



Workshop on Capacity Building Strategy for the Implementation of Low Carbon High Volume Transport in South Asia Summary Report

The Workshop on Capacity Building Strategy for the Implementation of Low Carbon High Volume Transport in South Asia was organised by the [Partnership on Sustainable, Low Carbon Transport \(SLoCaT\)](#), under the framework of the Applied Research Programme in High Volume Transport (HVT) by the [Department for International Development of the United Kingdom \(DFID\)](#) on 2 October 2018.

The workshop was a pre-event to the Eleventh Intergovernmental Regional Environmentally Sustainable Transport (EST) Forum in Asia,¹ hosted by the United Nations Centre for Regional Development (UNCRD) from 2 – 5 October 2018 in Ulaanbaatar, Mongolia.

The workshop was attended by more than 30 participants representing 11 EST countries (Afghanistan, Bangladesh, Bhutan, Cambodia, India, Malaysia, Maldives, Mongolia, Pakistan, Thailand, Vietnam) and 11 different transport organisations, research institutes, and non-government organisations. The participant list is presented under Annex I.

Background and Objectives

SLoCaT is currently carrying out [a joint project with DFID](#) to explore the current state of knowledge and capacity of low carbon HVT in selected project countries for research in Africa and South Asia.² The project will provide a review of potential transport solutions for the selected priority countries to move towards expanding and accelerating uptake of low carbon passenger and

¹ Eleventh Intergovernmental Regional Environmentally Sustainable Transport (EST) Forum in Asia.
<http://www.uncrd.or.jp/?page=view&nr=1125&type=13&menu=198>

² Project countries for research include: (South Asia) India, Indonesia, Bangladesh, (Africa) South Africa, Ghana, Nigeria, Rwanda, Uganda, Kenya.

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freight transport measures.

One of the major planned deliverables of the project is the development of a capacity building strategy for the institutions responsible for the practical uptake and implementation of research findings on low carbon HVT in project countries in Africa and South Asia.

Capacity gaps are often not related to a lack of technical engineering skills but a lack of experience with problem definitions and alternatives, public engagement, stakeholder relations, and monitoring and evaluation. The reasons may have a combination of different aspects that can be addressed through capacity building:

1. **Technical** – Insufficient or inadequate knowledge of available low carbon solutions;
2. **Institutional** – Lack of an effective network of organisations that can achieve the specific low carbon transport objectives on a sustainable basis;
3. **Political / Social** – Low priority, interest, or acceptance of developing low carbon high volume transport solutions; and
4. **Financial / Economic**—The presence of barriers to implementation that dis-incentivise public or private investment in the low carbon high volume transport solutions. May include lack of ready access to targeted funding.

The capacity building strategy thus aims to:

1. Analyse the current capacity, needs, knowledge, and knowledge-transfer processes within ministries and transport agencies in project countries to implement low carbon HVT;
2. Identify reasons why low carbon high volume transport solutions are not being more actively implemented in the project countries. Evaluate the possible causes of a lack of broader application of effective actions based on the four categories noted above
3. Identify capacity building opportunities, elements and requirements to increase uptake of low carbon HVT measures;
4. Identify capacity needs for planning processes in project countries, including how to evaluate success of low-carbon programmes and projects (using nuanced, context-specific criteria) and how to increase equity and other sustainable development objectives in addition to low-carbon impacts;
5. Assess the need for development of appropriate skills training (including management, communication, governance) and performance indicators within transport authorities to spur critical reflection and engagement.

The workshop aimed to obtain input from relevant national and local stakeholders on the needs and barriers in capacity building for implementing low carbon HVT in the region. Their input will contribute to build a proposed capacity building implementation strategy that could be effective in the project countries of the DFID-SLoCaT project.

The workshop also aimed to identify potential opportunities for capacity development among researchers and research bodies, government officials and implementing agencies, and political

decision-makers in the project countries (in cooperation with international bilateral and multilateral donors) to accelerate and streamline the adoption and implementation of research recommendations from this study.

