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Full Report

Global Health and Food Security in Fragile and Conflict Affected States (FCAS)

Syrian Academics and their Role in the Future of Food Security for Syria

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Global Health Academy

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Executive Summary

- The ongoing conflict in Syria has led to distortions in agriculture, food production and availability, distribution and consumption, with attendant effects on food insecurity and malnutrition.

- Uncertainties about and/or absence of governance, weakened institutions, changing donor funding priorities/ involvement and diminished local research capacity constrain traditional opportunities for long-term contingency planning and access to and integration of local expertise that is essential for timely, evidence-based decision-making.

- The extensive loss of human and intellectual capital in Syria, as academics are displaced from high-risk areas, as a matter of safety and security, means that the pipeline of expertise necessary for future societal rebuilding efforts is narrow and fragile and requires attention.

- A Round Table (RT) meeting was held in June 2019 to provide a platform for Syrian academics in exile in Turkey to share their expertise and to initiate a discussion about transition strategies away from short-term emergency aid to long-term food and health security with other researchers, relevant decision-makers, international and local (including Syrian) NGOs and responders to the crisis. This resulted in a number of outcomes:

  – Creation of a *nascent network of expertise* exploring the question of transition and long-term contingency planning for food and health security in Syria.

  – *Strengthened and extended partnerships* between researchers, practitioners and decision-makers in the UK, Syria and countries in the region receiving Syrian academics in exile (primarily Turkey).

  – A *provisional framework for an expert information ecosystem* to incorporate local cultural and technical expertise into future Syrian socio-economic development and reconstruction programmes. This includes the development of repositories to house and curate a catalogue of expertise, data and ongoing research outputs, and funding opportunities.

  – Identification of an important role for *knowledge broker organisations* at the interface between researchers, decision-makers and practitioners to ensure knowledge mobilisation across different organisational and disciplinary boundaries.

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1. Introduction

Sustainable Development Goal (SDG) attainment is severely compromised not only in fragile and conflict-affected countries (FCAS) like Syria but also in those countries that host their refugee populations. Protracted conflict involving forced internal and external displacement of people leads to severe poverty, destruction of health services and food insecurity due to pressure on land and water resources; fractured supply and value chains for essential crops and products; interrupted distribution routes; and volatile market prices; with the consequent effects of acute malnutrition, increased morbidity and mortality, poor mental health and impaired cognitive development, particularly in children.

Emergency interventions are focused on survival, short-term needs and recovery efforts (e.g. food, medicines, seed multiplication, irrigation canal rehabilitation, bakeries) at the expense of longer-term strategic approaches which incorporate broader socio-economic or environmental considerations. This may result in unforeseen tensions between short- and long-term food security demands which could undermine resilience of different agricultural sectors.

Syrian academics in exile offer a wealth of local knowledge, connection and expertise, a major part of Syria's intellectual and cultural capital that has been largely neglected by the intelligence gathering and analysis activities informing humanitarian responses to the crisis. In June 2019, the University of Edinburgh (UoE) and the Cara Syria Programme (Cara Syria) held a Round Table (RT) meeting to provide a platform for academics, decision-makers, practitioners and other responders to the crisis, to share their knowledge, culture and expertise in food security and discuss the development of strategies for a successful transition away from humanitarian provision of short-term food supplies and agriculture inputs towards long-term contingency planning and ultimately, reconstruction.

In this report, we provide an overview of the history and current situation of agriculture and food security in Syria (Section 1); a description of existing knowledge, expertise and capacity in agriculture and food production and challenges for longer-term reconstruction (Section 2); drivers of change (Section 3) as prioritised by RT participants in order to consider longer-term trends (Section 4); outcomes in two different scenarios (ongoing war versus fragile peace) in order to prioritise interventions for long-term sustainable food production and consumption (Section 5); models of how best to incorporate local knowledge into decision-making (Section 6); and, conclude with possible next steps as discussed at the RT (Section 7).

2. Agriculture and Food Security in Syria: Situation Report

Historical Drivers of Change

A historical timeline was developed with Syrian academics to encourage RT participants to think about and discuss drivers that had influenced and shaped the evolution of agriculture and food production in Syria since the 1960s. This timeline (seen in Figures 1a and 1b) takes into consideration important factors that have had a direct impact on the evolution of agricultural production, as well as exogenous factors that may have had an indirect impact.

Key Developments in the History of Agricultural Production in Syria

Agriculture has always been an important economic, social and cultural activity in Syria.

> "Syrians are producers. Syrians are consumers. They are cooks. (The) Syrian kitchen is very famous ...."

The country was once considered the breadbasket of the Middle East and one of the largest exporters of livestock, as well as crop, vegetable and horticultural products, such as pistachios, olives, figs, oranges and lemons. Syria is now in a state of acute food insecurity and reliant on imports of food and agricultural inputs for survival. Rebuilding this critical sector will be one of the most important elements of a transition strategy towards reconstruction and peace.

The ongoing conflict is undoubtedly the primary driver of the destruction of agriculture in Syria. However, in the context of historical political, economic and environmental changes (including extreme weather events) in Syria over the last 50 years, together with the significant shift of agricultural production from a public to a private good, it is also clear that the sector was poised to falter, even before the conflict began. The following figures (1a and 1b) are a simplified summary of the interplay between political, economic, societal, technological and environmental drivers over time that shaped the evolution of agriculture in Syria to the present day. It is not intended to be a comprehensive historical analysis of events but is included to enable reflection on the lessons learned from the complexity of a changing system over time.

Pre-Conflict

In the 1970s, both the agricultural and water sectors were managed by central government. Crops (such as wheat and barley) were at the centre of strategic agricultural planning, which followed a Soviet-style model of "buy-high, sell-low".[1] Costs of agricultural inputs such as fuel, seeds and fertiliser were subsidised. Planners would calculate the total amount of crop required to meet the nation's food security needs, and the necessary volume to export for cash.[2] This was managed through centralised agricultural planning and policy development offices/centres. Farmers would be instructed on the quantity of specific crops to plant and the government would guarantee prices for strategic crops such as wheat, cotton, sugar-beet, tobacco and maize. A compulsory pricing scheme for consumers was also in place for certain basic foods, such as bread and milk.

1 "Buy-high, sell low" refers to producing more. This helped the government to strategically store basic crops/seeds for at least for five years. Global Communities, Partners for Good (2018) Resilience through Humanitarian Assistance: Agriculture in the Syria Conflict. Edited by David Humphries. Available at www.globalcommunities.org p9.

2 FAO (2003) Fertiliser use by crop in the Syrian Arab Republic. Available at http://www.fao.org/3/Y4732E/y4732e06.htm.

Figure 1a. Drivers of change: food and agricultural production in Syria since 1960

Drivers of Change	1960s	1970s	1980s
Political	Agrarian reform: creation of stage farms	Redistribution of land to peasant farmers apart from Jazira – where live semi-nomadic tribes who support the Party	State marketing into new fields – fruit and vegetables
	Government management of ag resources		Ministries falling short of unrealistic targets
	Land Reform in 1958 63, 66: peasants organised into service cooperatives		Fragmentation of implementation of plans
Law and Policy	Legally binding state investment plans		Key targets for crop, levels of inputs, credit
	Contracts between owners and tenants had to be in writing and automatically renewed (Law 134)		
	Syrian trade policy prior to 1990 characterised by government intervention		
Economic	New forms of credit	State investment in reclaimed and irrigated lands	State investment in hydraulic projects
		State control over raw materials	Production cooperatives on newly irrigated land
	Reduction of farmer debts	State crop rotation plan	Inflation
		Increase in Arab oil-wealth opportunities for costly projects	Investments: state contributes capital 25% (cultivated land) against 75% private investment
Society	Peasants who work the land (even if not providing inputs) get increased % of harvests results in significant increase in income	State farms losing money and decline in farmers employees go to building sector	More land given to farmers to stem exodus of farm workers
			Peasants evade state crop-rotation plan
			Increase in industrial, agricultural and tourism products
Science and Technology		Dam building – creates capacity in engineering	
		15 pilot project farms created for displaced within irrigation framework to create agro industrial sector and abundant electrical supply	
			State farms associated with low productivity and high production costs
Environment		Creation of Lake Assad 1973 submerged villages in fertile lands and resulted in relocation	Fields irrigated but not drained become salified and unsuitable for agriculture in pilot project area

