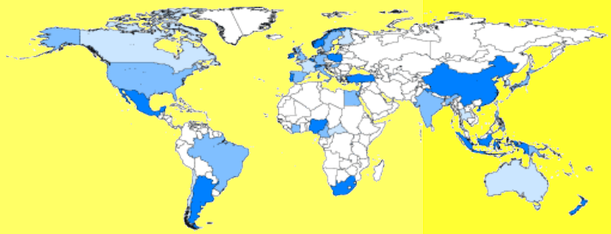
URGENT!

There is an urgent need to involve transport as a major sector in the climate change negotiation. WCTRS could help UNFCCC and the IPCC to promote this process.

WCTRS (World Conference on Transport Research Society)

The WCTRS covers multi-modal, multi-disciplinary, and multi-sectoral fields. The members span almost all aspects of transportation research, planning, policy and management. The World Conferences held every 3 years mirror this breadth of interests. 67 countries are represented in the WCTRS, with more than 1,500 members.

President: Anthony May (University of Leeds, UK)
Chair of Scientific Committee: Yoshitsugu Hayashi (Nagoya University, Japan)



WCTRS SIG11 (Special Interest Group11) - Transport and the Environment

The SIG11 aims at seeking ways to establish effective mechanisms for mitigating environmental degradation due to transport in the international domain. The following topics are researched: a) Comparing the emission of greenhouse gas and air pollution between countries and cities, b) Diagnosing transport system and its resulting global and local environmental degradation and prescribing countermeasure policies, and developing an evaluation system of their performance, c) Providing scientific instruments for evaluation of international mechanism for environmentally sustainable transport and the methods to collect the necessary financial resources.

Sponsored by:

Global Environment Research Fund (S-6-5), Ministry of Environment, Japan

Supported by:

Graduate School of Environmental Studies & Global COE Program "From Earth Science to Basic and Clinical Environmental Studies", Nagoya University, Japan
College of Architecture and Urban Planning, Tongji University, China

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PUTTING TRANSPORT INTO CLIMATE POLICY AGENDA

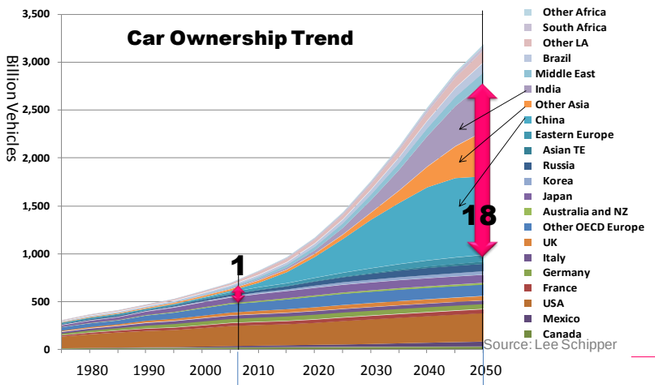
- Recommendations from WCTRS to COP17 -

World Conference on Transport Research Society (WCTRS)
http://www.wctrs.org/

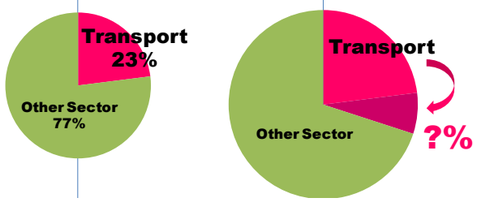
December 2011

Upgrading Transport to a Key Sector

Can Developing Countries Take Leap-frog Pathway?

