



Land transport's contribution to a 2°C target

Key Messages on the mitigation potential and financing of low-carbon land transport for climate change policy makers

This overview provides climate change negotiators and policy makers with the key messages on the mitigation potential of the land transport sector and shows that **land transport greenhouse gas emissions can be reduced cost-effectively and generate synergies with other sustainable development objectives.**

The IPCC's Fifth Assessment Report states that the mitigation potential in the transport sector is higher than in previous assessments. This comes at a time that the global energy demand for transport is still rapidly increasing. Modeling by the International Energy Agency (IEA) supports the IPCC's more favorable rating of transport's mitigation potential and concluded that a combination of technological and behavioural measures can decrease final energy demand in 2050 for urban passenger transport by at least 55% below an IEA defined baseline of a 4° Celsius temperature increase scenario (IEA, 2014). In addition, the shift towards low-carbon mobility is affordable, does not hamper economic growth and can also generate substantial co-benefits for other key policy areas, such as improved air quality, road safety, energy security and productivity.

The importance and the potential of the transport sector in addressing climate change is also illustrated by the major voluntary transport related commitments made at the Climate Summit hosted by UN Secretary General Ban Ki-moon. Sustainable transport's dual role as an enabler of sustainable development and *its mitigation potential for addressing* climate change is also acknowledged in the currently debated Sustainable Development Goals.

UNFCCC mechanisms, in particular the reporting and funding mechanisms for the post 2020 period, need to help rather than hinder efforts to include land transport as part of climate strategies. This window of opportunity is fast closing and thus Parties are encouraged to scale up low carbon transport as part of their development and climate plans by tapping into the rapidly growing examples of proven low carbon transport policies, programs and projects as well as supportive financing schemes. This report summarises key areas of action that can be taken in the passenger and freight sectors and shows that it is still feasible to bring transport emissions on track.

This report has been jointly developed by the Bridging the Gap and the Partnership on Sustainable, Low Carbon Transport (SLoCaT)
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1 Transport's role in achieving mitigation targets

Transport¹ currently accounts for about 23% of global energy-related greenhouse gas emissions of which 75% are derived from land transport. Driven by increased motorisation, urbanisation, economic and population growth, greenhouse gas emissions from land transport are set to double by 2050 (IPCC 2014). These increases will happen largely in the emerging and developing economies as this part of the world rightfully expands its transport infrastructure and services in support of much needed economic and social development.

It is also acknowledged that current measures in most countries are insufficient to bring transport onto a 2°C stabilisation pathway. There are many successful examples of policies and technologies already available to decarbonise the transport sector (IPCC 2014) and experience shows that much mitigation potential can be exploited through **avoided** journeys from more compact urban development, modal **shift** to lower carbon intensive travel modes, and the use of **improved** fuel, vehicle and engine technologies. None of these three strategies, known collectively as the Avoid-Shift-Improve (ASI) approach, is the one silver bullet that can substantively reduce GHGs in the land transport sector on its own; and significant reductions in GHG emissions can be achieved only if these strategies are deployed in a complementary manner.

All major elements of the ASI approach have been tested at scale in both the developed and the developing world. The Fifth Assessment Report of the IPCC rightfully points at growing number of successful examples of policies and technologies already available to decarbonise the transport sector (IPCC 2014). This has enabled France, Japan, the UK and Germany to stabilise or even decrease land transport emissions despite growth in both the economy and road-freight volume over the same period (ITF 2010). These (and other examples) show that economic vitality and growth can be decoupled from transport emission growth.

A comprehensive climate change mitigation strategy and action plan, addressing both passenger and freight transport, complemented by a mix of policies and measures, is needed to shift us onto a low, rather than high (BAU²), carbon trajectory.

The costs of reducing emissions from transport differ according to the type of measure. In today's economic climate, policy makers can be reluctant to agree to large-scale transport mitigation strategies because of the perceived high costs. However mitigation in the transport sector has the potential to go hand in hand with realising other economic, social and environmental objectives as well as being good for the climate. It would be wrong therefore to calculate the cost of climate change action in transport only in terms of the cost per tonne of CO₂ avoided. Instead benefits need to be quantified, linked to: increased energy security (reduced oil dependence and exposure to oil price volatility); improved transport infrastructure and traffic management; improved road safety; reduced congestion and travel time reduction resulting in increased productivity; lower air quality; and affordable and accessible transport helping to alleviate poverty.