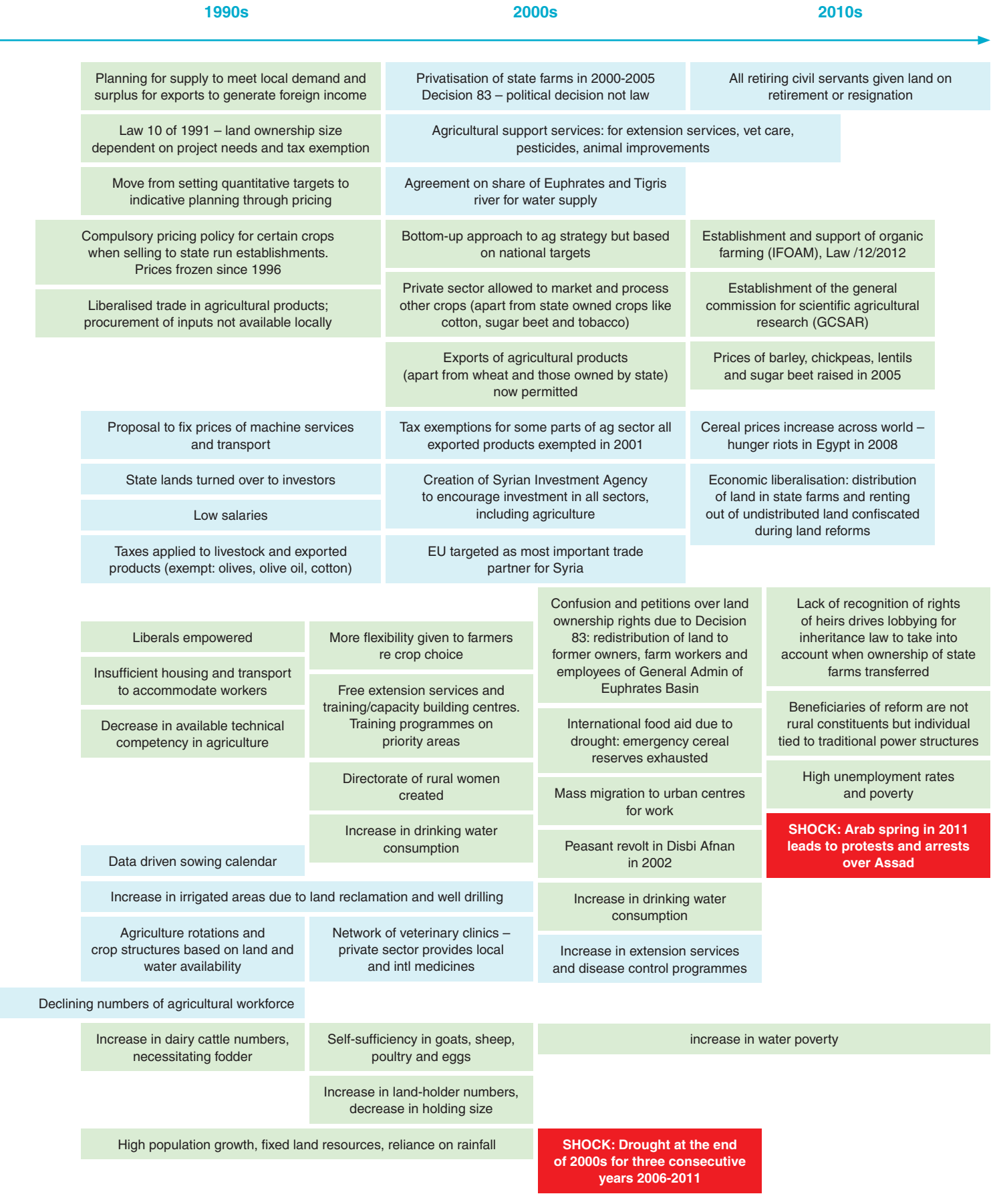
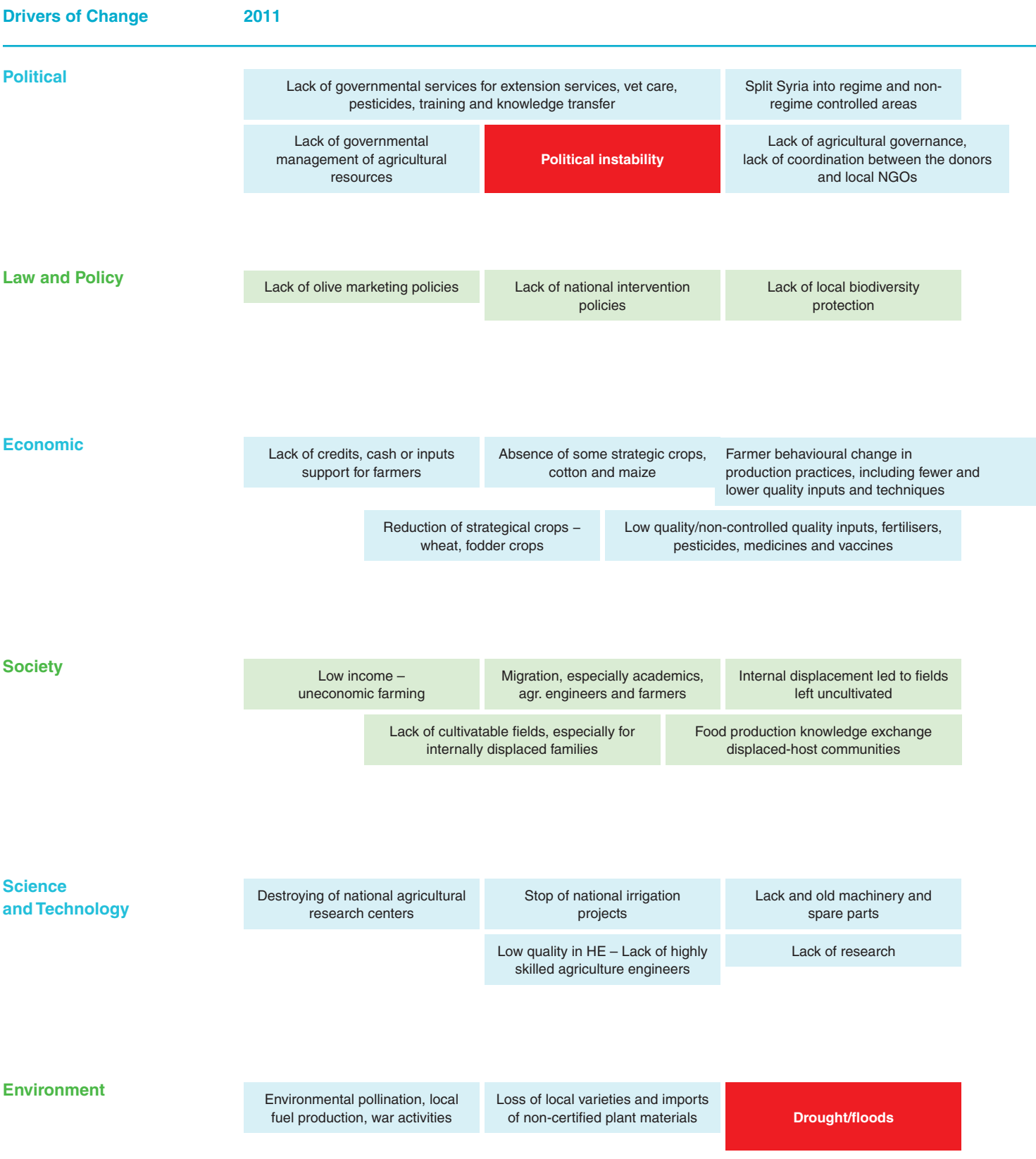

1990s
2000s
2010s
Planning for supply to meet local demand and surplus for exports to generate foreign income
Privatisation of state farms in 2000-2005 Decision 83 – political decision not law
All retiring civil servants given land on retirement or resignation
Law 10 of 1991 – land ownership size dependent on project needs and tax exemption
Agricultural support services: for extension services, vet care, pesticides, animal improvements
Move from setting quantitative targets to indicative planning through pricing
Agreement on share of Euphrates and Tigris river for water supply
Compulsory pricing policy for certain crops when selling to state run establishments. Prices frozen since 1996
Bottom-up approach to ag strategy but based on national targets
Establishment and support of organic farming (IFOAM), Law /12/2012
Liberalised trade in agricultural products; procurement of inputs not available locally
Private sector allowed to market and process other crops (apart from state owned crops like cotton, sugar beet and tobacco)
Establishment of the general commission for scientific agricultural research (GCSAR)
Exports of agricultural products (apart from wheat and those owned by state) now permitted
Prices of barley, chickpeas, lentils and sugar beet raised in 2005
Proposal to fix prices of machine services and transport
Tax exemptions for some parts of ag sector all exported products exempted in 2001
Cereal prices increase across world – hunger riots in Egypt in 2008
State lands turned over to investors
Creation of Syrian Investment Agency to encourage investment in all sectors, including agriculture
Economic liberalisation: distribution of land in state farms and renting out of undistributed land confiscated during land reforms
Low salaries
Taxes applied to livestock and exported products (exempt: olives, olive oil, cotton)
EU targeted as most important trade partner for Syria
Confusion and petitions over land ownership rights due to Decision 83: redistribution of land to former owners, farm workers and employees of General Admin of Euphrates Basin
Lack of recognition of rights of heirs drives lobbying for inheritance law to take into account when ownership of state farms transferred
Liberals empowered
More flexibility given to farmers re crop choice
Insufficient housing and transport to accommodate workers
Free extension services and training/capacity building centres. Training programmes on priority areas
International food aid due to drought: emergency cereal reserves exhausted
Beneficiaries of reform are not rural constituents but individual tied to traditional power structures
Decrease in available technical competency in agriculture
Directorate of rural women created
Mass migration to urban centres for work
High unemployment rates and poverty
Increase in drinking water consumption
Peasant revolt in Disbi Afnan in 2002
SHOCK: Arab spring in 2011 leads to protests and arrests over Assad
Data driven sowing calendar
Increase in irrigated areas due to land reclamation and well drilling
Increase in drinking water consumption
Agriculture rotations and crop structures based on land and water availability
Network of veterinary clinics – private sector provides local and intl medicines
Increase in extension services and disease control programmes
Declining numbers of agricultural workforce
Increase in dairy cattle numbers, necessitating fodder
Self-sufficiency in goats, sheep, poultry and eggs
increase in water poverty
Increase in land-holder numbers, decrease in holding size
High population growth, fixed land resources, reliance on rainfall
SHOCK: Drought at the end of 2000s for three consecutive years 2006-2011

