



Bridging the gap

Pathways for transport in the post 2020 process

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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

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This report has been jointly developed by the Bridging the Gap and the Partnership on Sustainable, Low Carbon Transport (SLoCaT)



Partnership on Sustainable
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Bridging the Gap and SLoCaT

Bridging the Gap, as a multi-stakeholder initiative, together with the Sustainable Low Carbon Transport Partnership (SLoCaT) has worked to increase the visibility of the potential for land transport in mitigation actions within the UNFCCC process as well in other processes. This work has also built on efforts, especially by SLoCaT, in the international Sustainable Development agenda as well the recent efforts to promote the integration of transport in the Climate Summit of Secretary General Ban Ki-moon. The different activities by Bridging the Gap and SLoCaT are seen as being mutually dependent and interlinked.

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Glossary of Terms

ADP	Ad Hoc Working Group on the Durban Platform for Enhanced Action
ASI	Avoid-Shift-Improve
CO ₂	Carbon Dioxide
CDM	Clean Development Mechanism
COP	Conference of the Parties
GIZ	German International Cooperation
Gt	Gigatonne
GEF	Global Environment Facility
GCF	Green Climate Fund
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
LDCs	Least Developed Countries
MDB	Multi-lateral Development Banks
NAMAs	Nationally Appropriate Mitigation Actions
NGOs	Non-Governmental Organisations
OWG	Open Working Group
MRV	Monitoring, Reporting and Verification
VKT	Vehicle kilometres travelled
Joule	Unit of energy (that required to heat 1L of water by 1°C)



Executive Summary

This paper aims to provide some key messages to climate change negotiators and policy makers on the potential contribution of the land transport sector to global stabilisation pathways required to keep global warming below 2° Celsius above pre-industrial levels. The IPCC's Fifth Assessment Report states that the mitigation potential in the transport sector is higher than in previous assessments. As energy demand in the land transport sector is rapidly increasing, it is important therefore to act now. This report summarises the mitigation potential in the land transport sector for both passenger and freight, covering the institutional and global governance perspectives and financing requirements. It emphasises that:

- Concerted efforts across all sectors, including transport are required to move towards a stabilisation pathway that keeps global warming below 2°C above pre-industrial levels.
- Land transport can play a significant role in achieving global climate change mitigation targets:
 - It will require a major effort to bring transport emissions on track to a 2°C stabilisation pathway, but it is still feasible.
 - Recent studies show that the mitigation potential of mode shifting, in particular for urban passenger transport, is greater than previously reported.
- Strategies to shape the sector and steer it towards a 2°C pathway are readily available; and they have been tested at scale in both developed and developing countries. There is a wealth of successful examples, pilots and finance that can be scaled up.
- 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, safety, energy security and productivity.
- UNFCCC mechanisms, in particular the reporting and funding mechanisms need to be designed to accommodate the needs of the sector.
- Sustainable transport is increasingly acknowledged as a vital element not only for climate change mitigation strategies, but also a contributor to sustainable development are likely to be included in the currently debated Sustainable Development Goals.

This paper's overall objective is to:

Convey to climate change negotiators and policy makers that there is a great potential to reduce land transport greenhouse gas emissions cost-effectively and at the same time generate synergies with other sustainable development objectives. There are now a wide range of strategies and measures that can be used to shift transport onto low carbon pathways.



1. Transport's role in achieving mitigation targets

Without transport contributing in a significant manner to the mitigation of climate change it will not be possible to stay within the mean global 2° Celsius temperature increase, which according to a wide scientific consensus is the maximum increase that the world could tolerate to prevent wide-scale economic and social disruption. The transport sector will need to play an important role in global climate change mitigation strategies, which cannot be offset by other sectors.

Transport¹ in total 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 land transport greenhouse gas emissions are set to double by 2050 if current trends persist (IPCC 2014). This increase 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.

There is substantial potential for mitigation of emissions from all land transport modes (IPCC 2014). The information presented in this paper indicates that a combination of technological and behavioural measures could 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). Some of these mitigation measures could be tapped at very low or even negative costs from a societal perspective along with generating substantial sustainable-development benefits (IPCC 2014).

While it is acknowledged that current measures in most countries are insufficient to bring transport onto a 2°C stabilisation pathway, it is also apparent that there are successful examples of policies and technologies already available which would contribute to the decarbonisation of the transport sector (IPCC 2014).

Some countries have shown reasonable progress in curbing their transport emissions. For example France, Japan, the UK and Germany have experienced a policy-led decline in transport GHG emissions in recent years, with stabilised or even decreased road GHG emissions despite growth in both the economy and road-freight over the same period (ITF 2010). The stabilization or decrease in GHG emissions from land transport in some countries can be partly attributed to saturation in travel demand, but also to strong policies at the national and local level that foster more efficient mobility behaviour and technologies (IEA 2013). This shows that economic vitality and growth can be decoupled from transport emission growth.

1.1 How to mitigate transport emissions

As transport is a complex sector there are a wide variety of measures that can be put in place at the policy level, behaviour change and choice architecture and via technical improvements. Much mitigation potential can be exploited through **avoided** journeys and modal **shift** resulting from behavioural-change, the use of **improved** vehicle and engine technologies, low-carbon fuels, improved infrastructure, system improvements and other changes to the built environment.

¹ All modes



None of these three approaches, which have become known as the Avoid-Shift-Improve (ASI) approach, individually is the silver bullet that can substantively reduce GHGs in the land transport sector on its own. It is only if they are deployed in a complementary manner that the significant reductions in GHG emissions can be achieved.

A comprehensive climate change mitigation strategy includes short, medium and long-term transport mitigation strategies, complemented by a mix of policies and measures to shift us onto low, rather than high (BAU²), carbon trajectories. For example, technology, vehicle and fuel improvements should be combined with travel demand and modal choice provisions.

A comprehensive transport mitigation strategy for land transport will address both passenger and freight transport. While, this paper focuses in its analysis of the mitigation potential of urban passenger transport, it should be kept in mind that GHG emissions from freight are considerable (40% of all land transport emissions in 2010, according to the IEA, are from freight and the 90% increase under a BAU scenario till 2050 means emissions are growing even faster than the 70% projected for passenger transport [IEA ETP 2014]). It is equally important that comprehensive transport strategies are multi-modal and that they include travel by car, public transport (bus and rail based) as well as walking and cycling.

1.2 Co-benefit - opportunities for sustainable development

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. It would be wrong therefore to calculate the cost of climate change action in transport only in terms of cost per the cost per tonne of CO₂ avoided. Instead this should include a quantification of the economic benefits 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.

Often these so-called co-benefits address areas that are of much more pressing concern to decision makers than the climate (GHG) impacts of transport. Traffic congestion and increased travel time in particular negatively impact development and are a major cost. This varies from 1.2% of GDP in the UK (Goodwin 2004), 3.4% of GDP in Dakar, Senegal, 4% in Manila, Philippines (Carisma and Lowder 2007), 3.3%-5.3% of GDP in Beijing (Creutzig and He 2009), 1%-6% of GDP in Bangkok (World Bank 2002) and goes up to 10% of GDP in Lima, Peru where travel can consume up to four hours daily (Kunieda and Gauthier 2007).

All the benefits listed above are part of most countries' development aspirations yet they are typically not part of the economic analysis of climate change measures in transport in the developing world. Likewise, however, climate change impacts are typically also not part of the economic analysis of transport policies, measures and processes.

² Business as usual – and present trend



	Energy savings	CO2 reduction	Air pollution reduction	Safety improvements	Access / Mobility improvements	Congestion reduction
Avoid	moderate to high	moderate to high	moderate to high	high	high	high
Shift	moderate to high	moderate to high	moderate to high	high	high	high
Improve	high	high	high	moderate to high	low	low

Figure 1: Linkage co-benefits and components of Avoid - Shift - Improve approach

Figure 1 shows the linkage between the three components of the ASI strategy and the different types of associated co-benefits. It is clear that technological options, under the Improve component, have a high CO₂ reduction potential but compared to the Avoid and Shift component their developmental impacts are more limited. However these will not deliver if implemented in an isolated fashion.

