Policy Brief 2020

Moving Towards Low-Carbon Mobility Transitions

Executive Summary

Emissions from the transport sector are likely to be largest source of greenhouse gases in the near future. A transition to forms of mobility that produce fewer carbon emissions and use less oil is both desirable and inevitable. It is equally clear that such transition transcends the technological upgrade of existing mobility systems, and requires a holistic rethinking of mobility practices and their meaning in contemporary societies. This research project is the first attempt to survey mobility transition policies on a global scale and to account for the current and projected meanings of mobility transitions. This research finds that, while there is no 'ideal low-carbon mobility transition policy', there are seven policy practices that can help guide decision-makers in constructing effective policies.

In Summary:

- **Appropriate policies depend on local context. There is no ideal set of policies for mobility transition that can be applied universally.**
- **Transition policies need to take on board the full social and cultural role and meanings of mobility and people in any given context. Focusing solely on technology as a means to transition is inadequate.**
- **Transitions to low carbon mobility futures need to be de-coupled from purely economic rationalities.**
- **Transition policies work best when there is agreement on aims across scales (city, regional, national and international).**

Introduction

This policy brief presents a summary of the results on a global comparative study of mobility transition policies in 14 countries and in the European Union and United Nations. Between 2014 and 2016, the research team conducted a survey of policy documents and interviews with over 150 relevant stakeholders (policy-makers, activists, transportation experts etc). The findings of the study highlight (i) the necessity to focus on mobility transitions rather than transport transitions; (ii) the importance of alignment of policies across scales and policy areas; (iii) the need for the evaluation of the equitability of transition policies; (iiii) the necessity to account for the 'downstream' consequences of policy decisions; (v) the imperative to avoid overly simplistic, reductive or universalist understandings of mobile people; (vi) the benefits of maximizing a range of stakeholders in mobility transition policies; (vii) the importance of questioning dominant narratives which ineluctably associate economic growth with growth in mobility.

Transitioning is Inevitable

The second largest contributor to greenhouse gas emission is transport which consumes 65% of global oil demand, presenting for the recent IPCC special report, 'major challenges for decarbonisation'. As the energy sector transitions to a lowa carbon future relatively quickly, emissions from transport are still increasing. The OECD projects that emissions from the transport sector could increase by 60% by 2050. Transport emissions are likely to become the largest source of greenhouse gases in the near future. In some developed countries they already are, while Europe has seen the largest growth of any sector.

Emissions from the transport sector are likely to be largest source of greenhouse gases in the near future. In some developed countries they already are while Europe has seen the largest growth of any sector.

In addition to the urgency of tackling anthropogenic global warming we likely have passed the point of global peak oil production. The most optimistic projection is that this point will occur in 2030. In the long-term oil supply will be depleted and extraction will become too expensive. At this point, humans will have to look elsewhere for sources of energy.

A transition to forms of mobility that produce fewer carbon emissions and use less oil is both desirable and inevitable.

The transportation sector is the world's largest consumer of oil. In 2010 around 61.5% of the oil that was consumed was consumed in the transportation sector. In 1973 the figure was 45.4%. While other energy users are moving to more sustainable non-carbon based energy sources, the transport sector is easily the most oil dependent and therefore will be one of the most vulnerable to the post-peak oil world. In the face of anthropogenic global warming, the dawning of a post-peak oil world, transport's contribution to the production of carbon emissions, and the current reliance of transport on oil: a mobility transition is inevitable and desirable. This research points to seven policy practices when constructing effective low-carbon transition policies.

