

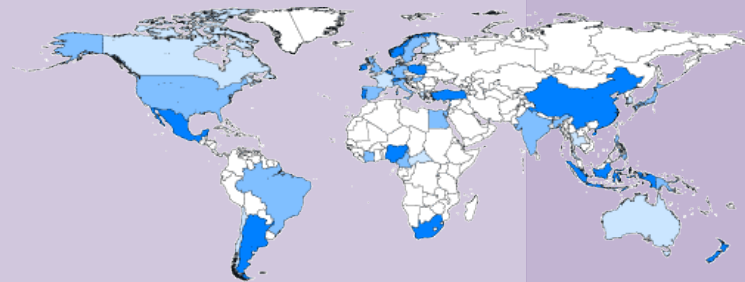
URGENT!

There is an urgent need to involve transport as a major sector in the climate change negotiation. The WCTRS could help the 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. 75 countries are represented in the WCTRS, with more than 1,500 members.

President: 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:

- Comparing the emission of greenhouse gas and air pollution between countries and cities,
- Diagnosing transport system and its resulting global and local environmental degradation and prescribing countermeasure policies, and developing an evaluation system of their performance,
- Providing scientific applicable instruments for evaluation of international mechanism for environmentally sustainable transport and the methods to collect the necessary financial resources.

Editors:

Yoshitsugu Hayashi, Kazuki Nakamura, Kei Ito, Aoto Mimuro,
Nagoya University, Japan

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Japan

Graduate School of Environmental Studies & Global COE Program "From
Earth Science to Basic and Clinical Environmental Studies",
Nagoya University, Japan

Contact:

Hayashi and Kato Laboratory, International Center for Sustainable
Transport and Cities (SUSTRAC), Graduate School of
Environmental Studies, Nagoya University, Japan

Address: 464-8603, C1-2, Nagoya, Japan

TEL: +81-52-789-2773

E-mail: tracc@env.nagoya-u.ac.jp

Website: <http://www.sustrac.env.nagoya-u.ac.jp/en/>

PUTTING TRANSPORT INTO CLIMATE POLICY AGENDA

- Recommendations from WCTRS to COP19 -



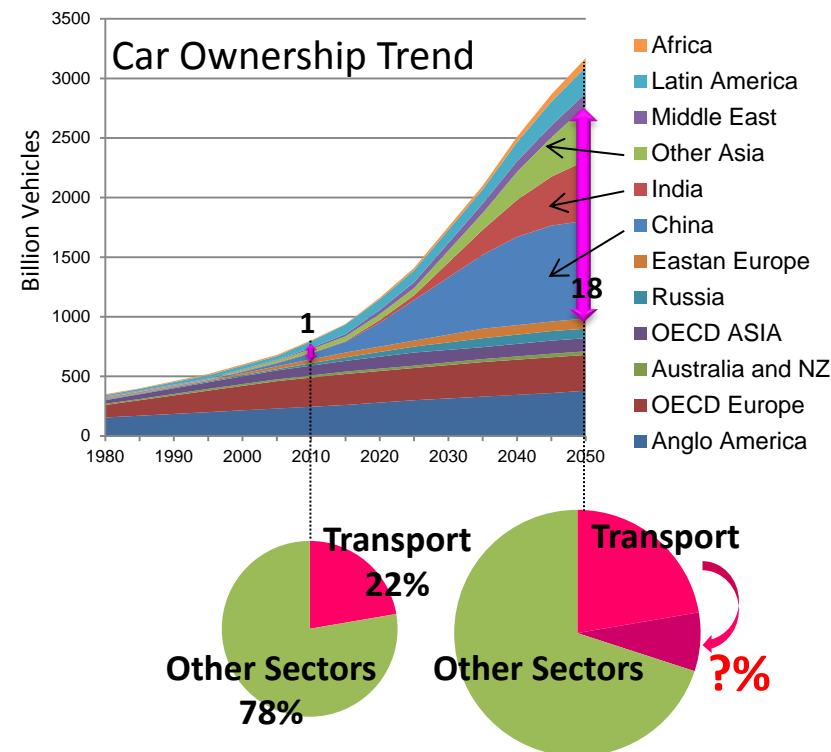
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November 2013