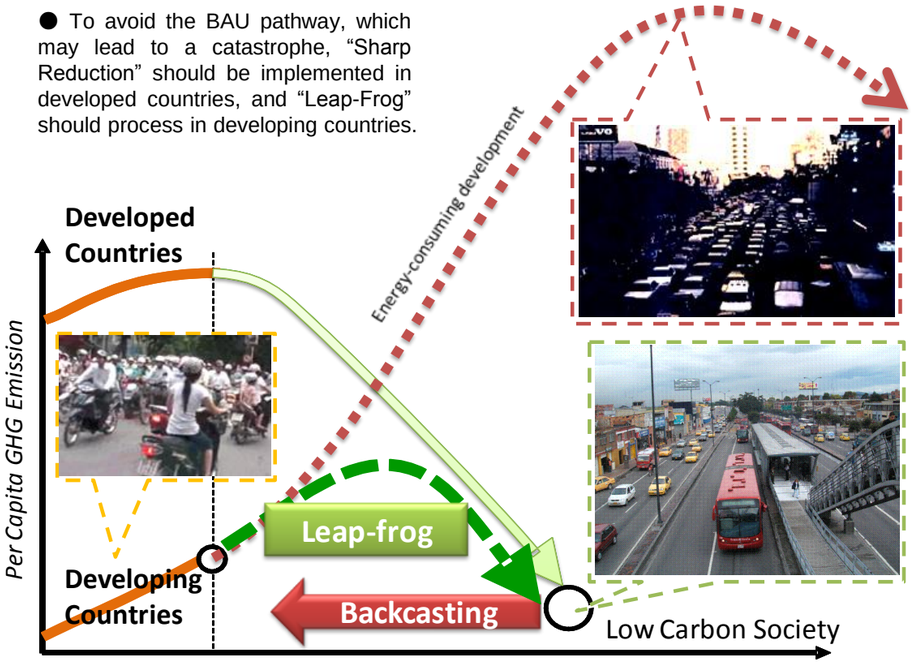


● According to IEA's forecasts, China, India and other Asian developing countries are expected to have significant growth of car ownership, 18 times larger by 2050.



● Transport accounts for 23% of CO_2 emissions (2007), amounting to 6.6 Gt-CO_2, and it is the fastest growing sector for carbon emissions. Given the expected drastic growth in car ownership in developing countries, the influence of transport sector on climate change shall not be neglected.

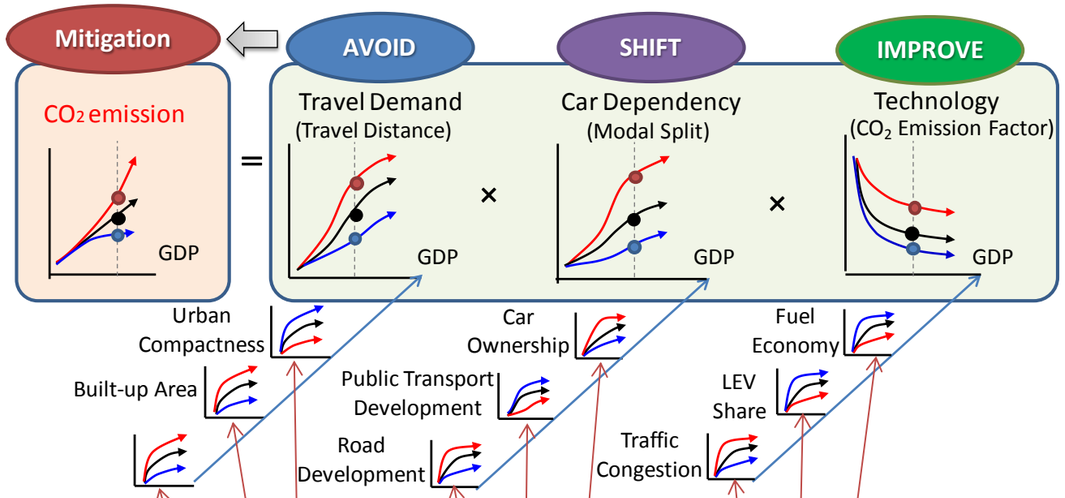
● To avoid the BAU pathway, which may lead to a catastrophe, "Sharp Reduction" should be implemented in developed countries, and "Leap-Frog" should process in developing countries.



Mitigation Options: CUTE Matrix

● The mechanism of CO_2 emission from transport can be decomposed to various elements of land-use transport systems and technologies. While economic growth is likely to change these elements in a way that causes more emissions, mitigation options need to be introduced to control the change of each element to design a low-carbon transport system.

● According to the WCTRS project "Comparative study on Urban Transport and the Environment (CUTE) (2001-2004)", a matrix of mitigation options was developed (CUTE Matrix). The strategies for low-carbon transport have 3 components: AVOID (reduce transport demand), SHIFT (reduce emissions per unit transported), IMPROVE (reduce emissions per kilometer). Each strategy would have instruments that include technological, regulatory, informational and economic instruments - as seen in the matrix below.