Figure 1b. Drivers of change: food and agricultural production in Syria since 2011



2019

Stop of international developing projects/agreements

Lack of agricultural planning on the whole land scale

Siege food as a weapon

Lack of national development policies

Lack of environmental protection policies, water resources management

Lack of food manufactures, value chain, and work opportunities

Farmers forced to sell their agriculture and livestock assets to survive

Low food availability, vulnerability

Self food production cultural knowledge in food production and consumption

The women's participation in agriculture sector (-/+)

Lack of international engagement in research and development studies

Absence of Syrian academic engagement

Limited access to suitably qualified academic staff

Fire destroying crops and forests

Plant and animal diseases

Deforestation

Pre-conflict contd.

Land reform policies in the 1970s facilitated the creation of state farms and redistribution of land to peasant farmers and rural people. This, in combination with policies to improve credit and reduce farmer debt, resulted in consolidation of a rural power base for the ruling Ba'ath party. However, this ultimately had a detrimental impact for pasture land, due to overstocking, overgrazing in some areas, and soil depletion in others due to frequent ploughing for crop production. The planting of water-hungry crops, such as cotton, contributed to the depletion of already scarce water resources. State water-management control resulted in significant government investment in expensive hydraulic projects, engineering infrastructure and dam building in order to coordinate water management for irrigation; while private well-drilling was penalised.

Although the industrial sector was thriving, the agricultural sector began to experience a decline in the 1980s. State farms were increasingly expensive to run, due to high production costs and low productivity. The numbers of farmers decreased as they moved into more profitable industrial and engineering sectors where employment opportunities were better. The agricultural sector opened up to private investors in the early 2000s, with an investment in agricultural support services for veterinary care, pesticide use and other extension services for specialised training in priority areas. The private sector was allowed to market, process and export crops, other than strategic state crops such as wheat, barley, cotton, sugar beet, tobacco, chickpeas and lentils.

While there were some incentives to retain farming expertise, agricultural production continued to decline as the government began to prioritise high-tech and commercial enterprises, resulting in increasing migration of people from rural areas to cities. The introduction of Decision 83[3] exacerbated this problem, as it resulted in confusion over land ownership and inheritance rights. The beneficiaries of this decision appear to be tied to the establishment, rather than rural constituents. Subsequent withdrawal of pro-farmer policies, such as subsidies for fuel to enable irrigation (2008) and subsidies for fertiliser (2009) by the government also coincided with a four-year drought.[4] As a result, crop yields fell dramatically and farmers were forced to sell crops and livestock to survive.

Years of Protracted Conflict

In 2011, more than a million people were living in Syria's cities in conditions of poverty and unrest, a situation made worse by the long-lasting drought and its detrimental impact on water supplies and agricultural production. Meanwhile the Arab Spring galvanised protests in Tunisia, Egypt and elsewhere. When the protests spread to Syria, this catalysed the outbreak of the ongoing conflict. The conflict in Syria has had a devastating impact on Syria's agricultural capacity, resulting in $16 billion in total losses between 2011 and 2106, including more than $3 billion losses in infrastructure, such as irrigation canals, wells and veterinary support.[5] Food prices are estimated to have increased by 800% since 2010. As a result, in Syria today, it is estimated that 6.5 million people are currently food insecure and a further 4 million are at risk of becoming acutely food insecure.[6] Despite the sustained conflict, agriculture is still considered an important part of Syria's economy (26% GDP)[7] and critical for self-sufficiency for more than 75% of households who grow their own food for consumption.

In rural areas, farming is continuing and markets are still functioning in part, although access to road and transportation routes is not always secure. Public assets for manufacturing no longer have government oversight and there has been a significant breakdown in water infrastructure. Lack of fuel and electricity means that it is not possible to use existing irrigation canals and, in the absence of government controls, farmers routinely drill underground wells, causing further damage to aquifers and depleting already scarce water resources. The de-regulation of the sector has enabled the private sector to invest in agro-pharmacies, but there are still challenges with respect to maintaining quality assurance of agricultural inputs. For example, shortages of pesticides and fertilisers have incentivised imports of higher priced, but lower quality and lower safety alternatives. The livestock sector has ostensibly suffered less than the crop sector, due to the presence of veterinary services that are still in place in government-controlled regions to keep livestock assets resilient.

3 Under Decision 83: "Land was parcelled out in shares of 3 ha. for irrigated land and 8 ha. for non-irrigated land. It formally allocated 'right of use', and not property. It called for land to be distributed to, in order of priority, the former owners, the farm workers, and employees of the General Administration of the Euphrates Basin (GADEB).It triggered tension and competition between these three categories." Hinnebusch R, El Hindi A, Khaddam M, Ababsa M (2011) Agriculture and Reform in Syria. University of St Andrews Centre for Syrian Studies. Published by the University of St Andrews Centre for Syrian Studies School of International Relations. Fife, Scotland, UK p94.

4 Global Communities, Partners for Good (2018) Resilience through Humanitarian Assistance: Agriculture in the Syria Conflict. Edited by David Humphries. Available at www.globalcommunities.org p9.

5 *Ibid.*

6 Food Security Cluster (2017) Food security situation in Syria: Expanded version of the Food Security Sector Humanitarian Needs Overview 2018. Whole of Syria Food Security Sector.

7 FAO (2017) Counting the cost: Agriculture in Syria after 6 years of crisis. Available at: http://www.fao.org/3/b-i7081e.pdf.

However, in opposition areas, there is still a significant decline in poultry numbers and grazing areas; there are restricted movements of livestock breeders, and no subsidies for fodder, or vaccines, which are also of low quality. Syria is reliant on imports of food and agricultural inputs (e.g. fertilisers, seeds, medicines) for the survival of its people.

> "We as humanitarian actors … have limitations due to several factors. First the donors' preferences, and second, the situation on the ground…. We don't speak to the donors without having an assessment of the situation on the ground and without contacting the beneficiaries directly (to) get (understand) their priorities."

In the future, rebuilding this critical sector will be one of the most important elements of a transition strategy towards reconstruction and peace. Current interventions occur at the expense of longer-term strategic approaches that incorporate broader socio-economic or environmental considerations.[8] This may result in unforeseen tensions between short- and long-term food security demands that could undermine longer-term resilience and generate unintended consequences. These tensions are likely exacerbated by difficulties in on-the-ground coordination and diminished regional and international collaborative research ties between funder, researchers, universities, producer organisations, local and international NGOs and the private sector.[9]

Migration, resulting in the internal and external displacement of people, means that much of the country's practitioner, scientific and technological expertise may reside outside Syria and remain inaccessible to decision-makers. As a result, relevant context-specific intelligence and expertise may be neglected from social and development programmes.[10] For example, interventions may not be compatible with local practices or growing conditions; agricultural inputs (such as new cultivars) may be supplied in advance of suitability testing and without knowledge of any long-term unintended consequences on local species.

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8 Longley, C, Christoplos, I and Slaymaker, T, (2006) Agricultural rehabilitation: Mapping the linkages between humanitarian relief, social protection and development. Humanitarian Policy Group Research Report 22, Overseas Development Institute, London, cited by Giordano, T (2011) Agriculture and economic recovery in post-conflict countries: Lessons we never learnt. Development Bank of South Africa. Development Planning Division Working Paper Series No. 22.

9 Giordano, T (2011) Agriculture and economic recovery in post-conflict countries: Lessons we never learnt. Development Bank of South Africa. Development Planning Division Working Paper Series No. 22.

10 It is worth noting that in the Turkey hub, most NGOs have at least two to three agronomists and veterinarians who are involved in planning and implementation of humanitarian programmes. These are coordinated through the clusters and sub-cluster working groups to avoid duplication of efforts. These experts have started to support the ministry of agriculture/SIG in developing studies and projects.

3. Local Knowledge and Resources

"Agriculture is culture" but all cultures have boundaries Syria is notable for its different types of boundary, which drives significant heterogeneity within the country. These include: agro-ecological boundaries; geopolitical boundaries; and pre-existing and emerging knowledge boundaries.