The workshop also paid specific attention to the implementation of low carbon HVT in the context of the [Bangkok 2020 Declaration](#), which was established by EST member countries and consists of 20 goals with measurable performance indicators categorised under the Avoid-Shift-Improve framework to serve as a recommended set of benchmarks among Asian countries for their overall decisions in transport policy, planning, and development.

Summary of Discussion

Opening Session

Mr. Karl Peet, Research Director of SLoCaT, opened the workshop by welcoming the participants and introducing the DFID-SLoCaT project, which aims to explore the current state of knowledge and capacity of low carbon HVT in selected project countries for research in Africa and South Asia.³ Four key questions were raised to guide the overall discussion of the workshop:

1. What are the key **capacity building opportunities** to increase uptake of low carbon HVT measures (technical, institutional, political/social, financial)?
2. How can **capacity building strategies** be most effectively delivered to ensure enduring impact (e.g. online learning, peer-to-peer exchanges)?
3. How can **practical research** help bridge knowledge gaps and accelerate implementation of low-carbon HVT?
4. Which ongoing **research topics** can help support increased uptake of low-carbon transport across EST countries?

Mr. C.R.C. Mohanty, Environment Programme Coordinator of the UNCRD, spoke on the critical role of low carbon HVT in achieving the Bangkok 2020 Declaration. The Bangkok 2020 Declaration (2010-2020) was adopted at the 5th Regional EST Forum in Asia (2010, Thailand). It was the first regional declaration or consensus on the strengthening of environmentally sustainable (land) transport in developing Asia which aims to catalyse actions by governments and other key transport stakeholders in the region towards the realisation of safe, secure, affordable, efficient, people-and environment-friendly, and inclusive transport in rapidly urbanizing and modernizing Asia. The Bangkok 2020 Declaration, with 20 time-bound EST goals and monitoring indicators embedded in Avoid-Shift-Improve strategies.

Specific examples were presented to illustrate how low carbon HVT is linked to a number of goals under the declaration:

³ Project countries for research include: (South Asia) India, Indonesia, Bangladesh; and (Africa) South Africa, Ghana, Nigeria, Rwanda, Uganda, Kenya.

Goals of Bangkok Declaration 2020	Examples
Goal 5: Improve public transport services including high quality and affordable services on dedicated infrastructure	164 cities worldwide have built bus rapid transit systems, carrying close to 33 million passengers a day
Goal 6: Reduce urban mode share of private motorised vehicles through Transportation Demand Management (TDM) measures	TDM measures adopted by Singapore, Hong Kong, Japan
Goal 7: Achieve shifts to sustainable modes of inter-city passenger and goods transport for both passenger and freight movement	India's dedicated freight corridor aims to shift freight movement from roads to more sustainable railways by building dedicated rail tracks
Goal 12: Achieve improved freight transport efficiency, including road, rail, air, and water, through policies, programs, and projects	Need for a regional cooperation agreement on green freight in Asia
Goal 13: Adopt a zero-fatality policy with respect to road, rail, and waterway safety and implement appropriate traffic measures and better post-accident care	Pedestrian zone project, green zone, child safety policies in Republic of Korea cut traffic fatalities for children by almost one-third in only 5 years, according to 2011 statistics

Mr. Noor-e-Alam, Project Director of the Ministry of Road Transport and Bridges, Bangladesh, explained how low carbon HVT solutions (e.g. rail and road-based mass transit, increased capacity of rail and waterway freight movement, use of clean fuels and technology in public transport) are currently being implemented to contribute to the country's emission reduction targets of its Nationally Determined Contributions. Mr. Alam acknowledged existing challenges in implementation, such as the lack of inter-ministry coordination, the need for stricter law and enforcement to curb fuel adulteration (sell of mixed fuels), and inadequate skills, capacity, or knowledge in low carbon transport, but indicated that the country is still committed to implement a variety of low carbon HVT options, such as the expansion of mass transit networks in Dhaka and other major cities, introducing electric vehicles for public transport and eco-driving for green freight.