Global Crude Oil Consumption in 2012

(Breakdown by sector)

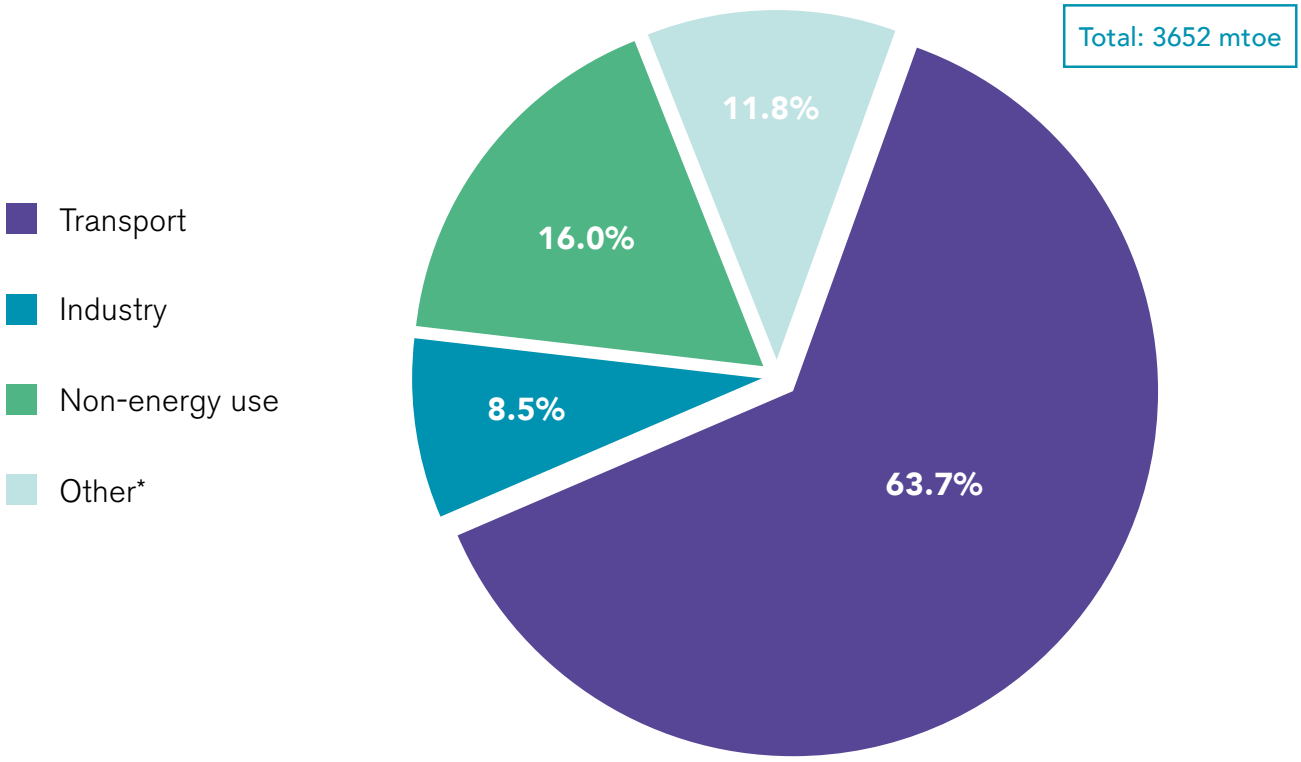

Fig 1: Global crude oil consumption in 2012. International Energy Agency, Key World Statistics, 2014

*Agriculture, buildings, commercial & public services and others.

Objectives of the Research

- To survey how mobility futures are represented in fourteen different national policy contexts globally as well as in the context of activities of the EU and the UN and associated bodies.
- To account for the (mobile) meanings given to current mobility practices and future mobilities within government policy at urban, regional, national, international (UN) and supranational (EU) scales.
- To investigate the changes in mobile practices envisaged in the above.
- To delineate how envisaged transformations are linked to new forms and patterns of movement and infrastructure.
- To account for the ways in which particular narratives, trajectories and imperatives of social-change are accounted for (or ignored) in the envisaged transformations.
- To identify how changes in mobile practices are enabled or hindered and the manner in which they are contested or negotiated.

Approach & Results

The research, funded by the Mobile Lives Forum (Paris), was conducted over two years and was completed in July 2016. It explored existing policies for transition to low or non-carbon mobilities in 14 countries around the world, as well as within the UN and EU as select important players in the global arena. The research sought to both explore common themes among our case studies and notable differences. The research was conducted by a team of seven researchers led by Professors Tim Cresswell (Northeastern University, Boston, USA) and Peter Adey (Royal Holloway, University of London, UK).