Agro-Ecological Boundaries

Syria is recognised as "a hand with five fingers" – that is, five distinct but overlapping agro-ecological areas that circumscribe and define what is grown where and by whom (Figure 2). The presence of all five areas is necessary for a successful Syrian future. The following zones are adapted from FAO and ICARDA classifications.[11]

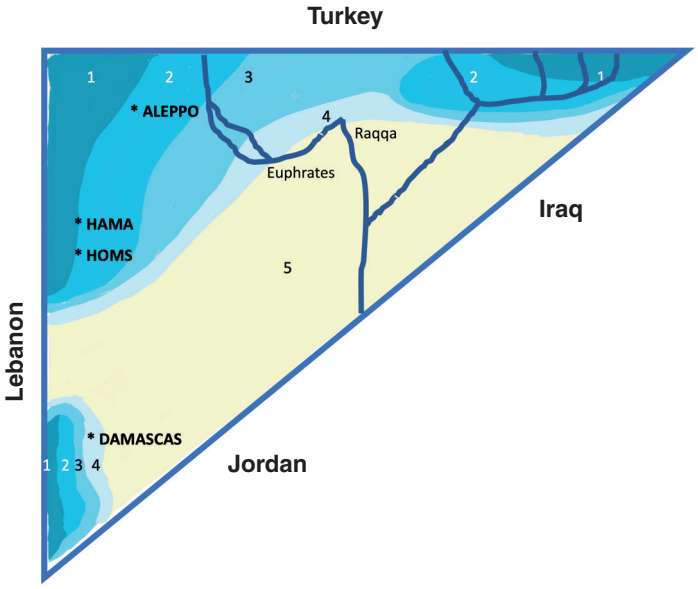


Figure 2. Schematic map of Syria illustrating its agro-ecological boundaries. Syria is called the "hand with five fingers" for the different growing regions, which are related to rainfall.

Zone 1: Rainfall exceeds an average of 350mm annually. Rain-fed crops (e.g. wheat, legumes) and summer crops (e.g. melon and watermelon) predominate.

Zone 2: Rainfall between 250 and 350mm during at least two-thirds of the monitored year. Barley, wheat, legumes and summer crops

Zone 3: Rainfall between 250 and 350mm with not less than 250 mm during half of the monitored year. Crops are grown every one to three years, mostly barley but also legumes.

Zone 4: 200–250 mm and not less than 200 mm during half the monitored year. A marginal zone between arable and desert, primarily used for grazing and/or barley.

Zone 5: Desert and steppe zone (~55% of national area) primarily used for nomadic livestock grazing and irrigated agriculture.

11 FAO (2003) Fertilizer use by crop in the Syrian Arab Republic. Available at http://www.fao.org/3/Y4732E/y4732e06.htm.

12 For example, the Syrian Engineer's Association, http://www.syrianagro.sy/.

Agro-ecological boundaries exhibit relative stability over time, although the speed of change may be influenced by climate change. These boundaries delineate heterogeneous farming cultures and environments that result in different producer and consumer activities and different needs and measures of success on the ground. There remain gaps in expertise and knowledge that need to be closely mapped to these boundaries. Syria's agro-ecological zones do not neatly coincide with current political borders. Addressing natural resource demands and constraints will require cooperation across geopolitical boundaries. The transition between short-term emergency responses and longer-term recovery and reconstruction efforts is likely to be felt acutely in the overlapping political and agro-ecological zones.

Geopolitical Boundaries

Unlike agro-ecological zones, geopolitical boundaries are more permeable and dynamic – and this affects the actors, institutions and types of donor-funded activities, in different regions. These activities include, but are not limited to:

– emergency food baskets;

– early recovery programmes and resilience-building (northwest) including wheat value-chain projects and indirect seeds multiplication efforts.

Traditional governance structures and institutions have been weakened since the beginning of the conflict. There are NGOs and agencies currently implementing programmes that are well coordinated in some areas and fragmented in others. Associations[12] and working groups emerge, disappear and re-emerge in different locations, as people's circumstances for and their needs change. Membership of many of these associations is fluid, their existence is time-limited and contingent on donors' funding priorities, which respond to the lifecycle of the conflict. This makes it challenging to forge traditional working partnerships and avoid duplication of effort at strategic, tactical and operational levels.

Due to the conflict, the country is fragmented into either regime- or non-regime-controlled areas. This has resulted also in the fragmentation of agriculture-related associations. For example, the General Union of Syrian Farmers, which is an association allied to the regime, is fragmented into several farmer groups, especially in the non-regime-controlled area. These groups depend on regional projects such as wheat and olive production, livestock husbandry, beekeeping and water use. In addition, there are several new technical and consultancy groups which consider irrigation, CBR, SRP and vocational training working groups.

Human capital is in high demand in different regions in Syria, particularly for organisations that are starting to return staff to regime-controlled areas. However, the existence of geopolitical boundaries may erode trust and make it challenging to attract and retain human capital in a secure and safe way. Syrian research efforts, and therefore efforts to move towards longer-term capacity- building, are limited by security.

> "… if we (Syrians) are to refunction and to play a positive role in food security … we need equipment, laboratories, access to the land, safe(ty) from airstrikes and shelling and … scientists".[13]

Researchers remain at risk and cannot wait for peace to begin so they can start implementing research programmes, but research capacity is depleted in regime-controlled geographical regions. There are challenges with scaling up activities until such time as Syrian academics/researchers[14] want to return and feel confident that they can do so safely.

> "The question is in which atmosphere we ('neutral scientists') can come back, yes? This is the question. Just I heard from you, (the term) 'neutral scientists'. There is no neutral in Syria now, to be realistic …. Even the regime will not accept this concept … that you are neutral. I believe even that the regime hasn't the real control … because we know also that there are other (dangerous) groups … in regime-controlled areas …. So the security situation is not… feasible now to come back."[15]

13 A general view expressed at the Round Table was the need for active research centres, recognition of the local and active universities, collaboration with the regional and the international research centres.

14 For the purpose of this meeting and report, academics are researchers who are or were engaged in the academic/higher education community. Researchers is an all-encompassing term which includes academics, but also anyone educated to a certain level (Masters' or PhD qualifications) who conducts research for industry, government or non-governmental agencies in a specific discipline (arts, humanities, social sciences or STEM subjects). Scientists are researchers who focus one or more of the STEM subjects.

15 Round Table Participant.

Knowledge Boundaries

Knowledge boundaries also exist between Syrian academics (i.e. a researcher who is or was engaged in the higher education community) in different disciplines, and between Syrian researchers employed by industry, INGOs/NGOs and other agencies working in emergency relief areas. These constrain information-sharing and collaboration opportunities. Understanding how to mobilise knowledge across these boundaries is important in ensuring that decisions about food security are culturally appropriate, fit-for-purpose and tailored to the lived experience in Syria. Historical boundaries or 'silos' between research disciplines and cultures of expertise, which may have existed in Syria prior to the conflict, must be acknowledged and addressed, in order to enable interdisciplinary working.

As Syrian expertise is exported, through migration of academics and practitioners, solutions are required that improve connectivity to colleagues in Syria and academic colleagues in the wider global community.

> "It seems to me that if you are doing research on Syrian communities both inside Syria and in exile that the key individuals who should be involved are the Syrians themselves..."[16]

Reconstruction efforts in agriculture require long lead-in times for preparation (e.g. breeding for disease resistance, new and improved seed varieties adapted to climate). Ethical, innovative approaches for independently brokering research between academics/researchers,[17] practitioners, decision-makers and funders are needed to continue effective work in conflict to improve preparedness for peace.

> "I think it's understandable. We all find ourselves at these moments of crisis focussing on the now, and sometimes, as many people have pointed out, the crisis that was meant to be short-lived has turned into nine years …. Well, maybe it's going to be another little while yet, and so the people that will be at the forefront of solutions may not be the people who are the scientists now but maybe will be the scientists of tomorrow."[18]

16 ibid

17 For the purpose of this meeting and report, academics are researchers who are or were engaged in the academic/higher education community. Researchers is an all-encompassing term which includes academics, but also anyone educated to a certain level (Masters' or PhD qualifications) who conducts research for industry, government or non-governmental agencies in a specific discipline (arts, humanities, social sciences or STEM subjects). Scientists are researchers who focus one or more of the STEM subjects.

18 Round Table Participant.

4. Prioritising Drivers of Change

Conflict has been the most significant shock to the Syrian agricultural system in the last 50 years. However, there are also underlying drivers of change that are important to consider. These critical uncertainties, identified from the historical timeline, were prioritised by RT participants and clustered thematically (Table 1). These outputs were subsequently used to inform a discussion about future scenarios, and to construct a problem tree and results map (Figure 4).