Mr. John Rogers, Climate Change Specialist and Lead Project Consultant of the DFID-SLoCaT project, introduced the difference between policy and target and stressed that a complete policy requires targets, implementing instruments, and enforcement and compliance mechanisms. He used a "Honda vs. Tesla" scenario to show how policy interventions, such as tax/ fee waivers, cash-back subsidies, fuel pricing, and guarantees to limit liabilities of insurance companies, can help to alter the public's perspectives on vehicle choices. The government plays a key role in creating enabling conditions for policies in order to encourage implementation by firms and households.

Break-out Groups

The participants were organised into four break-out groups to discuss the barriers and opportunities in implementing low carbon HVT through the perspectives of four groups:

1. Perspective of national-level ministries, moderated by **Mr. Jamie Leather**, Chief of Transport Sector Group, Asian Development Bank

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2. Perspective of local-level authorities, moderated by **Mr. Karl Peet**, Research Director, SLoCaT
3. Perspective of private investors and transport operators, moderated by **Mr. John Rogers**, Climate Change Specialist and Lead Project Consultant, SLoCaT
4. Perspective of the research community, moderated by **Mr. Holger Dalkmann**, Chief Executive Officer of Sustain2030

Members of each group were invited to write their opinions (with illustrative examples) on each of the following four themes from the point of view of the cohort of stakeholders represented by the group for the participant's country or city:

- **Theme A:** What priority does reducing GHG emissions have in local decisions that affect transport?
- **Theme B:** Is it necessary and/or desirable to promote low carbon HVT over the coming years? Why is it important (or not) to promote this? Do users/voters demand action?
- **Theme C:** What are the principle barriers/obstacles that could make this difficult to achieve?
- **Theme D:** What needs to be done to remove these barriers? How can this be implemented and who needs to take action for this to happen?

Plenary Session: Reporting on Discussion

Theme A: What priority does reducing GHG emissions have in local decisions that affect transport?

The group representing national-level ministries pointed out that transport emissions are growing the fastest in Asia among regions of the world, and if growing transport emissions in Asia are not curbed, the target of the Paris Agreement will not be achieved. A key priority of this group is to set standards and analyse cost and benefits of public transit and mode share in urban areas.

For local-level authorities, pollution is a higher priority focus in general context rather than specific GHG emission issues. Another major priority is the reliability of transport services and the connectivity from work to home. For instance, in Viet Nam, many initiatives were developed to limit the increase in private car use with GHG reductions as one component. Kuala Lumpur is seeking to promote the modal shift to 40% public transport and 60% private transport trips. Comfort, time, flexibility and GHG emissions are all to be considered by local-level stakeholders.

For private investors and transport operators, the primary priority is profit. GHG reduction may be a medium priority for large operators and very low priority for small operators. Most business investors believe low carbon action will not save money without government involvement. There is a need to use public-private partnerships for rail and bus rapid transit projects to provide access to capital and reduce the project risk sufficiently for the business sector to view them as profitable ventures.

The research community pointed out that countries often set targets for GHG reductions without solid implementation plans. Other policy drivers for implementing low carbon transport include

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pollution reduction, the demand for efficient transport and fuel cost saving. Elected officials are at risk of policy reversals when new governments are elected, which may discourage them from taking on large-scale, long-term low carbon transport projects.

Theme B: Is it necessary and/or desirable to promote low carbon, high volume transport over the coming years? Why is it important (or not) to promote this? Do users/voters demand action?

National-level stakeholders determined that it is necessary and desirable to take action on low carbon transport. Participants talked about co-benefits of low-carbon transport systems such as better air quality and liveable cities, while expressing reservations to implement low carbon transport options due to the time for change related to technology and legal requirements. It was also noted that in some countries, the government drives the users' wills while in some countries the users drive the government to change.

Local-level authorities pointed out that demand by users generally depends on whether they are informed of GHG emission reduction costs/benefits. In Malaysia, it is seen as imperative for protecting the public and in Kuala Lumpur, it is a priority to reduce GHG emission in the transport sector, while in India, higher priority is on user convenience and safety.

For the private sector, GHG emissions are not a significant priority, although large operators might see their clients demanding lower GHG emissions as part of their corporate sustainable responsibility (CSR) . Medium and small operators would not see this demand. Government should provide incentives and ensure the future of the initiative, and in the process offer a well-defined timetable to allow business to adjust. Whilst for large transport companies, a two-year payback period might be acceptable; for small operators, even one year is too long. Trust is necessary between government and operators.