The team produced individual policy reports for the United Kingdom, Canada, Norway, The Netherlands, Portugal, Brazil, Chile, South Africa, United Arab Emirates, Turkey, Kazakhstan, Singapore, South Korea, and New Zealand. An additional report was produced for the United Nations and the European Union. A final comparative report drew the research and finding together (Fig. 2).

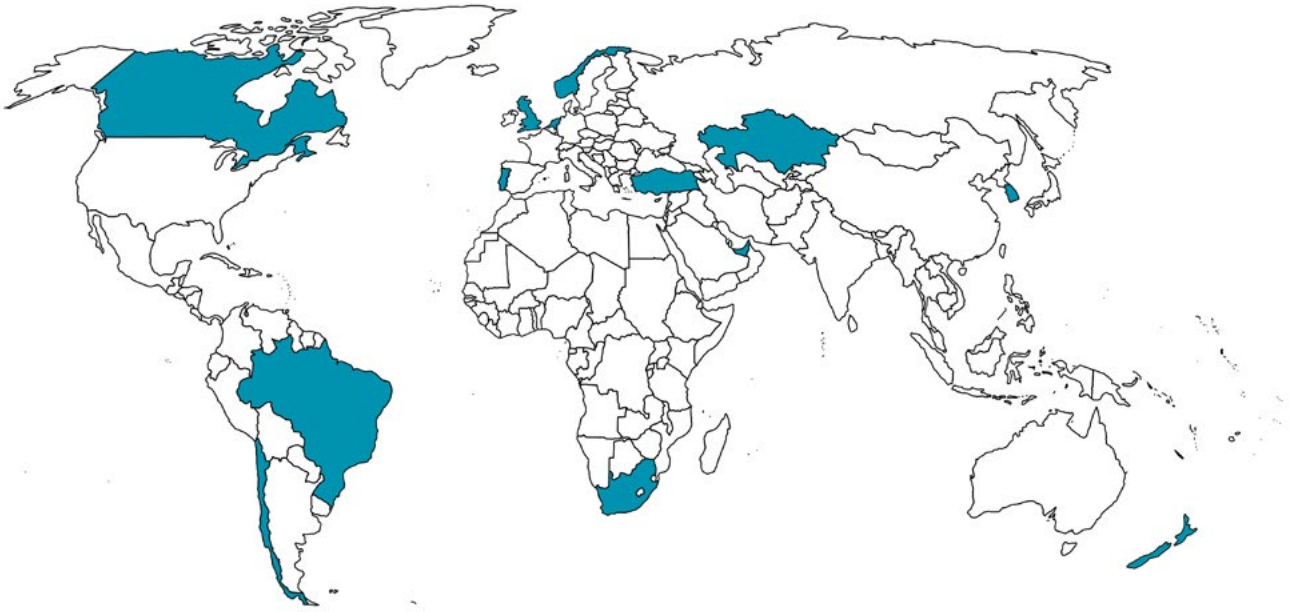

Fig. 2: Map of the world showing locations of case studies.

Each case study included approximately three weeks of fieldwork focused on the world of policy and included analysis of key documents and interviews with key policy stakeholders, civil society representatives and experts in each country. This was supplemented with more general observation of representations of mobility while on site.

The rationale for choosing case studies

Size and density of country

Approaches to mobility transition are affected by the size of the country over which mobility occurs. Issues facing Canada, including long distances and remoteness, are very different from an island state such as Singapore with its problems of land-scarcity or the Netherlands with its high-density transportation networks. The cases of Kazakhstan and the UAE, in their turn, represented the influence of extreme climates upon mobility challenges and aspirations.

Socio-Economic Profiles

Highly developed nations have more resources available to combat climate change and enact mobility transition than less developed ones. Higher levels of education and health care provision may also be related to the success of transition policies.

Governance

Strong, centralised or authoritarian governments and their political and legal systems are able to enact transition policies relatively easily if they want to. On the other hand, places with more developed civil society are more likely to push for transition "from below".

Connections between countries

While our case studies are largely national ones we sought out instances where we were aware of flows of policy and practice between countries (policy mobilities). We were also interested in making sure that particular case studies (such as Bus Rapid Transit, telework, or cycling schemes) occurred in more than one case study.