¹ All modes

² Business as usual – and present trend



Key message 1

Countries now have the choice to decouple their development ambitions and transport choices and choose low carbon transport pathways; however there is a major risk that by taking the quickest route to build transport infrastructure and systems they may well lock themselves into a high carbon transport future, compromising their growth and energy security.

1.1 CO₂ reduction potential of passenger transport

To bring transport onto the IPCC recommended 2°C pathway, significant action is required. The question is now on how to best structure policies and investments to achieve the intended climate impacts. For example, there is a major difference in mobility levels between the USA, total OECD and non-OECD countries³, with yearly per-person per-capita travel in 2010 on the order of 24,000km, 16,000km and 4000km respectively (IEA ETP 2014). Thus, if the transport sector is to be brought onto a 2°C stabilisation pathway, motorised travel must significantly decline in OECD countries over most of the projection period to compensate for the increase in developing and emerging countries. Fuel efficiency, in particular, will play an important role in reducing GHG emissions from land transport. So choices on land transport made in the emerging and developing economies on infrastructure, land use and technology will lock-in a country to either a fossil fuel dependent or a low carbon pathway for the next 30 to 50 years.

There is now considerable, and on-going, research to suggest that for the time period 2015-2050, it is also less costly to take a low carbon approach. In an aggressive High Shift scenario that promotes the use of public transport, walking and cycling over the individual car, savings are in excess of USD 100 trillion in public and private spending on transportation vehicle and infrastructure capital and operating costs along with fuel costs, according to recent work by UC Davis California and ITDP⁴. This comes primarily from a reduction in road construction requirements and vehicle purchase requirements but also achieves a significant improvement in mobility equity across income groups (UCD/ITDP, 2014).

Key message 2

Using Avoid, Shift and Improve as a framework for developing policies and measures is both affordable and will deliver climate and development objectives.

1.2 Policies to mitigate transport emissions

It is crucial that national and local level policies mutually support and reinforce each other in order to maximise the success of both. Support from the national level is vital for the success of a sector-wide decarbonisation strategy for transport. A clear and ambitious vision is seen as being key to this and the full commitment of the highest decision maker such as the President or Prime Minister can also make a large difference.

³ These categories broadly correspond to Annex I and Non-Annex I.

⁴ <https://www.itdp.org/a-global-high-shift-scenario/>



Transport is, today, heavily dependent on fossil fuels. Not sufficiently taxing or even subsidising fossil fuels makes any measure to reduce transport related greenhouse gas emissions challenging. However, providing alternatives, such as high-quality public transport, alongside the gradual phasing out of any subsidies will generate a multitude of benefits and if these are complemented by other policies and measures, now available to national and local policy makers, citizens can be persuaded that this is a better option for them.

2 UNFCCC as a catalyst for Low Carbon Transport

It is likely that the new global climate change agreement will differ from the Kyoto Protocol in the sense that: (a) all countries (both developed and developing) are expected to commit to binding or voluntary emission reductions; (b) there is a greater acknowledgement of the role that cities and sub-national entities can play in climate change mitigation; (c) there is an acknowledgement of the need to focus on high mitigation potential areas; and (d) there is a greater willingness to consult with and seek involvement of non party actors in the development of proposals.

This approach is promising for transport, which in the past had little chance to participate substantively in the discussions on the implementation of the Kyoto Protocol and associated mechanisms and arrangements under the UNFCCC.

Key message 3

It is likely that the role of sub-national entities and cities will play an increased role and have new opportunities to engage with the UNFCCC process of the new post-2020 Climate Agreement.

There are a variety of mechanisms and opportunities such as the Clean Development Mechanism; Intended Nationally Determined Contributions (INDCs); Nationally Appropriate Mitigation Actions (NAMAs); the Climate Technology Centre and Network (CTCN) for technical assistance; and the Green Climate Fund (GCF) for financing, which offer the transport sector opportunities to engage more pro-actively with the UNFCCC process.

Key message 4

There are an increasing number of opportunities to fund low carbon projects via the various mechanisms and agencies that are part of the wider UNFCCC Climate Change family. Parties are actively encouraged to make use of these opportunities for project development, financial and technical support for the introduction or support of low carbon sustainable transport.