1.3 CO₂ reduction potential of passenger transport

To bring transport onto the IPCC recommended 2°C pathway, significant action is required. There is a major difference in mobility levels between the USA, OECD and non-OECD countries, with yearly per-person per-capita travel in 2010 on the order of 24,000km, 16,000km and 4000km respectively (IEA ETP 2014). Looking at per capita light-duty vehicle kilometres (Figures 2 and 3), the differences are even more stark: 12,000km, 7,000km and 1,000km respectively. There is very low availability of cars, and a low level of car-based travel, in non-OECD countries. Additionally, Figure 1 shows the projections of vehicle travel in the IEA 4 degree scenario (4DS) and the reductions in the 2 degree scenario (2DS) as part of an avoid/improve/shift strategy.

Both the 4DS and 2 DS scenarios' assume measures to cut travel growth and shift trips from the private (car) transport to public (mass) transport, walking and cycling, although with more ambitious targets under the 2DS. In the case of the OECD countries a reduction in car travel can be observed, not only for the 2 DS but also in the 4DS, which is in line with the emission reductions that can already be seen in some European countries. However even in the 2DS scenario there is an increase in travel demand and supply in non-OECD countries. This is very much in line with the observed need for developing countries to expand their transport infrastructure and services in aid of economic and social development.

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. However as the developing world will be locked into whatever



infrastructure choices they make it is important that they also plan their growth for a low rather than high carbon pathway in transport terms.

Indeed there is now considerable, and on-going, research to suggest that this is also less costly over the period of time 2015-2050.

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.

The question is now on how to best structure policies to achieve the intended impacts in both OECD and non-OECD countries. The Fifth IPCC Assessment Report suggests that a balanced approach of measures that manage and even reduce transport demand (Activity-A), along with efficient modes of transport (Structure-S), improved energy efficiency (Intensity-I) and low-carbon fuels (Fuels-F) are the most feasible and also cost-effective way to bring transport emissions on a low-carbon development track.

The following Figure 2 and Figure 3 show the emission reductions for OECD countries and non-OECD required to move to a 2 Degree stabilisation pathway. For OECD countries this would mean a 80% emission reduction from the land transport sector by 2050.

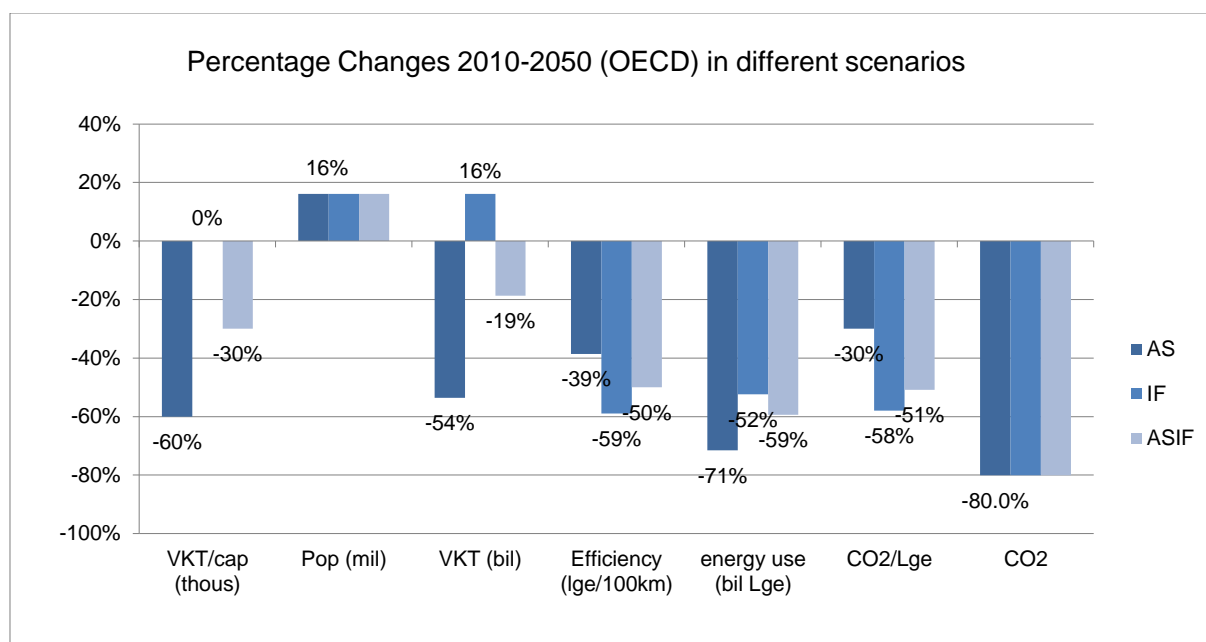


Figure 2: Light vehicle fleet until 2050 in OECD countries under different scenarios (Adapted from Fulton, Lah, Cuenot 2013)



Figure 2 shows that a focus of policies and measures only on the transport **A**ctivity and **S**tructure of passenger transport (AS) or only on the energy **I**ntensity and **F**uels (IF) will not be as effective as an integrated strategy that combines all factors (ASIF).

Potentially large CO₂ emission reduction potentials from urban transport are also shown in a new in-depth study, *A Global High Shift Scenario*, by the University of California Davis and the Institute for Transportation and Development Policy (UCD/ITDP, 2014). This new study assesses the benefits, especially in non-OECD but also in OECD countries, of reducing private vehicle travel through aggressive investments to bring up public transport, walking and cycling ratio's in non OECD cities to those of OECD cities.

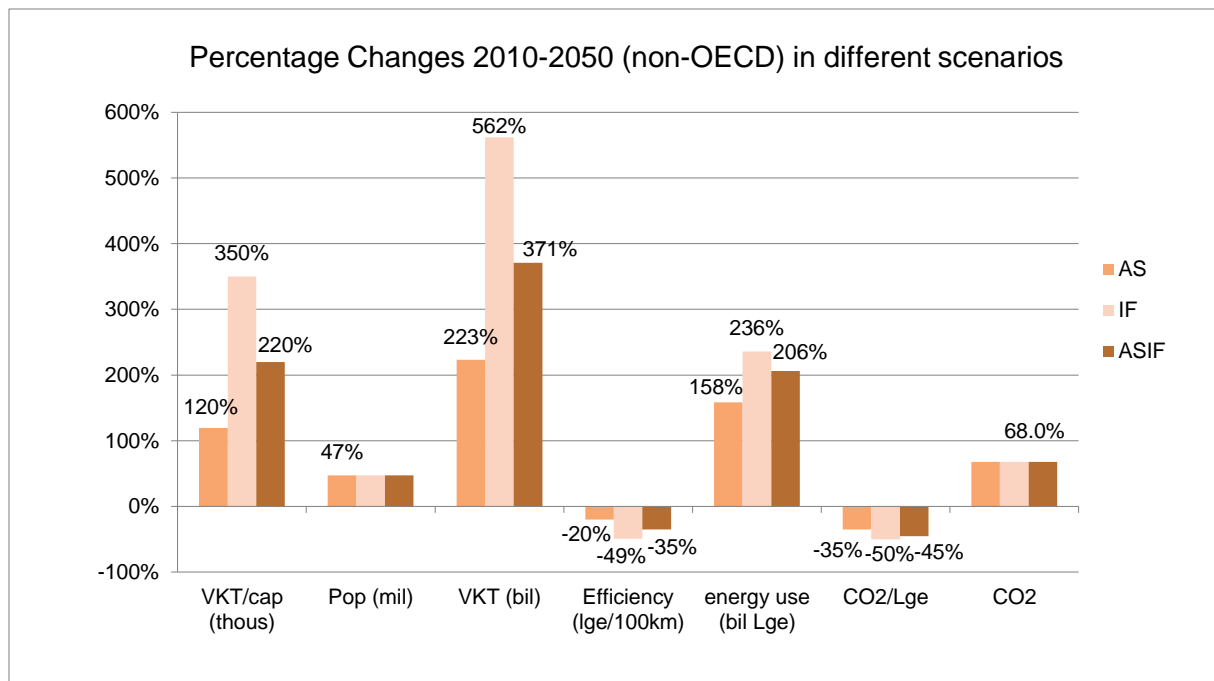


Figure 3 Light vehicle fleet until 2050 in Non OECD countries under different scenarios (Adapted from Fulton et al. 2013)

