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Workshop 8: Beyond the Farebox: Sustainable Funding of Public Transport by Better Understanding Service Values

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ABSTRACT

This Workshop was built around papers that aimed to identify ways of bridging the funding gap in public transport provision using methods other than the farebox. A number of traditional approaches such as land value capture and road pricing to provide additional sources of finance were discussed as were more general approaches such as the development of “Mobility as a Service”. The main thrust of the discussion was, however, the need to take an even broader approach recognising behavioural and governance factors that shape individual and social norms and trust in institutions. The creation of shared social values was seen as an essential precursor to successful public-private cooperation. The enhancement of efficiency in public transport provision to help reduce deficits rather than reductions in service would contribute to this. Above all the focus should be on a sustainable transport system embracing all modes to meet the needs of the population rather than a focus on sustainable financing of one element. Such a system depends on a complex set of interacting factors and not on a simple linear cause and effect model.

1. Introduction

This workshop built on Workshop 5 of Thredbo 15 which had discussed ways to bridge the benefits funding gap. The previous workshop had established a recommended formula for setting public transport fares and suggested focusing on land value and road pricing as a means of funding any gap. The primary focus of this workshop was set as going further with a discussion of more innovative ways of funding the transport network through various forms of non-fare revenue and of extracting non-fare revenue to fund the public transport system. This needs to involve an examination of the social, economic and business contexts that determine the success of various non-fare revenue models.

A number of the papers presented at the Workshop provided good examples of this approach examining specific funding instruments, particularly land value capture. This issue also relates to the issue of measuring and capturing the wider economic impacts of transport projects dealt with in Workshop 7. However, the discussion in Workshop 8 went much further recognising the importance of a more comprehensive view of issues relating to a sustainable transport service. In particular it was seen as essential to understand factors influencing behaviour and acceptability of measures as a precursor to the development of both existing and innovative new measures. Any measures directed towards public transport need to be

seen within the context of the overall need for mobility and the use of non-conventional transport modes.

2. Major themes of discussion

The workshop centred around three main themes:

- Developing a policy framework
- Understanding norms of behaviour and building of trust
- Collaboration between public and private agencies

2.1 Developing a policy framework

Four papers focused on aspects of the policy framework within which new approaches could be developed. Mobility-as-a-Service (MaaS) has featured strongly in many recent debates over how to provide a generalised model of service that embraces all modes of transport including non-motorised modes. Lajas and Macário (2019) provided an analysis based on a case study of Finland's approach to MaaS. Their proposed "Mobility as a Service Public Policy Framework" maps various policy instruments, stakeholders, management decision levels (Strategic, tactic, operational) and the responsible implementing authorities. It developed a framework as an attempt to understand and guide decision making in a robust and coherent manner, and to identify the various policy tools to guide policy design.

Discussion centred around the extent to which there could be a single approach to successful implementation of MaaS, given context specificity. It would be necessary to identify and understand fundamental success factors before creating, combining and adapting the framework to other cities. Nevertheless, it provided a useful framework which could help translate experience in Helsinki to other cities, although with more than 90% of "Whim" rides still being on public transport there were questions whether the Helsinki project could be deemed successful. MaaS provides an opportunity for the policy paradigm to shift to a redefinition of public transport to include non-conventional public transport alternatives. This particularly applies to solutions to the first- and last-mile problem, and hence the case for including them in any overall pricing and subsidy solution. This provides the potential to develop a "mobility wallet" which could be subsidised on an individual or household basis instead of global subsidies to operators.

A second paper looked more specifically at the different financing instruments currently available. Sauri et al (2019) attempted to analyse and develop evidence-based and context-specific approaches for sustainable financing in the EU context. This followed a similar approach to Lajas and Macário in developing a structured way to analyse policy making. They used the familiar concept of classifying proposals and analysis in three main dimensions, strategic, tactical and operational (STO), although this was argued by some to have possibly outlived its usefulness as a way of thinking about future changes. Sauri et al distilled a set of specific policy recommendations, among which the most important were those related to financing strategy, sustainable financing and funding instruments. An example given was that of the EU Green Bond. It was seen as useful to map compatible policy instruments and their effects, outcomes and externalities, to avoid the

political temptation to pick and mix policy instruments that may be incompatible and contrary with each other.