Table 1. Critical uncertainties that influence transition strategies away from emergency aid to long-term reconstruction

	Human Capital	Natural Resources	Agricultural Policy
High impact and uncertainty	• Lack of access to academic/ researcher expertise that is no longer in country and cannot return • Lack of access to extension services and quality education • Increased role of women in the workforce	• Increasing water poverty – reduction in groundwater levels and sources of replenishment for safe drinking, sanitation and irrigation • Dependency on water sources outside Syria (in Turkey) and elsewhere for replenishable water supply • Preservation of natural resource heritage (e.g. genetic resources and seeds from lost Syrian forests)	• Market forces (prices, value chains and agriculture as private rather than public goods) • De-regulation and absence of strong institutions that are responsible for standards and certification of agricultural products (inputs such as pesticides, fertilisers etc.) • Emergence of privately run and owned businesses • Increase in black markets, counterfeit drugs and agricultural inputs • Changing funder priorities
Lower impact and uncertainty (modifying or underpinning drivers)	• Competition from expatriate expertise from, and diversion of, Syrian expertise to support China, Russia, Iran (sent in to develop markets to feed their populations) – exacerbation of "brain drain" • Kinship networks: sources of income, communication and expertise	• Availability of fuel and machinery • Transport: availability, accessibility of road network (mines, damage to infrastructure, security) • Fire hazards (resulting from conflict activities) • Climate change: increase in greenhouse gas emissions; extreme weather events such as drought, flooding; changes in distribution of pathogens, pests, vectors and hosts/ reservoirs of infectious disease	• Land ownership and tenure (Decision 83 (2000))availability, access, use for agriculture, ownership – by state or private • Porous borders and movements of people across them
Needs	• Improved information sharing networks • Incentives to return • Trust in security • Education and training initiatives for agriculture • Business models for farming and innovation • Gender balance and women-empowering initiatives	• Innovation to enable self-sufficiency – "circular economy" • Climate-smart agriculture • Private sector investment • Inclusion of multi-disciplinary expertise (other than agriculture) to address cross-cutting unintended consequences)	• Holistic agricultural policy reform. Both top-down and bottom-up approaches are required

Food and Agriculture as an Engine for Peace

Two short-term future scenarios (two-year time horizon) and the opportunities and challenges within each, were considered by participants: Ongoing conflict versus fragile peace (Figure 3). Characteristics of each scenario were based on plausibility, not probability of occurrence.

Figure 3. Future scenarios for Syria: ongoing conflict or fragile peace

Ongoing Conflict

Increasing frequency of security risks: constant violent clashes and new radical groups emerging

- "Brain drain": continued internal and external displacement of people
- Increased pressures on natural resources water for sanitation and drinking
- Land reclaimed but unused and uncultivated due to risks from mines, fire
- Low market connectivity: markets functioning but restricted
- Increasing costs for food, agricultural inputs continued limited production; competition from lower quality, higher priced imports
- Limited engagement from some international donors (e.g. World Bank)
- Fragmented data collection and risks to researchers
- Stagnation of innovation due to limited private sector investment

Fragile Peace

Increasing stability and security in majority of regions within Syria; reduced frequency of security risks

- Return of Syrians from host countries (Turkey, Jordan, Lebanon and
- Existing pipelines of expertise and data driven approaches to decision making
- Return of donors, such as World Bank, which facilitates mobilisation of people and products
- Significant progress in de mining efforts secure roads and transport
- Infrastructure in place for effective decision making and support for animal, plant and environmental health and security
- Access to international markets
- Affordable, accessible food for all
- Climate smart farming practices
- Practitioner and producer driven local policy change and best practice guidelines

Challenges and Opportunities

Figure 3. Future scenarios for Syria: ongoing conflict or fragile peace

Challenges

Immediate

- Actors/organisations working in food assistance and emergency/medium-term intervention outnumber those working towards longer-term livelihoods and agriculture
- The different stages within the lifecycle of the crisis experienced in different regions – resulting in different funder priorities, NGO and IGO engagement and security issues
- Saving and storage of food: Cold-chain infrastructure

Longer term

- Relationship of food security to other outcomes – such as diminished educational opportunities, increasing poverty, decreasing nutrition and different forms of malnutrition
- Protection of workers, particularly women and children working in the agriculture sector, while ensuring equitable and inclusive opportunities to improve livelihoods
- Ensuring lessons learned from the conflict and from pre-conflict history are translated into sustainable solutions

Opportunities

Immediate

- Improved information and data-sharing to add value to existing evidence-basis for decision-making
- Operationalising different expertise in multi-partner multi-actor organisations through identification of key knowledge brokering organisations
- Creating a pipeline of expertise in other countries in preparedness for reconstruction efforts and in anticipation of peace

Longer term

- Development of staged programmes of work and research that flexibly address both urgent and emergent issues, as well as longer-term strategic research priorities and programmes
- Anchoring solutions to the history and culture of agriculture in Syria through integration of multi-disciplinary expertise
- Repairing communities through recognition of, and adaptation to, trauma. This includes trust- and peace-building initiatives, translating intergenerational food security programming into peace-building activities

5. Trend Analysis

The food system in Syria is fundamental to the health and well-being of Syria's people and central to achieving the 2030 Sustainable Development Goals (SDGs). Future trends for Syria's agriculture and food systems were inferred from the plenary discussions on the current situation in Syria, drivers of change and small group discussions around future scenarios. Table 3 below compares the trends for Syria's food system in contrast to global trends described by the World Economic Forum (WEF) Report 2017 - p6. Global aspirations articulated by WEF map neatly onto Syrian priorities for food systems – namely that future food systems need to be:

- economically and socially inclusive (central to which is prioritising equitable contributions from women, smallholders etc.);
- sustainable (i.e. conserving scarce resources, strengthening resiliency against future shocks)
- efficient (i.e. sufficient food, with minimal waste); and
- healthy (i.e. safe and nutritious diet).

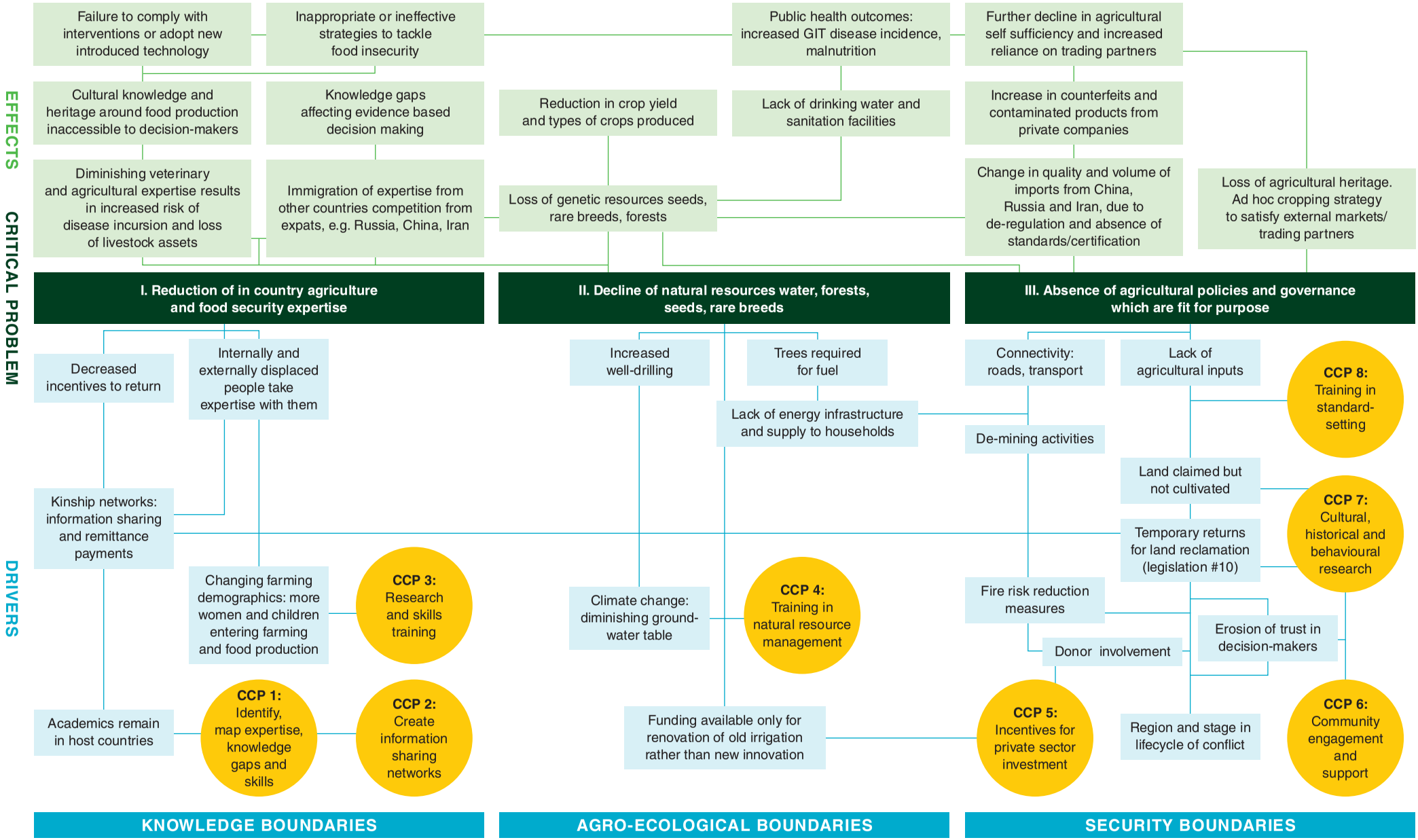
Understanding long-term trends is important for subsequent identification of critical control points, i.e. a step in the system in which a control or intervention can be applied to reduce risk of a direct or indirect negative effect (Figure 4). These interventions need to be SMART (specific, measurable, attainable, realistic and relevant, and timely) so that appropriate monitoring and evaluation frameworks can be developed around them.