The research community agreed that it is necessary and desirable to promote low carbon transport, and that further research on the co-benefits of various options is key. Management of new modes, such as dockless bike-sharing, needs more research, possibly into shared public-private business models. More research on last-mile connectivity and GHG impacts of mode share targets is needed. Traffic management is key to easing congestion and road safety.

Theme C: What are the principle barriers/obstacles that could make (broader implementation of low-carbon HVT) difficult to achieve?

National-level stakeholders perceived technology for low carbon transport to be costly and that it needs time to develop and evolve. There are also needs to understand feasibility and rates of return of low carbon transport. Other major barriers identified are related to legal issues and political risk. It would require a coordinated approach across government departments to enforce and overcome these barriers. It was suggested that voters are generally demanding for low carbon transport but if low carbon options cost a lot more to the users, voters would not easily

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take the decision over personal rate of return. For national stakeholders, political challenges are probably the biggest barrier, followed by then technical, social and financial challenges.

For local-level authorities, road agencies generally handle road projects, and it was noted that it may create friction among government units if the road agency's authority is diminished in the face of public transit development. In Viet Nam, there is a general preference for the private sector to develop low carbon transport, and furthermore, it is seen as important that the transport costs borne by the public users must not increase.

The private sector group pointed out that there is need for a bankable, resilient transport sector, as resilience in transport services and infrastructure is important for getting loans. Shorter payback period is also important as small business would not borrow money to reduce emissions. In terms of political barriers, private investors often think government is not willing to 'walk the talk'. The government needs to make the initial push. A lack of political leadership, clear goals political momentum and fear of change are key barriers to implementation, and a lack of capacity to make business viable is also a major obstacle.

For the research community, there is not enough money accessible to research and promote low carbon HVT. Lack of public awareness of the benefits of low carbon transport was also seen as a barrier to broader uptake.

Theme D: What needs to be done to remove these barriers? How can this be implemented and who needs to take action for this to happen?

National-level stakeholders pointed out that we need to take a pragmatic approach in two steps to overcome key barriers: 1) get strong technical evidence through research, data, solutions to politicians; and 2) explain low-carbon transport solutions to the public based on high-level data, co-benefits, and political decision-making.

The local authorities group stated that there needs to be greater use of private sector in public transport along with more mixed development in land use to overcome barriers to implementation. It is crucial to achieve higher densities and enable citizens to live closer to work, which would help to demonstrate the economic advantages of public transport and transit-oriented development (or mixed land use) to the public. It is important for local-level authorities to focus on integrated public transport systems and to achieve more seamless trips and to use social media to make the public more aware of the benefits of low carbon high volume transport. Also, regulation is important, especially land use regulations as well as the elimination of car use and fuel subsidies.

For the private investors and transport operators, GHG reduction needs to be a business proposition in order to show to the investors that there is financial profit for low carbon transport. More public-private-partnership-type arrangements are needed, and mechanisms should be created to give companies more credit for reducing GHG emissions. A low carbon transport fund would be ideal to encourage the private sector to take up the responsibility to reduce GHG

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emissions, and successful business models of low carbon transport interventions from other countries/localities should be highlighted.

The research community thought that governments must take a long-term perspective on low carbon transport by removing economic incentives for high carbon transport by internalising the costs of high carbon transport. Regulatory frameworks should be enforced. Research on new revenue streams for low carbon transport is also important, and sharing of knowledge should not just be done between academics, but also between academics, policymakers and the public.

Conclusions

The workshop concluded that much more work needs to be done to align the expectations between private investors and the implementing authorities. There is a need to make low carbon transport a bankable business model (e.g. by increasing carbon market price, reducing implicit subsidies for private, low volume transport, and reducing the risk for investors in low carbon transport). There is also need to avoid overly scientific approaches and demonstrate how low carbon transport is connected to daily life in order to convince business and political stakeholders.

