"Promoting Low Carbon Transport in India"

Expert Workshop on Indicators for Sustainable Transport

August 29, 2011

Hotel Fortune Landmark, Ahmedabad

Workshop Report

CEPT University's Centre for Urban Equity (CUE) organised a one day stakeholder's workshop on 29 August 2011, to discuss indicators for sustainable transport in India. The stakeholders included project partners and other experts working on sustainable transport. The workshop objective was to obtain expert opinion beyond what exists within the three partner institutions, namely, Indian Institute of Management, Ahmedabad (IIMA), Indian Institute of Technology, Delhi (IITD) and the CUE at CEPT University.

The project partners had prepared a list of indicators, as per the agreed format that covered economic, social and environmental aspects of sustainability. IIMA had prepared a list of indicators to address macro dimensions of sustainable transport. IITD had prepared a list of indicators for city level sustainable transport to which CUE incorporated more indicators and dimensions for inclusiveness. Two documents, 'Questionnaire for Macro Level Indicators' and 'Questionnaire for City Level Indicators', were prepared before the workshop and circulated amongst the invitees and other experts in the sector. Invitees who could not attend the workshop sent in their comments on the indicators in advance. Further comments and suggestions were provided during the workshop.

The workshop agenda and participants list are provided in this report as Annexes A and B. Prof. Darshini Mahadevia, Member/Secretary of CUE and Professor at Faculty of Planning and Public Policy, CEPT University, welcomed the participants to the workshop. Dr. Subash Dhar introduced the project and laid out the objectives of the workshop. Dr. Jorge Rogat provided a background on the indicators and added that they need to be simple and measurable.

The workshop was divided into three parts: two technical sessions on Macro and City level indicators as well as a working group session. The proceedings for each session are summarized below.

Technical Session 1: Macro Indicators

This session focussed on macro indicators for sustainable transport. Prof. P.R. Shukla, IIMA, suggested an approach of back-casting to reach a sustainable low carbon mobility framework. This would provide options on infrastructure, space design, technologies and behavioural aspects, which would then inform national level decisions geared towards achieving socio-economic objectives and global commitments on climate change targets. Prof. Shukla categorized the indicators into four broad groups; (i) economic, (ii) social, (iii) environmental and (iv) meta (strategic) indicators. The list of indicators were presented during the workshop.

Prof. Darshini Mahadevia, suggested that it would be important to incorporate indicators related to urbanisation levels and rates, urban settlement policy, urban land policy, urban employment structure, financing of transport infrastructure by the national government and in particular financing of infrastructure for non-motorized transport (NMT) and fiscal instruments. This would help embed inclusiveness and socio-economic dimensions to the macro indicators. Policy making for the transport sector is done by the State Government in

India, and macro level indicators would have to be sensitive to differences in state level policies.

Discussions on the macro indicators included the following issues:

i) In general, participants felt that there were too many indicators and that there was also an overlap between some of these indicators. It was therefore necessary to identify a minimum set of key indicators, for which any of the recognised statistical methods could be utilized, for example principal component analysis e.t.c.

ii) The omission of indicators not directly related to the transport sector e.g. food security was proposed.

iii) At the macro level, there was a need to bring in indicators related to rural transport and rural-urban linkage issues.

iv) The transport sector is also key for employment purposes, and this should be included as one of the social indicators.

v) It was proposed that the methodology developed includes assessment of emissions not only from CO_2 emissions, but also emissions of other Green House Gases (GHGs).

vi) In the indicators on urbanisation, it had become important to include the indicators on Special Economic Zone (SEZ), as they are becoming the driving force of the national urbanization process.

vii) There was also mention of including health indicators at the national level given that transport systems have a strong impact on the health status of the population.

viii) There was suggestion to include employment as an economic indicator and not a social indicator. Indeed, the choice of which category to place an indicator is related to the framework behind an indicator. Hence, strictly prohibiting indicators to economic, social and environmental categories may be misleading.

ix) There was a need to re-categorize the indicators in terms of "policy response", "performance" and "outcome". Another method would be "input", "process" and "outcome" indicators.

x) The 12th urban transport action plan was heavily biased towards metro systems, and the indicator exercise and overall project should feed into this policy making process.

xi) It was important to understand that variability in the size of cities would result in entirely different patterns of CO_2 emissions. This factor needs to be put into consideration during the macro modelling exercise. Currently, the macro modelling exercise included only a broad picture of urbanisation and guidance on disaggregated scenarios would be useful.