Table 3. Cross-comparison of trends in Syrian agriculture compared to global trends in food systems (Adapted from the WEF Report: Shaping the Future of Global Food Systems: A Scenarios Analysis)[19]

Food system trends	Syria (on current trajectory) Assumptions to be confirmed through desktop review or empirical data collection	Global
Demographic shifts	Increased urbanisation and changing farmer demographic that reflect greater numbers of women and new entrant farmers	Increased population Increased urbanisation
Macroeconomic trends	Increasing inequality of wealth and extreme poverty Reliance on small producers growing strategic crops and livestock/small ruminants	Increasing inequalities of wealth Sluggish economic growth Reliance on small producers
Triple burden of malnutrition	Undernourishment and micro-nutrient deficiencies in Syria. Possibility of over-nourishment for Syrians in some host country situations due to diet change resulting from accessibility/ affordability of food	Undernourishment, micro-nutrient deficiencies, over-nourishment – leading to non-communicable diseases (NCDs)
Depletion of natural resources	Extreme water poverty Increased greenhouse gas (GHG) emission due to land conversion and forestry degradation Decreased energy and fuel availability Decreased biodiversity	Agriculture results in water withdrawal (expected rise by 30%). Increase in GHG emission due to land conversion, forestry degradation and deforestation?
Geopolitical dynamics	Political instability and conflict Trade sanctions Forced migration	Nationalist and isolationist tendencies, changes in trade, increase in forced migration
Emerging technologies	Technological stagnation and regression No capacity to capitalise on emerging technologies due to lack of private investment, absence of intergenerational technical and scientific expertise in-country	Bio-innovation, gene editing, robotics

19 World Economic Forum Report: Shaping the Future of Global Food Systems: A Scenarios Analysis. Report by the WEF's System Initiative on Shaping the Future of Food Security and Agriculture Prepared in collaboration with Deloitte Consulting LLP. Available at http://www3.weforum.org/docs/IP/2016/NVA/WEF_FSA_FutureofGlobalFoodSystems.pdf.

Figure 4. Problem Tree and Results Map[20]



20 Illustrating the relationships between drivers (light blue) and effects (green) of three challenges: (I) Loss of human capital (agricultural and food security expertise), (II) Declining natural resources, and (III) Ineffective agricultural policies and governance) to implement a transition strategy away from humanitarian emergency aid to long-term reconstruction. Upstream drivers of change include factors contributing to and within knowledge, agro-ecological and security boundary constraints. Critical control points (CCPs in yellow) indicate potential interventions to mitigate onward risks which can be monitored and evaluated. These include: 1) CCPs for timely training and education initiatives; 2) investments in research and development to avoid natural resource losses; 3) data-driven decision-making; and 4) building trust as part of a programme of agricultural policy reform

6. Priority-setting: Strategy to Address Skills and Knowledge Gaps

Preparing for the Possibilities

Based on RT discussions, there are three critical priorities, which may need to be addressed for any transition strategy to be successful in the context of post-trauma/conflict recovery (Figure 4. Problem Tree and Results Map).

I. **Cultivating Human Capital:** This requires a future-oriented, inter-generational vision to sustain the long agri-recovery process. An important element of this process is the strengthening the health, mental health and wellbeing of community members so that there is resilience and responsiveness to the demands of this new environment. Cultivating human capital also requires rebuilding trust and expertise in Syrian agriculture and food sectors, and identifying opportunities for existing or emerging "expert information ecosystems". The latter is important for improvement of effective knowledge mobilisation between researchers, practitioners and decision-makers.

   Next steps: Developing trained and highly skilled individuals in a world where there are now fewer men than women in farming through:

   i. CCP 1: Identifying, locating and mapping knowledge gaps, existing expertise, and academics/researchers[21] and practitioner skills. This includes local and foreign sources of expertise and links to global academic community without risk to people involved.

   ii. CCP 2: Creation of cross-boundary information-sharing networks with decision-makers.

   iii. CCP 3(i): Research and development in agricultural engineering, sustainable natural resources and biodiversity, emerging and new technologies (such as hydroponics).

   CCP3 (ii): Vocational training of women and young people in exile to address intergenerational gaps in education and expertise. This will require refinement of learner profiles and a focus on equity, equality and trust. Cultivating the human capital of young people post-conflict is likely to demand new approaches to training and engagement. Connecting young people with "expert elders" may be an important aspect of this.

   CC3 (iii): Empowering and promoting Syrian women's voices in decision-making processes and response efforts to improve food and health security in Syria to improve gendered relations within Syrian higher education, households and communities.

II. **Sustainable Resource Management:** This requires investments in research and development (R&D) to avoid natural resource losses, conserve existing assets and mitigate long-term unintended consequences and trade-offs, which result not only from the conflict, but also stem from emergency humanitarian interventions. It will also require careful cultivation of teams of interdisciplinary expertise to address cross-cutting challenges to ensure that Syria's culture and heritage is conserved for future generations.

   Next steps: Recognising that equitable, sustainable distribution and use of natural resources is at the heart of peace and stability in Syria and needs to be at the centre of future, long-term research priorities and recovery programmes.

   i. CCP 4: Training in natural resource management: sustainable, climate-smart and precision-farming approaches. Developing cross-sectoral initiatives and outreach programmes that address sustainable management of water for irrigation, forests, land use and agriculture.

   ii. CCP 5: Incentives to attract increased investment from private sector.

III. **Grass-Roots Agricultural Policy Reform:** Promoting data-driven decision-making and practitioner-led social and technological interventions to add value, reduce duplication and improve coherence of existing data collections. RT participants recognised serious agricultural policy reform (and with it, water policy reform) will be essential, but not possible without top-down support. Discussion was therefore focused on grass-roots activities to manage return of displaced farmers and encourage knowledge-sharing from the current generation of farmers to the next.

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21 Supra note 12.

Next steps: Creating effective teams and effective communities in a post-conflict context. This will require specialist planning, intervention and trust. Local co-design and co-construction of psychological intervention will be key.

I. CCP 6: Community engagement and support, e.g. improving support and social cohesion for next-generation of small-holder farmers; ensuring internally and externally displaced persons (IDPs and EDPs) have access to appropriate resources (including psychological rehabilitation and support provision to those who need it most).

II. CCP 7: Culture, history and behavioural research looking at cross-sectoral issues specific to post-conflict contexts, that drive changes in agriculture, food production land and water use.

III. CCP 8: Training in standard setting and certification of agricultural inputs.

7. Incorporating Local Knowledge into Decision-Making

Science Diplomacy Organisations

The successful achievement of priority I (Valuing human capital) is fundamental to the co-construction and implementation of locally-led effective, interdisciplinary approaches to address priorities II (Sustainable resource management) and III (Grass-roots agricultural policy reform), and therefore the primary focus of activities subsequently considered by RT participants. Creating and sustaining food and health security in fragile and conflict-affected states such as Syria, creates complex multi-faceted problems that demand cross-cutting interdisciplinary collaboration to find culturally appropriate scientific and technical solutions that also take into consideration the political and societal dimensions. We propose to create a multi-partner, multi-disciplinary cross-boundary team comprising academics and researchers (in Syria, in host countries and in the wider academic community), practitioners (new entrants, experienced farmers and technicians) and decision-makers (actors and funders involved in humanitarian and reconstruction efforts) to improve knowledge mobilisation and integration (see Figures 5a and 5b).

The aim is to create a nascent network of expertise to respond to both urgent and longer term policy, industry and research priorities through a focus on three strategic objectives:

1. Combining expertise to answer the right question at the right time to inform evidence-based policy and planning.

2. Incorporating local knowledge and resources to promote positive behavioural change.

3. Building and coordinating activities to ensure effective emergency and transition responses and delivery of life-saving and sustaining activities.

An important and unique feature of this network is the coordinated relationship between multi-disciplinary networks of expertise – bringing together STEM subject experts (e.g. agriculture, soil, engineering, natural resources, veterinary medicine, psychology, medicine) with experts from the arts, humanities and social sciences (e.g. anthropology, Islamic history and culture, literature). The nascent network also proposes to cross geographical, as well as disciplinary boundaries, linking together academics who remain in Syria with those living in exile in neighbouring host countries (Turkey, Jordan and Lebanon) and the wider, global academic community (Figure 5b). This will be coordinated by knowledge-brokering organisations, such as the Cara Syria Programme, that have specialised knowledge and experience in this area. Partnerships between academics/researchers[22] and practitioners living in exile or remaining in Syria and those within the wider global community, are necessary to access and sustain local knowledge and expertise and transfer new technologies and techniques, in order to create a pipeline of relevant expertise that can identify windows of opportunity to transition from humanitarian aid to recovery and reconstruction efforts (Figure 5b).