Research plays a key role in informing the public on the urgent need for low carbon transport options in order to increase awareness and demand for action. Specifically, more research can be conducted to explore replicability of best examples from developed countries on low carbon high volume transport. Key topics of interest raised by the audience included the following:

- 1) The role of and public transit and public space management in reducing congestion;
- 2) Lifecycle savings potential of electric bus fleets;
- 3) Total transport costs of road transport and pollution from (particularly unpaved) road surfaces.

Please refer to Annex III for a briefing note on the initial discussion of research themes in the workshop.

In closing, **Mr. C.R.C. Mohanty**, Environment Programme Coordinator of the UNCRD, thanked relevant parties and emphasised that transit operators and cities are synergistic, as each needs to be resilient to succeed. **Mr. Batbold Sandagdorj**, Director-General for the Transport Policy Implementation and Coordination Department of the Ministry of Road and Transport Development, Mongolia, gave the closing remarks by encouraging stakeholders to have courage to take further actions to reduce emissions from the transport sector.

Annex I: Workshop Programme

2 OCTOBER 2018 (Tuesday)	
Time / Room	Provisional Programme
14:00 – 14:50	Opening Session
14:00 – 14:15	<p>Introduction to Workshop: Motive and Objectives Karl Peet, Research Director, Partnership on Sustainable, Low Carbon Transport (SLoCaT) (5 min)</p> <ul style="list-style-type: none"> - Overview of DFID programme - Goals of capacity-building programme <p>Role of Low Carbon, High Volume Transport in Achieving the Bangkok 2020 Declaration</p> <ul style="list-style-type: none"> - C. R. C. Mohanty, Environment Programme Coordinator, UNCRD (5 min)
14:15 – 14:30	<p>Overview of Opportunities/ Challenges of Implementing Low Carbon, High Volume Transport in Bangladesh Noor-e-Alam, Project Director, Ministry of Road Transport and Bridges</p>
14:30 – 14:45	<p>Organization and specific program of the workshop (10 minutes) John Rogers, Senior Climate Change Specialist</p> <ul style="list-style-type: none"> o Overview of how sessions are organized o Overview of what we expect to achieve
14:50 – 16:30	Break-out Sessions
	<p>Participants will split into 4 breakout groups looking at the same problems with different focuses</p> <ul style="list-style-type: none"> o Break-out Group 1: As viewed by National-Level Ministries Coordinator/Moderator: Jamie Leather, Chief of Transport Sector Group, Asian Development Bank o Break-out Group 2: As viewed by Local-Level Authorities Coordinator/Moderator: Karl Peet, Research Director, SLoCaT o Break-out Group 3: As viewed by Private Investors / Transport Operators Coordinator/Moderator: John Rogers, Senior Climate Change Specialist o Break-out Group 4: As viewed by Research Community Coordinator/Moderator: Holger Dalkmann, CEO of Sustain2030 <p><i>Members of each group will be invited to write their opinions and explain their thoughts on each of the following four questions. The time allowed for each question is 20 minutes. Sessions will be recorded.</i></p> <p>The groups are expected to discuss barriers in in each of the following four categories.</p> <ul style="list-style-type: none"> o Technical – Insufficient or inadequate knowledge of available low carbon solutions o Institutional – Lack of an effective network of organizations that can achieve the specific low carbon transport objectives on a sustainable basis o Political / Social – Low priority, interest, or acceptance of developing low carbon high volume transport solutions o Financial / Economic—The presence of barriers to implementation that disincentivize public or private investment in the low carbon high volume transport solutions. May include lack of ready access to targeted funding. <p><i>The groups are expected to discuss how this could affect Passengers and Freight on Road, Rail, and where applicable, National Aviation, Inland waterways and Coastal shipping.</i></p>

