1.

¹²⁸⁵ *ibid*, section 1.1; see also section 1.2.

¹²⁸⁶ *ibid*, section 1.2.1.

¹²⁸⁷ *ibid*, section 2.2.1.

¹²⁸⁸ *ibid*, section 2.2.6.

¹²⁸⁹ *ibid*.

¹²⁹⁰ *ibid*, section 2.2.5(B)7; see also section 2.2.5 (B)6.

¹²⁹¹ *ibid*, section 2.2.5.

¹²⁹² *ibid*.

¹²⁹³ *ibid*.

¹²⁹⁴ *ibid*, 26.

In addition to demand management, supply management has been considered for the purpose of ensuring water supplies. Adequate water supplies are sought through developing new water infrastructures or water transferring,¹²⁹⁵ and the basin boundary is seen as guidance for this WRM approach.¹²⁹⁶ The policy favours creating interconnections within a basin. Furthermore, within water security management, developing an appropriate long-term plan is important.¹²⁹⁷ For this purpose then, the WRM policy suggests the introduction of ‘the appropriate water supply planning parameters, design criteria and standards along with acceptable, desirable and permissible ranges and limits’.¹²⁹⁸ Another means through which the sustaining of water resources has been considered is the prevention of water pollution.

Traditionally, the organizational remits of WRMPs in Ethiopia were centralized, following the top-down approach.¹²⁹⁹ Central government was responsible for the overall management of water resources. The current water policy calls for the underpinning of the overall development of water resources through such ideas as a rural-centred, decentralized and participatory approach, as well as an integrated framework that promotes the participation of all stakeholders and user communities in the relevant aspects of WRM.¹³⁰⁰

This WRM in Ethiopia involves both national and local levels. To this end, IWRM, which involves diverse levels from federal to local, is recognized.¹³⁰¹ In particular, the policy document declares the establishment of relationships between the different levels and sectors through defining the responsibilities of each stakeholder within WRM.¹³⁰²

Watershed management is not a new practice in Ethiopia. It was started by the Ethiopian government, with the support of the World Food Programme, after the 1970s drought shocks.¹³⁰³ During this

¹²⁹⁵ *ibid*, sections 2.3.1.3, 1.2.3, 2.1.1.

¹²⁹⁶ *ibid*, section 2.1.1. 6.

¹²⁹⁷ *ibid*, section 2.2.5.

¹²⁹⁸ *ibid*, section 3.3.1.4; see also section 2.3.1.3.

¹²⁹⁹ Rahmato (n 1257).

¹³⁰⁰ FDRE (n 1279) section 1.3.4.

¹³⁰¹ *ibid*, section 4.1.

¹³⁰² *ibid*, sections 2.2.13 and 4.1.

¹³⁰³ Hankan Tongul and Matt Hobson, ‘Scaling up an integrated watershed management approach through social protection programmes in Ethiopia: the MERET and PSNP schemes’, 15–16 April 2013, Dublin, Ireland. Case Studies Policy Responses <www.mrfcj.org/pdf/case-studies/2013-0416Ethiopia-MERET.pdf>. accessed 13 August 2016

period, watershed management activities were carried out in exchange for food aid relief. However, this period of watershed management did not succeed. The main causes for its failures were that ‘the adopted watersheds proved too large to monitor and manage, while the top-down planning methodology lacked community input and the restoration was less effective than had been hoped’.¹³⁰⁴

Now the traditional WRM approach has been replaced by a community-based approach.¹³⁰⁵ The country’s WRM policy that was formulated after the adoption of the 1995 Constitution declares that water resources development shall be underpinned on a rural-centred, decentralized and participatory management approach.¹³⁰⁶ The policy also promotes community participation in WRM through involvement of all stakeholders and water users’ communities; that is, community-based WRM is one of the policy’s guiding principles. The community-based participatory approach encourages those at grassroots level to take initiatives and to raise their sense of ownership regarding natural resources management.¹³⁰⁷

Now across the country, community-based participatory management activities are underway to rehabilitate degraded land and watersheds through different programmes.¹³⁰⁸ Some community-based watershed management developments in Ethiopia include Managing Environmental Resources to Enable Transitions to more sustainable livelihoods (MERET) and the Productive Safety Net Programme (PSNP). In the late 1990s, the Tigray Bureau of Agriculture and Natural Resources, in one of the regional states of Ethiopia, drew some insights from an integrated community-based approach on successful participatory watershed management projects from India.¹³⁰⁹ By using the insights gathered, community-based watershed management programmes were piloted in the region.

In 2012, AgWater conducted an assessment on community-based participatory watershed management activities within three regional states of Ethiopia (Oromia, Tigray and Amhara), taking

¹³⁰⁴ *ibid.*

¹³⁰⁵ AgWater Solutions, ‘Community-based watershed management in Ethiopia’, *Agricultural Water Management Learning and Discussion Brief*, February 2012 <[www.google.co.uk/search?q=http://awm-solutions.iwmi.org/Data/sites/3/Documets/PDF/Country-Docs/Ethiopia/watershed-mangement-in-ethiopia.pdf&ie=utf-8&oe=utf-8&gws_rd=cr&ei=PbtbVZjMHI2S7AaB6oGICw](http://awm-solutions.iwmi.org/Data/sites/3/Documets/PDF/Country-Docs/Ethiopia/watershed-mangement-in-ethiopia.pdf&ie=utf-8&oe=utf-8&gws_rd=cr&ei=PbtbVZjMHI2S7AaB6oGICw)> accessed on 13 August 2015

¹³⁰⁶ *ibid.*

¹³⁰⁷ Negash(n 1255).

¹³⁰⁸ *ibid.*

¹³⁰⁹ Tongul and Hobson (n1303).

two watersheds from each regional state.¹³¹⁰ The assessment aimed to evaluate the impacts of community-based participatory watershed management in the country. The study findings revealed that there were variations in the success rates within watersheds. However, they underlined that improvement was observed on groundwater; degraded watersheds were rehabilitated; and water availability increased in all watersheds. In the upstream areas of each watershed, insitu water conservation was achieved and farmers in the downstream areas increased irrigation from groundwater. The study also found that the increase in availability and access to water enhanced the economic and social wellbeing of the local communities. The study also suggests that community-based watershed management should take into account variations within each watershed. It highlights how community-based watershed management ‘requires cooperation among various stakeholders to build and strengthen institutions, social norms and regulations, and to develop systems of sharing responsibilities and beneficiaries. The country’s watershed management policy needs revision to land tenure and community right issues’.¹³¹¹

Similarly, in 2013 Tongul and Hobson conducted a case study on the ‘interventions and impacts’ of pilot community-based watershed management programmes.¹³¹² The study demonstrated that the interventions and impacts included: rehabilitation of the catchment areas of watersheds; increased recharge of upstream catchments into the lower catchments; and rain-fed agriculture production was transformed into micro-irrigation. In view of the successes of initial pilots, the community-based participatory planning developed into the MERET programme in 2003.¹³¹³ The programme was widely expanded within five regional states and the Dire Dawa City administration, covering 450 watersheds. At the UN Summit on Climate Change in Copenhagen, Durban and Cancun, the approach was heralded as a model for building resilience.¹³¹⁴ Since its commencement, 400,000 hectares of degraded watersheds have been rehabilitated.

Since 2005, the Ethiopian government, with its development partners, has been further developing another programme, PSNP.¹³¹⁵ The programme aims to build assets by public work schemes. The

¹³¹⁰AgWater Solutions (n 1305).

¹³¹¹ibid.

¹³¹²ibid.

¹³¹³ ibid.

¹³¹⁴ World Food Programme 2015 <www.wfp.org/disaster-risk-reduction/> accessed 20 May 2015.

¹³¹⁵ The World Bank Group, ‘Ethiopia’s Productive Safety Net Program (PSNP): integrating disaster and climate risk management’(case study) June 2013, 2 <www.wcdrr.org/wcdrr>. accessed 20 May 2015.

scheme focuses on tackling food insecurity and asset building, in comparison with MERET, which is fully focused on watershed management. However, PSNP's activities are highly supportive of community-based watershed managing.¹³¹⁶ Nearly 60 percent of PSNP's public works sub-projects are in soil and water conservation.¹³¹⁷ Through PSNP, thousands of watersheds are under rehabilitation within 319 districts and two urban administration areas. Both MERET and PSNP programmes use community-based, with participatory watershed management as the leading principle. The recent impact assessment conducted on PSNP (amongst others) demonstrated its benefits, such as: increased water availability and quality; increased groundwater recharge and increased downstream base flow of streams; enhanced downstream crop production, through soil and water conservation; and increased biodiversity.¹³¹⁸ However, there are some criticisms suggesting the programmes are not inclusive and fair: local officials have a greater power than community participants, and lack the capacity to manage the programme. There is also a lack of adequate linkages between programme activities.¹³¹⁹ The programme is also criticized for being oriented to the short term.¹³²⁰

Recently, the Ethiopian government has developed national guidelines for community-based participatory watershed development planning, and has introduced a new programme called Sustainable Land Development (SLM).¹³²¹ SLM also uses participatory community-based watershed management as its guiding principle. It is believed that sustained successes of these programmes depend on understanding the contexts, and on the continuous and coordinated engagement of stakeholders at different scales and their commitments.¹³²²

7.3.2.2 Strategy

The subsequent development, after the introduction of the WRM policy and water law adoption, was of Ethiopia's water sector strategy. Formulated in 2001, this aims to ensure water supply as an

¹³¹⁶ Tongul and Hobson (n 1303).

¹³¹⁷ World Bank Group (n 1315) 5.

¹³¹⁸ Tongul and Hobson, (n 1303).

¹³¹⁹ S Devereux, R Sabates-Wheeler, T Mulugeta, T Brown and T Amdissa, *Ethiopia's Productive Safety Net Programme (PSNP): 2008 assessment report* (report commissioned by the PSNP Donors Group; Institute of Development Studies 2008).

¹³²⁰ *ibid.*

¹³²¹ Tongul and Hobson (n 1303).

¹³²² *ibid.*

integral part of sustainable development.¹³²³ The strategy envisioned ‘extending water supply coverage to large segments of the society’.¹³²⁴ Another goal is ‘to enhance and promote all national efforts towards the efficient, equitable and optimum utilization of the available water resources of Ethiopia for significant socio-economic development on a sustainable basis’.¹³²⁵ The strategy declared the necessity of developing and enforcing standards and guidelines for water resources for different uses, such as for drinking, industry and other uses.¹³²⁶ Under this strategy, the involvement of higher-level institutions within WRM is underlined in the formulation and enforcement of policies, strategies, regulations and legislation, as well as in the development and implementation of information management systems and capacity building programmes.¹³²⁷ Furthermore, the local-level institutions hold responsibilities concerning the implementation, management, monitoring and supervision of water supply facilities, and ensure inter-sectoral coordination.¹³²⁸

According to the water sector strategy document, the ownership of the water supply and sanitation facilities in urban areas lies with autonomous municipal institutions and, in the rural areas, the local communities, who own and manage them through the establishment of community-based structures, thereby facilitating these communities in developing an interface with the local administrative structures and defining the rules of engagement for service providers.¹³²⁹ The water sector strategy indicates that the implementation of the water supply mandate is principally the function of respective regional states, although the facilities are owned and managed at the local level by municipalities or rural communities within their administrative boundaries. However, this strategic document does not have a binding effect, although it may play as soft law.

7.3.3 Statutory law

7.3.3.1 Traditional laws

Historically, WRM in Ethiopia was limited to the regulation of water and sanitation, with the drive towards public health protection; there were no comprehensive law designated to control

¹³²³FDRE MoWR, Ethiopian Water Sector Strategy (2001) 17.

¹³²⁴ibid, 2.

¹³²⁵ibid.

¹³²⁶ibid, 17–18.

¹³²⁷ibid, 19–20.

¹³²⁸ibid.

¹³²⁹ibid.

pollution.¹³³⁰ From 1908, there were attempts to regulate the water and sanitation problems that led to communicable diseases.¹³³¹ For instance, the Ministry of Interior was empowered to handle water and sanitation issues in 1908 and subsequently, in 1942, the Directorate of Medicine took over this task.¹³³² However, the regulation of water quality was limited to big towns, and failed to cover other parts of the country.¹³³³

Following the issuance of Public Health Proclamation No.91/1947, the Ministry of Public Health's Hygiene and Environmental Health Unit was entrusted with sanitary regulation functions. Such activities included providing sanitary training and conducting inspections of latrines and drinking water constructions in both urban and rural areas.¹³³⁴ The implementation of these sanitary rules was carried out through municipal or provincial public health services. However, there has been criticism that the rules were not updated, the enforcement lacked transparency and few were fined for violations and water sanitation failures.¹³³⁵

In 1962, Ethiopia enacted the first ever water legislation, which provided a regulatory framework for water resources.¹³³⁶ Through this legislation, the Awash Valley Authority was established to facilitate large-scale irrigation development.¹³³⁷ The powers and authorities entrusted to the Awash Valley Authority included: administering water uses and rights; coordinating the activities of all the government bodies; allocating water for irrigation and other purposes; constructing and administering dams and canals; and fixing fees and collections for the use of water and other facilities in the valley.¹³³⁸

The main drive for the establishment of this water regulator was large-scale irrigation development. This suggests that the water law was more focused on water and economic development than managing water resources for their sustainable use and development. Moreover, the regulatory

¹³³⁰ Abera Kumie and Ahmed Ali, 'An overview of environmental health status in Ethiopia with particular emphasis to its organisation, drinking water and sanitation: a literature survey'(2005)19(2)*Ethiopia Journal of Health Development*, 89.

¹³³¹ *ibid.*

¹³³² *ibid.*

¹³³³ Kumie and Ali (n 1330) 90.

¹³³⁴ Public Health Proclamation of Ethiopia No.91/1947.

¹³³⁵ Kumie and Ali (n 1330) 92.

¹³³⁶ Yacob Arsano, 'Ethiopia and Nile dilemmas of national and regional hydropolitics' (thesis presented to the Faculty of Arts of the University of Zurich for the degree of Doctor of Philosophy, Centre for Security Studies, Swiss Federal Institute of Technology, Zurich, 2004) 126.

¹³³⁷ Ethiopian Government General Notice No. 299/1962, preamble.

¹³³⁸ *ibid.*

authority mandates ranged from water abstraction, price setting and water allocation, to large-scale agricultural irrigation farms to water resources usage regulation. The mandates entrusted to the authority indicate that the utilization of water resources for non-irrigation purposes was ignored. In particular, the law failed to accommodate comprehensive rules to manage water resource utilization.

For centuries, the indigenous people at the lower segment of the Awash River basin district were dependent on the Awash River water resources.¹³³⁹ Socially, these local people depended on the river water resources to obtain their livelihood. Introduction of the water legislation did not effectively control the human-induced pressures on the Awash Valley water resources. Areas of the valley that were used as a source of grazing land for livestock, particularly in dry seasons or when the rains failed, were changed and transformed to large-scale irrigation projects.¹³⁴⁰ Following this, grazing lands were rapidly lost and replaced by large-scale agricultural projects.¹³⁴¹ For instance, it was noted that in 1970–72, drought and the mismanagement of water resources exposed the indigenous people to severe disaster.¹³⁴²

In 1974, with the overthrowing of the imperial government in Ethiopia, the original objectives of the Awash Valley Authority were extended. At this stage, the Awash Valley Development Agency replaced the Authority.¹³⁴³ The Agency was given exclusive power over the water resources of the country, to facilitate agri-business development and administer state-owned agricultural enterprises.¹³⁴⁴ It was entrusted with authority over the allocation of water resources, administration of water rights and agri-business development. Further conflicting responsibilities were given to the Agency in terms of competing with other water users. With the ambitious development agenda that the law was expected to achieve throughout the valley, this water legislation also failed to accommodate competing water demands.¹³⁴⁵ Consequently, the water resource endeavours failed to deliver the expected outcome.¹³⁴⁶

¹³³⁹ Roye Behnke and Carol Kerven, ‘Replacing pastoralism with irrigated agriculture in the Awash Valley, North-Eastern Ethiopia: counting the costs’ (International Conference on Future Pastoralism, 21–23 March 2011, Future Agriculture Consortium, University of Sussex and the Feinstein International Centre of Tufts University) 1–3.

¹³⁴⁰ *ibid.*

¹³⁴¹ *ibid.*

¹³⁴² *ibid.*

¹³⁴³ Legal Notice No. 53/ 1977: Establishing Awash Valley Development Agency, preamble.

¹³⁴⁴ Arsano (n 1336) 126.

¹³⁴⁵ Newson (n 751)179.