In the High Shift scenario all world regions, urban light-duty vehicle travel (VKT) is cut by 50% in 2050 from the Baseline to. Substantial additional investments are then made to public transit (especially rapid transit modes such as metro, commuter rail and BRT), with the goal to provide the same total mobility as in the Baseline. The ratio of rapid transit system length per million residents (RTR ratio) in most cities is at least doubled compared to Baseline projections, and in some regions it is quadrupled or more³. The goal of replacing the car travel with high quality transit and safe non-motorized modes (via, for example, extensive cycle lane infrastructure), retaining or improving overall mobility, appears achievable in every part of the developing world and is only problematic in some OECD countries, particularly car-dominated countries like the United States. In such countries, changes in urban planning to cut travel demand, along with lifestyle changes (e.g. substitution of communications technologies for some travel) may help to offset the large cut in urban light-duty vehicle travel. An interesting result is that in High Shift, most countries around the world achieve an average urban mobility level

³ Since the Baseline RTR level presently is very low per capita.



close to 800 kilometres per person in 2050, a far narrower range than occurs in the Baseline scenario.

Fuel efficiency, in particular will play an important role in reducing GHG emissions and choices on infrastructure, land use and technology made in the emerging and developing economies will also lock-in a country to either a fossil fuel dependent or low carbon pathway for the next 30 to 50 years.

In this study, for urban passenger transport, the mitigation potential in 2050 is estimated to be 1700 Mt CO₂, or 40% reduction from the 4400 Mt in the Baseline. If combined with strong fuel economy improvements as proposed by the Global Fuel Economy Initiative (with a goal of a 50 % improvement in motor vehicle fuel economy by 2030), the overall CO₂ emissions could be reduced an additional 700 Mt for a total of 2400 Mt (2.4 GT), or a combined 55% reduction in urban passenger transport CO₂ emissions by 2050 compared to the Baseline scenario. It is also worth noting that the cumulative CO₂ savings from 2010 to 2050 in HS v. Baseline is about 25 gigatonnes, a 20% reduction from the 125Gt in the Baseline, which reaches nearly 35 gigatonnes when combined with the 50% fuel economy improvements.

In addition, such an aggressive promotion of public transport, walking and cycling in this High Shift scenario could generate very large cost savings, in excess of USD 100 trillion in public and private spending on transportation vehicle and infrastructure and vehicle capital and operating costs along with fuel costs, primarily from a reduction in road construction requirements and vehicle purchase requirements. The scenario also achieves a significant improvement in mobility equity across income groups (UCD/ITDP, 2014).

Based on further analysis by the International Council on Clean Transportation (ICCT), combining the High Shift Scenario with more stringent (i.e. Euro VI) emissions standards would reduce air pollution that contributes to climate change as a short- term climate forcer and could save USD 1.36 million early deaths annually. Overall the High Shift Scenario and its extensions offer a roadmap to achieving far more sustainable, equitable, and lower cost urban passenger transport. But to achieve this will require a strong set of policies and well-targeted investments.

Key message 2

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

1.4 Policies to mitigate transport emissions

Effective policy development on low carbon transport must take into account the recommendations given earlier in this paper on the need for a comprehensive approach. We emphasize that successful mitigation strategies in addition to climate change objectives should also include other developmental objectives and that in some cases it might be more pragmatic to incorporate climate change objectives in a wider transport policy or strategy.



Likewise 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 and the full commitment of the highest decision maker, such as the President or Prime Minister, can make a large difference. This provides the impetus for other important players responsible for parts of the transport system to include transport related climate change objectives in their development plans. This can be the Ministry of Energy (fuel economy); the Ministry of Urban Development (Urban Transport Policies); the Ministry of Public Works (transport infrastructure); or the Ministry of Finance (transport related taxes). In particular fiscal and regulatory measures are required to provide a policy framework in which other national and local transport related strategies and measures could be successfully implemented.

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 very challenging. However, providing alternatives, such as high-quality public transport alongside the gradual phasing out subsidies generates a multitude of benefits and if executed well will also provide the support needed for policy change. Benefits include efficiency gains and emission reductions, but also increased energy security and productivity. Moreover, the reduced subsidies and any appropriate taxes introductions can provide revenue that can be reinvested in a sustainable transport system.

Others lever available to policy makers include adapting fiscal policies implemented at national level such as vehicle taxation (at purchase, importation or on an annual basis while in use) that help guide consumers towards sustainable transport choices. Including fuel efficiency and/or CO₂ emissions into these policy areas also help deliver national targets and improve the performance of national fleets. Fee bates and incentives for the purchase of cleaner vehicles and the provision of alternative fuel infrastructure all help to make it easier for people to choose to shift away from fossil fuel based transport and help to steer consumers' choice towards more efficient vehicles.

The combination of demand side taxes and supply side regulations, improve substantially the efficiency of the system and encourages a shift to more efficient modes and fuels. However some of these need coordination between different national ministries who may have contradictory objectives, which underlines the need for high level support.

National policy measures can also provide an important policy framework and the financial incentives for the implementation of measures at the local level, such as public transport, walking and cycling investments, compact urban planning and Travel Demand Management. There are a multitude of policies or measures that can be undertaken by local authorities in order to support transport-sector emissions reduction, many of which work in conjunction with the aforementioned national policies. However they often require a stimulus package from national agencies in order to make this extra effort.

Specific examples for successful local policy measures include number plate auctioning (e.g. Singapore, Shanghai and Beijing), improved traffic and parking management, local registration fees linked to the efficiency of the vehicle, road user or congestion charging (as in London, Milan and Gothenburg), and the provision of



infrastructure for cycling and pedestrians. Supply management improvements typically undertaken by cities include expansion and public transport improvements, integrated ticketing and fare policies.

Box 1: Local Mitigation Action, the case of Sinchon Transit Mall, Seoul, South Korea.

In January 2014, Seoul opened a new commercial district in the Sinchon area, called Sinchon Transit Mall. This involved redesigning the streets Yonsei-ro (1,000m) and Myongmul-gori (450m) for bus and pedestrian use only, and excluding private cars. This transformed the previously congested streets into vibrant areas full of people, shops, artists and restaurants.

In these streets, the space for motorised vehicles was reduced from four lanes to two, while the footpath width increased by as much as 8m. Only buses (>15 passengers), emergency vehicles and bicycles are permitted to use these streets at any time, taxis have restricted access and delivery vehicles can enter from 10am-11am and 3pm-4pm, with a speed limit of 30 km/h to protect pedestrians.

The total cost of developing Sinchon Transit Mall was around USD 6.9m and it has brought about many benefits. Firstly, it has increased the speed of buses from 3-4 km/h to 14 km/h and the number of bus passengers utilising nearby stops has increased by 15% ($\approx 1,700$ pax/mo) compared to 2013. The number of pedestrians on the streets has increased by 50%. Retailers are enthusiastic as monthly sales at the nearby shops have also increased by 4.2% according to an analysis of credit card use. Currently, transit mall projects are eligible for subsidies from the central government.

2. UNFCCC as a catalyst for Low Carbon Transport

Since its introduction the Kyoto Protocol has prompted governments to put in place legislation and policies to meet their national commitments, stimulated businesses to make climate-friendly investment decisions, and created carbon markets. The second commitment period of the Kyoto Protocol began in January 2013 and will last until 2020. This was established in the adoption of the Doha Amendment at COP 18 in Doha, Qatar in December 2012. To date⁴, only 13 Parties to the Kyoto Protocol have accepted the Doha Amendment, which requires acceptance by 144 Parties to the Kyoto Protocol in order to enter into force. The intention of the Secretariat of the UNFCCC is that the Doha Amendment will enter into force by the 11th meeting of the CMP in Paris in 2015 (in combination with COP 21)⁵. It will be crucial that the major emitters such as China, the USA and Europe are part of the new agreement as currently this is not the case for the second commitment period of the Kyoto Protocol.