2 OCTOBER 2018 (Tuesday)	
Time / Room	Provisional Programme
14:50 – 15:10	Theme A From the point of view of the cohort of stakeholders represented by your group for your country/city: <ul style="list-style-type: none"> ○ What priority does reducing GHG emissions have in local decisions that affect transport?
15:10 – 15:30	Theme B From the point of view of the cohort of stakeholders represented by your group: <ul style="list-style-type: none"> ○ Is it necessary and/or desirable to promote low carbon, high volume transport over the coming years? ○ Why is it important (or not) to promote this? Do users/voters demand action?
15:30 – 15:50	Coffee break
15:50 – 16:10	Theme C From the point of view of the cohort of stakeholders represented by your group for your country/city: <ul style="list-style-type: none"> ○ What are the principle barriers/obstacles that could make this difficult to achieve?
16:10 – 16:30	Theme D <ul style="list-style-type: none"> ○ What needs to be done to remove these barriers? ○ How can this be implemented and who needs to take action for this to happen?
Plenary Session	
	Each group will elect a representative to report back to the plenary. The reporting will be done by themes (questions). The report by each group (per theme) will be written on the flipcharts and no more than 3 minutes to allow time for discussion.
16:30 – 16:40	Presentation of Group Findings <ul style="list-style-type: none"> ○ <i>Group 1: National-Level Ministries</i> ○ <i>Group 2: Local-Level Authorities</i> ○ <i>Group 3: Private Investors / Transport Operators</i> ○ <i>Group 4: Research Organizations</i>
17:10 – 17:40	Discussion across groups
17:40 – 18:00	Closing Session
	<ul style="list-style-type: none"> - John Rogers and Karl Peet, SLoCaT Partnership - C. R. C. Mohanty, Environment Programme Coordinator, UNCRD - Batbold Sandagdorj, Director-General for the Transport Policy Implementation and Coordination Department of Ministry of Road and Transport Development, Mongolia

Annex II: List of Registered Participants⁴

Overview:

Total No. of Participants Attended (registered)	35	
Country Rep Attended:	19	
Countries represented:	11	(Afghanistan, Bangladesh, Bhutan, Cambodia, India, Malaysia, Maldives, Mongolia, Pakistan, Thailand, Vietnam)
Country Breakdown:	Afghanistan	1
	Bangladesh	2
	Bhutan	1
	Cambodia	2
	India	1
	Malaysia	2
	Maldives	1
	Mongolia	6
	Pakistan	1
	Thailand	1
Vietnam	1	
NGO Rep Attended:	16	
Types of NGO represented:	5	
NGO Breakdown:	Transport Organisation	2
	MDB	2
	Research	8
	Independent	2
	UN Organisation	2

⁴ Note that additional participants may have engaged in the workshop without filling out the sign-in sheet

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No	Country/ Organisation	Title	Name	Surname	Organisation	Job Title
1	Afghanistan	Mr.	Javid Ahmad	Shirzad	Ministry of Rural Rehabilitation Development	Technical Advisor to Minister
2	Bangladesh	Mr.	Noor-e-	Alam	Ministry of Road Transport and Bridges	Project Director
3	Bangladesh	Mr.	Mir Tanweer	Husain	Ministry of Local Government, Rural Development & Cooperatives	Senior Assistant Engineer
4	Bhutan	Mr.	Wangchuck	Pemba		Director General
5	Cambodia	Mr.	Sophal	Kong	Ministry of Public Works and Transport	Deputy Director General
6	Cambodia	Mr.	Ouk	Ourk	Ministry of Public Works and Transport	Director
7	India	Dr.	Subhamay	Gangopadhyay	National Highway Authority	Road Safety Training Expert
8	Malaysia	Mr.	Abd Hamid bin	Surip		
9	Malaysia	Mr.	Amran	Abdullah	KL City Hall	Senior Deputy Director
10	Maldives	Ms.	Nafha	Aujaaz		
11	Mongolia	Mr.	S.	Batbold		
12	Mongolia	Ms.	Nyamdavaa	Shagdar	National Agency for meteorology and environment of Mongolia	Senior Officer
13	Mongolia	Ms.	Sarantsetseg	Khasaa	GASI	
14	Mongolia	Ms.	Naraa	Narmanclah	GI	
15	Mongolia	Ms.	Myagmarjgal	Mendloayou	ALAGAC	Specialist
16	Mongolia	Mr.	Myagmarsureu	Turbai	MRTD	Senior Officer
17	Pakistan	Mr.	Muhammad Maswood	Alam	Karachi Metropolitan Corporation	Director
18	Thailand	Ms.	Manwipa	Koson		
19	Viet Nam	Mr.	Anh Duong	Tran	Ministry of Transport	Director General
20	Independent	Mr.	Holger	Dalkmann	Self-employed	Independent Consultant
21	Independent	Mr.	Peter	O'Neill	Independent	Independent Consultant
22	MDB	Mr.	Jamie	Leather	Asian Development Bank	Chief of Transport Sector Group
23	MDB	Mr.	Arturo	Ardila-Gomez	The World Bank	Global Lead for Urban Mobility and Lead Transport Economist
24	Research	Dr.	Annabel	Bradbury	Cardno	Principal Consultant, ReCAP Deputy Team Leader
25	Research	Dr.	Karlson James (Charlie)	Hargroves	Curtin University Sustainability Policy (CUSP) Institute	Senior Research Fellow
26	Research	Ms.	Catharina	Visser Bartel	Research for Community Access Partnership (ReCAP)	Knowledge & Communications Manager
27	Research	Mr.	Robert James	Earley	Sino-Canadian Commodities Consulting Co. Ltd.	President
28	Research	Prof.	Tran	Thi Kim Dang	The University of Transport & Communication	Lecturer
29	Research	Dr.	Surya Raj	Acharya	Tribhuvan University	Visiting Professor
30	Research	Mr.	Daniel	Conley	University of Adelaide	PhD Candidate