The research has included over 150 interviews with key policy stakeholders worldwide. We are not aware of any research project that has such a wide scope and is able to develop such a complicated comparative agenda.

In each case, we surveyed national policy regarding low carbon mobilities as well as engaged three local case studies that may or may not have been generated by national policy. As a result this research documents and analgises 14 accounts of national government policy and over 42 local case studies on low-carbon mobility transitions in addition to accounts of policy constructed at the inter- and supranational level in the United Nations and European Union. The research has included over 150 interviews with key policy stakeholders worldwide. (Please refer to Table One for more detail on each of the case studies).

Typology of Transitions

During our research we identified a common typology of forms of mobility transition that, in an ideal world, would be mapped on to each other and in harmony.

Technological Transitions

Stories about low carbon futures tend to center on the possibilities offered by new technologies such as electric vehicles, hydrogen cells or nuclear fusion for example. Technological transformation is the easiest kind of transition to imagine as it appears to have such limited impact on the rest of our lives and can be imagined with currently dominant economic and political systems. There are rarely any implied differences in the need for mobility, patterns of mobility or practices of mobility. Despite these criticisms it is clearly the case that technology, and changes in technology, will play a role in transitions to low carbon futures.

Lifestyle Transitions

Transition policies aimed at lifestyle can emerge in both top-down and bottom-up ways. Top-down attempts at lifestyle transition tend to be forms of 'responsibilizing' transition so it is imagined to be the outcome of individual decisions rather than government or corporate action. Active transportation policies that advocate walking and cycling link ultra low-carbon mobilities to health and well-being discourses. Lifestyle transition policies are particularly prevalent around various attempts to promote car-sharing and flexible working. These schemes, more often than not, attempt to lock such lifestyle choices into a system of profitability alongside a discourse that places the responsibility for transition at the feet of the individual or family.

Infrastructural Transitions

Many of the transition policies we have examined have centered on changes to urban infrastructure rather than technology per se. The most common of these involve the construction of discrete spaces in the city that encourage and enable more environmentally friendly forms of mobility. These include the provision of discrete bike lanes, infrastructure of Bus Rapid Transit, and the provision of workspaces closer to where people live. However, existing urban infrastructures that were built for the automobile make wholesale reimaginings of low-carbon mobility futures difficult to put into practice.

Regulatory and Legislative Transitions

Some attempts at transition policy are largely top-down attempts at governing and regulating mobility. The most obvious example of this is the carbon tax. These efforts are often financial in nature – using systems of penalties and/or rewards to move people towards low carbon futures. The landscape of regulatory and legislative transitions is also geographically varied. Such policies are more often found at state or municipal level than at national level. Often local policies exist in direct contradiction to national policies that are more likely to focus on economic growth.

Table One: Countries of Case Study

Countries	Population	Area (km²)	GDP (approx.)	GHG Emissions per capita (2010)[1]	Electricity Production (renewable %)	Car Ownership (per 1000)	Kyoto Protocol Signatory (1997)	Paris Agreement Signatory (1997)	CCPI (2015)[2]
Brazil	205,338,000	8,515,767	$3,200bn	1,104.64	83%	249	Yes	Yes	49
Canada	336,048,521	9,984,670	$1,600bn	710.72	64%	662	No	Yes	58
Chile	18,006,407	756,096	$264bn	94.14	38%	230	Yes	No	n/a
Kazakhstan	17,692,500	2,724,900	$420bn	300.83	9%	219	Yes**	No	59
New Zealand	4,688,710	286,021	$173bn	71.27	73%	708	Yes*	Yes	43
Norway	5,214,900	385,178	$366bn	51.11	98%	591	Yes*	Yes	27
Portugal	10,374,822	92,090	$275bn	73.68	60%	548	Yes*	Yes	7
Singapore	5,535,000	719	$452bn	70.05	??	149	Yes	Yes	50
South Africa	54,956,900	1,221,037	$742bn	458.29	1%	165	Yes	Yes	37
South Korea	50,801,401	100,210	$1,849bn	661.69	1%	450	Yes	Yes	55
The Netherlands	17,000,059	41,543	$856bn	218.03	12%	528	Yes*	Yes	42
Turkey	79,463,663	814,578	$751bn	382.29	28%	253	Yes*	Yes	51
United Arab Emerates	5,779,760	83,600	$647bn	202.56	0.02%	313	Yes*	Yes	n/a
United Kingdom	64,716,000	242,495	$2,679bn	582.11	12%	519	Yes*	Yes	6