3 Low carbon transport – cheaper in the long run

The IEA (2012) estimates that the transport sector under a business as usual case would lead to investments in transport infrastructure, vehicles, operating costs, etc. of USD 500 trillion between now and 2050. At the same time the IEA believes that the wide scale adoption of ASI based policies and investment programs can result in net savings of over USD 50 trillion in reduced vehicle purchases, infrastructure and fuel costs. Another modelling exercise, ITDP and UC-Davis (described in the first part of this paper, making use of the same IEA methodological and accounting approach focusing on public transport and with more ambitious mitigation assumptions) suggests cumulative savings in excess of



USD 100 trillion in public and private spending on transportation vehicle and infrastructure capital and operating costs. Neither calculation includes the additional co-benefits gained by sustainable transport, such as improved safety, air quality and reduced travel time, which would make the cost-effectiveness of a shift towards sustainable transport even more compelling.

While considering how to best fund the transition to a low carbon development path for land transport from Climate Finance, it is important to consider how other sources of funding can be used. This includes how to tap private sector contributions, such as PPPs⁵ and climate bonds, to develop sustainable, low carbon transport infrastructure and services and how to engage with industry better as well as considering how much of the cost can be passed on to users and how this can best be put in place over time.

Key message 5 Making the link between comprehensive climate and development planning and low carbon transport will not only save carbon but is also cheaper in the medium to long term, but it requires efforts to engage with a variety of stakeholders.

4 Recommendations

A new international climate agreement needs to be forged by COP 21 (2015) in Paris. There is a growing evidence base on the mitigation potential of land transport, and conviction on the sustainable development benefits of such action and the economic viability of doing so. This is a key message from Bridging the Gap and SLoCaT as representative organisations of more than 90 agencies involved with sustainable transport.

2014 and 2015 provide Bridging the Gap and SLoCaT with unique opportunities to mainstream low carbon transport in global policies on climate change and sustainable development:

- **UNFCCC and COP 20**– present a number of opportunities to raise the profile of low carbon transport. SLoCaT and Bridging the Gap have an opportunity to partner with the UNFCCC secretariat to help increase the outreach to and dialogue with countries in developing and emerging countries. Part of this includes Transport Day 2014 in Lima, Peru during COP 20 and the ambitious plans for a Transport Pavilion during COP 21 in Paris;
- UN Climate Summit (2014)⁶ – **5 land transport initiatives under three Action Areas**: Transport (urban electric mobility, railways and public transport); Energy (fuel economy) and Industry (green freight) were launched. These initiatives have created the largest momentum for low carbon transport so far and offer an excellent opportunity to demonstrate the reduction potential of land transport;
- **Post 2015 Development Framework** and the Sustainable Development Goals– many of the proposed transport related targets are directly relevant for the scaling up of low carbon transport. It is in the interest of the sustainable transport community to ensure that they are integrated in the final SDGs adopted by the UN General Assembly in September 2015.

⁵ Public Private Partnerships – various models

⁶ Convened by the UN Secretary General held September 23, New York, 2014

It is increasingly likely that as a result of global processes on sustainable development and climate change, the emphasis will shift in climate change mitigation from an individual project approach to a sector wide programmatic or policy approaches.

Scaling up of the mitigation potential of sustainable transport will require:

- a) Further **development of the evidence base** on the mitigation potential of the transport sector. This will require additional studies on both passenger and freight transport. This will also be important in support of INDCs and the low emission pathways called for in the Results Framework of the GCF;
- b) There is an urgent need to improve the **availability and quality of transport data**. This requires a better coordination of existing data initiatives, and the exchange of data but it also calls for improved and expanded data collection by countries and cities in developing and emerging countries;
- c) Further development of the conceptual linkages between Avoid-Shift-Improve approaches and **recognition of the co-benefits** associated with climate action in the land transport sector. This should also extend to integrated (multi-criteria) economic assessment tools that combine climate with sustainable development benefits;
- d) Undertaking of **substantive capacity building** on low emission transport planning in developing countries and cities. The planning and implementation of comprehensive mitigation strategies that combine climate and sustainable development objectives is challenging and in many countries and cities there is not enough capacity to do so effectively;
- e) Taking **the opportunity** for improving low carbon transport offered through the INDCs and the scaling up of climate finance and, as in the case of NAMAs, identify countries that have an interest to develop transport related pilots for INDCs and the GCF;
- f) **Keeping up the momentum** on Transport NAMAs (t-NAMAs) and their implementation. Also, it is important that the transport sector, as the second largest sector in terms of the number of NAMAs, coordinates with other sectors in getting clarity on the implementation and financing arrangements for NAMAs;
- g) Increasing and **improving the use of Climate Finance** for Sustainable, Low Carbon Transport⁷.

⁷ There are a variety of publications on the Bridging the Gap, SLoCaT and on German funded TRANSfer project on this topic