Two further papers examined the application of policy instruments in more localised contexts of developing countries that are facing funding challenges. Cengiz et al. (2019) developed a financial model for betterment levies applied to apartments lying within railway catchment areas of Istanbul, Turkey. This examined proximity as the key variable in the determination of the optimal betterment levy.

The merits of betterment levies were under three broad areas: taxation principles, equity impacts and coverage. A property tax within a broader general tax system could theoretically be relied on to capture uplift and thus specific betterment levies would be unnecessary. A counter-argument in favour of a specific levy is that it would be more equitable for user or beneficiary to pay for better access to a specific service. It can be seen as unfair to use general taxes to build railways which are not used by everyone in an area. This brings in the more general question of equity. How would a betterment levy deal with the redistribution of value across the city due to railway development? Furthermore, in addition to a betterment levy on properties that gain value, should there be compensation to those that suffer losses due to changes in accessibility? Should proximity be basis of determining an appropriate levy?. Some studies have suggested that properties closest to the project (within 100 m) may lose value due to noise and security concerns, although Cengiz et al. claimed otherwise in the case of Turkey. The levy could be potentially regressive because residents who could not pay it may be compelled to dispose of the property. But this also raises the question of whether betterment levies should be imposed solely on residential properties that benefit from enhanced accessibility. Cengiz et al. suggest there is a case for extending a betterment levy from residential properties to commercial properties. The Crossrail project in London is partially financed by charges on businesses that are deemed to benefit as a way of capturing wider economic impacts of a project. The timescale over which any betterment levy is imposed could also be problematic due to any possible anticipation uplift effects. Betterment could start as early as the time of a project's announcement because of speculation and rumour.

Lubis et al. (2019) studied the potential and application of land value capture instruments in the development of a metro line in Greater Jakarta. They used interview surveys and focus groups of stakeholders to identify challenges in such areas as legal, governance, land acquisition, planning and community inclusion. This development was seen in the context of also being a catalyst for new urban development as a form of Transit Oriented Development (TOD). A greenfield TOD provides an opportunity for a holistic perspective of urban development and to reimagine the provision of public transport. Examples of this in other countries include the requirement for developers in UK to put in social infrastructure and integrate with public transport and the development of High Speed Rail in China that allowed for urban redesign or development of new cities. Compared to new transport infrastructure within brownfield / highly developed sites, a greenfield TOD faces challenges of insufficient demand for project justification.

2.2 Understanding norms of behaviour and building of trust

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It was increasingly clear during discussion of the policy framework that this could not be achieved in the absence of an understanding of how individual users of transport systems behave. Increasingly this requires an understanding of how users interrelate both with each other and with the providers of transport services. Three papers examined different aspects of this: behaviour norms and the effect on mode choice; trust in the context of fare evasion and attitudes to road pricing.

Ababio-Donkor et al (2019) used consumer behaviour theories to develop a latent choice model that incorporates social and personal norms (subjective variables) alongside more conventional objective variables such as household income, age, household size and car availability to describe mode choice. This applied the MINDSPACE (messenger, incentives, norms, defaults, salience, priming, affect, commitment and ego) framework to data from a case study in Edinburgh. The research suggests that personal norms have significantly more impact on transport decisions, such as mode choice and car purchases, than social norms.

This work has important implications for the development of a two-stage process that first seeks to determine importance of norms, which then secondly informs policy recommendations. Understanding such norms has important implications for funding as norm-based policy interventions are likely to be more cost effective than many engineering or technical solutions. There is clear value and potential in creating public awareness campaigns or demonstration projects to nudge or change attitudes in travel behaviour to address say, congestion due to school traffic. Other socio-political trends, such as climate change, are already starting to influence such norms, such as increased support for non-motorised modes and public transport to reduce carbon footprints.

Porath and Galilea (2019) reviewed the role of trust and norms in examining levels of fare evasion, based on a longitudinal study of Santiago. It was found that these were influenced by social, political and cultural factors and that trust towards political and economic institutions has an effect on fare evasion. Fare evasion can be seen as a manifestation of social anomie and an act of protest against, and distrust of, the system. The study suggests contagious effects. Where fare evasion level exceeds a certain threshold, around 7%, there will be social contagion. This phenomenon can be observed in other social behaviour, including the uptake of cycling.