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No	Country/ Organisation	Title	Name	Surname	Organisation	Job Title
31	Research	Ms.	Lauren	Gallina	University of Adelaide (Entrepreneurship Commercialization and Innovation Centre)	Research Assistant
32	Transport Organisation	Mr.	Giok Seng	Lee	Asia Pacific Natural Gas Vehicles Association (ANGVA)	Executive Director / Secretary
33	Transport Organisation	Ms.	Deliani Poetriayu	Siregar	Institute for Transportation & Development Policy	Urban Planning Associate
34	UN Organisation	Dr.	Madan B.	Regmi	United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)	Economic Affairs Officer
35	UN Organisation	Mr.	C.R.C.	Mohanty	United Nations Centre for Regional Development	Environment Programme Coordinator

Annex III: Initial Discussion of Low-Carbon HVT Research Themes

Initial messages received from the capacity building workshop of 2 October 2018 and from the expert interviews are focused on the disconnect (gap) that exists between two perspectives:

- 1) The **top-down view** of what needs to be done on low carbon high volume transport, as expressed by national level stakeholders and international agencies; and
- 2) The **bottom-up view**, as expressed by local authorities, private investors and transport operators, on what can be practically achieved.

1. Top-down perspectives

Those (top-down) entities associated with defining NDCs and other global forums identify the need to reduce GHG emissions and make transport more efficient. The process of converting this agreed direction into on-the-ground actions, as we have seen, often results in diluted commitments, as the stakeholders directly involved in making the changes happen, instead evaluate what they can practically commit to.

There is a clear need for research, technical assistance and capacity building to close this gap and allow the implementation of low carbon high volume transport solutions to be accelerated.

2. Bottom-up perspectives

Private investors and transport operators are very clear in that they can adopt low carbon transport measures to the degree that these make a successful business proposition, when often, they do not. The operating profit threshold that the investor requires depends not only on expected operating expenses and income (e.g. the fare structure, shipping prices and complementary income from commercial enhancement of land use but also to a great extent on the risks, uncertainty and unpredictability involved in the transport project and the cost and availability of capital. Examples include the following:

- A. Cost and availability of capital:** In many countries, banks do not accept vehicles as collateral to offer credit to transport operators at acceptable rates. This increases the cost, and reduces the availability of capital for most operators except for the largest that own and can offer sufficient fixed assets as collateral.
- B. Risk, uncertainty and unpredictability:** Where transport operations are regulated by the local or regional authority, any lack of legal clarity on how these will be adjusted in the future to accommodate inflation and changes in operation and/or could be affected by changes in the political incumbents, require the investor to recuperate his outlay over a shorter period to minimize his risk exposure to such possible changes in policy and other exogenous factors.
- C. Benefits to society that incur costs to the developer:** The carbon benefits of low carbon transport are essential to the planet, but, except in a few isolated cases, cannot be monetized sufficiently (at current USD/ton CO₂ rates) to pay the developer for the additional up-front investment that low-carbon transport often requires. Other co-benefits

can be very important to the wider local stakeholder community but do not directly benefit the developer. Included in this list are improvements in air quality, health, quality of life, congestion, and noise reduction.