¹³⁴⁶ *ibid.*

Among the factors for the failure of this legislation, lack of inclusiveness was noted as a primary cause. For instance, Dessalegn Rahmato describes the conventional WRM as follows:

Policy planning and implementation at the time was guided by a strong top-down approach. There were few occasions when stakeholders were involved in any aspect of water resource development. Neither the direct beneficiaries nor concerned institutions at the local level were consulted in the planning and implementation of water projects. Moreover, the management of the projects themselves were in the hands of party or government functionaries, and not in the hands of the beneficiaries themselves.¹³⁴⁷

He further added that past water policies in Ethiopia were made, and plans were executed, by professionals without involving the communities concerned.¹³⁴⁸

The subsequent water law development has shown that the 1971 water management legislation, which was introduced by the imperial government, encompassed both water quality and quantity regulation.¹³⁴⁹ The legislation sought the establishment of a Commission with diverse responsibilities, such as: the protection of water resources; the introduction of efficient water resources utilization; and the management of all the water resources in the country.¹³⁵⁰ The Commission was entrusted with responsibilities for water supply and other related operational functions. However, with the overthrow of the imperial regime, the organizational setting up was aborted before it materialized.¹³⁵¹ Subsequently, in 1981, the National Water Resources Commission was established as the sole national government institution responsible for both regulatory and operational functions of WRM.¹³⁵² The responsibility to manage water resources rested upon the Water Resources Development Authority.¹³⁵³

The 1987 Ethiopian water management legislation introduced the necessity to properly use natural resources; to integrate utilization of natural resources in the nation's valleys; and to coordinate optimal allocation of water resources to development, irrigation and other uses, by favouring a centralized management.¹³⁵⁴ This legislation established the Ethiopian Valleys Development Studies

¹³⁴⁷Rahmato (n 1257).

¹³⁴⁸ibid.

¹³⁴⁹ Order No. 75/191: Establishing National Water Resources Commission.

¹³⁵⁰ibid, article 4.

¹³⁵¹ Arsano (1336)129.

¹³⁵² Proclamation No. 217/1981: Establishing National Water Resources Commission.

¹³⁵³ Legal Notice No. 119/1981: Establishing Water Resources Development Authority.

¹³⁵⁴ See preamble of Proclamation No. 318 of 1987: 'A proclamation to provide for the establishment of the Ethiopian valleys development studies authority'.

Authority and defined its remit: it was mandated to delimit the boundaries of the country's valleys; to conduct studies and research; to assist preparations of master plans; to prepare master plans for valleys; to identify and prepare development projects and prioritize them; to conduct feasibility studies of irrigation projects; to initiate policy and directives pertaining to utilization of transboundary rivers; and, upon approval, to conduct follow-ups of their implementation.¹³⁵⁵ It was also entrusted to conduct research on improving irrigation and on environmental controlling means, such as dilution and pollution, and to initiate policy devices to control the problems. Upon approval, it supervised their implementation and prepared and submitted to the government the optimum allocation of the valley's water resources for irrigation and other various uses.¹³⁵⁶

Generally, the traditional water laws and institutional framework developments were considered ineffective for enhancing the sustainability of water resources in the country. Girma Hailu notes that the water resources governance system was weak.¹³⁵⁷ He further adds that WRM institutions were fragmented, and there was no scheme to coordinate functions.¹³⁵⁸ A single institution was entrusted with responsibilities that were inherently conflicting in nature, such as natural resources development and protection.¹³⁵⁹ The laws were not comprehensive in controlling the diverse human pressures.¹³⁶⁰

7.3.3.2 Contemporary laws

7.3.3.2.1 The Water Resources Management Proclamation

In 2000, the Water Resources Management Proclamation was enacted in Ethiopia; this was the first water legislation to be introduced since the previously mentioned water policy.¹³⁶¹ The Proclamation is the key legislation for defining the use and protection of water resources and, through it, the MoWR and the MoWE have been given exclusive power over the management of the water

¹³⁵⁵ *ibid*, article 6.

¹³⁵⁶ *ibid*.

¹³⁵⁷ Girma Hailu, 'Environmental law of Ethiopia' in *International Encyclopaedia of Laws*(Kluwer Law International, Leuven, Belgium, 2000)9.

¹³⁵⁸ *ibid*.

¹³⁵⁹ *ibid*.

¹³⁶⁰ *ibid*, 23.

¹³⁶¹ Water Resources Management Proclamation, No.197/2000.

resources of the country, including the power to issue directives.¹³⁶² The MoWE is also entrusted with further responsibilities such as those listed in Box 1 below.¹³⁶³

While the MoWE is designated as the ‘supervising body’ that holds the River Basin Authorities accountable,¹³⁶⁴ the powers entrusted to the Ministry suggest that this single government institution is charged with regulatory and operational functions that are inherently conflicting.

The MoWE is the principal government institution that engages in water abstraction, developing large-scale water supplies and large-scale irrigation, regulating water quality and quantity concerns, and setting conditions for water utilization. The statutory roles designated to the Ministry do not accommodate the robust measures that the WRM policy is aiming for to manage supply and demand. Rather, it seems to be a watered down form of a regulatory agenda, in failing to provide statutory obligations by which the water utilities are expected to abide. In addition, there is no single provision that sets out long-term security management schemes.

Five years after the adoption of the Ethiopian Water Resources Proclamation, the Ethiopian Water Resources Management Regulation was issued.¹³⁶⁵ The reading of the Regulation gives the impression that it is a mere repetition of what is already incorporated under the Proclamation with regard to WRM. While the Regulation includes the possibility of delegating powers to other bodies, it does not declare when and what types of functions should be delegated, or to whom the powers are delegated. At present, the ‘supervising body’, the MoWE, is situated in the capital city and located remotely in terms of conducting effective WRM across the country.

¹³⁶² *ibid* and Proclamation No. 691/2010: ‘A proclamation to provide for the definition of powers and duties of the executive organs of the Federal Democratic Republic of Ethiopia’, article 26.

¹³⁶³ Water Resources Management Proclamation Article 8(1).

¹³⁶⁴ Proclamation, No.197/2000 (n 1361) and Proclamation No. 691/2010 (n 1362) article 33(11).

¹³⁶⁵ Council of Ministers, Ethiopian Water Resources Management Regulation, March 2005: Regulation No. 115/2005.

Box 1: WRM powers of the MoWE¹³⁶⁶

- Establishes an inventory of water resources and registry of actions
- Issues permits of professional competence, as well as for water use and construction
- Allocates water resources
- Establishes the required standards for the design and construction of waterworks and their monitoring
- Issues guidelines and directives for the prevention of the pollution of water resources, as well as for water quality and health standards in consultation with other concerned public bodies
- Promotes the development of water resources
- Conducts basin studies regarding potential quality and quantity
- Facilitates utilization, determining conditions and methods for optimum and equitable utilization of water flow across regional states
- Carries out the construction of medium- and large-scale irrigation dams, administering water structures constructed by the federal government budget
- Sets water quality standards for water resources
- Supports the expansion of potable water coverage and following up and coordinating the implementation of projects financed by foreign assistance.
- Handles all big water supplies fully and issues permits and regulates the construction and operation of water works in interstate and transboundary water bodies

Neither the WRM Proclamation nor the subsequent regulations have addressed the definition of the statutory obligations of water facilities. Instead, the authority for WRM is concentrated within the MoWE, to the extent that water supply and regulatory functions are conflicting, which affects balanced decision-making. There are many examples to suggest that the prevailing conflicting responsibilities affect the impartiality of the MoWE when discharging its responsibilities to enhance the security of water resources. For instance, the water abstraction regulations and water supply development, the management of effluent discharge, price setting and the development of irrigation projects concentrate the responsibilities upon the single institution. The nature of these mandates implies that the role of the environmental authorities in water resource security management is blurred. In particular, the functions of WRM lack a division between water resources development and protection.

¹³⁶⁶ *ibid.*

7.3.3.2 Regulation of self-supply facilities

Access to public water supplies and facilities, particularly in rural areas, is minimal in Ethiopia and is unable to significantly cover the needs of all people. Most of those in rural areas depend on rain-fed, streams and other natural and artificial water bodies for diverse domestic and agricultural uses. The majority of Ethiopia's population lives in a scattered manner in rural areas and owing to the nature of this settlement and the country's capacity, developing adequate communal water supply facilities is complex. At present, in addition to publicly owned water supply facilities, self-supply facilities are increasingly being developed. These facilities provide water for a household's needs: drinking, small-scale irrigation and other forms of domestic consumption. These social institutions are not well organized; rather, they are scattered by their nature. A family would develop a water supply for itself without the financial support of the government or donors.¹³⁶⁷ The facilities are privately owned by families – and are not a substitute for the government's obligation to ensure access to water resources.

Individual families use wells and harvest rainwater for supporting their water needs. At present, this self-supply approach is often seen as a low-cost way to enhance access to water for the scattered rural communities. Self-supply is often seen as a supplementary means to increase water supply coverage.¹³⁶⁸ However, because of their considerable benefits, this approach is now finding favour with the government for its cost-effective options for providing water for families for 'traditional irrigation' and domestic uses. For instance, the national five-year Growth and Transformation Plan increasingly supports these social institutions.¹³⁶⁹ This plan gives recognition to the traditional water usage system for a family to own its water supply facility and control the water resources abstracted from its well. However, it is likely to be difficult to coordinate these facilities at the river basin level, since they are too scattered to organize at a watershed level.

Under the WRM Proclamation, these traditional water supply facilities are exempt from regulation.¹³⁷⁰ The water law does not quantify the amount of water per day that traditional water

¹³⁶⁷ Paulos Workneh, Aibly Woldelessie and Paul Deverill, 'Water, sanitation and hygiene: sustainable development and multisectoral approaches developing low-cost household water supply options: the potential of self-supply in Ethiopia', Reviewed Paper –Local(34th WEDC International Conference, Addis Ababa, Ethiopia, 2009).

¹³⁶⁸ IRC International Water and Sanitation Centre, *Self-supply: the case study for leveraging greater household investment in water supply* (2012).

¹³⁶⁹ Growth and Transformation Plan (GTP) 2010–2015 (Addis Ababa Ethiopia, September 2010) 40–42.

¹³⁷⁰ Proclamation No. 197/2000 (n 1361) article 12.

facilities are likely to abstract.¹³⁷¹ The law has a tendency to allow self-supply facilities to freely abstract the amount of water necessary for domestic needs from surface and underground aquifers. The implication is that more focus has been given to enhancing access to water than sustainable water use; it is up to each traditional facility to determine its levels of abstraction. Although it is believed that these water supply facilities are cost-effective, they may not be sustainable unless a mechanism is developed to regulate the quantity of this water resources utilization.¹³⁷² Nor has there been a mechanism developed to register them in order to make their water usage sustainable. Setting up an appropriate regulating scheme and creating awareness in the owners of self-supply water facilities of how to enhance their water-saving behaviour is critical – but the concern remains unaddressed. Too many unregulated self-supply facilities may abstract water resources in an unsustainable manner. Eventually, this may lead to the tragedy of the commons.

7.3.3.2.3 Regulating the irrigation of water

In Ethiopia, irrigation development for large-scale agriculture was a drive for the introduction of conventional water law.¹³⁷³ Thus, one may consider that the early water law development in Ethiopia was attached to the government's aspirations for irrigation development. Under the conventional water law, the responsibility for managing water resources was conferred upon the national government authority.¹³⁷⁴ However, the WRM that was driven by irrigation development failed partly because of its failure to accommodate the interests of local people.¹³⁷⁵

Under present WRM law, the responsibility for developing large-scale irrigation falls to the MoWE.¹³⁷⁶ The regional states or cities may be involved in water management if they obtain the delegated authority from the national government. Within water resources, at the time at which the information for this study was collected, the lower levels were delegated to the management of cooperative water usage. However, this mandate is limited only to registering the society of cooperative irrigation water users.¹³⁷⁷ The lower levels of management do not have the power to conduct follow-ups or register self-supply irrigation facilities owned by families or large-scale

¹³⁷¹ *ibid.*

¹³⁷² IRC International Water and Sanitation Centre (n 1379).

¹³⁷³ Rahmato (n 1257).

¹³⁷⁴ *ibid.*

¹³⁷⁵ *ibid.*

¹³⁷⁶ Proclamation No. 691/2010 (n 1362) article 26.

¹³⁷⁷ Regulation No.115/2005 (n 1365) article 29 sub article 2.

irrigation facilities. Practically, the regional states are developing irrigation projects within their respective boundaries, and different levels of government may be involved in the development of irrigation projects. In the past, it was believed that uncoordinated irrigation development was, in part, the cause of the failure of conventional water development projects in Ethiopia.¹³⁷⁸ Sustainable irrigation developments require coordinated water resource utilization throughout the basin.¹³⁷⁹ Integrated water development would be an answer if uncoordinated water use for irrigation were a problem.

The present irrigation practice has shown that there is a tendency to use the water resources in an uncoordinated way in some project developments. For instance, one of the upstream regional states undertook the Fantale and Tibila Irrigation Project, which was expected to develop more than 30,000 hectares to irrigate agricultural land.¹³⁸⁰ For this project development, the regional state diverted massive quantities of water resources from the Awash River.¹³⁸¹ The project aimed to transform the pastoralist communities living in the area into farming practitioners. Upon this diversion, however, the regional state did not obtain a permit from the Awash River Basin Authority, which is in charge of managing the water resources in the basin district.¹³⁸² It is believed that the water resources in the Awash River are too scarce during dry seasons to satisfy diverse needs.¹³⁸³ This uncoordinated water development may set a precedent for other states or users to engage in a similar fashion, which increases the uncoordinated and unregulated pressures on water resources.

7.3.3.2.4 Water facilities regulation

For both urban and rural water facilities, regulation is a key aspect for the sustainability of water resources.¹³⁸⁴ Water resources are regulated ‘to protect human health and ensure the economic and environmental sustainability’;¹³⁸⁵ upon water services regulation, ‘the overall objectives of regulation

¹³⁷⁸ Interview with Tigistu G/Meskl, Director Directorate of Rural Land Administration and Land Use in the Ministry of Agriculture, 6 August 2011.

¹³⁷⁹ *ibid.*

¹³⁸⁰ *ibid.*

¹³⁸¹ Interview with Frewe Abebe, head of technical department, in the Awash River basin authority, Ambhara, 1 August 2011.

¹³⁸² *ibid.*

¹³⁸³ *ibid.*

¹³⁸⁴ IRC Briefing Note, March 2015 (re-printed) ‘Building blocks for sustainability series: triple-s regulations in rural areas’, 1.

¹³⁸⁵ *ibid.*, 2.

are that water services are provided in an efficient, fair and sustainable manner, while balancing priorities set out by government at national and local levels'.¹³⁸⁶ Commonly, regulation¹³⁸⁷ balances different needs of stakeholders, enables the public sector to carry out its long-term policy objectives in expanding services, protects against environmental damage and protects consumers.

Concerning water supply, the Ethiopian WRM policy and strategy aim to introduce a more decentralized decision-making system that promotes the involvement of different stakeholders. For instance, in Amhara National Regional State, the office administers the urban water supply and is led by the water board.¹³⁸⁸ Likewise, in the Oromia National Regional State, drinking water services are provided by the urban water supply and sanitation service enterprise, which is led by the water board.¹³⁸⁹ The water boards are selected by the town administration from different stakeholders, including water users, as a means of enhancing participatory decision-making.¹³⁹⁰ The board is part of the water enterprise; it is not an independent regulator.

In many of the regional states, water laws place emphasis on provision of adequate clean water for customers. For instance, the responsibilities of the water board and water office in the urban areas of Amhara National Regional State focus on: constructing water works, providing water services, collecting revenue and preparing proposals for water tariffs.¹³⁹¹ Likewise, in Oromia National Regional State, the water board and water enterprise responsibilities focus on water supply management.¹³⁹² And similarly, the Tigray National State urban and rural water supply and sewerage service proclamation entrusted water supply management mandates to water boards and offices.¹³⁹³ The responsibilities of the water utilities in the regional states do not encompass many important

¹³⁸⁶ *ibid*, 3.

¹³⁸⁷ *ibid*, 2.

¹³⁸⁸ Proclamation No. 188/2011: 'A revised proclamation issued to provide for the re-organization of the Amhara National Regional State Water Supply and Sewerage Services', articles 2,4 and 9.

¹³⁸⁹ Proclamation No. 78/2004: 'A proclamation to provide for the establishment of urban water supply and sewerage service enterprises of Oromia Regional State', articles 4, 5 and 7.

¹³⁹⁰ *ibid*, article 7; Proclamation No.188/2011 (n 1388)article 9, sub article 2 and Regulation 2012 issued to implement Proclamation No.188/2011, article 32; Proclamation No. 122/1999 to provide for the establishment of urban and rural water supply and sewerage service, Tigray Regional State, article 2(1) and article 22.

¹³⁹¹ Proclamation No. 188/2011 (n 1388) articles 10 and 12.

¹³⁹² Proclamation No. 78/2004 (n 1389) articles 5 and 8.