⁴ September 2014

⁵ http://unfccc.int/files/parties_and_observers/notifications/application/pdf/note_verbale_to_kp_parties_doha_amendments.pdf



This reinforces the need for a new global and inclusive climate change agreement, based on today's situation in terms of emissions. The on-going negotiations in the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) working on setting out the new agreement is taking a different approach in the sense that: (a) all countries (both developed and developing) are expected to commit to binding or voluntary emission reductions; (b) a greater acknowledgement of the role that cities and sub-national levels can play in climate change mitigation; and (c) acknowledgement of the need to focus on high mitigation potential areas; and (d) greater willingness to consult with and seek involvement of non-party actors in the development of proposals.

This may work better for sectors like 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, and encourage more action.

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 and be included in the new post 2020 Climate Agreement.

2.1 Clean Development Mechanism (CDM) and Joint Implementation

The Clean Development Mechanism (CDM) is process under which Annex 1⁶ countries are able to earn certified emission reduction (CER) credits by funding emission reducing projects in developing countries. These CERs are equivalent to one tonne of CO₂ and can be sold or traded to contribute to the country's emission reduction target under the Kyoto Protocol. CDM projects must provide emission reductions that are additional to what would have otherwise occurred.

The CDM mechanism aims to combine incentives for emission reductions in developing countries with the promotion of Sustainable Development. In practice the emphasis in CDM projects has been very much on realising GHG emission reductions with great attention to the quantification of such emissions, while the sustainable development benefits are usually secondary in all respects including the manner in which they are quantified and measured before and during the project.

CDM has been operational since 2006 and 7556 projects have been registered.⁷ CERs amount to over 2.9 billion tonnes of CO₂ equivalent during the Kyoto Protocol's first commitment period between 2008 and 2012.⁸ (See Annex 1 for a list of transport sector CDMs). Overall, only 29 CDM transport projects have been registered (as of September 2014); so transport projects make up only 0.3% of all CDM projects.

As of September 2014, 16 CDM methodologies approved were for transport projects.⁹ These covered: BRT, MRT¹⁰ and cargo transport projects to enhance energy efficiency through modal shifts; the use of electric and hybrid vehicles, and

⁶ Basically industrialised countries

⁷ <http://cdm.unfccc.int/index.html>

⁸ http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php

⁹ <http://cdm.unfccc.int/DOE/scopes.html>

¹⁰ BRT: Bus rapid Transport; MRT: Mass Rapid Transport



vehicles with cleaner and energy efficient technologies; and the production of biofuels.

There is a broad consensus within the transport community that CDM is not a relevant instrument for the land transport sector. This is mainly due to the complex, costly and time-consuming procedures required to quantify emission reductions to meet the UNFCCC strict requirements and proving the additionality aspects. Furthermore, the conceptual design of CDM and the additionality requirement is not a good fit generally with the transport sector. Guided by the experiences in CDM, the transport community has largely lost interest in this approach to crediting.

Likewise the transport community has also not been actively engaged in Joint Implementation (JI) projects. These are like CDM crediting schemes but in this case the transactions are mostly with countries in Eastern Europe. The JI mechanism was also not well suited to the transport sector as the density of regulation and difficulties with monitoring mean there is less potential for JI-projects in the transport sector.

Overall in many cases and project types in the transport sector, investment and transaction costs are much higher than the financial incentives provided by the CDM or JI.

2.2 Some areas of promise for land transport under the UNFCCC

Within the UNFCCC structure there are a number of new initiatives, including Intended Nationally Determined Contributions (INDCs); Nationally Appropriate Mitigation Actions (NAMAs); Climate Technology Centre and Network (CTCN), and the Green Climate Fund (GCF) which may be able to provide the transport sector with opportunities to engage more pro-actively with the UNFCCC process and are looking promising.

2.2.1 *INDCs*

Intended Nationally Determined Contributions (INDCs) are a relatively new concept that came out of the international negotiations at COP 19 in Warsaw, Poland. In Warsaw, Parties involved, agreed to submit INDCs addressing post-2020 emission reductions by March 2015, in order for these to be incorporated into the 2015 climate agreement. These INDCs are the starting point of a process that will build mitigation ambition over time.

As INDCs are still fairly new, there is currently a lack of detail and guidance with regard to the nature of them. As suggested in the name, INDCs will be guided by national development priorities, rather than the global need for climate change mitigation, which may eventually be a potential weakness of this process, but it need not be. It is likely that developed countries will focus their INDCs on precisely defined, economy wide, multi-year targets up to 2025 or 2030, similar to previous emission reduction pledges. It is not yet clear whether developing countries (non-Annex 1 parties) will follow the example of the developed countries and submit economy wide proposals for enhanced action or whether they would focus their INDCs on specific programs e.g. national energy efficiency or renewable targets or



climate related governance structures and highlight the intended impacts of specific policies and projects that are due to be implemented¹¹.

It would be helpful to the sustainable transport community if all countries would submit economy wide INDCs with a sector breakdown that would include transport, as has been suggested in draft proposals by the co-chairs of the ADP working group. This would enable the UNFCCC process to be much more policy relevant from a low carbon perspective.

It is relevant in this context to look at the manner in which transport has been addressed in the National Communications by the non-Annex 1 countries. So far, with a few exceptions this has been relatively disappointing and these have had little policy relevance for the transport sector. Transport has usually been dealt with in an aggregated – top down manner - whereby emission estimates have been made on the basis of national fuel sales. This makes it difficult to see if any policies that might reduce the amount of fuel sales through efficiencies gains have been effective.

Most developing countries would have to make serious improvements in the collection and analysis of transport data before they could come up with meaningful transport specific INDCs. However the benefits of doing this would also be substantial and in any event as transport demand grows data collection will need to be improved if they are to balance and manage transport supply, energy security and development ambitions.

Transport projects such as NAMAs have great potential to contribute to INDCs, and to sustainable development goals. Many developing countries already point to transport-specific NAMAs in the national communications, and could highlight the impact of these projects in their INDCs. Within INDCs, Parties are encouraged to endorse sectoral targets and initiatives, highlighting an opportunity for action in the transport sector to be incorporated into national emission reduction pledges.

2.2.2 NAMAs

Nationally Appropriate Mitigation Actions (NAMAs) are a useful opportunity to support national efforts to reduce greenhouse gas emissions from the transport sector in Non-Annex I (developing) countries under the UNFCCC. These actions can be part of a wider concept for sustainable transport and can also cut across sectors. They are recognised as an additional instrument that is available to complement wider mechanisms that are providing technical and financial support to low carbon transport activities in these countries. NAMAs can be implemented, voluntarily, by developing country Parties and be reported to the UNFCCC.

As of September 2014, the Ecofys NAMA Database consisted of 107 NAMAs and 23 feasibility studies across all sectors, in 37 countries.¹² 23 transport-related NAMAs are featured in the Transport NAMA Database¹³; these are shown in Annex 3. This gives transport the second highest number of NAMA activities of any sector (after energy).

¹¹ <http://www.ecofys.com/files/files/ecofys-giz-2014-intended-nationally-determined-contributions-under-unfccc.pdf>

¹² http://www.nama-database.org/index.php/Main_Page

¹³ http://www.transport-namadatabase.org/index.php/Main_Page



The UNFCCC has its own knowledge-sharing platform, the NAMA Registry¹⁴ where developing countries can record information for all NAMAs seeking support for preparation or implementation. As of September, six out of the 47 NAMAs included in the NAMA Registry were transport-related NAMAs.

International climate change policy for Non-Annex I countries has to date been dominated by project based approaches (as described on page 14) rather than programmatic approaches that are better suited to sustainable transport. It appears that NAMAs therefore present an enhanced opportunity for Non-Annex I countries to receive recognition and support under the UNFCCC for sustainable transport actions due to the wide range of options that can be put under NAMAs.