On the other hand there is mixed evidence for the benefits of greater action on fare evasion. More fare inspections and the social exposure of crime could be useful, although one view is that information and the threat of random inspections coupled with high penalties may suffice. Stronger enforcement may, however, be alienating, especially if fare evasion is criminalised. Low income passengers who evade fares may be impacted further. One suggestion is to provide a direct incentive for operators to enforce fare collection by linking service fees linked to ridership or fare revenue. However, in some cases it was felt that drivers may not feel secure enough to confront fare evaders. When paying the correct fare becomes a social and personal norm, peer pressure starts at a certain threshold of payment. It is critical to think how people can take responsibility and ownership of the system to engender a culture of paying the correct fare. In such cases fare evaders will be confronted by fellow passengers, and older or community owned companies generally have lower fare evasion rates than commercial private sector operators due to a sense of communal ownership.

Improving trust in the system can be achieved through providing a greater transparency of the status of transport agencies and the rationale of fares and penalties. This is needed, for example, to address the perception that fares (and in particular penalty revenues) go simply into operators' profits rather than system development. If fare evasion is a reflection of an inability to pay rather than unwillingness to pay, it may be preferable to provide subsidies to those without the means to pay rather than general subsidies to transport operators.

One of the innovations that has been the subject of much conjecture over the response of individuals is road pricing. Whilst it is seen as a logical means of providing a more level playing field between private and public modes of transport, it has nevertheless raised considerable objection principally centred around whether it should be seen as a tax or a charge for using a resource. Hauge and Topp (2019) studied the effects of road pricing within the context of the Nordic Model of the economy, using examples from Sweden and Norway. The level of trust in the system allowed greater political intervention and greater acceptance of road pricing, leading to increased road network efficiency and benefits to public transport services. This study argued that road pricing is politically feasible, because it brings tangible benefits in reduced congestion, faster buses and avoidance of new investment in road capacity which could then be used to subsidise public transport, bicycles and car-free housing. The hypothecation of road pricing revenue to public transport is one important way these wider benefits can be promoted as, for example, in London.

However, a key question is how far the Nordic model is applicable to other cities that seek to implement road pricing, especially those without as good a road network as the Scandinavian cities. For this, demonstration projects are seen as being valuable in gaining political acceptance, in addition to revenue hypothecation. It is argued that it is important to not just examine road pricing in isolation, but address mobility holistically, including information on how road pricing revenue is used and how pricing helps to signal the true cost of mobility to enable rational and economically efficient decisions. The discussion also raised the question of the relative merits of road pricing vis-à-vis a physical reduction in road capacity to suppress traffic volumes. The two approaches may not be mutually exclusive and the example of road charges being used to fund transformations of the road environment in Amsterdam was cited.

2.3 Collaboration between public and private agencies

Central to any new or revised approach to the support of public transport in the context of mobility as a whole is the relationship between public and private agencies. This is not just the contractual relationship when private sector operators provide public transport under various form of contract to public agencies but, as we have seen in the previous section, it affects the level of trust and hence expectations of users and taxpayers in the provider of transport services.

Song et al. (2019) examined the Japanese model in which private rail operators play a strategic role in enhancing shared value within the catchment area of a railway line, against the background of an unfavourable trend of lower demand arising from an aging population. Whilst on one level this can be seen simply as private operators seeking alternative revenue sources to sustain profits as the revenue from the direct provision of transport services falls, there is also a growing cooperative relationship between private operators and local government. Song et al explored the respective roles of the two sectors and discussed the

strategies of private railway operators, building on findings from interviews with five private railway companies.

The Japanese model has brought about operator-driven development of housing, educational, social amenities and recreational facilities in local areas. This virtuous growth cycle internalises the positive externalities from rail development, and provides residents with amenities and good quality of life, who then in turn provide demand for the railway. This is reminiscent of the idea of “metroland” developed in the 1930s by the Metropolitan Railway in London. This rail operator driven development encourages collaboration between operators and local government, but there are challenges faced by local governments. These include problems of lack of public sector resources to manage the development demands, the lack of an understanding of commercial business practices and profitability considerations, and the potential for conflicts between political and business interests. The dangers of regulatory capture developing within a long term relationship and the way fairness and impartiality considerations may lead to a concern over being too collaborative with a private sector operator may limit the effectiveness of these arrangements.