¹³⁹³ Proclamation No. 122/1999 to provide for the establishment of urban and rural water supply and sewerage service, Tigray Regional State, articles 23 and 27.

aspects of water sustainability; water wastage management, pollution protection and water system rehabilitation are not the obligation of water utilities.¹³⁹⁴

Sustainable water supply services in urban areas may depend, inter alia, on the effectiveness of economic regulation. The Amhara National Regional State water law encourages urban water facilities to recover their service costs with a fair return from the investment.¹³⁹⁵ Likewise, the Oromia National State water law obligates the urban water utilities to use cost-recovery as a guiding principle upon setting water tariffs.¹³⁹⁶ Often, water tariffs are set out by the water board and need approval from the water bureau of each regional state for their implementation. However, the water laws in these regional states do not provide rules that obligate the utilities to install and use water metering to implement the water cost-recovery principle.

Because more than 85 per cent of the country's population is living in rural areas, it is crucial to investigate the state of rural water supply facilities in order to enhance the sustainability of water. In rural parts of the country, the water supply utilities are administrated by the Community Water and Sanitation Executive Committee of Associations,¹³⁹⁷ the Water Committee¹³⁹⁸ and Sanitation Committee,¹³⁹⁹ which are commonly known as the community Water and Sanitation Committees (WASHCos). The WASHCos' members are elected and drawn from each water user's community through public gatherings.¹⁴⁰⁰ Once a water facility's construction is finished by the government or non-governmental organizations, its handover to the WASHCos takes place.¹⁴⁰¹ Then a water utility is owned and managed by the communities through the WASHCos.¹⁴⁰²

¹³⁹⁴ Proclamation No. 78/2004 (n 1389) articles 5 and 8.

¹³⁹⁵ Proclamation No. 188/2011 (n 1388) Preamble para. 3 and article 12(4).

¹³⁹⁶ Proclamation No. 78/2004 (n 1389) article 4(2).

¹³⁹⁷ Regulation No. 102/2012: 'Rural potable water and sanitation associations establishment regulation of southern nations nationalities and peoples regional state', article 22.

¹³⁹⁸ Proclamation No. 188/2011 (n 1388) articles 2(5) and 21.

¹³⁹⁹ Proclamation No.152/2009 to provide for the establishment and administration of Oromia National Regional State Rural Potable Water Service Organization, articles 15 and 16.

¹⁴⁰⁰ Proclamation No. 188/2011 (n 1388) article 19(2); Proclamation No.152/2009 (n 1399) article 15(1).

¹⁴⁰¹ Tamene Chaka, Leulseged Yirgu, Zemede Abebe and John Butterworth, *Lessons for rural water supply: assessing progress towards sustainable service delivery in Ethiopia*(IRC International Water and Sanitation Centre, The Hague 2011) 3.

¹⁴⁰² Roger Galow, Eva Ludi and Josephine Tucker (eds), *Achieving water security: lessons from research in water supply, sanitation and hygiene in Ethiopia*(Practical Action Publishing 2013) 10.

This community-led rural water service provision is a practical shift from the top-down government-led water utility model;¹⁴⁰³ it is a response to the idea that ‘decision-making needs to occur with or close to end users to ensure that services fully meet local needs and are sustainable’.¹⁴⁰⁴ The approach brings the voice of users to the centre of decision-making. The drive for this new model introduction is that ‘the community will contribute towards capital costs in cash or in kind, and assume responsibility for maintenance.’¹⁴⁰⁵ The water users’ community thus owns and is involved in the water utility¹⁴⁰⁶

WASHCOs are responsible for collecting revenue from water users, distributing water and undertaking minor maintenance of the utilities.¹⁴⁰⁷ Despite WASHCOs being basic institutions, which manage water supply and lead the water users’ community at grassroots level, they are not yet used as a platform for non-water supply issues, which are supportive for the sustainability water. WASHCOs do not have responsibilities to control water demand, water pollution, leakage control or water system protection. The mandates are focused on water supply rather than water sustainability. They do not have an obligation towards enhancing the long-term interests of the community or to environmental and economic sustainability. This demonstrates that the remits of WASHCOs may need expansion, to accommodate water demand management and environmental protection. WASHCOs also lack clear linkage with other programmes that are in place, such as MERET, PSNP and SLM, which are widely in use to sustain water resources.

Commonly, water tariffs are used as an economic regulatory tool for WRM. Practically, though, in rural areas water tariffs are determined by water beneficiaries themselves.¹⁴⁰⁸ The roles of tariffs are limited to recover the costs of water operation and maintenance.¹⁴⁰⁹ They focus on affordability rather than water cost-recovery. In rural areas, the guidelines for economic regulation are developed by local governments; however, the problem lies in the capacity of local government to introduce such frameworks.¹⁴¹⁰ The capacity of the local level is limited to setting out a framework for water

¹⁴⁰³ *ibid*,10.

¹⁴⁰⁴ *ibid*, 40.

¹⁴⁰⁵ *ibid*.

¹⁴⁰⁶ *ibid*.

¹⁴⁰⁷ Proclamation No.152/2009 (n 1399) article 16; see also Proclamation No. 188/2011 (n 1388) article 21.

¹⁴⁰⁸ Proclamation No. 188/2011 (n 1388) article 20; Regulation No. 102/2012 (n 1397) article 25.

¹⁴⁰⁹ Proclamation No. 188/2011 (n 1388) Preamble, para. 3.

¹⁴¹⁰ IRC (n 1384) 4.

tariffs.¹⁴¹¹ Once tariffs are defined, long-term sustainable water supply services depend on the extent of enforcement of the economic regulation tools – ¹⁴¹²but it is difficult to implement economic regulation tools for the water facilities in rural areas and small towns.¹⁴¹³ Sometimes, the rural water facilities ‘are operating informally in somewhat a legal vacuum’.¹⁴¹⁴

WASHCOs are important community-based water supply institutional structures at most decentralized levels in the rural areas. However, their impact depends on the capacity of each rural water utility having a legal personality, rules conferring proper responsibilities and regulation of their functions and their effective implementation. A study has been recently conducted on a rural, community-based water supply services provision model, and demonstrates that the approach is prone to too many limitations, leaving doubts about sustainably managing water supply services.¹⁴¹⁵ It was noted that: ‘systems continue to fail, communities struggle with financing and practicalities of operation and maintenance, and word a (district) water offices often lack the capacity to provide effective support.’¹⁴¹⁶ They are unable to discharge their responsibilities because of the capacity problem;¹⁴¹⁷ rural areas’ water supply facilities are hence fully scattered within the local level.

Butterworth et al. noted that ‘improved community-based sources (run usually by a locally selected water, Sanitation and Hygiene Committee (WASHCOs)) are, in contrast, widely considered to provide safe water, despite the fact that often they do not, and in practice quality is not monitored either systematically and regularly’.¹⁴¹⁸ They also contend that ‘communal systems are also prone to breakdowns and seldom provide for all domestic needs’.¹⁴¹⁹ WASHCOs depend on local government (the district water office), which itself is facing a capacity problem.¹⁴²⁰ District offices, which are responsible for regulating WASHCOs, are not familiar with the basic rules of water sustainability

¹⁴¹¹ *ibid*, 5–6.

¹⁴¹² *ibid*, 3.

¹⁴¹³ *ibid*.

¹⁴¹⁴ *ibid*.

¹⁴¹⁵ *ibid*.

¹⁴¹⁶ Galow et al.(n 1402) 10.

¹⁴¹⁷ *ibid*.

¹⁴¹⁸ John Butterworth, Sally Sutton and Lemessa Mekonta, ‘Self-Supply as a complementary water services delivery model in Ethiopia’ (2013) 6(3) *Water Alternatives*, 417.

¹⁴¹⁹ *ibid*.

¹⁴²⁰ Chaka et al.(n 1401) 3.

when regulating the committees.¹⁴²¹ District officers are not capable of providing support and regulatory functions, and the offices are chronically under-staffed.¹⁴²²

In building resilient water users' communities, registration of rural water utilities may have its own contribution since it confers a legal personality that allows them to discharge their obligations and be used as a tool in holding the utilities accountable. In Ethiopia, there are some initiatives to register the rural water facilities and to confer legal personality. Many regional states have already formulated regulations that legalize rural water utilities.¹⁴²³ However, the regional and zonal bureaus do not prepare detailed guidelines to carry out their registration.¹⁴²⁴ In general, WASHCOs are not legally recognized and even in areas where they have received legal acknowledgement, delays in registration are posing problems for the facilities' management functions.¹⁴²⁵ Many of the rural water utilities and WASHCOs remain unregistered and unaccountable facilities.

7.3.3.2.5 Regulation of water abstraction and effluent discharge

The security of water resources requires the management of their abstraction and the regulation of effluent discharges that affect water quality. As discussed elsewhere, the exclusive mandates to regulate water abstraction and effluent discharges are conferred upon the MoWE.¹⁴²⁶ With regard to the management of water abstraction and effluent discharges, the Proclamation incorporated a permit system as a device.¹⁴²⁷ To this end, the Federal Ministry of Water and Energy Resources, called the 'supervising body', is entrusted with the mandate to issue water use and effluent discharge permits and to conduct the monitoring of their implementation.¹⁴²⁸ Through the regulation of pollutant discharges, it engages in environmental protection.¹⁴²⁹ The mandates of the MoWE suggest that the Ministry may provide bulk services and regulate access to the resources.

¹⁴²¹ Tesfaye Woldemichael and Fikadu Debalike, 'Global water initiative – east Africa secure water for small holder agriculture: Review of functionality as well as developing system for GWI WASH facilities'(2013)*Legalisation of WASHCOs and O&M Guidelines*, 18–19.

¹⁴²² Galow et al. (n 1414) 10.

¹⁴²³ Woldemichael and Debalike (n 1421) 18–20.

¹⁴²⁴ *ibid.*

¹⁴²⁵ Chaka et al.(n 1401) 3.

¹⁴²⁶ Proclamation No. 691/2010 (n 1362) article 26.

¹⁴²⁷ Proclamation No. 197/2000 (n 1361) article 11.

¹⁴²⁸ *ibid.*, article 8; see also article 11.

¹⁴²⁹ *ibid.*, article 13.

The permit system underlines that water abstractors and effluent dischargers should obtain permits from the Ministry before becoming involved in water resource development.¹⁴³⁰ However, these rules do not provide possible limits on the abstraction of groundwater or surface water, although permits may be suspended if the water resources are depleting or if the licence holders fail to meet the conditions set out under the permits.¹⁴³¹ The Ministry may suspend, terminate or revoke licences if the water abstraction is damaging the environment.¹⁴³² With regard to waste water discharge permits, the holder of the licence is expected to renew the licence within a two-year period.¹⁴³³

There is no clear provision that specifies the roles that regional states and local levels should play within WRM. Moreover, this law does not specify the possible relationship that the federal and regional states establish in planning, developing and protecting water resources. The only possible option to enable the regional levels to be involved in the management of water abstraction and effluent discharges is through delegation. The Ministry of Water and Energy Resources may delegate its role(s) in WRM to any organization that it thinks appropriate.¹⁴³⁴ Through this power of delegation, the Ministry first ensures that delegation is necessary, and that the agent is an appropriate body to implement the functions that it obtains through delegation. This means that the delegation of power must be rationally articulated so as to make implementation effective. Water law reform does not seem to devolve authority to regional levels. Up to the point at which this research was carried out, the Ministry did not delegate any of its functions or the permit system regarding WRM to any other bodies, except to the River Basin Authorities recently established for two basins. Both the Water Proclamation and regulations suffer from the same shortcomings from centralizing WRM and lack comprehensive rules to manage water resources.

7.3.3.2.6 Environmental protection

The FDRE Environment Authority and the regional environmental agencies were established in 2002.¹⁴³⁵ At the federal level, the Environment Authority was accountable to the Prime Minister.¹⁴³⁶ At the regional levels, the environmental protection institutions were accountable to a body that was

¹⁴³⁰ *ibid*, article 11.

¹⁴³¹ Council of Ministers (n 1376) article 6; see also Proclamation No. 197/2000 (n 1372) article 17.

¹⁴³² Council of Ministers(n 1376) and Ethiopian Water Resources Management Regulations, article 6 (3)(e).

¹⁴³³ *ibid*, article 13.

¹⁴³⁴ Proclamation No. 197/2000 (n 1372) article 8(2).

¹⁴³⁵ Environmental Protections Organs Establishment, Proclamation No. 295/2002.

¹⁴³⁶ *ibid*, articles 2(1) and 3.

determined by the respective regional state. Each regional state would designate or establish an institution responsible for protecting the environment.¹⁴³⁷ The objective for establishing these organizational structures was to separate environmental development functions from protection functions, as they are by nature conflicting if they are conferred upon a single institution.¹⁴³⁸ Remarkably, the law defines ‘protection’ as ‘sustaining the essential characteristics of nature and enhancing the capacity of the natural resources base with a view to safeguarding the interests of the present generations without compromising the opportunities for the future’.¹⁴³⁹ The concept of protection in this Proclamation encompasses both present needs and the interests of future generations, whilst safeguarding nature. In addition to the Federal Environmental Authority and regional environmental agencies, the federal government may assign a competent authority for environmental protection.¹⁴⁴⁰

The Federal Environment Authority has the mandates; it formulates policies, strategies, laws and standards, and ensures the effectiveness of the process of implementation.¹⁴⁴¹ It also has mandates to prepare updates, review environmental policies and coordinate measures at a national level.¹⁴⁴² Unless the projects were licensed by the federal government, the compliance to environmental standards is regulated through regional environmental agencies.¹⁴⁴³ Despite the matter being interstate in its nature, it might be handled by the regional states within their administrative boundary demarcation.¹⁴⁴⁴ The nature of this environmental protection mandate allocation raises the issue of how this institutional arrangement is effective in regulating human pressures that are interstate in their nature. In 2011, Ethiopia adopted the Climate Resilience Green Economy Strategy which accommodates comprehensive measures to enhance sustainable use of natural resources, including water resources.¹⁴⁴⁵ With the aim of renewing the organizational arrangement of the Environment Authority, the Ministry of Environment and Forest was established in 2013.¹⁴⁴⁶ The mandates of the

¹⁴³⁷ *ibid*, article 15.

¹⁴³⁸ *ibid*, preamble para. 1.

¹⁴³⁹ *ibid*, article 2(6).

¹⁴⁴⁰ *ibid*, article 2(2).

¹⁴⁴¹ *ibid*, article 5.

¹⁴⁴² *ibid*, article 6.

¹⁴⁴³ *ibid* articles 14, 6(3).

¹⁴⁴⁴ *ibid*.

¹⁴⁴⁵ Ethiopian Climate Resilience Green Economy Strategy (2011) Preamble.

¹⁴⁴⁶ Proclamation No. 803/2013, ‘Definition of powers and duties of the executive organs of the Federal Democratic Republic of Ethiopia’ (2013), article 2.

Environment Authority were transferred to this new Ministry,¹⁴⁴⁷ which was conferred with the regulatory functions of both protecting the environment and policy making.¹⁴⁴⁸ In addition to environmental issues, the Ministry of Environment and Forest is mandated to coordinate climate actions across the sectors.¹⁴⁴⁹

The Environmental Pollution Control Proclamation is remarkable in being the first in the history of the Ethiopian WRM law development to introduce comprehensive rules regulating point source pollution.¹⁴⁵⁰ The legislation suggests the need to formulate standards to assist in the regulation of pollutant discharges that affect the environment.¹⁴⁵¹ However, the law introduced a saving provision that limits the scope of application to those factors that were established before the introduction of the legislation. It freed pre-existing industries to discharge whatever pollutants they wanted until that suspension terminated.¹⁴⁵² More astonishingly, the legislation did not set out when the suspension of the rules for these industries would end. The environmental and societal interests were sacrificed to protect the economic interests of pre-existing industries. The reluctance to introduce immediate applicable rules implies that there were dilemmas in regulating the industries' discharge of effluents as a matter of immediate concern, despite the effect on the quality of water, potentially causing irreversible damage to water resources, human health and lives and the environment.

Half a decade after the promulgation of the Pollution Control Proclamation, the Prevention of Industrial Pollution Regulation was enacted to give detailed rules facilitating implementation of the Pollution Control Proclamation.¹⁴⁵³ This Regulation incorporates key substantive rules to regulate point source pollution.¹⁴⁵⁴ It obliges specified industries to minimize their generation of pollutants to the limit of the relevant environmental standard and dispose of the pollutants in an environmentally friendly way. The Regulation declares that every factory should handle equipment, inputs and products in a manner that prevents damage to the environment and human health. When a factory loses potentially dangerous pollutants, inputs or products, it is obliged to notify the competent

¹⁴⁴⁷ *ibid*, article 2(6).

¹⁴⁴⁸ *ibid*, article 3.

¹⁴⁴⁹ *ibid*.

¹⁴⁵⁰ FDRE Environmental Pollution Control Proclamation No. 300/2002.

¹⁴⁵¹ *ibid*, article 6.

¹⁴⁵² *ibid*, article 18.

¹⁴⁵³ FDRE, Prevention of Industrial Pollution, Council of Ministers Regulation, No. 159/2008.

¹⁴⁵⁴ *ibid*, article 4.

environmental authority. Moreover, every factory should notify the competent environmental authority if it has any potentially dangerous pollutant, input or product under its possession.