D. Barriers to implementation: There are often important hidden barriers to implementation that increase the implementation time, cost, risk and uncertainty of the project. These, if borne by the project developer, require a higher return on investment to offset their impact in the cost and risk associated with developing and operating the transport service.

E. Negative externalities of subsidized low volume transport: The subsidized use of public goods (road space, air quality etc) to private low volume, high carbon transportation make it more difficult for low carbon high volume transport to compete economically in the marketplace with the service it offers.

These elements often increase the required price for the low carbon transport service to a level that cannot economically compete with the high carbon low volume alternative, and as a result the project does not move ahead. The following example from the wind generation sector can be emulated through parallel policy structures in the transport sector.

Example of Wind Generation

An example from the introduction of renewable generation of electricity into the grid supply illustrates how careful policy development and management can unlock private investment and operation. It is possible to promote wind generation by solely offering a lead-in tariff that is sufficiently high to offset the perceived costs and risks to the developer, but this would require a price per kWh that is too high to be manageable.

A more favorable approach is to reduce these risks and uncertainties via the legal structuring of a bankable power purchase agreement with loan guarantees to provide the access to low cost capital for the project's development; elimination of the institutional barriers to successful implementation, reduction of technical delays to project startup etc. An optimized mixture of such policies can make wind generation an attractive proposition to the private sector developer at a far lower lead-in tariff and at a far lower cost to the society.

The national and local authorities that are working to implement low carbon high volume transport solutions would benefit from clear, concise, but complete guidance on the following themes to make it easier to accelerate the incorporation of private investment in these solutions. It is inefficient, for example, for multiple municipalities that wish to establish publicly managed, privately operated bus routes to have to work out, starting from scratch, the legal intricacies of a bankable transport service agreement, when the availability of templates could give a head start to what would finally be an improved offering.

This would require research (with subsequent technical assistance and capacity building) on areas as diverse as:

A. Institutional capacity

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- How to strengthen the effective interaction among stakeholder institutions, and among different departments within the same institution
- How to put together and build consensus on a good effective, green, safe, and inclusive transport masterplan for a city or region

B. Transport finance

- How to establish bankable transport service agreements that would allow the operator to obtain low-cost capital to establish the service
- How to introduce financial incentives (feebates) for low carbon high volume transport
- How to implement PPPs in transport

C. Implementation and regulation of low carbon transport measures

i. Avoid

- How to introduce traffic management including:
 - o Parking restrictions
 - o Tax on GHG emissions and private use of public road space
 - o Congestion and or low emission zones
- How to use smart-phone based software to identify motorised and non-motorised routes and transit demand

ii. Shift

- How to establish integrated transport system planning across all modes and from trip origin to destination
- How to make use of ITS
- How to regulate shared ridership
- How to regulate dockless bike / e-bike / e scooter sharing schemes
- How to set up and operate long distance rail connectivity
- How to set up and operate modal exchange between road freight and water/rail transport systems

iii. Improve

- How to introduce clean fuels
- How to introduce electric vehicles
- How to phase out old less fuel efficient and more polluting vehicles
- How to introduce vehicle emissions standards and fuel economy standards
- How to ensure production compliance for vehicle emissions and fuel economy standards

iv. Others

- How to regulate phone-app taxis
- How to manage motorcycle taxis
- How to establish efficient and inclusive rural transport infrastructure and services
- How to introduce road asset management procedures

By providing such capacity building procedures, templates, and tools we can make it easier for authorities to accelerate the implementation of low carbon high volume transport systems that fully address the social need for the transport infrastructure and services and that are sufficiently attractive to private investors/operators for them to actively promote the change.