Technical Session 2: City Level Indicators
Prof. Geetam Tiwari, IITD presented a framework on city level transport indicators and categorized them as follows: (i) mobility and accessibility indictors, (ii) environmental indicators, which are related to fuel use, (iii) pressure indicators and (iv) response (policy) indicators. She added that the indicators could also be divided into the following groups: (i)

city level, (ii) intermediate impacts level, which would include generalised cost of travel and infrastructure availability and quality, (iii) user related, which would capture information on modal choice for each travel purpose and (iv) fuel efficiency related (or environmental) indicators. Following Prof. Tiwari's presentation, Rutul Joshi contributed to the discussion on inclusiveness in urban transport. He stated that the levels of accessibility are very different for low income groups and for different size classes of urban centres, and that low income groups prefer to live near their work place to ensure accessibility. Further, neighbourhoods where low income groups choose to live are contingent upon non-transport aspects such as land use and shelter policies. At the same time, the poor are 'no choice users' of a transport mode and that the task of any transport planning has to be to convert them into choice users.

During the session, key discussion points were as follows:

i) It was necessary to decide whether benchmarks for these indicators would be specified or not. Two options emerge here: when benchmarks are fixed, they pre-judge and assign particular values to any indicator. On the other hand, without benchmarks, there is a risk of missing out on the needs of the vulnerable population. At the city level, the Ministry of Urban Development has already developed benchmarks, and a document on this is available on their website..

ii) At this point, it was the highlighted that some benchmarks can be taken from the macro level indicators. For example, there are well established benchmarks for CO_2 emissions

iii) There was a need to identify users of the indicators being developed, to ensure that they are targeted accordingly.

iv) It was emphassied that low carbon economies can rely only utpo a limit on a particular intervention e.g., beyond a limit of density, cities would not remain liveable. This needs to be put into consideration when developing urban structure indicators.

v) The poor are no choice users of a transport mode and to convert them into choice users, there has to be indicators that capture the quality of infrastructure. A similar dilemma applies for higher income groups, who are forced to use motorised transport, especially cars e.g. in cities such as Melbourne, a mode choice that depletes family welfare. For this latter group, there is also a need to convert no choice into choice of mode. Development of indicators on land use planning related issues would help in averting this problem.

vi) Street design indicators also need to be brought on board to incorporate NMT aspects and inclusiveness, as is being attempted in Delhi. Safety aspects e.g. for pedestrians on footpaths is key and indicators for this need to be included.

vii) Streets should be safe for women, and other vulnerable groups to walk on. Lighting, presence of business activities on the streets e.g. vending, creates a notion of safety and should form part of the indicators on safety.

viii) Safety is equally important for the children and the aged. Hence, safe footpaths for them to walk on are also important. This factor can be included in the indicator for foot path design.

ix) NMT infrastructure, including footpaths have to be unobstructed and clean to increasing their usage. There should be an indicator that captures this aspect.

x)   It was suggested that distances travelled depend on land use mix and balance, and this can be measured by using the entropy index.

xi)   There is also an important aspect of time taken for inter-modal switch, which needs to be minimum and convenient to encourage commuters to shift from private to public transport, wherever necessary.

xii)   Management issues are equally important. For example, an integrated ticketing system for different modes has to be introduced to increase the convenience of utilizing public transport. Management of the system brings about enforcement and institutional issues. Whether this would be considered during development of the indicators remains unclear.

xiii)   Low Carbon Mobility Plans (LCMPs) should pay attention to human displacement caused by transport projects. Rapid expansion of public transit systems has resulted in extensive displacement of populations. This type of approach to transport planning is not sustainable.

xiv)   Another set of indicators with an environmental dimension could be the thermal density at junctions.

xv)   The key issue for indicators is whether or not they are measureable. Measurability is generally translated in terms of easy availability of data. However, in this way many indicators which are relevant for sustainable transport can be left out. Therefore it is essential that the project generates data on the finalised set of indicators.

xvi)   Finally, indicators to be used in the preparation of LCMPs and assessment of case studies should be related to a framework of sustainability. The exercise should avoid preparing a laundry list of indicators.

Working Group Session

The final session aimed at compiling a set of indicators was divided into two working groups, one to discuss and finalise the macro level indicators and other to discuss and finalize city level indicators. The draft lists of indicators were discussed amongst participants of the two working groups. These indicators have been finalised, and are available on the project website: **http://www.unep.org/transport/lowcarbon/publications.asp**. At the end of the workshop, Dr. Subash Dhar gave a short presentation on the way forward and how this relates to the upcoming Stakeholder Consultative Workshop scheduled for October, 2011.