There are ranges of criteria to determine the scope of application under the Regulation. First, the Regulation only applied to the industries listed by the subsequently formulated directive.¹⁴⁵⁵ Second, the industries were allowed to discharge pollutants until the standards were formulated, and those industries being regulated by the legislation would be determined by the subsequent directive. In a strict legal sense, this law allowed those industries out of the listing to discharge effluents into the environment without regulation. The Regulation did not provide rules for taking precautionary measures to regulate the impacts of effluent discharges, unless it required the industries that possessed pollutants to notify the competent environmental body.¹⁴⁵⁶ Moreover, the Regulation did not apply to the pre-existing industries.¹⁴⁵⁷ An existing factory is defined as one that is under operation or a project for which an application to obtain a licence to establish a factory has been submitted before or on the date of entry into force of the Regulation.¹⁴⁵⁸ It gave further exemption of the pollution regulatory rules to pre-existing industries for nearly half a decade.¹⁴⁵⁹ Until then, the existing firms had the privilege of continuing to pollute water resources. This left water resources being used by humans, and the protection of a healthy ecosystem, unregulated.

For instance, in March 2006, Action Professionals' Association for the People brought a legal action against the FDRE Environmental Protection Authority in the Federal First Instance Court of Ethiopia. The claim was against the immense pollutant discharges into the water resources of the Awash River and two of its tributaries, which cross many regional states.¹⁴⁶⁰ This case was the first ever legal dispute in Ethiopia that was brought against a government regulator for its failure to protect the water resources. In this case, the plaintiff strongly claimed that unregulated effluent discharge was degrading the water resources to the extent of harming human and non-human beings. The case was supported by scientific study and expert witnesses. After investigating the case, the Court rendered a decision in favour of the defendant, and similar decisions were rendered by the Federal High and

¹⁴⁵⁵ *ibid*, article 3.

¹⁴⁵⁶ *ibid*, article 4(3).

¹⁴⁵⁷ *ibid*, article 12, sub article 1.

¹⁴⁵⁸ *ibid*, article 2(5).

¹⁴⁵⁹ *ibid*, article 12, sub article 1.

¹⁴⁶⁰ FDRE, the Federal First Instance Court, Court File Case No.64/902.

Supreme Courts at the appellate levels.¹⁴⁶¹ The central statement of the courts' decisions was that the defendant, the Environmental Authority, was not responsible for the failure to act.

The reading of the story in this case indicates that some legal and organizational remit problems were prevailing in the management of interstate water pollution regulation in Ethiopia. The material facts of the claim implied that unregulated and untreated effluent discharges were affecting the tributaries of the Awash River, which caused damage to the river's water resources, to people and to biodiversity. The plaintiff sought that the defendant should take administrative and legislative measures to stop ongoing water pollution and clean up the streams. It also asked the Court to introduce inspectors to conduct a follow-up of the implementation process and measures decided by the defendant.¹⁴⁶² The reading of the court case absolves the defendant, and stresses two main issues that meant that it should not be held accountable for the allegation of the plaintiff. The first claim indicated substantive law problems. In particular, the defendant argued that the majority of the industries polluting the Awash River tributaries were pre-existing. These industries were exempt from the pollution control legislation.

Within existing law, the authority did not have a statutory mandate unless the legal suspension of pollution regulation on the pre-existing industries was terminated.¹⁴⁶³ This claim confirmed that pre-existing industries were free and unregulated, even if their activities were damaging water resources. Especially in rural areas, where the majority of people do not have access to clean water, suspending the regulatory rules regarding pollution and leaving pre-existing industries to pollute water resources might not be seen as a mere legislative failure, but could be equated to giving the industries the licence to devastate biodiversity and human health, particularly for those people who have no access to clean water. The pollution control regime, which was sought to protect the security of water, has thus been compromised.

The second key argument brought by the defendant was that the defendant's power was limited to conducting follow-ups of the implementation of pollution regulation laws by the regional states, rather than being directly involved in the implementation of environmental protection laws and policies. This claim indicated that the responsibility for the regulation of pollution was decentralized

¹⁴⁶¹ *ibid*; Federal High Court, Court Case File No. 51052; and the Federal Supreme Court, Court Case File No. 3977.

¹⁴⁶² *ibid*.

¹⁴⁶³ *ibid*.

to the regional states. The legal foundation for this claim was the Proclamation Establishing the Organs of Environmental Protection in the country. According to this legislation, the main responsibilities of the national Environmental Protection Authority are preparing policies, laws, regulations and strategies, and conducting the follow-up review of their implementation.¹⁴⁶⁴ The central role in implementing water pollution control law goes to the respective regional states and local levels.¹⁴⁶⁵ Such power allocation may not be wrong in itself. However, the problem is the regime's failure to understand the nature of interstate pollution problems.

Decentralization may be seen as giving the opportunity to local people to participate; however, its significance in interstate pollution control may be doubted. The implementation of the decentralized mandates was dependent on the strength of the respective regional states concerned.¹⁴⁶⁶ At present, the capacity of the regional states to implement decentralized mandates is increasingly varied.¹⁴⁶⁷ Some regional states are, by far, too weak to discharge their legal mandates. With interstate water pollution issues, the strength of one regional state or local level may not guarantee the regulation of water quality challenges unless stakeholders engage jointly.

In circumstances in which water pollution is unregulated, it is common for one regional state to benefit at the cost of another, since regional states may not be equally affected by the impacts of pollution spill-over. With regard to interstate pollution regulation, what is more complicated is deciding which regional state is appropriate for regulating this pollution problem. It may be argued that the regional state that is obliged to regulate is the state from where the pollution emanates; or the one where the firms discharging the effluents are based; or all the states that share the water resources where the effluent discharges pass. However, such administrative boundary-oriented and fragmented pollution management may not bring about effective solutions for the challenges to water resource security through interstate pollution.

Moreover, the defendant in the above-mentioned case claimed that its authority was limited to conducting a follow-up of the implementation by the regional states, but that it did not have the influential power to take measures to regulate pollution. The regional states have autonomous power

¹⁴⁶⁴ Proclamation No. 295/2002 (n 1435) article 6.

¹⁴⁶⁵ *ibid.*, article 14.

¹⁴⁶⁶ United Nations Country Team, Ethiopia United Nations Development Assistance Framework, 2012–2015 (2011).

¹⁴⁶⁷ *ibid.*

for determination in matters in which they have the authority to handle and implement.¹⁴⁶⁸ Constitutionally, the regional states and their institutions are not accountable to the federal institutions; rather, they are accountable to the people of the region.¹⁴⁶⁹ This suggests that the mandate of the Federal Environmental Authority to conduct follow-ups is unclear regarding the nature of the practical role it plays. In the absence of clear roles to take measures against the regional states, the credibility of the Environmental Authority's follow-up mandate is questionable. This legal dispute indicated that the FDRE Environmental Protection Authority needs decisive powers regarding the regulation of interstate water resource pollution. The mandate to follow-up alone may not be helpful in regulating water pollution problems of this nature.¹⁴⁷⁰

The other concern is directly related with drinking water quality regulation. In 1990, Ethiopia introduced the drinking water quality standards that ensured safe water quality for drinking purposes, and this was subsequently revised in 2001.¹⁴⁷¹ This standard was designed with due consideration of the WHO guidelines for drinking water quality specifications.¹⁴⁷² The compliance with these standards varies by the types of chemicals, specifications of water sources and regional states.¹⁴⁷³ There are no laws setting out statutory obligations regarding drinking water; the implementation of the standards is dependent on the willingness of the water supply facilities. A significant number of populations in developing countries, including Ethiopia, depend on diverse water sources, including streams, vendors, unprotected wells and springs to obtain drinking water.¹⁴⁷⁴ Yet, in Ethiopia, water pollution from nitrate concentration is unregulated.¹⁴⁷⁵ There has been algal blooming in the water resources of some water bodies, indicating nitrate pollution.¹⁴⁷⁶

Over the next five years, the agricultural sector is expected to grow steadily. The drives for this growth are ensuring food security for the growing population, providing raw materials for domestic

¹⁴⁶⁸ FDRE Constitution 1995, article 39 (3); see also Proclamation No. 295/2002 (n 1447) article 14.

¹⁴⁶⁹ *ibid.*

¹⁴⁷⁰ Interview with Mohammed Ali Mohammed, Director of Technology Transfer Program Directorate, the FDRE Environmental Protection Authority, 16 August 2011.

¹⁴⁷¹ Ethiopian Standard, ES 261:2001, drinking water specifications, preamble.

¹⁴⁷² *ibid.*

¹⁴⁷³ WHO and UNICEF, *Rapid assessment of drinking water quality in the FDRE: country pilot project implementation in 2004–2005*(2010).

¹⁴⁷⁴ Interview with Wongel Abate , Executive Director of Action Professionals' Association for the People , 10 August 2011

¹⁴⁷⁵ *ibid.*

¹⁴⁷⁶ Interview with Zewdu Tefera, Director Directorate of Legal Affairs, Ethiopian Ministry of Water and Energy Resources, 16 July 2011

industries, and the provision of goods for domestic and foreign markets.¹⁴⁷⁷ The Growth and Transformation Plan considers the intensification of commercial farms to meet the objectives expected from the agricultural sector. This sector's development is increasingly connected with the intensive use of chemicals and other related inputs that may have impacts on the quality of water resources, unless effective measures are taken to protect diffuse water pollution. At present, there are no indications that diffuse pollution will be managed in the near future.¹⁴⁷⁸

7.3.3.2.3 River basin-based WRM

To implement water security management institutional arrangements, establishing proper organizations with defined remits is imperative. In 2007, a law designed to establish river basin organizations was introduced.¹⁴⁷⁹ Amongst the objectives of the law, promoting and monitoring the implementation of IWRM processes and facilitating an equitable and participatory management were underlined.¹⁴⁸⁰ This legislation provided a general framework for establishing river basin organizations through the subsequent enabling of the regulation issued by the Council of Ministers on a phase-by-phase basis.

However, this legislation did not give a specific time for when these organizations would be established; rather, it gave discretion to the Council of Ministers to choose the appropriate times and for the selection and prioritization of the river basins that needed the establishment of River Basin Authorities. No specific parameters were given for such selection and the phase-by-phase establishment of river basin institutions. Generally speaking, the Proclamation calls for the establishment of an organization for each river basin. The legislation suggests the possibility of one river basin institution managing two or more river basins until the establishment of the other basins' own respective institutions.¹⁴⁸¹

Under the River Basin Councils and Authorities Proclamation, two bodies are responsible for running river basin management: the River Basin High Councils (BHCs) and Authorities.¹⁴⁸² The

¹⁴⁷⁷ Ethiopian Growth Transformation Plan, 2010/11–2014/15, 8, 19–21.

¹⁴⁷⁸ Interview with senior official in the FDRE Ministry of Water and Energy Resources, 10 August 2011.

¹⁴⁷⁹ The River Basin Councils and Authorities Proclamation No. 534/2007.

¹⁴⁸⁰ *ibid*, preamble and article 4.

¹⁴⁸¹ *ibid*, article 3(2).

¹⁴⁸² *ibid*, article 3(1).

Basin Authority is entrusted with powers and responsibilities such as: initiating policy measures for the implementation of IWRM in respective river basins; submitting them for approval to the BHC; conducting a follow-up of the implementation; preparing and submitting the basin plan to the BHC; monitoring its implementation upon approval; issuing permits applicable to the basin's water use and water works; and ensuring that the terms of the permits are complied with.¹⁴⁸³

Generally, the functions of the Basin Authority may be divided into two categories. The first strand of functions relates to the initiation of policies and plans for the respective river basin. These are then submitted to the BHC for approval, and implemented once approval is received. The second category of powers relates to the issuing of permits and related activities for water resource utilization, for which the Basin Authority implements WRM and follow-ups. For the first category of functions, the Basin Authority is primarily accountable to the BHC; whereas for the second category, it is accountable to the MoWE,¹⁴⁸⁴ which conducts supervision of the functioning of the River Basin Authorities.¹⁴⁸⁵

As discussed elsewhere, the MoWE is the principal organization that regulates water use and engages in the provision of water resources.¹⁴⁸⁶ It provides bulk services and regulates access to these resources. It also engages in development activities. As a principal water user, as well as the supervisor for water regulation, the MoWE also has the potential to neglect its management of water resources regulation, particularly in those water development projects that it directly handles. It may be difficult for the River Basin Authority to hold the Ministry accountable for any misuse, for the Authority is not in a position to regulate the behaviour of the MoWE. Moreover, owing to its lower status, the Basin Authority's competence in coordinating the federal ministerial levels of the institutions is doubtful. More importantly, the Authority may not be in a position to interfere with the functions of the regional states, although these functions may directly or indirectly affect water resources. This creates doubt in creating a practical, integrated river basin management in the current arrangement through the River Basin Authority.

¹⁴⁸³ *ibid*, article 9.

¹⁴⁸⁴ *ibid*, articles 1 and 2.

¹⁴⁸⁵ Water Resources Management Proclamation, article 8(1).

¹⁴⁸⁶ *ibid*.

In a strict legal sense, for instance, land administration is given fully to the regional states under the current Ethiopian Constitution. This means that the River Basin Authority does not intervene in this power in any way, unless it is managing water resources at the river basin level. Although the Proclamation establishing river basin institutions provides that all persons and institutions should cooperate with the Basin Authority for the implementation of its mandates, the duty of cooperation is limited to those functions that are entrusted to the River Basin Authority, and the Proclamation is silent as to how regional states are expected to be coordinated on the matters that are delegated to them by law.¹⁴⁸⁷ More importantly, there is no specific liability that will apply if persons or institutions fail to cooperate with the Authority. This means that the statutory cooperation is voluntary in its nature, and is implemented by the willingness of regional states as the stakeholders. Therefore, to make the implementation effective, the duty to cooperate under this legislation needs the identification of areas of cooperation and the roles and functions of different stakeholders. Liabilities for non-compliant stakeholders then need to be stipulated, and mechanisms should be set up for dispute settlement.

In addition, the Basin Authority collects, compiles, analyses and disseminates information for proper planning, administration and management of water resources in the basin. It also develops and uses a river basin model in order to guide and support the strategic planning and water administration functions of its basin water resources; gives advice and technical support to the BHC and the MoWE on dispute resolution in relation to the allocation and use of the water resources of the basin; sets up a forum for effective networking among stakeholders; collects water charges from users; and, on the basis of instructions from the BHC, prepares and provides the necessary information for the concerned body in charge of negotiations with other countries regarding transboundary river basins.¹⁴⁸⁸ All these mandates are the primary functions of the MoWE.

Under the Water Resources Proclamation, the possible types of charge for water uses are a water use charge, payable annually, and charges for the discharge of treated waste as allowed by permit.¹⁴⁸⁹ To implement this authority, the water charge for each river basin is expected to be adopted by the Council of Ministers. This Proclamation does not provide rules about pricing schemes for water

¹⁴⁸⁷Proclamation No. 534/2007 (n 1479) article 19.

¹⁴⁸⁸ibid.

¹⁴⁸⁹ ibid, articles 22 and 31.

utilities. It is unclear how the cost internalization is materialized within the water resources for domestic water use.

The BHC is the highest body that is responsible for conducting respective river basin WRM.¹⁴⁹⁰ The members of this Council are designated by the national government,¹⁴⁹¹ and are expected to come from both federal government and regional states. However, the law does not provide the parameters that are used to select these members. It is left to the discretion of federal government to designate them.¹⁴⁹² Potentially, there will be a BHC for every river basin; hence there is the possibility of having too many BHCs, whether a river basin is interstate or not.

In practice, the members of each BHC are appointed by the Prime Minister on the recommendation of the MoWE.¹⁴⁹³ At the point at which this information was researched, no specific guidelines had been developed that could be used to determine where the members of the BHC come from. However, it is believed that the members, or those persons appointed and chaired by the Prime Minister, are all expected to come from regional states that share river basins, with stakeholders that are drawn from businesses and the private sector.¹⁴⁹⁴ These might include the presidents of the regional states sharing the basin with the members designated by federal government.¹⁴⁹⁵ Regional states that do not share river basins cannot participate in the BHC. The problem with the nature of this designation is that water security management may not always find solutions at the basin level alone; rather, it may require water transfer from outside the river basin zone.¹⁴⁹⁶

The regional state bureaus participate, although they are voiceless in decision-making.¹⁴⁹⁷ In addition to members of government bodies, designated private and business sectors participate in the BHC decision-making forum, but they do not have voting power.¹⁴⁹⁸ The nature of the BHC's power creates doubt as to how private sectors' and consumers' interests are incorporated into shaping WRM.

¹⁴⁹⁰ *ibid*, article 2.

¹⁴⁹¹ *ibid*, article 5.

¹⁴⁹² The Abbay Basin High Council and Authority Establishment Regulation No.151/2008.

¹⁴⁹³ Interview with one of the senior officials in the FDRE Ministry of Water and Energy Resources, 10 August 2011.

¹⁴⁹⁴ *ibid*.

¹⁴⁹⁵ Negash(n 1255).

¹⁴⁹⁶ Rodda (n 373).

¹⁴⁹⁷ Negash (n 1255).