Source: "Climate Analysis Indicators Tool (CAIT) Version 2.0. (Washington, DC: World Resources Institute, 2014)". World Resources Institute. http://cait2.wri.org

[2] Climate Change Performance Index. A comparison of the 58 top CO2 emitting nations, according to German Watch (2015). https://germanwatch.org/en/download/10407.pdf

For Kyoto Protocol:
* indicates an Annex I Party to the United Nations Framework Convention on Climate Change
** indicates an Annex I Party for the purposes of the Kyoto Protocol by virtue of Article 1, paragraph 7, of the Kyoto Protocol. Source: http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php

Key Findings

- There is no ideal set of policies for mobility transition that can be applied universally. Appropriate policies depend on local context, particularly on its scale, level of development and form of political organization.
- Focusing solely on technology as a means to transition is inadequate. Transition policies need to take on board the full social and cultural role and meanings of mobility in any given context.
- Transitions have tended to be underpinned by liberal logics, that is, by a focus on individual choice and freedom, by a quantification of policies and their standardization for commercial purposes.
- Transitions to low carbon mobility futures need to be de-coupled from purely economic rationalities. This means that they ought to incorporate discussions on sustainable growth and even economic degrowth
- Transition policies work best when there is agreement on aims across scales (city, regional, national and international.) Decentralizing sovereignty and power to both supranational structures and local organisations seems key to pushing the agenda forward.

Implications and Recommendations

These seven considerations for the construction of mobility transitions policy can be applied across the typology of policies that might help bring about low carbon mobilities. Each of these types represent distinct logics and opportunities and are operationally interlinked.

It is better to think of mobility transitions than transport transitions.

A mobility transition is not straightforwardly a transport technology transition. Focusing on the technologies or mechanisms of movement with little regard for the social context, or the meanings given to movement is likely to result in full or partial failure. At a macro level the most straightforward approach to reducing carbon emissions from transport is to: a) reduce or eliminate the need to travel (by using ICT for instance) and; b) decrease the length of necessary trips (so public transport becomes a more viable option). An approach to mobility transitions that is informed by work on the social context and meaning of mobility and is sensitive to local and national context is most likely to include as many stakeholders as possible and have a greater chance of success.

Focusing on the technologies or mechanisms of movement with little regard for the social context within which movement occurs,or the meanings given to movement in the cultural realm, is likely to result in full or partial failure.

Mobility transitions are more likely to work when there is alignment of policies across scales and policy areas.

Policy makers need to consider the strategic aligment of transition policies at different scales. They should ask in what ways will transition policy be more or less likely to fail given their nesting within often contradictory scales and times of policy making? The most significant mismatch of policy at different scales and times of policy making occurred when medium to long term environmental transition concerns were in contradiction to shorter term economic goals of growth and profitability. There were many attempts to fold mobility transition into a narrative of economic growth within a (neo)liberal economy including carbon tax, road pricing and the eco-card. In the broader context of the European Union a policy of free mobility of economic purposes was always working in tension with an expressed desire to transition to a low carbon future. Transition should be mainstreamed across policy domains.

The most significant mismatch of policy at different scales and times of policy makingoccurred when medium to long term environmental transition concerns are in contradiction with shorter term economic goals of growth and profitability.

Good transition policies will include an evaluation of the equitability of transition policies before implementation across categories of social difference (class, age, gender, race and ethnicity) and geography.