There is no restriction on the nature of climate change mitigation activities that can be submitted to the UNFCCC as a NAMA. They can be local, regional or national policies, projects or strategies - indeed any intervention, either new or existing, stand-alone or 'bundled,' sector specific or economy-wide, that can be shown to reduce emissions from a business as usual (BAU) scenario - can be considered. The only requirement is that NAMAs requesting financial, capacity building or technological support must adopt an approach where impacts are Measurable, Reportable and Verifiable (MRV).

There are a growing number of initiatives for supporting NAMA development, both technical and financial. The NAMA Partnership¹⁵ is one such example, created in recognition of the demand from developing countries for support with preparing and implementing NAMAs. This is an international partnership of multilateral organisations, bilateral cooperation agencies and think tanks that is co-ordinated by the UNFCCC Secretariat¹⁶. Work by the partnership includes identifying best practices, and facilitating the preparation and implementation of NAMAs in developing countries. It primarily focuses on aspects such as finance, MRV and national sustainable development.

The 'NAMA Facility'¹⁷, launched jointly by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the UK's Department of Energy and Climate Change (DECC) has 70 million euros committed to support developing countries that want to implement 'transformational country-led NAMAs'. Two of the five NAMA projects selected for funding from the first call of proposals (2013) are transport NAMAs¹⁸: the Transit Oriented Development (TOD) NAMA in Colombia, and the Sustainable Urban Transport Initiative (SUTRI NAMA) in Indonesia.

Although NAMAs are a much more promising mechanism to engage sustainable transport under the UNFCCC some concerns have emerged in the transport

¹⁴ <http://www4.unfccc.int/sites/nama/SitePages/Home.aspx>

¹⁵ <http://www.namapartnership.org/>.

¹⁶ The members are as follows: United Nations Environment Programme Division of Technology, Industry and Economics (UNEP-OTIE), UNEP Risø Centre, United Nations Development Programme (UNDP), Food and Agricultural Organisation (FAO), Inter-American Development Bank (IDB), United Nations Institute for Training and Research (UNITAR), The World Bank, NEFCO, Asian Development Bank (ADB), African Development Bank (AfDB), Agence Française Développement (AFD), Japan International Cooperation Agency (JICA), KfW, GIZ, Climate Policy Initiative (CPI), International Fund for Agricultural Development (IFAD), World Resources Institute (WRI), Climate Marks and Investment Association (CMIA), Center for Clean Air Policy (CCAP), Climate Works Foundation, Organisation for Economic Cooperation and Development (OECD) and World Business Council for Sustainable Development (WBCSD).

¹⁷ <http://nama-facility.org/news.html>

¹⁸ <http://nama-facility.org/projects/projects-selected.html>



community over the last year, some of which are specific to the transport sector. It appears that the number of transport NAMAs entering the NAMA pipeline is starting to slow down and those announced seem to be moving forward rather slowly. The emphasis in the scope of the NAMAs has been mostly on policy, program or project design while few have a direct implementation focus.

Some of these problems experienced in transport NAMAs might be related to outstanding questions to NAMAs in general, especially on the financing arrangements. So far there are no clear guidelines on structuring NAMA support for implementation activities. Neither is there clarity on the Monitoring, Reporting and Verification (MRV) requirements for implementation NAMAs. In this respect, NAMAs do not yet offer an alternative to other climate funding mechanisms like GEF, CTF or CDM, which all have a strong implementation focus.

The reluctance of the UNFCCC parties to take an active stance on these issues has a potentially damaging effect on NAMAs and could substantively reduce the interest of developing countries to engage in NAMAs, including transport NAMAs. This would be a disappointment for the transport community. Several organisations within the Bridging the Gap and SLoCaT communities have been, and still are deeply, involved in the development of transport NAMAs, and are convinced of their usefulness within the UNFCCC process.

2.2.3 CTCN

The Climate Technology Centre and Network (CTCN), hosted by UNEP and operational since 2013, aims to enhance action on the development and transfer of technology for action on climate change. Since its launch in late 2013, 93 countries have established national CTCN focal points (National Designated Entities) that can submit requests to the CTCN for technical assistance, and provide information on relevant climate technologies and good practices. The CTCN has the potential to support links between different UNFCCC processes, for example, the progression from Technology Needs Assessments (TNAs) to NAMAs. At the SBSTA 39th meeting in Warsaw, the third synthesis report on technology needs highlighted that 41% of Parties prioritised the transport sector in their TNAs in terms of climate change mitigation. A breakdown on the prioritised technologies within the transport subsector of the energy sector is shown in Figure 4.

This highlights the common theme between countries that transport is becoming a higher priority in terms of technology needs. There is considerable potential for these technology priorities to be turned into transport NAMAs with the assistance of the CTCN, which can provide support in terms of the knowledge sharing as well as linking these technology needs with potential funding sources.

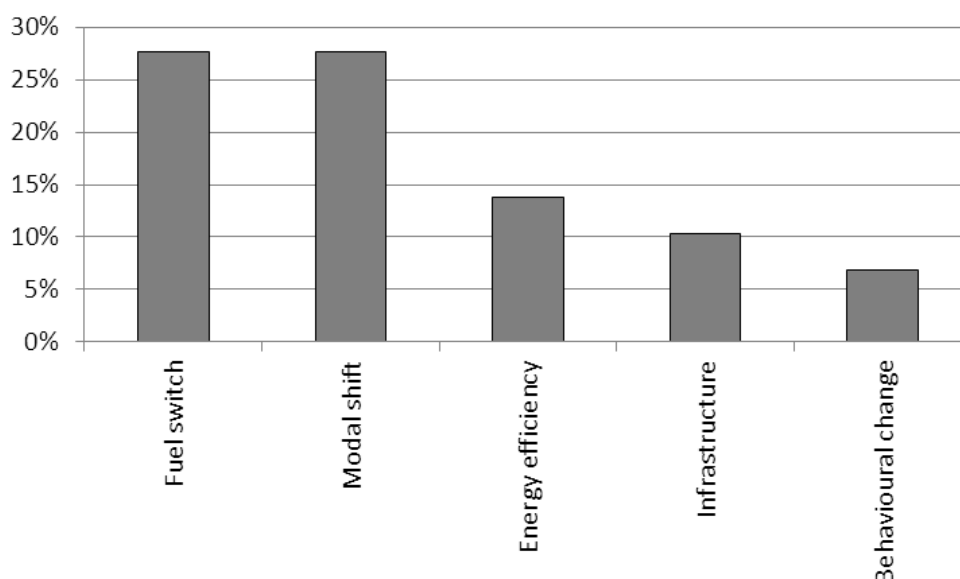


Figure 4: Prioritized technology categories in the transport subsector as reported in Parties' technology needs assessment reports (percentage of the Parties that undertook mitigation technology needs assessments)

(Source: <http://unfccc.int/resource/docs/2013/sbsta/eng/inf07.pdf>)

2.2.4 Green Climate Fund (GCF)

The Green Climate Fund (GCF) was established to provide (more) ambitious climate financing for the mitigation of and adaptation to climate change in the developing countries. The Green Climate Fund was agreed upon at COP 16, in 2010, in Cancun, Mexico. Its secretariat is hosted by Republic of Korea and is now becoming operational. The agreed size of the fund by 2020 is USD\$ 100 billion per year; yet it is not clear how this target will be met and what the annual size of funding would be in the years before 2020. Neither is it fully clear what the impact will be of the GCF on future funding for the Climate Change component of the Global Environment Facility or the Clean Technology Fund, which until now have been the major sources of Climate Finance for low carbon transport. Some progress has been made since June 2014 and an increasing number of countries are pledging funds¹⁹.

In May 2014, the GCF published an initial Results Framework, which outlines how the GCF intends to contribute to low carbon development.²⁰ Low-emission transport is identified as one out of four strategic level-impact results:

1. Increased low-emission energy access and power generation;
2. Increased access to low-emission transport;
3. Increased energy-efficiency in buildings, cities and industries; and
4. Sustainable land use and forest management, including REDD+.