¹⁴⁹⁸ *ibid*.

The BHC has been conferred with a range of functions. It provides policy guidance for the River Basin Authority and conducts the overseeing of planning to ensure a high level of coordination among stakeholders in implementing IWRM in the respective river basins. It also: directs the preparation of the RBMPs and submits them for approval to the government; proposes to the government the rate of water charges to be paid by water users in the river basin;¹⁴⁹⁹ examines and decides on the appropriateness and prioritization of constructing major water works in the basin; and examines and decides on water allocation rules and principles that are dynamic within the context of the river basin.¹⁵⁰⁰

Moreover, the BHC is also mandated with powers to manage water use disputes between regional states in the river basin; it provides information and advisory support to the body in charge of negotiating with neighbouring countries, with respect to the transboundary basins for which the BHC is responsible; and it establishes the standing of ad-hoc committees that are necessary to discharge specific functions.¹⁵⁰¹ The functions entrusted to the BHC indicate that it is the ultimate authority for providing the guidance for the integration of water resources implemented by the River Basin Authorities. However, the body is an ad-hoc institution, and mostly comprises busy government officials from federal and regional states. This may leave them with insufficient time and effort to engage in WRM. When this research information was collected, there were no BHCs except for the Abbay River Basin Authority. The river basins, like the Awash River basin district, in which the River Basin Authority has already been established, might not be able to effectively discharge their legal duties in the absence of the BHC. A Basin Authority is a separate body that implements a BHC's decisions.¹⁵⁰²

¹⁴⁹⁹ *ibid.*

¹⁵⁰⁰ *ibid.*

¹⁵⁰¹ *ibid.*

¹⁵⁰² Proclamation No. 534/2007 (n1479) article 10.

7.4 Implementation of WRMPs

Precise and clear legislative mandates are indispensable for implementation;¹⁵⁰³ they can affect considerably the level of implementation.¹⁵⁰⁴ Clarity is important for two reasons: ‘It helps to determine how well implementers and target groups understand what is expected from them. More subtly, ambiguity provides a means for negatively inclined judges or bureaucrats to evade the intent of policies through deliberate misinterpretation.’¹⁵⁰⁵ No matter how clear and precise a statute, it requires strong organizations mandated to implement and realize its objectives.¹⁵⁰⁶

When the information for this study was collected, out of twelve river basins, there were only two River Basin Authorities established – for the Abbay and the Awash River basins. As an example, the Awash River Basin Authority was established in 2008.¹⁵⁰⁷ The practice of the Awash River Authority gives the impression that it continues to engage in its traditional functions, like water training, water allocation for large-scale water users and constructing irrigation channels.¹⁵⁰⁸ Even these traditional functions do not extend to encompass the whole river basin; rather, they are limited to a small segment of the Awash River basin.¹⁵⁰⁹

The suggested causes for this are that few staff members are equipped with the knowledge of IWRM, or the conceptual complexity of the idea of an integrated river basin management.¹⁵¹⁰ Frewe Abebe, one of the senior officials in the Awash River Basin Authority, was optimistic that reform of the traditional ways of WRM in the Awash River basin district would soon commence. However, there is no indication of when this reform is going to happen, for this is left not only to the readiness to reform, but to the willingness of the institution to accommodate the upcoming changes, and the

¹⁵⁰³ Paul Sabatier and Daniel Mazmanian (eds), ‘The implementation of public policy: a framework of analysis’ (1980) 4 *Policy Studies Review Annual*, 188.

¹⁵⁰⁴ *ibid.*, 191.

¹⁵⁰⁵ Lawrence Baum, ‘The influence of legislatures and appellate courts over the policy implementation process’ (1980) 4 *Policy Studies Review Annual*, 209.

¹⁵⁰⁶ Sabatier and Mazmanian (n 1503) 190.

¹⁵⁰⁷ Councils of Ministers, Regulation No. 156/2008 to provide for the establishment of Awash River Basin High Council and Authority.

¹⁵⁰⁸ Interview with Frewe Abebe, head of technical department, in the Awash River Basin Authority, Ambhara, 2 August 2011, 15:30.

¹⁵⁰⁹ *ibid.*

¹⁵¹⁰ *ibid.*

introduction of an effective BHC, which is responsible for direct WRM in the basin. As has been discussed, the process of establishing the BHC has been too slow.¹⁵¹¹ The Awash River Basin High Council is yet to be established. Unless this institutional problem finds a solution soon, the implementation of the coordinated management of water resources, which might help to enhance water security, may not effectively materialize.

The recent Ethiopian Growth Transformation Plan addresses WRM by encompassing all water resource utilization, such as irrigation, power and integration of the nation's water resources.¹⁵¹² As part of its strategic directions, its plans include:

creating interconnection among different sectors and users, ensuring fair and equitable utilization of the resources taking into consideration the demand and benefit of the future generation, contributing to fast and sustainable social and economic development of the nation through sound development strategies, and mitigating the impacts of runoff, drought and other natural hazards [which] stand amongst the priorities of Ethiopian water resources management policies.¹⁵¹³

7.5 Case law

The regulated use of natural resources is a key to ensuring their long-term availability.¹⁵¹⁴ In Ethiopia, unwise water abstraction remains one of the challenges to water security. Since the 1960s, for instance, Lake Haramya was used as a source of water to supply the city of Harar, and for both rural and urban dwellers.¹⁵¹⁵ This lake water resource was used for domestic support, fishing, irrigating lands for crops, industrial use, supplies and many other uses. Now, however, this lake is extinct; it is a 'deadlake'. Ayenew describes the ruin of this lake as a 'shocking extinction'.¹⁵¹⁶ There is no water, the living things are devastated, and 'the Lake bed is converted to blowing sand plain'.¹⁵¹⁷ The

¹⁵¹¹ *ibid.*

¹⁵¹² Ethiopian Growth Transformation Plan (n 1477) 40.

¹⁵¹³ *ibid.*

¹⁵¹⁴ Wongel Abate (n 1474).

¹⁵¹⁵ Ayenew (n 1229) 146.

¹⁵¹⁶ *ibid.*

¹⁵¹⁷ *ibid.*

extinction of this lake is very a recent phenomenon, as the pumping of its water for urban needs terminated in 2004.¹⁵¹⁸

One of the main causes of the ruin of this lake was unregulated water abstraction.¹⁵¹⁹ The local farmers irrigated their land without any limitations by using their own facilities, and industries used to supply the demanded amount of water without any restrictions. Until the lake became extinct in 2004, little attention had been given to sustaining the use of its water.¹⁵²⁰ Instead, it was assumed that the lake's water resources were free for all users to exploit. Its extinction has become a constraint for the economic sector.¹⁵²¹ Similarly, in some water bodies, over-abstraction, diversion and pollution are considerable threats that the country's water resources are still facing.¹⁵²² The security of water resources is at a very low level and water resources utilization remains unsustainable.¹⁵²³

When water resources are scarce, the pollutants that are discharged cause the acceptable quality of water for various uses to deteriorate.¹⁵²⁴ Through pollution, water security challenges in the country may intensify. In Ethiopia, some water bodies have been used as a sink for the discharge of factory pollutants.¹⁵²⁵ In particular, the upstream catchments of the Awash River basin, which cross through the city of Addis Ababa, were used as a sink for industrial effluent discharge.¹⁵²⁶ Most of the factories in Addis Ababa did not have effluent treatment plants; they discharged effluents into the water bodies without any treatment.¹⁵²⁷

Even the factories that had treatment plants did not use these to treat the effluents before they discharged them into the water bodies.¹⁵²⁸ The sewage from urban areas and leakage from septic tanks affect the quality of water available for a range of uses.¹⁵²⁹ Water pollution also threatens the security of water through increasing the cost of water treatment.¹⁵³⁰ But in Ethiopia, the implication

¹⁵¹⁸ *ibid.*

¹⁵¹⁹ *ibid.*

¹⁵²⁰ *ibid.*

¹⁵²¹ *ibid.*

¹⁵²² *ibid.*, 141–57.

¹⁵²³ *ibid.*, 17.

¹⁵²⁴ Howarth(n 69) 357.

¹⁵²⁵ Wongel Abate (n 1474).

¹⁵²⁶ *ibid.*

¹⁵²⁷ *ibid.*

¹⁵²⁸ *ibid.*

¹⁵²⁹ *ibid.*

¹⁵³⁰ National Audit Office (n 661)4–5.

of water pollution goes beyond the increase of water costs, since the majority of the rural population depends on natural water bodies to find drinking water; its cost extends to human life.

As one of the developing countries, Ethiopia considers its industrial sector role as critical for helping the country's gross domestic product.¹⁵³¹ This sector directly and indirectly depends on water resources to sustain its production. In the past, the utilization of water resources for the purposes of economic development was insignificant.¹⁵³² However, now the state of water utilization is increasing, with the intent of ensuring food security and sustaining economic development.¹⁵³³ The Ethiopian Growth and Transformation Plan, which was designed for implementation in 2010–2015, emphasizes fast development in the country,¹⁵³⁴ and also recognizes water resources as invaluable resources for meeting the economic and social development that the Plan aspires to.¹⁵³⁵ It aims for an intensification of commercial farms and irrigation developments to meet the objectives expected from the agricultural sector.¹⁵³⁶ In the agricultural sector, the Plan considers ensuring food security for the growing population, providing raw materials for domestic industries and providing goods for domestic and foreign markets.¹⁵³⁷ The evidence suggests that there will be a possible increase of human pressures on the water bodies in the country, which may exacerbate water security threats unless proper institutional arrangements are put in place. However, the Plan does not consider the development of water resources plan to enhance the security of water in the country.

7.6 Conclusion of chapter

This chapter has evaluated the state of the water resources, as well as the contemporary and projected water security challenges, in Ethiopia. The study has shown that although Ethiopia had been considered as relatively water abundant, the country is now experiencing challenges to its water security, and these challenges may continue to affect social and economic development unless an

¹⁵³¹ Interview with Kahsay G/Tensae, Director of National Parks and Wildlife Sanctuaries Coordinating Directorate, Ethiopian Wildlife Conservation Authority, 01 August 2011.

¹⁵³² *ibid.*

¹⁵³³ *ibid.*

¹⁵³⁴ Ethiopian Growth Transformation Plan (n 1477) 19–21.

¹⁵³⁵ *ibid.* 40.

¹⁵³⁶ *ibid.* 40–42.

¹⁵³⁷ *ibid.*

effective system is designed, in particular to regulate the human pressures that affect the sustainability of the country's water resources. It is projected that the water scarcity problem will rise with the fast-growing population and climate change in the country.

The examination in this chapter has also shown that the usages in some water bodies are unsustainable; their existing scarce resources are exposed to over-abstraction, to the brink of ruin, and to pollution, which damages the quality of water. Pollution exacerbates the challenges to water security by rendering the available water unsafe for its required needs. In the current context, the majority of rural communities and a significant number of the urban population have no access to safe water. The rural populations depend more on the natural water bodies than on water facilities to meet their domestic drinking water demands.

Moreover, the security of water in Ethiopia is cross-dimensional, and may delay the country's aspirations for fast socio-economic development. The challenges to water security raise the question of how, and to what extent, key management systems for water resources are reflected in the country's contemporary water policy and law. The early development of water law was related to WRM for large-scale irrigation. It began with the drive towards agricultural modernization, by facilitating water resources for large-scale farming in the Awash Valley areas. The long-term sustainable use of water, comprehensive WRM and accommodation of a range of needs were unlikely to be appropriately addressed. Subsequently, the development of WRM law was observed, but it assigned a single organization to water resource regulation and agricultural enterprises development. By their nature, these functions were conflicting within WRM, rather than enhancing the security of water resources. It was unlikely that the water developer itself would regulate its behaviour. This could open up the water resources to the tragedy of the commons, as noted by Hardin.¹⁵³⁸

Under contemporary water law, the permit system is assumed to be a tool to allocate and regulate water resources. Water abstractors and effluent dischargers are required to obtain permits before becoming involved in water resource development.¹⁵³⁹ However, these rules do not provide possible limits on the abstraction of water from groundwater or surface water, although permits may be

¹⁵³⁸ Wongel Abate (n 1474).

¹⁵³⁹ Ibid.

suspended if the water resources are being depleted or the licence holders fail to meet the conditions set out under the permits.¹⁵⁴⁰ The examination of present irrigation practice within the chapter has shown that there is a tendency to divert water without obtaining any permit. Similarly, traditional water supply facilities are exempt from any regulation.¹⁵⁴¹ The water law does not quantify the amount of water per day that traditional water facilities are likely to abstract.¹⁵⁴² The implication is that more focus has been given to enhancing access to water than to sustainable water use. The rights are unregistered, the rates of abstraction are undefined, and facilities are scattered within rural areas and communities. The amount of abstraction is left to the capacity of the user.

Water pollution affects water quality and exacerbates problems of access to and availability of water resources. The investigation in this chapter has shown that after the introduction of the WRM Policy, two major proclamations and two regulations have also been enacted to provide substantive rules for WRM. The first legislation concentrates on pollution control in terms of point source water pollution. It is crucial because a significant proportion of the population remains dependent on direct abstraction or untreated water. However, this Pollution Control Proclamation was curtailed from being implemented on pre-existing industries. Secondly, any existing water laws, including pollution control, do not incorporate statutory obligations on the water suppliers regarding water quality perspectives. Moreover, the pollution control system tends more towards an administrative boundary-oriented model. Regarding the protection of water resources from pollution, industrial pollution control is handled by the Environmental Authority. However, the regional states are principal implementers of industrial regulations, regardless of whether the nature of the pollution is interstate or confined within their regional state. The review has indicated that effective implementation, particularly in interstate pollution, is doubtful without the significant involvement of a national environmental authority. An administrative boundary-oriented WRMP may not sufficiently curb interstate water pollution, since the impacts transcend administrative boundaries, and effective control of such pollution depends on the capacity of respective states.¹⁵⁴³ Because of these factors, the implementation of point source pollution control remains weak in the country.

¹⁵⁴⁰ Regulation No.115/2005 (n 1376) article 6; see also Proclamation no. 197/2000 , article 17.

¹⁵⁴¹ Proclamation No. 197/2000, article 12.

¹⁵⁴² *ibid.*

¹⁵⁴³ Frances Cleaver and Tom Franks, 'How institutions elude design: river basin management and sustainable livelihoods' (2005) BCID Research Paper No.12, University of Bradford, 7.

Finally, despite some water bodies being under threat from diffuse water pollution, there are no rules that set out diffuse pollution control from sewage or the utilization of agricultural chemicals.

The analysis in this chapter has also revealed that current water policy considers using a ‘twin-track’ approach. It considers demand and supply management as schemes to ensure access to and availability of water. Adequate water supplies are sought through developing new water infrastructures, with water transferring from one basin to another, or by creating interconnections within a basin.¹⁵⁴⁴ In principle, the basin boundary is seen as a guidance for its WRM.¹⁵⁴⁵ Furthermore, within water security management, developing an appropriate long-term plan is important.¹⁵⁴⁶ For this purpose, the WRM policy suggests the introduction of ‘the appropriate water supply planning parameters, design criteria and standards along with acceptable, desirable and permissible ranges and limits’.¹⁵⁴⁷ However, the policy ideals have not developed into binding legislation.

The evaluation in Chapter Seven also indicates that contemporary Ethiopian water policy favours regulation of water resources through cost internalization.¹⁵⁴⁸ The policy sets out the need to use the ‘full cost-recovery’ and ‘willingness to pay’ models. Regarding people living in towns, it favours full cost-recovery, whereas it suggests cost-recovery for the maintenance of facilities for the rural communities.¹⁵⁴⁹ The internalization of costs aims to achieve the protection, conservation and efficient use of water resources.¹⁵⁵⁰ However, the policy document has not been translated into binding legislation; nor are there clear guidelines that are supportive in setting out the rules that facilitate implementation. The practical significance of the policy therefore remains unclear.

The assessment in this chapter thus indicates that the comprehensive water policy that was formulated remains far from becoming a binding water law. In particular, although the mandate of the lead institution (the MoWE) is clearly defined,¹⁵⁵¹ the statutory obligations of water suppliers remain unclear. In such circumstances, the agencies’ accountability for their performance is weak,

¹⁵⁴⁴FDRE, Ethiopian Water Resources Management Policy (1279) sections 2.3.1.3; 1.2.3; 2.1.1.

¹⁵⁴⁵ibid, section 2.1.1. 6.

¹⁵⁴⁶ ibid, section 2.2.5.

¹⁵⁴⁷ ibid section 3.3.1.4;see also section 2.3.1.3.

¹⁵⁴⁸ibid.

¹⁵⁴⁹ibid, section 2.2.5(B) 7;see also section 2.2.5 (B) 6.

¹⁵⁵⁰ ibid, section 2.2.5.