The overall reduction in population and consequently in demand has forced operators to compete for residents through differentiation in services provided in local areas. Operators have also started to group together to compete with other groups on a larger scale which may reduce the benefits of competition. This could lead on the one hand to a form of zero-sum game in attracting population to move between areas without any real benefits, but on the other hand could have benefits in leading to more compact, dense and efficient urban developments. This approach offers a new paradigm in that, in contrast to land value capture that seeks to extract benefit, it offers an opportunity to create shared societal value. Since the private operator rather than government is the key driver of local developments, the resulting symbiotic relationship requires operators to consider long term public or societal interest instead of just short term profit maximisation.

In contrast Stewart et al. (2019) conducted a comparative analysis of operational unit cost growth of urban bus services in the US, London and the rest of Great Britain, all of which are under different operating models to see if the public-private relationship affected performance. The starting point for this used the idea of Baumol’s Disease (Baumol and Bowen, 1965) applied to bus service delivery given its cost structure in which labour cost is a significant component. Baumol’s Disease suggests that public services may struggle to find productivity gains to match those in the private industrial sector and hence costs rise faster than in the rest of the economy as wages have to rise to compete in the labour market. Thus employment in the lagging sector can continue to grow and starts to have a detrimental effect on overall economic performance. Any sustainable funding scheme has to recognise the problems and the resulting impacts on costs. In some cases, such as the French system of a payroll tax in larger cities that generates revenue to support public transport, there is a clear penalty on expanding firms.

This brings us back to the need for partnership, not only between public authorities and transport providers, but also between the users of transport, public authorities and the operators. Users here can mean the direct users, passengers, and the beneficiaries of good transport such as firms employing public transport commuters. Discussion centred on the extent to which this is best done through a general unitary transport authority that has responsibility to coordinate all modes of transport such as Transport for London in the UK or

the Land Transport Authority in Singapore, or through specific partnerships. Such partnerships can provide a means of coordinating for example the vehicle and service quality provided by the operator with the quality of the infrastructure provided by the public authority.

Technical change such as the advent of autonomous vehicles would provide an opportunity to substantially alter cost structures and hence mitigate the potential effect of problems like Baumol's Disease. It is therefore important that any public-private sector agreements provide scope for such changes.

3. Discussion and outcomes

As indicated in the Introduction, the Workshop went beyond just a detailed examination of specific funding instruments for public transport to a much wider discussion of the factors relevant to creating a sustainable transport service. Understanding the factors influencing behaviour and the acceptability of measures is a precursor to any development of innovative new measures as well as understanding the likely outcomes from existing policies and practices. Transport modes cannot be considered in isolation and policies towards public transport need to be taken in the context of the overall need for mobility and include the possible use of non-motorised and non-conventional transport modes.

The key themes emerging from this approach were threefold:

- Understanding individual and social norms in behaviour
- Building trust in public and private sector agencies
- Importance of collaboration between public and private agencies to ensure consistency and coherence of implementation

Transport, and public transport in particular, raise interesting questions about the societal factors that determine demand and choice. Ultimately the choices made, of whether, when and how to travel, are individual ones that will depend on individual norms and individual characteristics. But these choices interact with those made by other users of the relevant transport system and hence social norms become relevant. Policy instruments need to understand and respect these norms if they are trying to influence behaviour. Building trust also requires building a sense of ownership that is often lacking in the provision of mass public transport. However, context is important here and developing a contingent mapping of decisions, policies, instruments within an appropriate governance structure would be a valuable contribution to this.

Sustainable transport needs to be understood in the context of optimal mobility and not focus exclusively on sustainable funding of public transport. Thus for example road pricing needs to be seen as part of an integrated sustainable transport objective and not just as an allocation mechanism for road space and a revenue earner to support public transport. To be a politically feasible and effective policy, road pricing requires not just the transparent hypothecation of revenues to reinforce trust, but to be one element in creating shared societal value. This requires diversification and public-private cooperation rather than a simple focus on capturing value. Public transport cost reductions may be an important element in creating a sustainable transport system, but these need to focus on increased

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efficiency and enhanced service levels rather than the all too common reductions in service levels.

The Workshop sought to bring these various diverse themes together in a way which reflected their crosscutting nature. Figure 1 shows a way that represents a move away from a simple concern with sectoral and linear relationships to a more complex set of interactions. This views a sustainable transport system (the goal in the centre of the diagram) as involving two sets of determinants. In the middle ring are the various sets of policy instruments that can be used to attain sustainability. These are not independent of each other and an effective policy will require an appropriate mix of some or all of the elements.