¹⁹ See Bridging the Gap web site www.transport2020.org for updates and the review of climate pledges at the UN Summit September 2014

²⁰ Initial Results Management Framework of the Fund, GCF/B.07/04, 07 May 2014



In July, discussions between governments took place in Oslo, Norway ahead of the first formal GCF Pledging Conference to set out a pathway for contributors to mobilise finance to the GCF. Pledges made in September at the UN Climate Summit have gone some way to achieving the target²¹.

The GCF, in the design of its results framework, appear to have taken on board criticisms regarding the almost exclusive project focus of other Climate Finance providers by emphasizing its intention to ensure that all GCF funding will create a shift towards low-emission development pathways. The initial Results Framework makes reference to “country-driven policy agenda”. It suggests that countries focus on enabling legal and regulatory frameworks and that they focus on:

- a) Developing a policy document that outlines its mitigation strategy;
- b) Changing the legal and regulatory framework to be consistent with the proposed policies;
- c) Building the capacity to implement the proposed programme in government institutions provided with the funding needed to attract qualified staff;
- d) Enabling the financing needed to support the development and implementation of mitigation projects; and
- e) Establishing the monitoring and evaluation processes needed to support the evolution of the implementation programme.

Annex 4 to this document provides a more detailed overview of the initial Mitigation logic model and the initial mitigation performance assessment framework for the GCF.

A mitigation approach that adopts a sector wide approach is in line with the present approach to INDC and NAMAs, which also are looking sector wide. This is a welcome development from the perspective of the transport sector. In the first part of this paper it was argued that a combination of different approaches is required to realize ambitious mitigation from transport. The ASI approach, which brings together these different mitigation approaches and has proved to work, is well suited to be applied at a sector level than at the project level.

By including a specific indicator in the performance assessment model on the contribution of private sector to mitigation activities funded by the GCF, it appears that the GCF has reached a similar conclusion as the sustainable transport community. Without a much-scaled up involvement of private sector in funding and implementing low carbon (transport) infrastructure and services the scale of climate change mitigation will remain well below what is required.

It is important to realize that the concerns and limitations on availability of data on transport infrastructure, services and activity as well as associated GHG emissions that were raised earlier in the section on INDCs, also fully apply to GCF’s intended performance assessment model. Current levels of data in many of the developing countries will not be sufficient to provide the required baseline data and this may act as a constraint to the impact of GCF funding for low-emission transport.

²¹ Climate Finance update www.transport2020.org



It is encouraging to see that low emission transport has such a prominent place in the initial Results Framework, however it appears that the Results Framework only focuses on low-emission passenger transport and that it does not actively incorporate low-emission freight transport. Efforts should be made to ensure that the final version of the Results Framework will also explicitly acknowledge the role of low-emission, or green, freight.

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.

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 of USD 500 trillion in transport infrastructure, vehicles, operating costs, etc. 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. The modelling exercise undertaken by 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 but with more ambitious mitigation assumptions, found 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 make the cost-effectiveness of a shift towards sustainable transport even more compelling.

Those figures dwarf all available climate finance options, which currently only account for less than USD 7 billion annually. However, there is a lack of clarity and clear data on transport-related Climate Finance and what is defined as Climate Finance which makes it difficult to compare. Funding provided through GEF and CDM is certainly well below USD 1 billion per year; and multilateral Development Banks in 2012 reportedly invested USD 4.5 billion in sustainable, low emission transport²².

Considering the size of existing and future Climate Finance, as well as the share that transport could rightfully claim based on its contribution to GHG emissions (which is estimated by the sustainable transport community as about one fifth of energy related GHGs in 2012), it is unequivocally clear that Climate Finance will not be able to provide the financial resources to realize ambitious GHG reductions in land transport in the developing countries. It is important therefore to agree on the best use of climate finance for this sector. If we can move away from considering climate finance as a source of funding to cover incremental cost of low carbon technologies deployed in specific projects, we feel that more progress can be made. Instead, the limited climate funds should be used to promote the transition of other sources of financing, most importantly generating public and private sector funds towards low carbon, sustainable transport.

²² Joint Report on MDB Climate Finance 2012.



The concept of transitional costs of shifting towards a low carbon development pathway is relatively new and not incorporated well in Climate Finance architecture. Yet, in the case of the transport sector, where it has been proven that at the sector level there are negative incremental costs (in other words positive benefits) of implementing an ASI based approach to further development of transport infrastructure and services, such new thinking on the role of climate financing could be very much beneficial in accelerating the scaling up of low carbon transport.

While considering how to best fund the transition to a low carbon development path for the transport sector it is important, in addition to the recommended changed role for Climate Finance, to consider the implications for other sources of funding. (Further information on any examples below can be requested via the web site).

- What part of GHG emission reduction measure, or other sustainability measures in the transport sector, can be funded through passing on the costs to users? Considerable improvements in fuel economy or fuel quality improvements can be achieved with consumers picking up the tab for at least part of such improvements. Likewise, the promulgation of new tire manufacturing standards that can result in fuel savings of up to 5%. These do not require any large investments on the side of governments. There are other options such as 'payments by beneficiaries' e.g. value capture resulting from improved transit, or the use of compulsory or voluntary business taxes with the aim to develop transit that supports the business sector (versement transport, France or Crossrail funding, UK). Certain taxes (Pigouvian) taxes or levies such as congestion price, carbon tax, parking tax that are directly related to transport activities by individuals are also part. In some countries some of these may require legislative changes but there are still many options before this has to happen.
- How to re-direct public sector funding from supporting, albeit discreetly via road building, a car dominated transport infrastructure towards multi-modal transport infrastructure services which provide greater choice and favour more sustainable modes? At a societal level this does not require more funding, as demonstrated by the OECD, but it does call for changes in funding priorities. In many countries, cities lack access to funding for transport infrastructure and services and lack the mandate or capability to develop effective financing structures. The experiences of countries, including Colombia, India and Mexico demonstrate the benefits of a program based approach in which national governments co-finance worthwhile city based initiatives. This has proven to be more effective in scaling up the realization of sustainable transport than the traditional project approach;
- How to tap into the private sector as a more significant contributor to develop sustainable, low carbon transport infrastructure and services? There is agreement that public sector funding, even aided by Official Development Assistance (ODA) or Climate Financing will fall far short of what is necessary especially for funding infrastructure and services; either for climate protection or in the pursuit of sustainable prosperity called for in the new post 2015 agenda for sustainable development. There is a shortage of good instruments on the one hand to scale up investments and on the other a lack of understanding and capacity within the sustainable transport community on how to best work with the private sector on realizing sustainable, low carbon transport. Bridging the Gap and SloCaT are working to close this gap with reports, information sessions and outreach at COPs and SD events.



- How to better leverage both funding for sustainable transport through directed ODA (e.g. MDB Rio +20 commitment to allocate \$ 175 billion to sustainable transport)? While an impressive amount it is estimated by the MDBs that this will cover at most cover 3-4% of required investments in sustainable transport in the coming decade. To improve the leverage of funding from both the private sector and institutional funders (e.g. pension and sovereign wealth funds) the public and private sector parts of MDBs will need to learn to work better together.

Key message 5

Making the link between comprehensive climate and development planning and low carbon transport will not only save carbon but be cheaper for Parties. Climate finance can be used to leverage more public and private investment but capacity building between the transport and financial communities on how this can work better is also required.

4. Conclusions and Recommendations

A new international climate agreement must be forged and agreed by COP 21 (2015) in Paris, or at least the broad principles agreed by then. An acceleration of efforts to ensure that the land transport sector will be able to benefit from this new agreement is seen as being vital and necessary to make headway in reducing the growing emissions from this sector. The decoupling of economic and sustainable development from transport is also seen as being critical to addressing climate change.

The remainder of 2014 and 2015 provide the sustainable transport community, 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– as demonstrated in this paper are a number of opportunities to raise the profile of low carbon transport in the UNFCCC process including: INDCs, NAMAs, CTCN, and GCF. SLoCaT and Bridging the Gap welcome the opportunity to partner with the UNFCCC secretariat to ensure that this can happen. It will be important to 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 – land transport was well represented at the September UN Climate Summit held in New York with 5 initiatives under three Action Areas: Transport (urban electric mobility, railways and public transport); Energy (fuel economy) and Industry (green freight). These initiatives have created the largest momentum for low carbon transport so far. This offers an excellent opportunity to work with the transport sector itself in demonstrating the reduction potential of land transport;
- Post 2015 Development Framework – 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.