¹⁵⁵¹ UN-Water, ‘Global analysis and assessment of sanitation and drinking water: the challenge of extending and sustaining services’ (report, 2012) 17.

and enhancing water security is unlikely to be possible.¹⁵⁵² There is a range of institutions involved in WRM. For example, the MoWE is conferred with water supply and regulatory functions, particularly in large-scale irrigation projects and water supply development. These mandates are conflicting by their very nature. Although the implementation of WRM is principally carried out by two bodies – the BHC and River Basin Authority – the MoWE supervises the Authority in conducting these functions. Practically, the nature of this mandate (i.e. the MoWE conferring the allocation of water abstraction) means that use of water resources by the Ministry may be unregulated, since the Authority may not have the capacity to control the functions of its super-regulator. There is the impression that the water resources regulator itself is a major water resources developer – and the Environmental Authority does not have the mandate to regulate its water abstraction or effluent discharges. The Authority’s mandate is limited to point source pollution regulation, in particular from industries that have obtained licences from the federal government, although it has a mandate to supervise the lower levels.

One of the aims of the national water sector policy is reorganizing WRM within the basin district.¹⁵⁵³ The assessment in this chapter demonstrates that Ethiopian water policy favours IWRM.¹⁵⁵⁴ The watershed boundary-based WRMP has been introduced as a recipe to reform the management system of water resources.¹⁵⁵⁵ When the information for this study was collected, only two River Basin Authorities were established out of the twelve river basins – for the Abbay and the Awash River basins. The latter was established in 2008,¹⁵⁵⁶ and its practice gives the impression that it is continuing to engage in traditional functions, like water training, water allocation for large-scale water users and constructing irrigation channels.¹⁵⁵⁷ Even these traditional functions do not extend to encompass the whole river basin; rather, they are limited to within a small segment of the Awash River basin.

The water policy calls for the overall development of water resources through the use of ideas such as a rural-centred, decentralized and participatory approach, as well as an integrated framework that promotes the participation of all stakeholders and user communities in the relevant aspects of

¹⁵⁵² *ibid.*

¹⁵⁵³ FDRE MoWR, Ethiopian Water Resource Management/Sector Policy document (2001) 6.

¹⁵⁵⁴ FDRE, Ethiopian Water Resources Management Policy (n 1279) section 4.1.

¹⁵⁵⁵ *ibid.*, introductory sections.

¹⁵⁵⁶ Regulation No. 156/2008 (n 1507).

¹⁵⁵⁷ Abebe (n 1508).

WRM.¹⁵⁵⁸ The WRM Policy suggests that diverse institutions and levels are assumed to be involved in the management of water resources.¹⁵⁵⁹ This management involves both national and local levels. In particular, the policy document declares the establishment of relationships between the different levels and sectors by defining the responsibilities of each stakeholder within WRM.¹⁵⁶⁰ This is a noble idea, which requires the defining of the statutory WRM obligations of the diverse levels and institutions involved. Naturally, the implementation of this idea is unlikely, unless their responsibilities are first defined as statutory roles, and schemes are set up to sort out how coordination is to happen. It has been over a decade since the water policy was issued, but there is no law to implement its ideals. Paradoxically, the MoWE was given exclusive power over the management of the water resources of the country, including the power to issue directives.¹⁵⁶¹ Whilst the Ethiopian WRM Regulation includes the possibility of delegating powers to other bodies, it does not declare when and what types of functions should be delegated, or to whom such powers should be delegated.¹⁵⁶²

The BHC is the highest body that provides guidance for its respective River Basin Authority.¹⁵⁶³ The members of each Council are designated by the national government,¹⁵⁶⁴ and are expected to come from both federal government and regional states. However, the law does not provide the parameters that are used to select these members. It is left to the discretion of federal government to designate them.¹⁵⁶⁵ These might include the presidents of the regional states sharing the basin and the members designated by federal government;¹⁵⁶⁶ and while the regional states' bureaus participate, they are voiceless in decision-making.¹⁵⁶⁷ In addition to members of government bodies, designated private and business sectors participate in the BHC decision-making forum, but they do not have voting power.¹⁵⁶⁸ The nature of the BHC's power therefore creates doubt as to how private sectors' and consumers' interests are incorporated into shaping WRM.

¹⁵⁵⁸FDRE, Ethiopian Water Resources Management Policy (n 1279) section 1.3.4.

¹⁵⁵⁹ibid, section 4.1.

¹⁵⁶⁰ ibid, sections 2.2.13 and 4.1.

¹⁵⁶¹ Proclamation No.197/2000 (n 1541) and ProclamationNo. 691/2010 (n 1362) article 26.

¹⁵⁶² Regulation No. 115/2005 (n 1540).

¹⁵⁶³ ibid, article 2.

¹⁵⁶⁴ ibid, article 5.

¹⁵⁶⁵ Regulation No.151/2008 (n 1507).

¹⁵⁶⁶Negash (n 1255).

¹⁵⁶⁷ibid.

¹⁵⁶⁸ibid.

Chapter Eight: Reflection and Conclusion

8.1 Water security contexts and key qualities of effective WRMPs in the case study countries

Traditionally, the challenges facing sustainability of water resources have been understood from the perspectives of semi-arid and arid countries. This thesis demonstrates that there are water security problems that include both the humid and semi-arid parts of the globe. Many of the European member states have already been categorized as lying within the water security threat regions. The discussion in this thesis also covers how almost a quarter of Africa's population lives in water-stressed regions. Despite the exposure of the AU and the EU to water security threats, a considerable quantity of their water resources are wasted, polluted and over-abstracted. In such regions, the study suggests that the threats would continue to rise unless proper measures are introduced and put in place.

The review in this study also shows that England is one of the more humid countries compared with many other EU member states. However, water security challenges are becoming recurrent threats in the country. In south-eastern parts of England, there is less water per person than in arid and semi-arid countries in the world;¹⁵⁶⁹ and the threats are expected to extend to other parts of the country. Despite these growing water security problems, there is also a considerable degree of human pressure on freshwater, both from over-abstraction and pollution.¹⁵⁷⁰

Compared to England, Ethiopia is a relatively semi-arid country. Its water resources are exposed to a great deal of spatial and temporal variability. In addition to natural scarcity, it is projected that water security problems will rise with the fast-growing demand to meet Ethiopia's economic and social development.¹⁵⁷¹ The study also indicates that, in both case study countries, availability of water resources would worsen in the future due to unsustainable water usage and pollution.

¹⁵⁶⁹Environment Agency(n 116) 10.

¹⁵⁷⁰Defra (n 753).

¹⁵⁷¹Ethiopian Growth Transformation Plan (n 1477) 40.

How can water law and policy help to achieve water security in the case study countries? To establish an analytical framework, the study evaluated the tragedy of the commons and the integrated river basin management approach, and has mapped out the following as salient features of an effective WRM system:

- A need to take into account the context of water resources
- Supply and demand management
- Water cost internalization
- Long-term WRMP
- Responsive water allocation
- Reasonable and equitable use of shared water
- No significant harm
- Water quality protection
- Subsidiarity
- Participation
- Collaboration
- Integration
- Separation of regulatory and water service provision remits
- Clear implementation strategies

After mapping out these main qualities, the study made an evaluation in order to understand the extent to which key features of an effective WRMP are reflected in English and Ethiopian water policies and laws. The findings indicate that, in both countries, there are some initiatives being implemented in their respective WRM policies and laws which do reflect these key qualities of an effective management system. From the overall water policies review, it may be argued that the contemporary policies generally accommodate some key features of an effective WRM system, but only if they are accompanied by proper water laws, implementation strategies and organizational remits that are designed to enhance water security. However, the initiatives which have been taken are limited and varied. Particularly, in Ethiopia's water management system, the progress made to insert such key features into binding law have been slow. Even if some features are reflected within

the water laws of both jurisdictions, they are limited and incomprehensive. Moreover, their implementation too has been weak and incomprehensive in both countries and, because of this, traditional WRM systems still have a big impact; as a result, there has not been much deviation from the ‘traditional’ way of managing water resources.

The study reveals that the effectiveness of a WRMP may not depend solely on the introduction of water policy and law. Primarily, it depends on identifying the key qualities of an effective system, which are then required to be acted into water policy and law. However, a reflection of such qualities may not enhance the sustainability of water. Rather, water security as a goal may be achieved when these key qualities are reflected in water policy and law *comprehensively*. However, this is not an end in itself for the realization of water security, as the effectiveness of a WRM system depends on its successful implementation in order to address water security challenges. Moreover, identification of the key qualities and their implementation in water policy and law are continuous processes in WRM, since water resource challenges are constantly changing with time and place. The study also suggests that these key qualities should be reflected at different scales – from the international to the local (national) levels.

8.2 International level

Water resources often do not respect administrative boundaries. Owing to this special nature, international water policy and law play a critical role in providing a general framework which controls the behaviours of states. The early international water laws were focused on coordinated development of transboundary water for specific uses.¹⁵⁷² Nowadays, there are many laws and policy instruments that manage international water resources, including its non-navigational uses. The Mar del Plata Conference introduced the coordinated management of all water resources, while the Rio Declaration on Environment and Development and Agenda 21 recognized again the necessity of an integrated and coordinated WRM. Agenda 21 further emphasizes an IWRM ‘based on the perception of water as an integral part of the ecosystem, a natural resource and a social and economic good, whose quantity and quality determines the nature of utilisation’.¹⁵⁷³

¹⁵⁷²Salman (n 405).

¹⁵⁷³Agenda 21, chapter 18.

The 1992 Dublin Conference also emphasized a holistic approach – that is, an IWRM that favours managing land and water resources across a catchment area. Subsequent international water law development, such as the Helsinki Rules, also recognizes management of all waters, both navigational and non-navigational, in the entire international basin in a way that enhances the equitable and reasonable use of water and follows the obligation not to cause significant harm. The Stockholm Action Plan identified environmental issues that required international cooperation and recognized the government's right in shared natural resources as a qualified right. Regarding shared resources, states are expected to cooperate through establishing multilateral or bilateral arrangements, or other appropriate means. Similarly, the 1979 UN General Assembly Resolution promotes effective cooperation among states in order to sustain shared resources.

The 1997 Convention on the Law of the Non-Navigational Uses of International Watercourses embodied the principles of equitable and reasonable use and the 'no significant harm' rule. It also accommodated water system conservation and sustainable development. These principles may be seen as customary of international law, which provides norms that could be implemented into regional and national water law.

At international level, the 1978 UNEP developed its 'Draft principles of conduct in the field of the environment for the guidance of states in the conservation and harmonious utilisation of natural resources shared by two or more states'. Accordingly, states cooperate with a view to control, prevent, reduce or eliminate adverse environmental effects. At the regional level, OECD in Europe has adopted a number of non-binding recommendations: water resources should be managed on the basis of long-term plans, and all relevant aspects of water quantity and quality should be addressed, such as abstraction and discharge, supply and protection. The OECD recommends a river basin-oriented WRM.

The assessment of the 1957 arbitration tribunal's decision, about the Lac Lanoux transboundary water dispute between France and Spain, has shown that riparian states are entitled to use water, but without ignoring other riparian states' interests. In the most recent transboundary water dispute, the Gabčíkovo–Nagymaros case, the Court in its decision noted that there were developments in international environmental law which are supportive of environmental protection and the equitable and reasonable utilization of international watercourses. The reviewed case studies inform us that

there has been a basic change in traditional water law and practices; in particular, the right to use shared water resources is conditional, in order to avoid unsustainable water exploitation. In this development, the philosophical foundation is environmental concern.

On 28 July 2010, the UN General Assembly adopted Resolution 64/292, which explicitly recognizes ‘the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights’. The MDGs also set out the role of water in human development under Target 7C. The United Nations World Water Development Report of 2012 underlined how human use and pollution are threatening the sustainability of water resources, and suggested that unsustainable practices should not be ignored if access to clean water and sanitation is to be achieved. In the SDG drafting process, UNESCO’s IHP recommended that in addition to fulfilling the human needs of clean water and sanitation, countries to address issues of overexploitation of freshwater resources, the growing water pollution problems in order to reach global sustainable development.¹⁵⁷⁴ The draft SDGs brought a development into water policy and law that advocates increased access to safe water and sanitation; a reduction in water demand and controlled pollution; that water resources should be efficiently used; and that WRM should be taken to the appropriate level by following an integrated approach.

The examination of international law and practice indicates that many key features of an effective WRM system are reflected in the international water instruments. Many of these key features aim to regulate the behaviours of states. While some of the main qualities of effective WRMPs that are present within international law and policies do support the enhancement of water sustainability, their practical importance has been limited to ensure that this does occur. However, their implementation may not be effective enough to ensure the sustainability of water resources without effective WRM systems at regional and national levels, since these are the principal actors compared to the international level. In particular, it is important that states adopt these norms in their regional and national water policies and laws.

¹⁵⁷⁴ UNESCO (n 484) 3.

8.3 Regional level

The AU has a broad mission to shape its member states' water policies and laws. Similarly, as a supranational body, the EU has the legal competence to introduce water policies and laws that shape its own members' behaviours and, indeed, over the last three decades the EU has adopted a range of these in order to reform its WRM systems. Many of the EU's traditional water policies and laws had focused on non-water security issues, and were characterized as instruments providing standards for different types of water use. The main objectives of such policies and laws were to protect against market distortion and to ensure public health. To meet these objectives, the new standards have been set to regulate quality of water and point source pollution.

The regulation of diffuse pollution was introduced at similar time to protect water from nitrate pollution arising from agricultural purposes. The analysis of this stage of water law has shown that sustainability of water resources might not be achieved by using regulatory schemes alone. In the case of diffuse pollution, water polluters may not be the water users themselves, and such pressures on water resources may result from legal activities such as agricultural practices. The protection of water resource quality from failures has been approached from land-use management practices. At the early stages, while the EU provided binding water legislation concerned with regulation of specific issues, the level of the EU's intervention in WRM was not significant enough to address water resource sustainability challenges. The state of the EU's legislative intervention was too narrow to manage water security challenges. A range of key features of an effective management system for water resources were not reflected within its water policies and laws. However, it might be up to each member state to introduce its own measures to sustain its water resource.

A significant shift in the EU's institutional water arrangements was introduced with its adoption of the WFD within the Union.¹⁵⁷⁵ The Framework, introduced in 2000, is more progressive and comprehensive than its predecessors.¹⁵⁷⁶ The legislation aims to protect the interests of humans, healthy water ecosystems and sustainability of water resources. It intends to control human impacts on water and its ecosystem. Through this, the integration of land and water resources is perceived as one of the key features of an effective WRM system within the EU.

¹⁵⁷⁵ Page and Kaika (n 504).

¹⁵⁷⁶ *ibid.*

The WFD provides a framework in which the member states can introduce more specific water resources policy and law. Through this legislation, the role of the national level is clearly recognized in WRM. The WFD was transposed into the member states' legislation: each EU member state is obliged to implement the WFD, and such implementation can be ensured by the Commission of the European Communities.¹⁵⁷⁷ The failure to transpose and implement the legislation entails legal consequences. For instance, the Water and Environment (Water Framework Directive) (England and Wales) 2003 legislation transposed the EU WFD. This means that the key features of an effective WRM system at the EU level would also need to be reflected at the national level (i.e. in the English WRM policies).

The importance of the EU's legislative intervention in shaping WRM is twofold. First, across the EU, water laws are being harmonized to enhance the sustainability of water, and the behaviours of the governments of member states are also being shaped accordingly. This demonstrates that water resource security concerns are not only the affairs of individual member states; the EU is considerably engaged in protecting its overall interests. The impression is that enhancing water security may not be achieved through isolated, fragmented and incoherent WRM within political boundaries – although, upon designing the institutional arrangements, the context of the country or region in which such institutional arrangements are introduced may need to be taken into account. Second, achieving water security may demand a more coordinated and inclusive approach that addresses water resource threats, while providing responsive solutions for the conflicting demands between countries. The WFD is a particularly invaluable legal instrument for harmonizing the WRM institutional arrangements of the member states. This suggests that, in tackling the fragmentation and incoherence of the water policies and laws between member states, the EU's strong legislative competence has played a crucial role.

At the EU level, more awareness of water politics has been observed since the 2003 drought; this can be seen from the introduction of water policy options for drought and water scarcity. In 2007, the European Commission adopted the Communication on water scarcity and droughts, which accommodated water policy options, setting the priorities for managing water scarcity and drought

¹⁵⁷⁷ TFEU, article 258.

challenges.¹⁵⁷⁸ In 2012, the European Commission expensively analysed the WFD implementation and evaluated a ‘blueprint’ for EU water law reform. These developments in water policy suggested that WRM should be reshaped and implemented according to changing contexts. Notwithstanding these developments, in the EU significant water resources vulnerability remains. Although the Communication has not been adopted into binding legislation, WRMPs should have some responsiveness or sensitivity to the extent of the growing water scarcity threats.

The WFD incorporated a rule that regulates the off-take of quantities of groundwater. The rule demands that member states must take into account a long-term average water recharge level for groundwater, in order to control over-abstraction, and imposes limitations on the level of water abstraction. Practice indicates that water abstraction for agriculture accounts for 24 per cent of water use within Europe, but that water abstraction regulation is inefficient.¹⁵⁷⁹ There is an over-estimation problem in existing water bodies, which opens the way for over-abstraction.¹⁵⁸⁰ This makes the water allocation permit system patchy, which can be decided at the discretion of each member state. At the EU level, there should be the introduction of strong regulation regarding water abstraction for agricultural purposes.