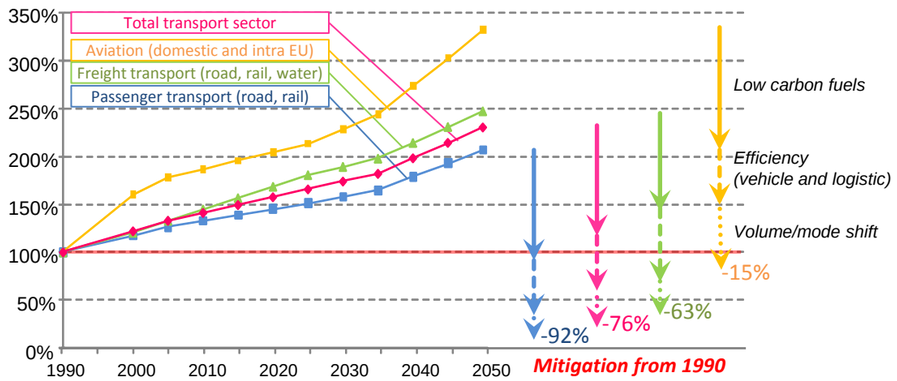


CUTE Matrix		Strategies		
		Avoid	Shift	Improve
		Reduce transport demand	Reduce emission per unit transported	Reduce emissions per kilometer
Instruments	Technological	■Transit Oriented Development (TOD)	■Integrated Public Transport System ■Highly Competitive Mass Transit System ■Intermodal Freight Transport	■Low Emission Vehicle (LEV) ■Alternative Energy ■Advanced Infrastructure Technology ■Logistic Efficiency
	Regulatory	■Compact City ■Mixed Land Use	■Bus/Tram Priorities ■Parking Regulation ■Traffic Access Control	■Emission Standard ■Top-Runner Program
	Informational	■Tele-Work ■Smart Choice on Workplace and School	■Awareness Campaign for Public Transport Use	■Eco-Drive ■Intelligent Transportation System ■Labeling of Vehicle Performance
	Economic	■Fuel Tax ■Road Pricing ■Relocation Subsidy	■Car Registration Tax ■Fuel Tax ■Road Pricing	■LEV Preferential Tax ■Fuel Tax

Reference : WCTRS and Institute for Transport Policy Studies (2004) Urban Transport and the Environment: An International Perspective. Elsevier Ltd.

Sharp Reduction in Developed Countries:
Innovative Technologies

Innovative Technologies Contributes to CO_2 Reduction in EU

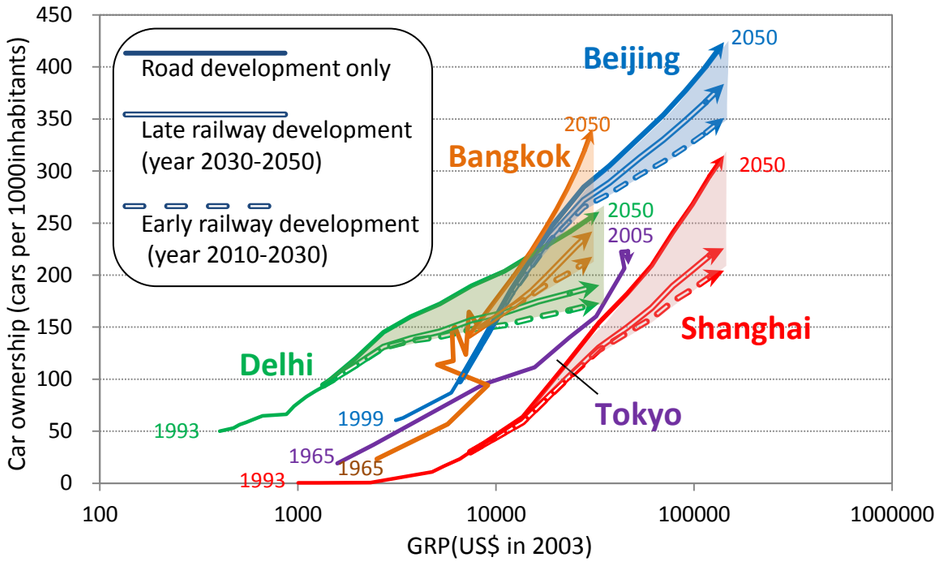


(Source: Karst Geurs, Getting into the Right Lane for 2050, Netherlands Environmental Assessment Agency, 2009)