Who do policies work for? While it is possible to say that carbon tax policies, for instance, are likely to result in reduced carbon emissions it is also clear that without redistribution, such a policy is socially regressive and likely to disproportionately impact impoverished, marginalized and, particularly, rural communities. Similarly, the promotion of a Bus Rapid Transit system may well reduce carbon emissions in the city but is far from ideal if it is inaccessible to the mobility disabled. More than that, by being inaccessible it actually contributes to the production of disability. One way to think through this issue is to produce transition policies in bundles. A carbon tax, for instance, could be coupled with redistribution policies that actively assist the impoverished and marginalized populations who disproportionately bear the brunt of the costs. This might include, for instance, providing subsidies aimed at the poor for the purchase of electric vehicles or increased funding for public transportation.

Policy makers need to explore and account for the 'downstream' consequences of policy decisions, and determine more precise measures for success and failure.

While the absolute reduction in carbon emissions is one important measure it is necessary to consider other possible impacts such as the social ones noted above. The widespread adoption of automated electric vehicles, for instance, could result in unsustainable increases on power production. Similarly, the sudden possibility of cars with no inhabitants could increase congestion in an alarming way as cars will be travelling with no driver or passengers. Creating a light rail system with fewer stops in an urban area may result in fewer buses serving the communities along the route where the train does not stop.

Policy makers should avoid overly simplistic, reductive or universalist understandings of mobile people.

Transport planning has traditionally assumed a universal human being as the typical mobile subject. Commuters have been imagined as though they have no gender (the "neuter commuter"), passengers have been entered into flow models as seemingly universal PAX, issues of disability and accessibility have not been included in consideration of transition. In reality any effective transition policy must take into account the diversity of human bodies and subjects and their different needs.

Good transition policies will include an evaluation of the equitability of transition policies before implementation across categories of social difference (class, age, gender, race and ethnicity) and geography.

The range of stakeholders in mobility transition policies need to be maximized.

There is a danger of experts and government officials (or corporations) telling citizens how to move. Even the language used can alienate potential allies by creating meanings for mobility that are not aligned with the needs and desires of everyday life. Policy makers need to become policy-enablers who encourage and stimulate local organisations, coalitions and individuals in community participation for mobility transition. Rather than being aligned with the dominant narrative of economic growth, mobility needs to become aligned with notions of citizenship and common good in order to more successfully transition.

Policy makers need to question dominant narratives which ineluctably associate economic growth with growth in mobility.

Of all the tensions that lead to transition failure that we have identified, this is the most frequent. As long as mobility and economic growth are conceptually and culturally linked then transition policies can never reach their full potential. We need to decouple mobility transition from private economic benefit. Low carbon mobility transitions are often added on as afterthoughts to economic purposes. Schemes to change patterns of commuting in Rotterdam were primarily about the efficient management of the workday and road congestion than they were about reducing carbon emissions, which shows challenges to prioritize low-carbon transition in policy making.

Footnotes

i This policy brief was produced by the research team in fulfillment of the final report for the Living in the Mobility Transition Research Project funded by the Mobile Lives Forum in March 2018. The authors of this policy brief are: Peter Adey, Tim Cresswell, Jane Yeo-njae Lee, Anna Nikolaeva, Andre Novoa, and Cristina Temenos. More information on the project can be found here: http://en.forumviesmobiles.org/project/2016/10/04/living-mobility-transition-2471

ii IPCC Special Report Global Warming of 1.5o p. 142 http://www.ipcc.ch/sr15/

iii OECD ITF Transport Outlook 2017 https://www.itf-oecd.org/transport-outlook-2017;

iv U.S. Energy Information Administration, Monthly Energy Review January 2018 https://www.eia.gov/totalenergy/data/monthly/pdf/mer.pdf; Transport and Environment Reconfirmed: Transport is Europe's biggest climate problem 2017 https://www.transportenvironment.org/newsroom/blog/reconfirmed-transport-europe%E2%80%99s-biggest-climate-problem

v Nick Owen, Oliver Inderwildi, David King 'The status of conventional world oil reserves - Hype or cause for concern? Energy Policy August 2010. Volume 38, Number 8, 4743-4749.

vi International Energy Agency, Key World Energy Statistics 2017 https://www.iea.org/publications/freepublications/publication/KeyWorld2017.

vii Singapore was also included as a case study (too small for map scale).