The WFD’s remit principally affects water quality, although quantity is also affected. Primarily, the EU’s role in WRM is limited to water quality management, unless the member states decide against this unanimously. Such unanimity may allow member states to control any move by the EU to adopt legal measures principally related to water quantity management. Certainly, it empowers the member states to play more roles, and permits states to resist measures that affect their national interests. This issue may give rise to doubt about the competence of the EU in introducing water quantity management rules, although it may be argued that the TFEU does not limit water quantity management to those measures that do not affect the availability of water resources, since it allows all measures that protect and improve the availability of water resources to follow qualified majority voting. The impression is that there may be a fear among member states of fully passing their power regarding water quantity determination to the EU. With growing water shortage challenges, the EU should place emphasis on both water quality and quantity regulation.

¹⁵⁷⁸ Ecologic (n 506).

¹⁵⁷⁹ *ibid.*

¹⁵⁸⁰ *ibid.*

Additionally, the WFD brought further development to the rules controlling water pollution for pollution point source regulation, through to emission regulation and the use of Best Available Technology; diffuse pollution awareness creation schemes; chemical use control; and expanding best agricultural practices. Another innovation in pollution control is the introduction of a new scheme that obligates member states to designate protected areas of water resources that are used for particular purposes. Nevertheless, in terms of the key features in controlling water pollution, ‘full compliance’ to the WFD has not been achieved; even though there are significant pollution pressures within the EU, implementation is often a key factor or challenge in many water bodies.¹⁵⁸¹ This suggests that the EU needs to strengthen its enforcement of water legislation.

The WFD introduced a rule for water pricing as a market instrument – that is, member states are under an obligation to develop water pricing as a requirement.¹⁵⁸² They are obliged to ‘take account of’ the principle of recovery of costs of water services, and to ensure the adequate contribution of water users to the cost of water as an economic regulatory tool. The member states’ duty is not to implement cost-recovery; rather, it is limited to taking into account the principle, meaning that its implementation is dependent on the willingness of each member state to act. Each state has discretion with regard to its water pricing, so some progressive states may use effective water pricing, whereas others may not, and implementation of cost internalization varies within shared river basins. Moreover, each EU member, within its national boundary demarcation, conducts an economic analysis by using technical specifications.¹⁵⁸³ The WFD favours water cost internalization within the political boundary demarcation of each member state. Shared water bodies still lack coherent mechanisms to set water pricing in a coordinated way. Patchy water pricing may not bring changes to all parts of a shared water body and compliance with cost-recovery water pricing remains a problem. This suggests that the EU should strengthen its compliance mechanism. In practice, within the water bodies of the EU, cost internalization has not materialized effectively.¹⁵⁸⁴ Moreover, the WFD lacks clarity in the scope of the application of water pricing– which has again left the implementation of water pricing patchy and ineffective within the EU member states. In terms of water cost internalization, the scope of water services is often limited to drinking water and waste water

¹⁵⁸¹ European Commission (2012) 0673 Final (n 497).

¹⁵⁸² WFD, article 9.

¹⁵⁸³ *ibid*, articles 5 (Annex III and Annex VI) and 11.

¹⁵⁸⁴ European Commission (2012) 0672 Final (n 498).

treatment; this excludes regulation of major water consuming sectors, including water abstraction for agriculture. At the Union level, the EU should introduce comprehensive guidelines for cost internalization.

Local participation is one of the key features of an effective WRM system. The WFD favours stakeholders' participation in the development of RBMPs. However, the scope of participation is limited to written comments and opinions on the draft RBMP and plan update documents.¹⁵⁸⁵ The WFD's CIS document also extends the scope of consultation to the provision of written comments, possibly including dialogues with the public in workshops and a wide range of meetings.¹⁵⁸⁶ The CIS suggests public participation to allow people to influence the outcome of plans and the working process; however, it is unclear whether potential participants are involved in the implementation processes. Thus the EU should introduce clear laws to enhance participation during the implementation stage of RBMPs.

Generally, in early water policy, environmental problems were seen within administrative boundaries. Environmental policies favoured decision-making at the lowest appropriate level unless the mandate was exclusively given to the EU level. The focus that was given to the lowest appropriate level demonstrates the demand for local participation in such environmental decision-making. While the idea of subsidiarity is recognized as a key element of environmental law, in principle, decision-making is determined on a case-by-case basis. The EU discharges the mandates that are exclusively given, and follow the same approach to management of water as a medium of the environment. In most cases, determining the level that was best suited for water resources decision-making was left to the respective member state, unless specific WRM aspects were left for regional-level intervention. One of the fundamental shifts brought by the WFD was that, within the EU, water resources should no longer be controlled along political or administrative boundaries; rather, the WRMPs are now set out and implemented according to the boundaries of river basins. This new development in water governance systems has certainly changed a traditionally administrative boundary-oriented and fragmented WRM.

¹⁵⁸⁵ WFD, article 14.

¹⁵⁸⁶ EU (n 334).

The WFD obligates member states to manage water resources at the river basin level in a coordinated fashion, in both transboundary and non-transboundary water bodies, although different levels are involved in WRM. River basin management assumes cooperation as a tool in coordinating WRM. However, cooperation with a non-EU member state that shares water resources with a member state is increasingly dependent on the willingness of the former, unless there is a treaty forcing it to cooperate. Often, regions and countries may have their own priorities and agendas.

By comparison, in the AU, the major mandates of the OAU were traditionally limited to giving support, in a coordinated manner, to alleviating the colonization and racism threats to which many of the African countries were exposed. The legislative competence of the OAU was fully different from the EU. During the colonial period, the preferred approach to implementing these objectives was non-interventionist within the member states' internal affairs. Inherently, the OAU did not have the legislative competence to introduce an effective management system for water resources. Each member state might separately introduce a water policy and law that it would consider appropriate for the sustainability of water. However, post-colonial Africa has changed the mandate of the AU in order to intervene in some issues that were previously the remit of member states. With the establishment of the AU and NEPAD, the former's legislative competence was extended to intervening in issues that affect the sustainable development of the entire continent. However, the wordings of the mandates of the AU and NEPAD seem to be too weak, and focus more on promotion and facilitation, rather than on direct intervention within member states' affairs.

To tackle water scarcity threats, the AU has made some efforts aiming to reform the continent's WRM. Notably, the AU has adopted the comprehensive African Water Vision for 2025 that accommodates some key features of an effective management system for water resources. The document calls for member states to engage in such key features as: equitable and sustainable use; demand and supply management; water quality protection; integration; cooperation and collaboration; and participation and subsidiarity. The study demonstrated that in Africa there are some regional water treaties which may provide a better platform for WRM, as they are supportive of subsidiarity. However, such arrangements may not be a substitute for the AU's role in providing water law, and the sustainability of African water may also need international, AU and regional treaties. The Africa Water Vision is comprehensive, in terms of encompassing water security concerns at the centre of sustainable development and in calling the AU's member states to bring about fundamental changes

in their WRMPs. Despite the Africa Water Vision's recognition that water security is at the heart of the AU's social and economic development and environmental sustainability, the status of the AU's legislative competence to intervene in shaping WRMPs is weak. The AU's Water Vision is 'calling' the member states, rather than 'reflecting' key features into water policy and law; it leaves reflection and implementation to the discretion of each member state.

AMCOW and the heads of government of certain African countries have subsequently formulated a range of declarations that facilitate the implementation of the Africa Water Vision. Since 2000, the AU has adopted a dozen WRM declarations. The impression is that the state of the AU's legislative intervention in WRM does not seem strong. The continent does not have a comprehensive water law that harmonizes member states' water laws and policies. The influence that the AU has brought is insignificant in changing the status quo of its member states and, because of this, water security challenges are addressed by fragmented, incoherent and incomprehensive water laws that were introduced by each AU member state, even in instances of shared water bodies. To tackle the fragmentation and incoherence of the water policies and laws between member states, the AU needs to have a strong legislative competence. In particular, as water security is a regional threat and has regional implications, the AU should have strong legislative competence to intervene at that level.

8.4 National level

8.4.1 Controlling water demand and supply

In the case study countries, there is an objective to address pressing water shortages with the growing recognition of the importance of water security for human needs. The right to water and sanitation has been widely recognized in both national and international policy instruments. The importance of this development is arguably to enhance the sustainability of water, to protect human needs and to ensure access to, and availability of, water. Particularly, a country is expected to take a distinct measure to address human needs when water is in deficit. However, the right to water is not an absolute right, such as an ordinary property right. Water is one special resource; the idea is that the right to water should also address the sustainability of water concerns in an integrated manner.

The study suggests that water is a public resource. Hence, in order to protect public needs, the control of water as a matter of public interest is unquestionable. Any water policy and law should embed the PTD in the utilization of water resources.

Recent national policy and legal developments inform us that there is an important shift in water rights. When water scarcity or stress is growing, public needs are protected by introducing coercive rules. Traditionally, England's water permit system was conceived to provide a perpetual right for the licence owner or possessor. This may not protect the public interest, since the purpose of water permits has tended to protect private interests. However, in recent years, there have been significant changes to water law in England. The modern permit system that was introduced in 2003 is both regulatory and time-bound; the permits will not create lasting property rights.

Under contemporary Ethiopian water law, the permit system is assumed to be a tool to allocate and regulate water resources. The water abstractors and effluent dischargers are expected to obtain permits before becoming involved in water resource development. The permits may be suspended if the water resources are being depleted or the licence holders fail to meet the conditions set out under the permits.¹⁵⁸⁷ In Ethiopia, examination of present irrigation practice has shown that there is a tendency to divert water without obtaining any permit. The study shows that traditional water supply facilities are also exempt from any regulation. The water law does not quantify the amount of water that traditional water facilities abstract; the implication is that more focus is given to enhancing access to water. In order for Ethiopia to enhance the sustainability of water, the country needs to regulate the use of water for different purposes by introducing a comprehensive water law.

Ethiopia's 1995 Constitution declares explicitly that water is a public resource. The FDRE has also given recognition to the right to clean water, and has imposed an obligation on both government and its citizens to protect the environment. The adoption of the regulations under the national constitutional document informs the government's political commitment to protect the right to clean water and environment. This legal evolution may be entrenched with the increasing recognition of controlling water consumption to protect the environment. This legal development suggests the right to water tries to protect human needs, but is subject to control in order to regulate unsustainable

¹⁵⁸⁷ Regulation No.115/2005 (n 1361) article 6; see also Proclamation No. 197/2000(n 1365) article 17.

water exploitation which damages the water environment. However, what is yet an unfinished task is the introduction of clear legislation that facilitates implementation of this constitutional right.

Another key issue in WRM is the nature of control. Achieving water security requires a significant reduction in water demand. The study suggests more could be done in controlling water demand. Because demand management requires effective water consumption reduction measures, depending on the context of a country in question, WRM alone may not solve water security problems. Rather, control of what service providers are doing may enhance the sustainable availability of water. In England, a high percentage of total water consumption is by the water companies. In Ethiopia, by comparison, there is a high level of irrigation water and many communities are served by direct abstraction from the resources. Thus, it is important that each country should take responsive measures for its specific water security problems.

In England, it is now a legal requirement for the water companies to prepare WRMPs,¹⁵⁸⁸ which provide what water companies are doing to sustain water. As a high percentage of water services are delivered by these water companies, the plans are an important tool to regulate their behaviour. The WRMPs accommodate options that improve the sustainable provision of water through reducing demand and enhancing supply. The water companies have an obligation to conserve water and prepare long-term WRMPs which assist in forecasting the availability of water, evaluate water security challenges and discuss options as to how to manage such challenges. Each company has a statutory requirement to prepare and publicize its WRMP, and declare how it will ‘be able, and continue to be able, to meet its statutory obligation’ of providing drinking water.¹⁵⁸⁹ The water companies’ WRMPs help them to make sure that they can respond flexibly to future uncertainties.¹⁵⁹⁰ The plans are made through long-term assessments of specific water resource zones and availability to meet a range of demands.¹⁵⁹¹

WRMPs may play a key role in balancing demand and supply. This implies that WRM policy and law are considerably evolving towards preparedness and resilience building. While preparation of WRMPs may not be an end to securing water resources availability, however, achieving water

¹⁵⁸⁸ Water Act 2003, s.62.

¹⁵⁸⁹ *ibid*, which interpolated ss.37A-D in the Water Industry Act 1991.

¹⁵⁹⁰ Defra et al.(n 834) 8.

¹⁵⁹¹ Defra, Ofwat, Environment Agency and Llywodraeth Cymru Welsh Government, *Water resources planning guidance: the technical methods and instructions*(July 2012) 12.

security is increasingly dependent upon the implementation of these plans. The WRMP in England is central to the enhancement of water security, as well as being a procedural requirement. The water law does not set out a clear rule that imposes an obligation on water undertakers regarding its implementation. Moreover, the WRMPs' scope of application is limited to drinking water resources. The study suggests that implementation of WRMPs remains weak in England. This suggests that it is also important that effective water demand and supply management requires not only the introduction of WRMPs, but also a comprehensive implementation system. The degree effectiveness of WRMPs depends on the strength of enforcement of any action that enhances compliance.

At the national level in Ethiopia, arguably, the early development of water law was related to the protection of water resources for large-scale irrigation. It began with the drive towards agricultural modernization, in order to facilitate water resources for large-scale farming in the Awash Valley areas. The long-term sustainable use of water was unlikely to be addressed within traditional WRM policy and law. Subsequently, the development of WRM law was observed to be assigned to a single organization with regard to water resource regulation and agricultural enterprise development in the Awash River Valley areas. These functions were conflicting within WRM, rather than enhancing the security of water resources. In Ethiopia, the recent water policy favours preparing long-term plans and considers using a 'twin-track' approach, regarding demand and supply management as schemes to ensure access and availability of water services. However, the policy ideas have not changed into binding legislation; the country does not have a comprehensive water law. It should thus be a crucial aim for the country to introduce a comprehensive water law which accommodates long-term WRMPs.

In England, all water service users pay fair prices for the water services they obtain; also cross-subsidy is used to allow special treatment for those water customers who may not be able to afford to pay. On the other hand, only 30 per cent of households' water services are fitted with meters and, except in those areas where resources are under stress, introducing metering is not a compulsory requirement for water companies. Owing to this fact, it is difficult to say whether water users are paying a fair price for what they are using. However, this does not necessarily mean that water abstraction in the country is free. For instance, the water companies, as one of the major water abstractors, pay the costs for the volume of water they abstract to the Environment Agency, as per their licensing conditions.

Contemporary Ethiopian water policy promotes regulation of water resources through cost internalization. The policy suggests those people living in towns; it favours full cost-recovery, whereas it suggests cost-recovery for the maintenance of facilities for the rural communities.¹⁵⁹² The internalization of costs aims to attain the protection, conservation and efficient use of water resources.¹⁵⁹³ However, the policy text has not yet been translated into binding legislation. Thus, the country should need to introduce a water law that accommodates water cost internalization.

8.4.2 Water quality protection

The study suggests that the challenge in the case study countries' water security is thus not only one of securing enough safe water. Water security is also linked to the protection of water resources from sewage discharges and urban waste water, and point and diffuse source pollution. In England, water quality failures from sewage discharges and urban waste water are addressed by the issuance of standards and the introduction of a permit system. The discharge authorizations or Environmental Permits set out standards to minimize the adverse effects of waste water on the receiving environment. Through the permit system, the Environment Agency can control water quality failures caused by waste water. The sewerage companies are responsible for waste water treatment from sewage, since the companies are the main waste water treatment service providers.

The Environment Agency is also entrusted with the responsibility to regulate water quality deterioration through pollution.¹⁵⁹⁴ One measure to manage diffuse source pollution is by establishing protected areas and creating awareness amongst farmers to use the identified best farming practices.¹⁵⁹⁵ Such codes of best agricultural practice have been developed and used in the protected zones.¹⁵⁹⁶ The Environment Agency may ask the Secretary of State to designate areas as water protection zones.¹⁵⁹⁷ In practice, diffuse pollution remains a significant challenge, and the implementation of the codes of best agricultural practice for diffuse pollution control remains weak. This suggests more efforts should be made to enhance the effectiveness of water law implementation.

¹⁵⁹² Ethiopian Water Resources Management Policy 1999, section 2.2.5(B) 7; see also section 2.2.5 (B) 6.

¹⁵⁹³ *ibid*, section 2.2.5.

¹⁵⁹⁴ Water Resources Act 1991, s.84; Environment Act 1995 ss.2(ii), 5.

¹⁵⁹⁵ Water Resources Act 1991, ss.92, 93, 94.

¹⁵⁹⁶ *ibid*, s.97.

¹⁵⁹⁷ *ibid*, s.87.