Annex A: Agenda

Time	Theme	Speakers
9.30 to 10.00	Registration & Tea	
10.00 to 10.45	**Inaugural**	
10.00 to 10.05	Welcome	Prof. Darshini Mahadevia
10.05 to 10.15	Workshop objectives	Dr. Subash Dhar
10.15 to 10.30	Indicators for Sustainable Transport	Dr. Jorge Rogat
10.30 to 10.45	Discussion	
10.45 to 11.15	**Tea Break**	
11.15 to 12.45	**Session I – Indicators at Macro Level**	
11.15 to 11.35	Macro Indicators of Sustainable Low Carbon Transport	Prof. P. R. Shukla & Prof. Prem Pangotra, IIMA
11.35 to 11.45	Inclusiveness at Macro Level	Prof. Darshini Mahadevia
11.45 to 12.45	Discussion & Expert Inputs	
12.45 to 13.30	**Lunch**	
13.30 to 15.30	**Session II - Indicators at City Level**	
13.30 to 13.50	City level Indicators of Sustainable Transport	Prof. Geetam Tiwari, TRIPPS, IITD
13.50 to 14.05	Indicators of Inclusive Transport at City level	Prof. Darshini Mahadevia and Rutul Joshi, CUE, CEPT University
14.05 to 15.30	Discussion & Expert Inputs	
15.30 to 16.00	**Tea Break**	
16.00 to 17.00	**Conclusion**	
16.00 to 16.30	Putting Together the Final List of Indicators	Facilitated by Dr. Jorge Rogat
16.30 to 17.00	Next Steps	
	- Indicator application at national level - Delhi Workshop	Dr. Subash Dhar Prof P R Shukla

Annex B: Participants List

#	Name	Organisation	Contact Details	Email
1	Dr. Kirti Bhandari	CENTRAL ROAD RESEARCH INSTITUTE (CRRI)	+91-11-26848917	kirti.bhandari7@gmail.com
2	Amit Bhatt	EMBARQ - WRI	+91-9868453595	abhatt@wri.org
3	Vatsal Bhatt	BROOKHAVEN NATIONAL LABORATORY	+91-9712682172	vatsalbhatt@gmail.com
4	Mr. Abhijit Datey	CUE, CEPT University	+91-9724393659	adatey@gmail.com
5	Dr. Subash Dhar	UNEP Risoe Centre on Energy	+45-46775135	sudh@risoe.dtu.dk
6	Chhavi Dhingra	Sustainable Urban Transport Project (SUTP)	+91-11477 73546	chhavi.dhingra@giz.de
7	Ravi Gadepalli	ITRANS	+91-11-26581765	ravi.gadepalli@gmail.com
8	Mr. Sandeep Gandhi	SG Associates	+91-9811081711	gandhi.sandeep@gmail.com
9	Ms. Deepty Jain	Transportation Research and Injury Prevention Programme	+91-7503039959	archikooldeepty@gmail.com
10	Mr. Jaehyun Jang	UNCRD	+81-52-561-9536	jangj@uncrd.or.jp
11	Ms. Renana Jhabwala	Self Employed Women's Association		renanaj@vsnl.net
12	Prof. Rutul Joshi	CUE, CEPT University	+91-79-26302470	joshirutul@gmail.com
13	Dr. R. R. Kalaga	IIT, New Delhi	+91-9891252635	raokrch@gmail.com
14	Mr. Christopher Kost	Institute of Transportation and Development Policy, ITDP		ckost@itdp.org
15	Prof. Darshini Mahadevia	CUE, CEPT University	+91-79-26302470	darshini@cept.ac.in
16	Ms. Shivika Mittal	IIM, Ahmedabad		shivikam@iimahd.ernet.in

17	Prof. Dinesh Mohan	IIT, New Delhi	+91-11- 26591147	trippdelhi@hotmail.com
18	Mr. Talat Munshi	CEPT University	+91-79-26302470	talatmunshi@gmail.com
19	Dr. Valsala C Nair	Wilbur Smith	+91-9686625270	vnair@wilbursmith.com
20	Jamie Osborne	Massachusetts Institute of Technology	+91-9022568329	jamieo@mit.edu
21	Prof. Prem Pangotra	IIM, Ahmedabad	+91-79-66324833	pangotra@iimahd.ernet.in
22	Ms. Tejal Patel	CUE, CEPT University	+91-9898034366	tejalpatel07@gmail.com
23	Mr. Tejas Patel	CUE, CEPT University	+91-9898618063	tejascept@gmail.com
24	Dr. Jorge Rogat	UNEP Risø Centre	+45-4632 2288	jorge.rogat@risoe.dk
25	Ms. Trishita Roy	IIM, Ahmedabad	+91-9375323978	trishitar@iimahd.ernet.in
26	Prof. Ambuj Sagar	IIT, New Delhi	+91-9871746644	asagar@hss.iitd.ac.in
27	Dr. H S Sudhira	Institute of Human Settlements (IIHS)	+91-80-41137705	hs.sudhira@iihs.ac.in
28	Prof. P.R. Shukla	IIM, Ahmedabad	+91-79-66324827	shukla@iimahd.ernet.in
29	Prof. Geetam Tiwari	IIT, New Delhi	+91-11-26858703	geetamt@gmail.com
30	Mr. Parth Vaidya	IIM, Ahmedabad		parthv@iimahd.ernet.in
31	Mr. Somesh Sharma	IIM, Ahmedabad	+91-9925150375	somesh07@gmail.com