22 Supra note 12.

Figure 5a. Architecture of an information ecosystem

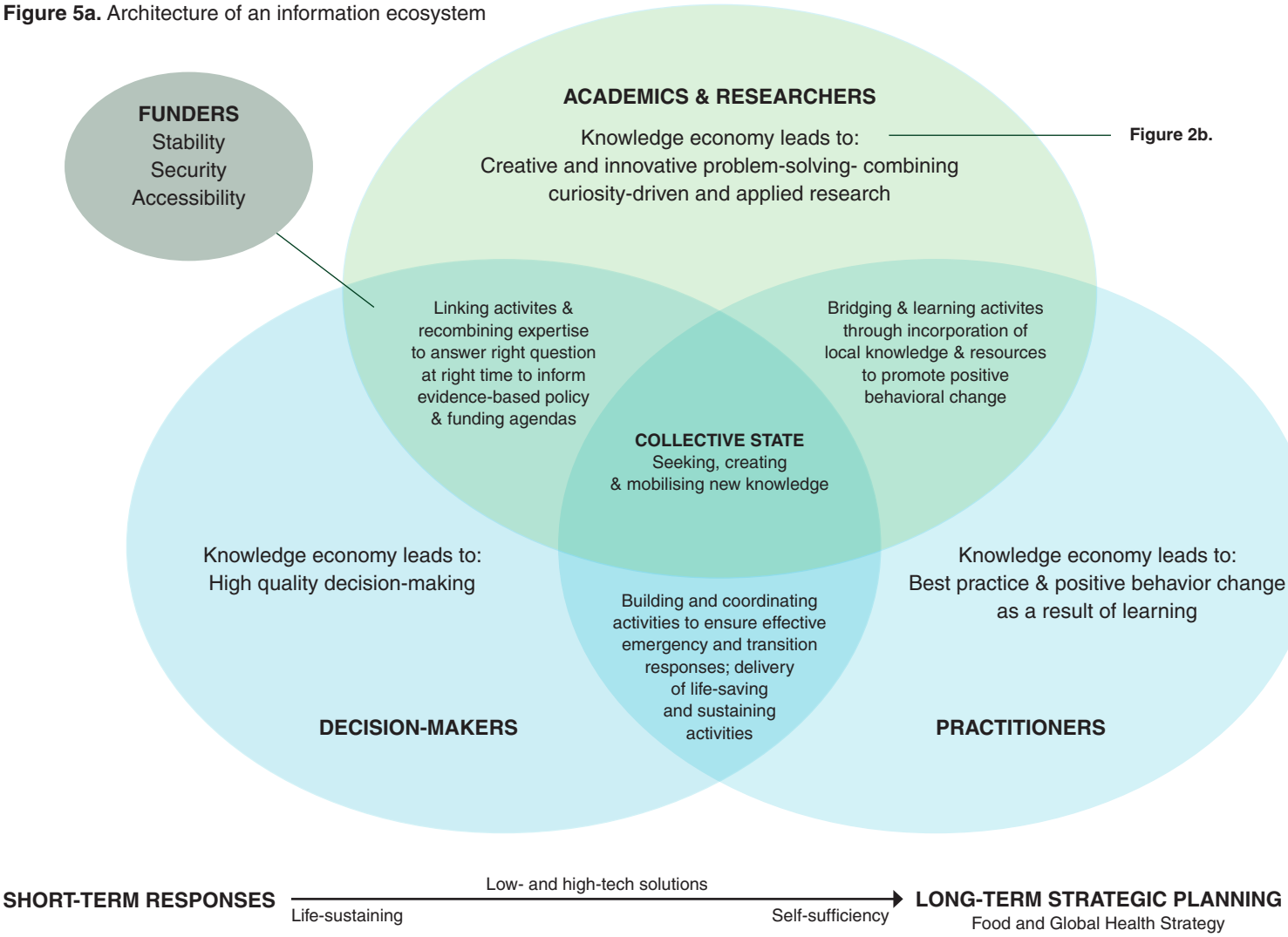
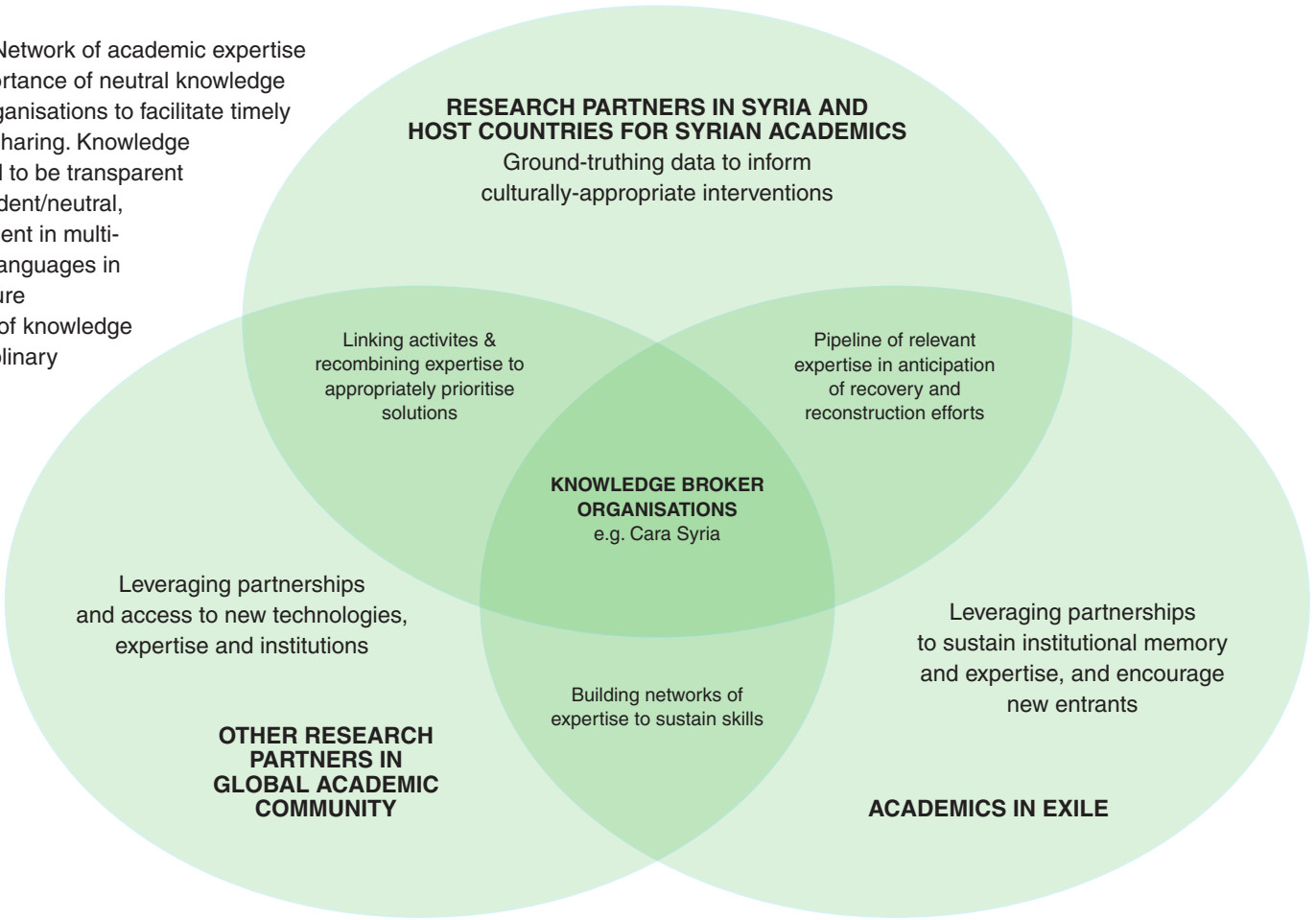


Figure 5b. Network of academic expertise and the importance of neutral knowledge brokering organisations to facilitate timely information sharing. Knowledge brokers need to be transparent and independent/neutral, as well as fluent in multi-disciplinary languages in order to ensure mobilisation of knowledge across disciplinary and cultural boundaries.



8. Discussion and Next Steps

Seeds of Peace

- This round table was a necessary and unique opportunity to facilitate dialogue between academics/researchers,[23] practitioners and decision-makers working towards food and health security in Syria.

- Emergency interventions are focused on life-saving, short-term needs (i.e. food, fertilisers, seeds, medicines at the expense of longer-term strategic approaches, which incorporate broader socio-economic or environmental considerations.

- Uncertainties about and/or absence of governance, weakened institutions and changing funder priorities and involvement, place constraints on evidence-based decision-making and exacerbate tensions between short- and long-term food security demands, undermining resilience of different agricultural sectors in the long-term.

- Migration resulting in the internal and external displacement of people, means that much of the country's scientific and technological expertise resides outside Syria. The extensive loss of in-country human and intellectual capital in Syria, as academics are displaced from high-risk areas as a matter of safety and security, means that the pipeline of expertise necessary for future societal rebuilding efforts is narrow, fragile and requiring attention.