Leap-frog in Developing Countries:
Green Transport Systems

Early Improvement Reduces More CO_2

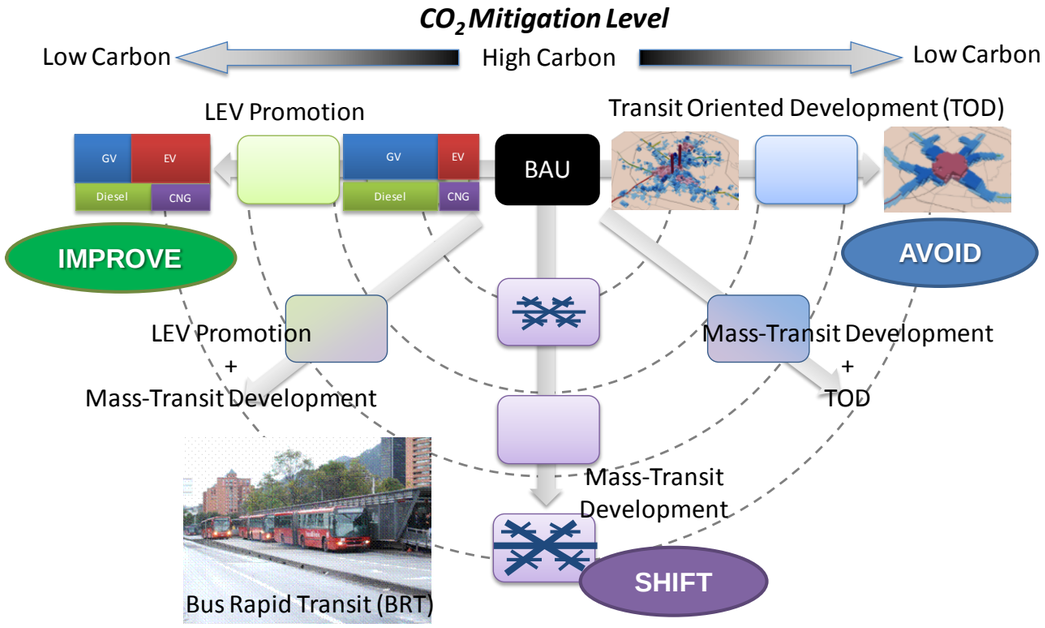
● For a developing megacity, which are likely to prioritize road development over rail development, early development of mass-transit networks is highly recommended. The early development could make it citizens to grow up their habits to use railways and bring on less CO_2 emission from transport sector in future.



Designing A Low-Carbon Transport System

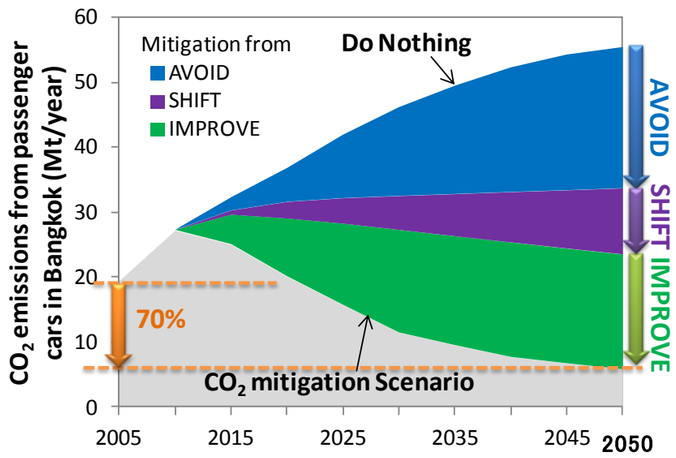
● A low-carbon transport system can be designed by combining elements relating to the three types of low-carbon transport strategies. Thus, it can be realized with a policy package among measure for land-use transport planning (AVOID and SHIFT) and advancement of transport technologies (IMPROVE).

● Developing countries and cities need to actively introduce latest measures to develop the system in a leap-frog manner. They include introducing Transit Oriented Development (TOD) and Bus Rapid Transit (BRT) systems, and promoting Low Emission Vehicles (LEV).