Evaluation of the Ethiopian water law has shown that it reflects the rules controlling water quality failure from point source pollution. However, the Pollution Control Proclamation was curtailed from being implemented on the pre-existing industries. There is thus a need –for the sake of further water security –to remove this particular exemption. Moreover, the pollution control system tends towards an administrative boundary-oriented model. Control of water resources from industrial pollution is handled by the Ministry of Environment and Forest, but only if the firm concerned has been registered by the federal government. In all other cases, the regional states are the principal implementers of industrial pollutant regulations, regardless of whether the nature of the pollution is interstate or confined within the regional state. This review has indicated that the effectiveness of such a model of pollution control is doubtful without the significant involvement of a national environmental authority, particularly in cases of interstate pollution. An administrative boundary-oriented WRM may not sufficiently curb interstate water pollution, since the impacts transcend administrative boundaries, and effective control of such pollution depends on the capacity of the respective state. Because of these factors, the implementation of point source pollution control remains weak in the country. Lastly, despite some water bodies being under threat from diffuse water pollution, there are no rules that set out the control of diffuse pollution from the utilization of agricultural chemicals and sewage. This again suggests the need to introduce a comprehensive water pollution control system.

8.4.3 Integration

Water security problems require responsive solutions for the entire water system –and for all major human pressures across a river basin district. Integration needs to move along a spectrum that is able to consider all water uses and types of water challenges and sets out measures that curb those identified problems. The management of the water resources within the case study countries needs to focus more on IWRM. Sustainable, long-term water resource availability may not become a reality without introducing and effectively implementing this IWRM approach; for such integration is more than just a traditional coordinated WRM approach.

The study suggests that IWRM means managing water resources at all levels– from local to global. To this end, actions at each level need to be defined, and the measures on one

level need to be linked with the other. In cases of shared water, regional and international agreements should be developed and enforced to establish coordination. As water security challenges need context-specific solutions, they mainly require key roles to be played at national, river basin district and catchment levels. Given that water security challenges are not single-level problems, they need integration among these levels.

Regarding the nature of organizational remits, the review of England's water law has shown that the water services facilities are administrative boundary-oriented, decentralized and scattered at the local level. The analysis indicated that more decentralized WRM could facilitate local participation. However, it demonstrates that fragmented water services provision is not a recipe for the security of water, although local participation in WRM is still crucial. In particular, when water resources are scarce, the fragmented water services provision may expose water resources to unbalanced utilization. Moreover, in fragmented and localized water services provision, those water resources zones that are abundant with water continue to utilize more water, whereas the 'stress' or 'scarce' zones continue to suffer unless there are schemes for a coordinated management. Since 1963, England has been introducing regionally based water services provisions.

The RBMPs provide a process through which water resource pressures are understood and managed in an integrated manner.¹⁵⁹⁸ In 2009, the RBMPs were published for the river basin districts in England. For each river basin district, the RBMP has been formulated with the aim of ensuring an IWRM that could avoid fragmentation. IWRM integrates both quantitative and qualitative aspects of water pressures and uses. The recent 2015 implementation of RBMPs in England shows that in terms of surface waters, some water bodies are yet subject to significant pressures. These pressures include pollution from point and diffuse sources, and abstraction and hydromorphological alterations. This informs us that more should be done to implement these RBMPs.

At present, in Ethiopia's rural areas, the WASHCOs are responsible for administering water facilities. They collect revenue from water users, distribute water and undertake minor maintenance of the utilities. WASHCOs are basic institutions that administer the water supply and lead the water users' community at grassroots level; they are not yet used as a platform for non-water supply issues. The WASHCOs' institutional arrangements favour a bottom-up approach that empowers local

¹⁵⁹⁸ Angling Trust et al. (n 732).

communities; however, they do not have responsibilities to control water demand and pollution, leakage control or water system protection. They do not have an obligation towards enhancing the long-term interests of the community, or environmental and economic sustainability. This demonstrates that the remits of WASHCos need mandate expansion; accommodating both water demand management and environmental protection. Moreover, only a small number of the WASHCos are legalized to discharge water services provisions. It should be important to legalize and coordinate the functions of WASHCos to enable them to provide sustainable water services.

In addition, water security requires an integrated land and water management in order to protect the sustainability of water resources. While the Ethiopian water policy favours an IWRM and ecosystem approach, the policy has not been changed into water law. There are no comprehensive binding rules to protect the ecosystems of water resources, which is crucial in protecting them. Thus, the country should introduce a water law that enhances IWRM.

In England, water law has accommodated clear, substantive rules that are designed to control land development. To control diffuse source pollution, the schemes that have been introduced range from regulation to awareness creation. Practice in England suggests that an attempt to control diffuse pollution is carried out through a voluntary mechanism or awareness creation, by targeting groups – particularly farmers, since agricultural land-use practices are the main source of the challenges. Moreover, there are rules to establish protected areas to safeguard water resources against pollution. Land use of protected areas must follow the codes of practice that are set out. This demonstrates that effective WRM demands an integrated management of land use in the water resources zone.

8.4.4 Collaboration

Water security issues are often interconnected, locally and internationally. Water security as a challenge therefore requires working together. The existence of clear statutory roles by itself may not guarantee the enhancement of the security of water resources. Effective WRM needs collaboration; particularly, it needs to establish how different stakeholders can work together. Effective collaboration needs both a setting out of a defined remit and creation of a relationship between stakeholders. In England's WRM, there are a number of stakeholders (government, regulators, water companies and consumer representatives). The WSRA is entrusted with economic regulation, and the DWI and the

Environment Agency are entrusted with the responsibility of drinking water and environmental quality, respectively.

Defra (the government department) provides policy guidance that directs the regulators' functions. Although these regulatory functions differ in their nature, they have increasingly interrelated goals in ensuring water sustainability. In practice, there was a suggestion that the WSRA works in isolation. Similar criticisms observed that Ofwat provided decisions without sufficient justification. The study indicates that the Water Act 2014 has brought a scheme that rectifies this drawback, and increases coordinated water services regulation.

Similarly, in Ethiopia, the 1999 WRM Policy suggests that diverse organizations and levels are assumed to be involved in the management of water resources.¹⁵⁹⁹ The policy also pledges the need to have coordination between stakeholders. However, the policy ideals remain unchanged to binding legislation, since the country has not developed a comprehensive WRM law. Ethiopia needs to develop a water law that defines the roles of different water services regulators and WRM bodies, and establish collaboration among regulatory institutions.

8.4.5 Subsidiarity

Traditionally, as discussed previously, England's water services provisions have not been integrated and comprehensive. However, this model has been replaced by a river basin-based services provision model. Practically, though, all WRM or service provision challenges may not find solutions from a single level. They may require bottom-up and/or top-down approaches; some issues are best handled at the local level while others may be better managed at national or supranational levels. Depending on the nature of the problem, regional or local levels play crucial roles in WRM or water services provision. In England, practice indicates that some issues are being handled at the local level. For instance, in England and Wales, the Catchment Sensitive Farming Project, which is voluntary in nature, seeks to tackle agricultural diffuse pollution.¹⁶⁰⁰ In this project, the farmers voluntarily engage by gaining advice and receiving incentives, and it gives emphasis to actions taken at the grassroots level and integrates these with other catchment delivery mechanisms. The example of the

¹⁵⁹⁹Ethiopian Water Resources Management Policy 1999, section 4.1.

¹⁶⁰⁰Middleton (n 929).

Wessex Catchment in England shows how the Catchment Sensitive Farming Project has been conducted at a very local level within small areas to control the nitrate problem.¹⁶⁰¹ While the lower level (catchment or below) is seen as appropriate to manage diffuse pollution problems, to date, there is no clear rule within English water law that defines the roles that each level has to play. In 2014, the government issued statutory guidance on the practical implementation of the WFD.¹⁶⁰² The guidance places increased emphasis on the catchment-based approach to WRM.¹⁶⁰³ Because this approach ensures the understanding of water security pressures of specific catchments, this policy guidance should therefore be changed into English law.

In Ethiopia, the watershed boundary-based water resources planning or management has been introduced as a recipe to reform the management system of water resources.¹⁶⁰⁴ To this end, the policy calls for the overall development of water resources through certain ideas, such as a rural-centred, decentralized and participatory approach, as well as an integrated framework that promotes the participation of all stakeholders and user communities in the relevant aspects of WRM.¹⁶⁰⁵ At present, Ethiopia practises community-based participatory watershed management activities across the country. The study demonstrates that there have been variations in the success rates of different community-based management in different localities. This community-based participatory watershed management requires cooperation among various stakeholders to build and strengthen institutions. Some programmes are also being criticized on particular grounds, such as lack of inclusiveness or fairness and short-termism. This suggests that these participatory watershed management programmes should address contemporary weaknesses and, in particular, that they require legalization.

It is clear that WRM involves both national and local levels. The Ethiopian water policy document declares the establishment of relationships between the different levels and sectors through defining the responsibilities of each stakeholder within WRM.¹⁶⁰⁶ This is a noble idea, which requires the defining of the statutory obligations of the diverse levels and institutions involved in WRM.

¹⁶⁰¹ de vial (n 930).

¹⁶⁰² Environment Agency (n 1064) 12.

¹⁶⁰³ *ibid*,44.

¹⁶⁰⁴ Ethiopian Water Resources Management Policy 1999, introductory sections.

¹⁶⁰⁵ *ibid*, section 1.3.4.

¹⁶⁰⁶ *ibid*, sections 2.2.13 and 4.1.

8.4.6 Stakeholders' participation

In water resources protection and development, there is a range of interests that need taking into account when decision-making. The study shows that participation is an instrumental tool for enhancing the sustainability of water resources. The EU's WFD considers public and stakeholders' participation as decisive in river basin plan development. The participatory WRM approach in this law aims to harmonize the needs and interests of water users at the river basin level. The WFD requires the member states to take measures to promote 'active involvement of all parties' in planning processes.¹⁶⁰⁷ In England, the Water Environment (Water Framework Directive) (England and Wales) Regulations require public participation when preparing RBMPs,¹⁶⁰⁸ during which the Environment Agency carries out the consultations with a diverse range of stakeholders. Amongst these, the water, energy and industrial companies, charities, local government, non-governmental organizations, wildlife groups and the public are mentionable.¹⁶⁰⁹ Similarly, in England and Wales, public participation has been ensured through setting up river basin district liaison panels at the regional and national levels.¹⁶¹⁰

In the development of English WRMPs by the water companies, the regulators and government bodies participate so as to ensure long-term water security. The development of participatory WRMPs is assumed to enhance implementation of each plan's objective of water security. Access to valid information is a prerequisite for genuine participation in WRM.¹⁶¹¹ In England, there have been some challenges in implementing real participation in environmental concerns.¹⁶¹² Despite the Aarhus Convention strongly emphasizing the need to have genuine participatory environmental protection, there are no common perspectives or common

¹⁶⁰⁷ WFD, article 14.

¹⁶⁰⁸ The Water Environment (Water Framework Directive)(England and Wales) Regulations 2003, s.12.

¹⁶⁰⁹ Environment Agency (n 1072)13.

¹⁶¹⁰ Fritsch and Benson (n 1060) 273.

¹⁶¹¹ Robert Lee, 'Valuing sources of environmental information' (2012) 24 *Environmental Law & Management*, 55.

¹⁶¹² *ibid.*

understandings, or unified enforcement of access to information.¹⁶¹³ The study suggests the necessity of developing schemes that enhance access to accurate information.

In England, consumers' interests in drinking water service provisions have been addressed by setting up a platform that enables the consumers' 'voice' to be heard. The CCWater protects consumers, but this may not necessarily be considered as participation. In its Price Review 2014, Ofwat introduced a new system of CCGs, the aim of which was to enhance the engagement between customers and water companies. Membership of the groups accommodates different stakeholders. This new scheme enhances the customers' representatives and stakeholders to challenge and shape the water companies' overall business plans.

In Ethiopian water policy, stakeholders' participation is emphasized. The BHC is the highest body that is responsible for conducting respective river basin WRM.¹⁶¹⁴ The members of this Council are designated by the national government,¹⁶¹⁵ and are expected to come from both federal government and regional states. However, the law does not provide the parameters that are used to select these members; no specific guidelines have been developed that could be used to determine where the members of the BHC come from. Practice indicates that the Prime Minister, or those persons appointed and chaired by him or her, participate in BHC. In particular, the members are expected to come from regional states that share river basins.¹⁶¹⁶ In addition to members of government bodies, designated private and business sectors participate in the BHC decision-making forum, but they do not have voting power.¹⁶¹⁷ Lack of specific guidelines to define stakeholders leaves the definition of stakeholders to the discretion of the government; thus, the government needs to introduce guidelines on how to define people who participate in BHCs. Similarly, in water services provisions, the WASHCOs provide key water service utilities at grassroots level that involve local communities; yet only a small number of the WASHCOs are legalized. It should therefore be important to legalize these utilities to enable them to discharge their functions properly.

¹⁶¹³ *ibid.*

¹⁶¹⁴ The River Basin Councils and Authorities Proclamation No. 534/2007, article 2.

¹⁶¹⁵ *ibid.*, article 5.

¹⁶¹⁶ *ibid.*

¹⁶¹⁷ *ibid.*

8.4.7 Clear policy guidance

Managing water resources regulation needs provision of clear policy guidance by an impartial body. In England, the objectives of the regulators are mixed—for instance, the economic regulator Ofwat has an obligation to ensure that its decision-making takes sustainable development into account. Defining the appropriate legal responsibility for regulators alone may not bring the expected solutions for the water security challenges, as water regulators handle a whole range of objectives. Because of this, while each regulator is expected to exercise its functions within its legal remit, uncoordinated water resources regulation may constrain the overall objectives of WRM. In order to avoid such implementation difficulty, the Secretary of State provides the policy guidance for water regulators. This implies that the policy guidance is used as a scheme of policy integration. The water regulators function under the scrutiny of the Secretary of State to achieve government policy aspirations in WRM.

Similarly, in Ethiopia, the MoWE is mandated to issue policy guidance. The problem in the Ethiopian case is impartiality; the MoWE provides such policy guidance, yet the Ministry is one of the major users of the water resources. This suggests that Ethiopia should introduce an institutional arrangement that provides impartial policy guidance to water users. Ethiopia also needs to refine the mandate of the Ministry in a manner that addresses its impartiality problems.

8.4.8 Separation of regulatory and service provision mandates

In England, the Water Act 1973 established ten regional water authorities and entrusted them with diverse regulatory and operational functions.¹⁶¹⁸ The legislation was criticized for conferring such a broad range of regulatory and operational functions. Traditionally, the regional water authorities were ‘abstractors and dischargers, regulation enforcers and service providers, polluters and environmental guardians’.¹⁶¹⁹ Because of this, regional water authorities were characterized as being both a ‘poacher and gamekeeper’. Water resources regulatory functions lacked impartiality to the extent that there was a conflict of interests.¹⁶²⁰ Subsequently, the operational and regulatory functions

¹⁶¹⁸Howarth and McGillivray(n 774).

¹⁶¹⁹ Johnson and Handmer(n 750)349.

¹⁶²⁰ Howarth and McGillivray (n 774) 94.

were separated,¹⁶²¹ and WRM functions were divided into two parts: the water supply and sewerage services on the one hand, and regulatory and law enforcement functions on the other.¹⁶²² This reform of mandate has brought a clear separation between regulatory and operational functions.

In Ethiopia, the MoWE is conferred with water supply and regulatory functions, particularly regarding large-scale irrigation projects and water supply development. Moreover, although the implementation of WRM is principally carried out by the River Basin Authority, the MoWE supervises the Authority in conducting these functions. Practically, conferring the allocation of water abstraction to the MoWE means that water resources exploitation by the Ministry may be left unregulated, since the River Basin Authority may not have the capacity to control the functions of its super-regulator. The mandate conferred to the MoWE suggests that the water resources regulator itself is a major water resources developer. To avoid this problem, the country must therefore review the remit of the MoWE.

¹⁶²¹ibid.

¹⁶²²ibid.

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Annex: List of Interviewees

1. Fekahmed Negash, Directorate Director of Basins Management Administration in the MOWE, (Addis Ababa, 9 August 2011).
2. Feriwe Abebe., Head of technical department, in the Awash River basin authority, [Interview] (Ambhara , 01 August 2011).
3. Kahsay G/Tensae, Director of National Parks and Wildlife Sanctuaries Coordinating Directorate, Ethiopian Wildlife Conservation Authority, Addis Ababa, 6 August 2011)
4. Mohammed Ali Mohammed, Director of Technology Transfer Program Directorate, the Federal Democratic Republic of Ethiopia Environmental Protection Authority, (Addis Ababa, (Addis Ababa, 16 August 2011).
5. Tigistu G/Meskl, Director Directorate of Rural Land Administration and Land Use in the Ministry of Agriculture, (Addis Ababa, 06 August 2011).
6. Wongel Abate, Executive Director of Action Professionals' Association for the People,(Addis Ababa , 10 August 2011).
7. Zewdu Tefera, Director Directorate of Legal Affairs, FDRE Ministry of Water and Energy Resources [Interview] (Addis Ababa, 16 July 2011).