- Improving local knowledge-sharing about the culture and history of agriculture, food access, production, preparation and food behaviours, will improve the effectiveness of strategic development for future reconstruction of the agricultural sector and Syrian food systems particularly if there are lessons to be learned from responses to previous food-system shocks (such as conflict and drought).

- A multi-faceted, multi-disciplinary approach is needed to address different gaps in expertise and training, whether they are technical training expertise and/or psychological needs and demands, in order to build trust and social cohesion. Psychological recovery is a key part of community and economic recovery in a post-conflict, post-trauma context. The Global Academies at UoE with other local and global partners can contribute to thinking around the inter-relationship between health, mental health, nutrition and compassionate, sustainable communities.

- This RT meeting has resulted in the creation of a nascent network of expertise between academics/researchers,[24] practitioners and decision-makers in the UK, Syria and countries receiving academics in exile (primarily Turkey), which will explore further the question of transition and long-term contingency planning for food and health security in Syria. This has strengthened and extended partnerships such that local cultural and technical expertise may also be incorporated into future Syrian socio-economic development and reconstruction programmes.

- Participants have agreed a provisional framework for an information ecosystem (see Figures 5a and 5b) to incorporate local knowledge, as well as cultural and technical expertise, into future Syrian socio-economic development and reconstruction programmes. This includes the development of repositories to house and curate a catalogue of expertise, data and ongoing research outputs, and funding opportunities.

- There is an important role for knowledge-broker organisations at the nexus of the researcher-decision-maker-practitioner interface to identify sustainable communication pathways and ensure knowledge mobilisation across different organisational and disciplinary boundaries.

23 Supra note 12.

24 Ibid.

- A provisional strategy and next steps (Box 2) for this network were agreed but requires further refinement:

  1. Vision: A science diplomacy organisation that focuses on Syrian food and agriculture as an "engine for peace".

  2. Mission: To facilitate sustainable agriculture, food production and consumption for the long-term development and reconstruction of a future Syria.

  3. Strategic Objectives:

     - Identify future food security funding, research areas, education and training priorities for Syria and UK/ global partnerships.

     - Develop a local, culturally appropriate and scientifically robust evidence-base to underpin decisions about food security interventions and social development programmes.

     - Strengthen existing research expertise of displaced academics in Turkey so that they might independently co-develop inter- and transdisciplinary research approaches and strategies for successful agricultural redevelopment in the future, which are focused on natural resource management and protection of livestock, crop and other assets.

- There were some limitations to this RT, which demand attention in the future if this network is to be self-sustaining and effective in its efforts. These include limitations associated with participant diversity, time constraints and the particularity of contextualised data elicited from discursive approaches.[25]

Conclusion

This RT meeting enabled a process of dialogue at the interface of science, society and policy (Appendix 2), which we will seek to sustain, as it should have a positive impact at policy level where academic/researcher[26] and practitioner buy-in and input are advantageous and at the local practitioner level where innovation and good practice will be encouraged. This reflexive approach is not just about improving anticipatory governance but also about emphasising the promotion of parallel partnerships between governance and society, in the face of uncertainty, to improve the future.[27]

25 Wodak and Meyer (2009).
26 Supra note 12.
27 Lawrie 2011; Boden et al. 2015.

Next Steps

1. **Capitalise on existing research networks and resources:**

   a. Comprehensive review of existing evidence bases (FAO, WFP etc.) and add value through empirical data collection, elicitation of expert opinion, data analysis etc. where appropriate.

   b. Gap analysis to identify knowledge and expertise gaps for priority areas: livestock; crop production; and natural resource management.

2. **Build capacity through the development of portable, online and student-training programmes and short courses (delivered as MOOCs, WhatsApp etc.) that address skills necessary to use new technologies and scientific methodologies, as well as agri-business and finance skills:**

   a. Create a gateway hub to identify funding opportunities and partners to help access these opportunities successfully.

   b. Develop an online repository of existing data resources, reports and open source literature to improve transparency (see for example, Zenodo: https://zenodo.org).

   c. Develop e-learning opportunities – scalable, practical ways of addressing skills shortages within and outside the country; MOOCs co-constructed and run by local communities.

   d. Design and implement outreach programmes, drawing from other case studies (Malawi, and UoE) – schools as a community hub.

3. **Develop a programme of research (based on syndemics framework) to enable flexible, agile and timely responses to policy-relevant questions. This will demand a multi-disciplinary team with the relevant capabilities to respond to emergency, applied research questions and long-term curiosity-driven hypotheses.**

   a. Map ethics codes across different organisational interfaces and develop and agree on shared ethical guidance document.

   b. Develop a communications plan for information ecosystem.

   c. Agree shared values and ways of working (transparency, neutrality, independence, justice, respect, trust, impartiality etc.).

4. **Identify and include interested funders and other members for future network meetings and activities (see Appendix 1 for proposed additional members). This includes strengthening partnerships with health practitioners to gather data and co-construct evidence-based interventions to promote beneficial health outcomes.**

5. **Agree date and topics for next meeting: Seeds of Peace. This could be focused on a single issue or comprise multiple streams for discussion. Topics of importance identified included:**

   a. Climate-smart and nutrition-sensitive agriculture.

   b. Empowerment of women in agriculture (including micro-gardens, community outreach programmes).

   c. “One Health” (e.g. leishmaniasis, livestock health and welfare).

   d. Sustainable natural-resource management: water, energy, food and forests.

Appendix 1. Proposed additional members to join existing network of expertise

NAME	TYPE OF BUSINESS	WEBSITE
Japanese International Cooperation Agency	Governmental agency	**https://www.jica.go.jp/english** The Japan International Cooperation Agency is a governmental agency that coordinates official development assistance for the government of Japan. Its purpose is to assist economic and social growth in developing countries, and the promotion of international cooperation.
The World Academy of Sciences (TWAS)	International NGO	**https://twas.org** Advancement of science in developing countries.
Syrian Centre for Policy Research	Independent NGO non-profit think tank	**https://www.scpr-syria.org** Undertakes public policy-oriented research to bridge the gap between research and policy-making process.
SPARK	Non-profit international development organisation	**http://spark-syria.eu/home**
The ASFARI Foundation	British grant-making charity	**https://www.asfarifoundation.org.uk** To ensure a good education for, and encourage entrepreneurship among, young people from the Levant and the UK, to support them to work together to create positive change, and to strengthen civil society.
The Royal Society	Scientific academy of UK and commonwealth	**https://royalsociety.org** Dedicated to promoting excellence in science.
The SPHEIR Project (Strategic Partnerships for Higher Education Innovation and Reform)	Partnerhip Project	**https://www.jica.go.jp/english** Transforming higher education with innovative partnerships SPHEIR (Strategic Partnerships for Higher Education Innovation and Reform) aims to transform higher education systems in focus countries in Sub-Saharan Africa, Asia and the Middle East to better meet the needs of graduates and employers. It supports diverse, large-scale partnerships working across different sectors and countries to improve the quality, relevance, accessibility and affordability of higher education. It focuses on creating new and innovative solutions to key higher education challenges to deliver systemic and sustainable change at scale.
SOAS	University of London	**https://www.soas.ac.uk**
GIZ		**https://www.giz.de/en/aboutgiz/profile.html** A service provider in the field of international cooperation for sustainable development and international education work
DFID	UK Government	**https://www.gov.uk/government/organisations/department-for-international-development**

Appendix 2. Roundtable Participants

NAME	EXPERTISE	ORGANISATION/AFFILIATION
Dr Shaher Abdullateef	Hydroponics and biotechnology	**Cara Syria – FSL**
Dr Manaf Aldakhil	Agricultural engineering	**Aleppo University in the Liberated area**
Dr Anas Alkaddour	Agriculture and horticulture, potato breeding and biotechnology	**Global Communities**
Dr Ahmad Alkhalil	History and Islamic civilisation	**Iğdır University**
Ms Safa Almohammad Alsbahi	Agricultural engineering, food science	**BINAA**
Dr Omar Atik	Plant protection	**Shafak**
Dr Lisa Boden	Veterinary public health, population medicine and public health law	**Global Academy of Agriculture and Food Security, University of Edinburgh**
Dr Clara Calia	Clinical psychology	**University of Edinburgh**
Ms Martina Iannizzotto	Economics	**WFP**
Dr Martin Keulertz	Water-food-energy nexus	**AUB**
Dr Tefide Kizildeniz	Agricultural engineering and women's studies	**Gaziantep University**
Mr Charles Kleinermann	Political science, international relations and social economy	**ICARDA**
Dr Tom Parkinson	Education and musicology	**University of Kent**
Professor Corinne Reid	Psychological therapies	**University of Edinburgh**
Ms Kate Robertson	Human rights and international programme management	**Cara Syria Programme**
Professor Geoff Simm	Animal breeding	**Global Academy of Agriculture and Food Security, University of Edinburgh**
Dr Mona Suilmi	Social science	**Independent**
Mr Ayham Taha	Economist and political scientist	**Care International**
Ms Ipek Velioglu Melis	International relations	**Cara Syria**
Mr Adam Yao	Agriculture sciences, sustainable natural resources management, climate change and adaptation.	**FAO**