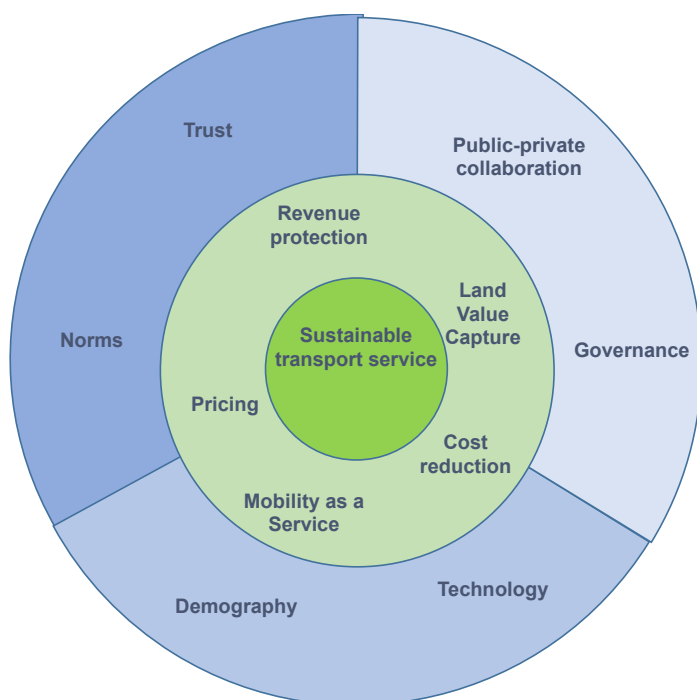


Figure 1 Conceptualisation of elements in a sustainable transport system

In the outer ring are the various factors that will help determine the appropriate mix of policies and policy instruments. These divide into three broad types of factor: technological, governance and behavioural. The technological factors include both physical technology and social change such as demographic factors. These are seen as essentially exogenous, although transport technology may also be driven by perceived needs to achieve the sustainable transport goal. Demographic change has become a major element in mobility inequality with both older and younger age groups impacted by reduced levels of local public transport. Public transport operators may also be disadvantaged by schemes to provide reduced fare or free transport for such groups without adequate compensation. This is where such schemes under a MaaS framework to provide for example mobility wallets that can reflect individual circumstances of a user rather than blanket reduced fare policies.

Governance factors include the structure of government, essentially who is responsible for formatting and implementing policies on sustainable transport, and relationships between the public authority setting policy and the operator, whether public or private. In multi-level jurisdictions there is often a disconnect between who sets policy and who has to implement it

(Vickerman, 2008a, b). Whilst global transport policies may be set at national or even supranational level to designate high-level transport networks, policies relating to climate change and environmental protection or distributional policies aimed at protecting the transport disadvantage, it is often left to the regional or local level to implement such policies and crucially to find the necessary funding out of their own budgets. Cutting across the question of who sets policy is the structure of relationships between the public and private sectors. In some cases this may be set by high level government policies requiring, for example, privatisation of public transport or some form of contracting out or franchising.

The third set of factors are the behavioural ones that determine the norms and trust that dominated the discussion in this Workshop. Social norms will clearly interrelate with demographic factors and trust will both depend on and influence the development of governance arrangements (see for example Fukuyama, 1995).

The basic concept presented in Figure 1 reflects the view that there is no simple set directional relationship. The possible links are both between the various elements in different rings, for example from governance or technological factors to each of the various policy instruments as modified by behavioural factors, and between the various factors within each ring. Understanding the potential conflicts between the policy instruments in the middle ring to develop a coherent strategy is important but so is an understanding of the interaction between the conditioning factors in the outer ring. Formulating policy is thus not a straightforward set of linkages between instruments and objectives but a more nuanced understanding of a matrix of factors and their impact not just on the direct transport outcomes but also on the way people understand and value aspects of the transport services available. Without an understanding of this matrix of relationships there is little hope of establishing a sustainable transport service that is a precursor to any attempts to address the financial sustainability of the service.

4. Recommendations

4.1 Policy recommendations

4.1.1 High-level policy recommendations

Policy can be considered at both the high level of general approaches to policy formulation and in terms of specific recommendations for individual policies. At the high level there are three broad recommendations for policy guidance.