Indentifying A Necessary Policy Package

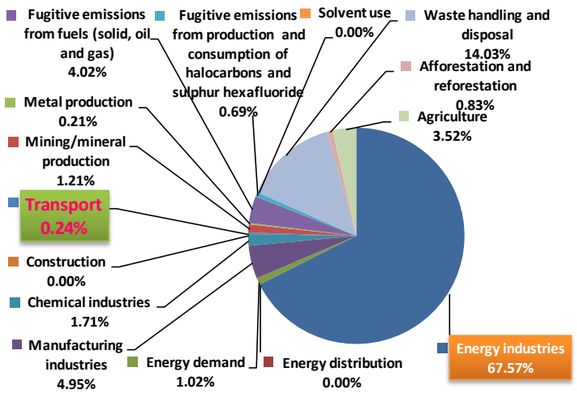
Extensive Measures Needed for Low-Carbon Transport



● In order to achieve 70% mitigation from 2005 to 2050 in Bangkok, the city must control the expansion of built-up areas to the current levels (AVOID), must develop mass-transit networks to a level four times larger than planned (SHIFT), and must introduce advance transport technologies to the same extent as in developed cities (IMPROVE).

Weak Supportive Financial Mechanism

Only 10 Projects for Transport in 4206 CDM Projects (2011)



Sectoral Scope*	Registered Projects
Energy industries	2842
Energy distribution	0
Energy demand	43
Manufacturing industries	208
Chemical industries	72
Construction	0
Transport	10
Mining/mineral production	51
Metal production	9
Fugitive emissions from fuels (solid, oil and gas)	169
Fugitive emissions from production and consumption of halocarbons and sculpture hexafluoride	29
Solvent use	0
Waste handling and disposal	590
Afforestation and reforestation	35
Agriculture	148

Proposers

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- **Pierpaolo Cazzola**, *IEA*
- **Yves Crozet, Hector G. Lopez-Ruiz**, *LET, University of Lyon II, France*
- **Atsushi Fukuda**, **Hisayoshi Morisugi** *Nihon University, Japan*
- **Karst Geurs**, *University of Twente, Netherlands Environmental Assessment Agency, Netherlands*
- **Jiro Hanyu, Yuki Tanaka**, *Institution for Transport Policy Studies*
- **Shinya Hanaoka**, *Tokyo Institute of Technology, Japan*
- **Yoshitsugu Hayashi**, *Nagoya University, Japan (SIG11 Co-chair)*
- **Ian Hodgson**, *EU Commission*
- **Ali Huzayyin**, *Cairo University, Egypt*
- **Reiner Koblo**, *German Development Bank, Germany*
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NAMAs & MRV

Earlier Actions for AVOID:
Progress of motorization and urbanization is irreversible. Construction of low carbon transport network and land-use pattern requires a long period. Developing countries can not waste of time any more.

Methodology of MRV(Measurement/Report/Verification):
Rich technologies and knowledge should be integrated as practical methodologies and be transferred to developing countries.

Co-benefit:
Low carbon transport systems bring various positive effects to developing countries, convenient & comfortable trips, economic growth without bottleneck brought by traffic congestion, mitigation of local pollutions, and compact & smart landscape.

Market Mechanism:
Self-sustaining finance systems for NAMAs should be established. Value capture is one of the most promising methods to be realized by means of combination of taxation, subsidization, carbon charge, and etc.

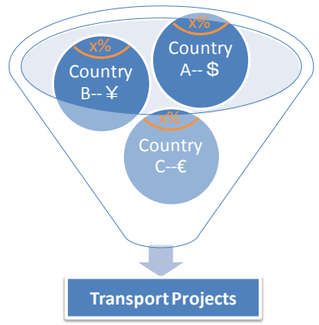
From Project CDM to Programmatic CDM

The Programmatic CDM is not an option but a new scheme to realize a project which consists of a bundle of similar projects. Compared with traditional Project CDM, Programmatic CDM can absorb the risks of each individual CDM project due to uncertainty in reaching the emission targets proposed for the transport sector.

Green ODA

Long-term impact:
The volume of transport projects by ODA is huge among internationally transferred budget. Road construction is dominant compared to railways. And further automobile use and induce additional road improvement which brings more CO_2 emission in long term. AVOID of carbon-dependent transport requires the SHIFT of ODA to green modes.

Designing the market for the future CO_2 reduction:
CO_2 reduction effect of green transport takes a long time. However, the current carbon market treats only short term emissions and, therefore, does not adapt such long term effects as generated by transport projects. The expectation of future CO_2 reduction is considered to be financial products, e.g. carbon stock option and carbon futures.

CDM Compensation Fund

The CDM Compensation Fund avoids the risk for investors (firms in developed countries) to miss the emission credit due to uncertainty of achieving the expected CO_2 reductions. It should be established to reserve a certain percent (x%) of emission rights from each CDM project.