It is increasingly likely that as a result from global processes on sustainable development and climate change the emphasis will shift in climate change



mitigation from an individual project approach to sector wide programmatic or policy approaches.

This will be key in scaling up the mitigation potential of sustainable transport. To help this shift happen, it is important to:

a) Further develop the evidence base on the mitigation potential of the transport sector. This will require doing more global work and additional studies on passenger and freight transport. In addition analysis will need to be carried out at the national and regional level. This work will also be important to support INDCs and the low emission pathways called for in the Results Framework of the GCF;

b) To improve the availability and quality of transport data. There is an urgent need to improve the availability and quality of transport data. This requires a better coordination of existing data initiatives, including 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 develop the conceptual linkages between the climate oriented Avoid-Shift-Improve approach and co-benefits associated with climate action in the land transport sector. This should also extend to integrated economic assessment tools that combine climate benefits with sustainable development benefits;

d) Undertake 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) Take the opportunity offered through the INDCs and the scaling up of climate finance as described in the GCF Results Framework and, as in the case of NAMAs, identify countries that have an interest to develop transport related pilots for INDCs and the GCF;

f) Keep up the momentum on Transport NAMAs (t-NAMAs). This can best be accomplished by getting a number of transport NAMAs implemented. 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) Increase and improve the use of Climate Finance for Sustainable, Low Carbon Transport²³.

There is a growing evidence base on the mitigation potential of land transport, the sustainable development benefits and the economic viability of such action. This is a key message to Parties and the UNFCCC. Bridging the Gap and SLoCaT will intensify its outreach based on these three messages: high mitigation potential, widespread sustainable development benefits and increased economic viability.

²³ There are a variety of publications on the Bridging the Gap, SLoCaT and on German funded TRANSfer project on this topic





Annex 1: PROPOSED TRANSPORT RELATED TARGETS IN THE OWG FINAL REPORT (19 JULY 2014)

Proposed SDG	Proposed Transport Target
Proposed goal 2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	Target 2.3 by 2030 double the agricultural productivity and the incomes from small scale food producers, particularly of women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets, and opportunities for value addition and non-farm employment Target 2.a increase investment, including through enhanced international cooperation, in <i>rural</i> infrastructure, agricultural research and extension services, technology development, and plant and livestock gene banks to enhance agricultural productive capacity in developing countries, in particular least developed countries
Proposed goal 3. Ensure healthy lives and promote well-being for all at all ages	Target 3.6 by 2020 halve global deaths and injuries from road traffic accidents Target 3.9 by 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination
Proposed goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	Target 7.3 double the global rate of improvement in energy efficiency by 2030 Target 7.a by 2030 enhance international cooperation to facilitate access to clean energy research and technologies, including renewable energy, energy efficiency, and advanced and cleaner fossil fuel technologies, and promote investment in energy infrastructure and clean energy technologies
Proposed Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Target 9.1 develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all Target 9.4 by 2030 upgrade infrastructure and retrofit industries to make them sustainable, with increased resource use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, all countries taking action in accordance with their respective capabilities Target 9.a facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, LDCs, LLDCs and SIDS
Proposed goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable	Target 11.2 by 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons Target 11.6 by 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality, municipal and other waste management Target 11.7 by 2030, provide universal access to safe, inclusive and accessible, green and public spaces, particularly for women and children, older persons and persons with disabilities Target 11.a support economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning
Proposed goal 12. Ensure sustainable consumption and production patterns	Target 12.c rationalize inefficient fossil fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities
Proposed goal 13. Take urgent action to combat climate change and its impacts	Target 13.2 integrate climate change measures into national policies, strategies, and planning



Annex 2: List of UNFCCC registered CDM transport projects

Project Name	Country	Type	Scale	Estimated emission reductions in metric tonnes of CO ₂ equivalent per annum
BRT Bogotá, Colombia: TransMilenio Phase II to IV	Colombia	BRT, urban transport	Large scale	16563
Installation of Low Greenhouse Gases (GHG) emitting rolling stock cars in metro system	India	Low carbon vehicles	Small scale	1160
Flexible Cars Metro Medellín, Colombia	Colombia	Flexible car, urban transport	Small scale	1290
BRT Chongqing Lines 1-4, China	China	BRT, urban transport	Large scale	18067
Bio-fuel Production for Usage in Vehicles, Paraguay	Paraguay	Bio-vegetable oil production and usage in transport	Small scale	1188
Modal Shift from Road to Train for transportation of cars	India	Freight mode shift	Small scale	1001
BRT Lines 1-5 EDOMEX, Mexico	Mexico	BRT, urban transport		15863
BRT Zhengzhou, China	China	BRT, urban transport	Large scale	14715
Metro Delhi, India	India	Metro, urban transport	Consolidated methodologies	19043
BRT Metrobus Insurgentes, Mexico	Mexico	BRT, urban transport	Consolidated methodologies	1544
Mumbai Metro One, India	India	Metro, urban transport	Consolidated methodologies	15547
BRT Transmetro Barranquilla, Colombia	Colombia	BRT, urban transport	Large scale	1828
BRT Macrobus Guadalajara, Mexico	Mexico	BRT, urban transport	Large scale	1365
BRT Cali, Colombia	Colombia	BRT, urban transport	Large scale	12187
BRT Metroplus Medellin, Colombia	Colombia	BRT, urban transport	Large scale	13479
Bus Rapid Transit (BRT) in Guatemala City	Guatemala	BRT, urban transport	Large scale	16148
Chengdu Bus Rapid Transit (BRT) Project	China	BRT, urban transport	Large scale	1621
REGABUS, Pereira, Colombia	Colombia	BRT, urban transport	Large scale	1956
Metro Line 12, Mexico City	Mexico	Metro, urban transport	Consolidated methodologies	16983
BRT Metrobus 2-13, Mexico	Mexico	BRT, urban transport	Consolidated methodologies	14601
ECO electric vehicles, India	India	Electric vehicles	Small scale	1563
Hero Electric Vehicles, India	India	Electric vehicles	Small scale	1647



Gas Fuel Efficiency Improvement with Digital Logbook Systems on Road Freight Transportation CDM Project in Malaysia	Malaysia	Installing digital logbook systems to commercial freight transport fleets	National scale	19
Electrotherm Electric Vehicles, India	India	Electric vehicles	National scale	175
Phoenix Auto Industries Electric Vehicles, India	India	Electric vehicles	National scale	18
Mode-shift of passengers from private vehicles to MRTS for Lurgaon metro	India	Metro, urban transport	Consolidated methodologies	15863
MRT System in Tunis	Tunisia	Metro, urban transport	Consolidated methodologies	193
Demonstration project for annual production 4, 000, 000 B biogas from organic waste Anyang City	China	Use of biofuels in transport applications	National scale	1739
Guangzhou MRTS Line I Project	China	MRT, urban transport	Consolidated methodologies	15188

(Source: <http://cdm.unfccc.int/Projects/projsearch.html>)