First and foremost is the need to understand sustainable transport in the context of optimal mobility and not to focus exclusively on how to develop sustainable funding of public transport. Defining optimal mobility thus becomes a key policy objective rather than how to reduce deficits in public transport provision. Secondly is the importance of understanding the specific context of policy and developing contingent mapping of decisions, policies, instruments within an appropriate governance structure. This is particularly important when different levels of government have responsibility for different types of policy, for example where one deals with responsibility for adding the mobility disadvantaged whilst another deals with the actual provision of transport services. This can easily lead to a mismatch. Thirdly is the need to understand behavioural norms (individual and social) in formulating

policy instruments that respect these norms or influence behaviour and build trust and a sense of ownership. Only if citizens respect and trust the decisions relating to transport provision in the context of desired levels of mobility will they be prepared to trust both the government authority and a transport operator. This trust is important in ensuring willingness to pay appropriate levels of fare or other charges and reduce attempts to cheat the system.

4.1.2 Some examples of approaches to policy

Three examples of possible policy recommendations may help to clarify this approach. Road pricing featured strongly in our discussions. This needs to be seen as part of an integrated sustainable transport objective to be a politically feasible and effective policy. Transparent hypothecation of revenues may help to reinforce trust. Those jurisdictions that used trials to demonstrate the benefits of road pricing to all users have typically seen more widespread acceptance than those that simply imposed it. In the latter case road pricing is more likely to be seen as additional taxation on road users rather than as a charge for use unless general taxation on road vehicle and fuel is adjusted to compensate.

Secondly policies that aim to create shared societal value through diversification and public-private cooperation rather than a focus on capturing value are likely to be more acceptable. Land-value capture is often viewed rather like road pricing as an attempt to impose additional taxation on residents. Creating shared values can help to overcome this by bringing the private sector into cooperation rather than limiting it through strict contractual terms. This can help reduce the tendency to view private sector operators as only interested in extracting rent through profit and encourage the view that a sufficient share of profit is reinvested to improve service levels.

Thirdly, the focus on reducing public transport cost to reduce levels of subsidy and the cost to the public budget needs to be achieved through increased efficiency rather than the service reductions that are too often seen as the solution. This is where an overarching sustainable transport objective needs to be in place to guide efficiency measures so that policies are not implemented that have unintended consequences. Technology and cooperation are key elements in developing such policies.

4.2 Research recommendations

Enhancing policy along the lines outlined in the previous section will require research in a number of areas. A number of recommendations for further research have been considered using the ideas in several of the papers presented in this workshop:

- How to allocate funding to all transport alternatives (including the less conventional) and the use of new instruments such as mobility wallets, give advent of MaaS (Lajas and Macário)
- Expand value capture studies beyond simple valuation to include impacts on all stakeholders, the distribution effects and stages of development (Cengiz et al.)
- Use concepts of individual and social norms to understand issues such as mode choice, fare evasion, acceptability of road pricing and greater cooperation between

private agencies and public sector in creating shared value (Ababio-Donkor et al, Porath and Galilea, Hauge and Topp, Song et al.)

- How such norms affect the attitudes towards risk and resilience of individuals, private and public sector agencies in the context of uncertainty

4.3 Recommendations for Thredbo 17

The discussion in this Workshop challenged some of the conventional approaches adopted in the Thredbo series of conferences. The view was strongly felt that there had been too much focus on the detail of contractual arrangements and concern over deficits and securing additional means of funding. This focus on sustainable funding sometimes lost the broader view of the objective of a sustainable transport system designed to meet the needs of both users and residents. The lack of trust in existing systems of provision requires a rethink that will involve much greater recognition of the behavioural norms that govern individual and social behaviour. There are two principle strands of approach that are recommended:

- To develop wider discussion of the social and environmental context of mobility and how individual policy instruments fit into this. Transport should not be regarded as an isolated discipline and there is a need to think about issues holistically.
- To diversify the disciplinary contributions to provide a better understanding of the context of public transport within overall mobility and the social and psychological constraints and drivers of behaviour

Above all the Workshop recommended strongly that this should involve a wholesale rethinking of the foci of all the workshops for future Thredbo conferences and not just be confined to a discussion in one Workshop. The focus should be on a sustainable transport system embracing all modes to meet the needs of the population rather than a focus on sustainable financing of one element. Such a system depends on a complex set of interacting factors and not on a simple linear cause and effect model.

Declaration of Interest

Nothing to declare

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