Upgrading Transport to a Key Sector

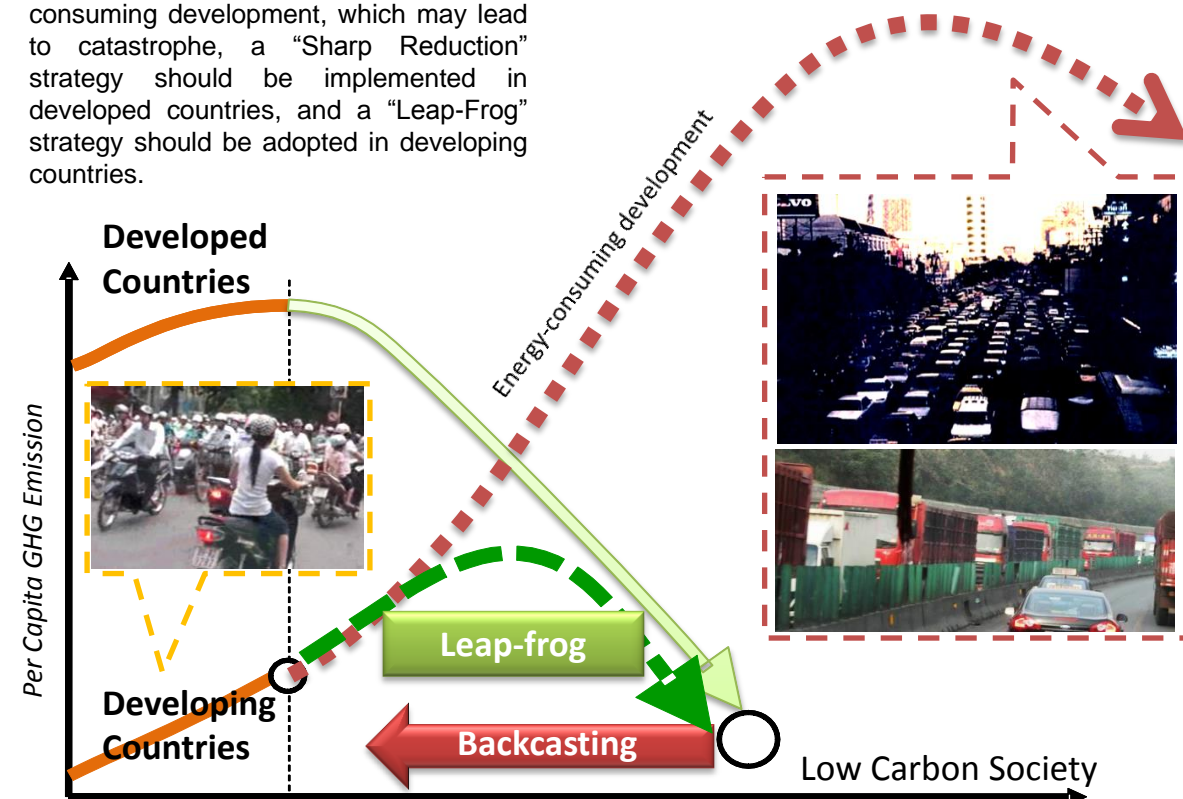
Can Developing Countries Take a Leap-Frog Pathway?



● According to IEA's forecasts, China, India and other Asian developing countries are expected to have significant growth in car ownership, an 18-fold increase from 2010 to 2050.

● The transport sector accounts for 22% of global energy-related CO₂ emissions (IEA,2012), amounting to 6.8 Gt-CO₂, and it is the fastest growing sector for carbon emissions. Given the expected dramatic growth in car ownership in developing countries, the influence of the transport sector on climate change must not be neglected.