Annex 3: List of Transport NAMA projects

Name of NAMA	Country	Development stage	Scope of action	Type of approach (A-S-I)	Transport mode category)
City wide mitigation programme of Greater Accra Municipality	Ghana	Feasibility study	Sub-national	Not known	Not known
Comprehensive mobility plan for Belo Horizonte, Brazil	Brazil	Feasibility study	Sub-national	(Avoid) (Shift) (Improve)	Bus (PT) Bicycle (PT) Motorcycle (IMT) Other motorized transport (IMT) Walking (INMT) Cycling (INMT) Other non-motorized transport (INMT)
Mobility readiness plan	Guinea	Under development	National	(Shift) (Improve)	Bus (PT) Other public transport (T)
Electric Vehicles NAMA	Colombia	Under development	National	(Improve)	Other public transport (T) Motorcycle (IMT) Road cargo (F)
Enhancing Vehicle Renovation and Operating efficiency in Mexico's federal freight sector	Mexico	Feasibility study	National	(Improve)	Bus (PT) Motorcycle (IMT) Road cargo (F)
Integrated improvement transit management	Guinea	Feasibility study	National	(Improve)	Bus (PT) Other public transport (T) Motorcycle (IMT)
Integrated Urban Mobility Systems as a Reducing Mechanism	Mexico	Under development	National	(Avoid) (Shift) (Improve)	Bus (PT) Bicycle (PT) Motorcycle (IMT) Cycling (INMT)
Low Carbon Climate Resilient Development Strategy in Dominica	Dominican Republic	Under development	National	Not known	Not known



Master Plan on Comprehensive Urban Transport of Vientiane	Laos	Feasibility study	Sub-national	(Shift) (Improve)	<p>Is (PT)</p> <p>Other public transport (T)</p> <p>Tram (IMT)</p> <p>Other motorized transport (IMT)</p> <p>Truck cargo (F)</p> <p>Other freight (F)</p>
Mexico's Energy Efficiency Program for Freight Vehicles	Mexico	Order development	National	(Improve)	Truck cargo (F)
Modernization of freight train infrastructure	Argentina	Feasibility study	National	(Shift) (Improve)	Truck cargo (F)
Optimization of the conventional bus system in the valley of Mexico City	Mexico	Feasibility study	Sub-national	(Shift) (Improve)	Is (PT)
Passenger Modal Shift from Road to Rail – The Gautrain Case	South Africa	Implementation	Sub-national	(Shift)	<p>Is (PT)</p> <p>Truck (PT)</p>
Programme for Energy Efficiency in the Transport Sector in Chile	Chile	Feasibility study	National	(Improve)	<p>Is (PT)</p> <p>Truck cargo (F)</p>
Public transport development	Libanon	Feasibility study	Sub-national	(Shift) (Improve)	<p>Is (PT)</p> <p>Truck (PT)</p> <p>Tram (IMT)</p>
Public Transport Route Optimization and Vehicle Fleet Renovation	Mexico	Order development	National	(Shift) (Improve)	Is (PT)
Rehabilitation of Arterial Roads in Serbia	Serbia	Order development	National	(Improve)	<p>Is (PT)</p> <p>Tram (IMT)</p> <p>Motorcycle (IMT)</p> <p>Truck cargo (F)</p>
Rollout of electric private passenger vehicles	South Africa	Feasibility study	National	(Improve)	Tram (IMT)
Santiago Transportation Green Zone	Chile	Order development	Sub-national	(Shift) (Improve)	<p>Is (PT)</p> <p>Other public transport (T)</p>



Supported NAMA for improvement of Road-based Freight sector	Colombia	Feasibility study	International	(Avoid) (Shift) (Improve)	Truck (IMT) Walking (INMT) Cycling (INMT) Truck cargo (F)
Sustainable Urban Transport Initiative (SUTRI)	Indonesia	Order development	International Sub-national	(Shift) (Improve)	Bus (PT) Bike (PT) Truck (IMT) Motorcycle (IMT) Walking (INMT) Cycling (INMT)
Transit-Oriented Development in Colombia	Colombia	Order development	International	(Avoid)	Bus (PT) Bike (PT) Walking (INMT) Cycling (INMT)
Transport NAMA in Peru	Peru	Feasibility study	International	(Avoid) (Shift) (Improve)	Bus (PT) Bike (PT) Truck (IMT) Motorcycle (IMT) Other motorized transport (IMT) Walking (INMT) Cycling (INMT) Truck cargo (F)

(Source: http://www.transport-namadatabase.org/index.php/Main_Page)



Annex 4a: Initial Mitigation Logic Model GCF

<i>Paradigm shift objective</i>	Shift to low-emission sustainable development pathways			
↑	↑	↑	↑	↑
Impacts (Strategic level)	1.0 Increased low-emission energy access and power generation	2.0 Increased access to low-emission transport	3.0 Increased energy efficiency in buildings, cities and industries	4.0 Sustainable land use and forest management, including REDD+
↑	↑			
Project/pr programme outcomes (Country-driven from NAMAs, climate change strategies, mitigation policies, etc.)	5.0 Increased gender-sensitive low-emission development mainstreamed in government 6.0 More small, medium and large low-emission power suppliers 7.0 Lower country energy intensity trajectory 8.0 Increased use of low carbon transport 9.0 Stabilization of forest coverage			
↑	↑			
Programme / project outputs (to be defined by executing entities)	<u>Possible examples include:</u> <ul style="list-style-type: none"> • More small, medium and large low-emission power suppliers; • Increased use of incentives and technologies for low-carbon transport; • Improved management systems of entities responsible for forests and protected areas; • Increased energy efficiency of building, industry and appliances. 			
↑	↑			
Indicative activities (to be defined by executing entities)	<u>Possible examples include:</u> <ul style="list-style-type: none"> • Capacity-building to foster government support for policy reforms through training and knowledge-sharing; • Upgrading the legal and regulatory framework; • Increased investment in renewable energies; • Increased investment in energy efficiency; • Increased investment in low-emission transport; • Increased support for decreased deforestation and increased afforestation. 			
Inputs	Grants, concessional loans			



Annex 4b: Initial mitigation performance assessment framework GCF

Annex IV: Initial mitigation performance measurement framework¹

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Expected results	Indicators (indicative)	Baseline data	Targets	Data sources and collection methods	Frequency	Responsibility	Assumptions/notes
Paradigm shift objective							
Shift to low-emission, sustainable development pathways	M.1 Tonnes of carbon dioxide equivalent (t CO ₂ eq) emitted by countries receiving mitigation funding	Assumed business-as-usual emissions trajectory measured in t CO ₂ equiv. emitted by countries		The Fund would coordinate with the UNFCCC data	Every five years	Fund Secretariat	
	M.2 Cost per t CO ₂ eq decreased for all Fund-funded mitigation projects	Not required		Executing entity (EE)/implementing entity (IE) results reports and energy balances	Every five years	Fund Secretariat	Provides information to help reduce the expected cost of mitigation
	M.3 Volume of public and private funds catalysed by the Fund (core indicator)			Project/programme proposals and end-of-project reports	Beginning and end of an investment	IEs	To effectively bring about a paradigm shift in the way that societies approach mitigation, the private sector must be engaged given its sizeable role in the energy sector. This indicator – consistent with the Fund's Governing Instrument – is a proxy indicator that measures catalysed funding, including private sector funding. It should be tracked by all projects and programmes.

Expected results	Indicators (indicative)	Baseline data	Targets	Data sources and collection methods	Frequency	Responsibility	Assumptions/notes
Impacts (strategic level)							
1.0 Increased low-emission energy access and power generation	1.1 Level of national/regional capacity (MW) from low emission sources (renewable energy).	Existing mix of power generation		Data from the transmission system operator or dispatch centre	Mid-term and end of investment	IEs	
2.0 Increased access to low-emission transport	2.1 Emissions levels from vehicles	Existing transport emissions		Data from Ministry of Transport	Annually	IEs	<u>Draw on data available from UNFCCC reporting</u>

Project/programme outcomes							
8.0 Increased use of low-carbon transport	8.1 Number of passengers (disaggregated by gender where possible) using low emission vehicles	Existing transport use		Records of Ministry of Transport or licensing bureau	Annually	EEs	Assumes that a portion of investments will target vehicle fleets and possible car manufacturers.
	8.2 Modal share (by transportation type)	Existing transport use		Transportation household survey with sex disaggregated data	Annually	EEs	Survey would determine the predominant types of transportation used (pedestrian, bicycle, bus, rickshaw, collective taxi, rail, car, etc.) by women and men. Repeated over time to determine any movement to low-emission modes.



Annex 5 Bridging the Gap resources

More information can be obtained from the Bridging the Gap fact sheet on Climate Finance (<http://www.transport2020.org/publicationitem/19/btg-factsheet-climate-finance>).