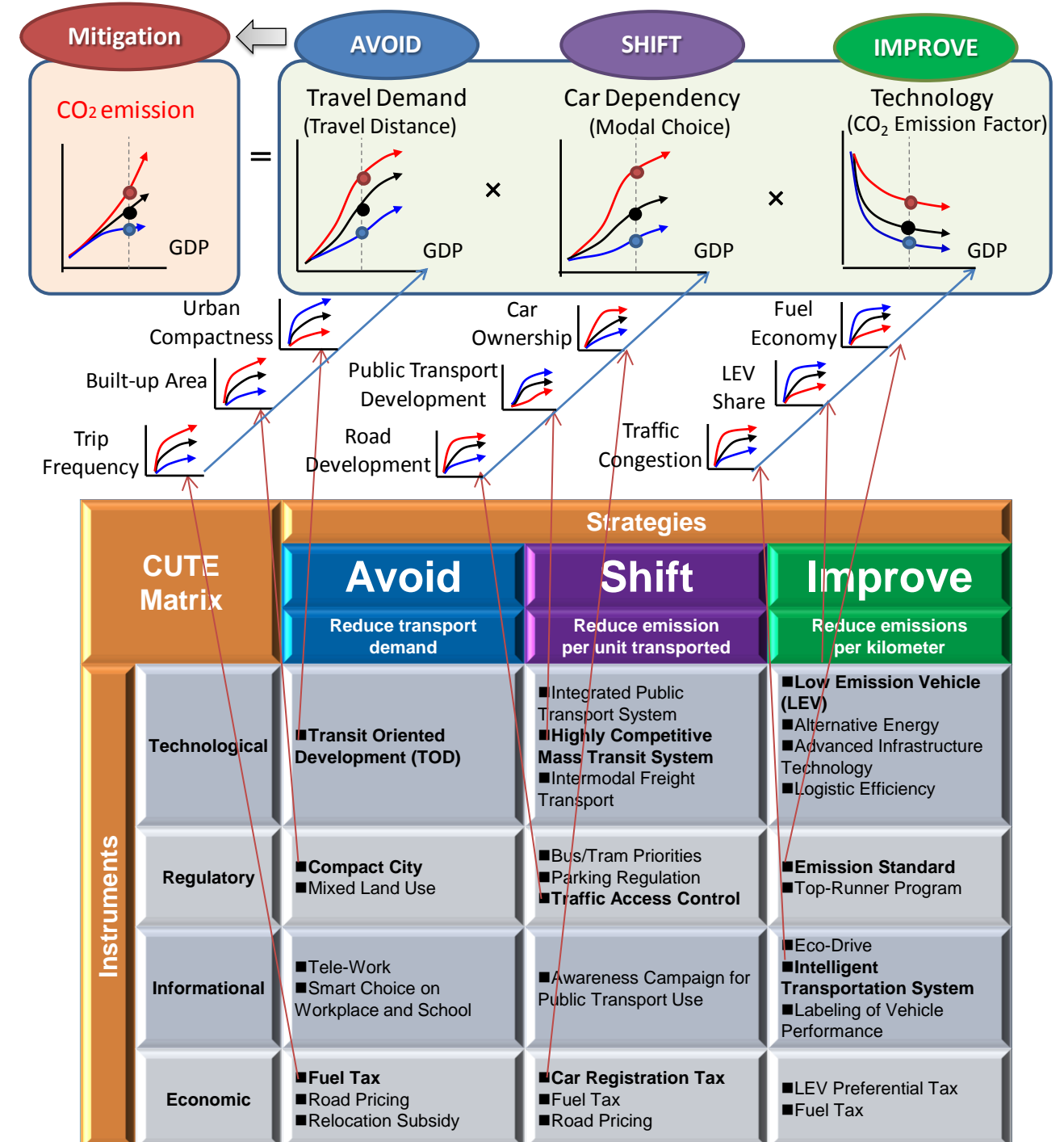
● To avoid the pathway of energy-consuming development, which may lead to catastrophe, a "Sharp Reduction" strategy should be implemented in developed countries, and a "Leap-Frog" strategy should be adopted in developing countries.



Mitigation Options: the CUTE Matrix

● The mechanism of CO₂ emissions from transport can be decomposed into 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 in each element and hence to achieve a low-carbon transport system.

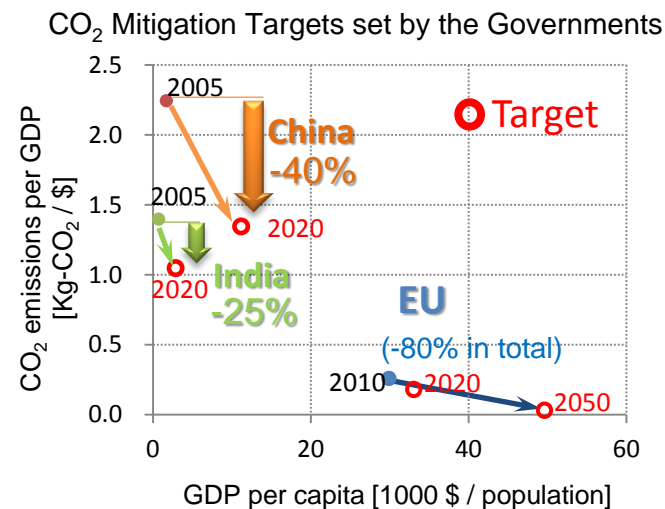
● In the pioneering work of the WCTRS project "Comparative study on Urban Transport and the Environment (CUTE)", a matrix of mitigation options was developed (the CUTE Matrix). The strategies for low-carbon transport have 3 components: **AVOID** (reduce unnecessary transport demand), **SHIFT** (reduce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



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

Targeting CO₂ Mitigation

Developing Countries Have Large Potential of CO₂ Mitigation



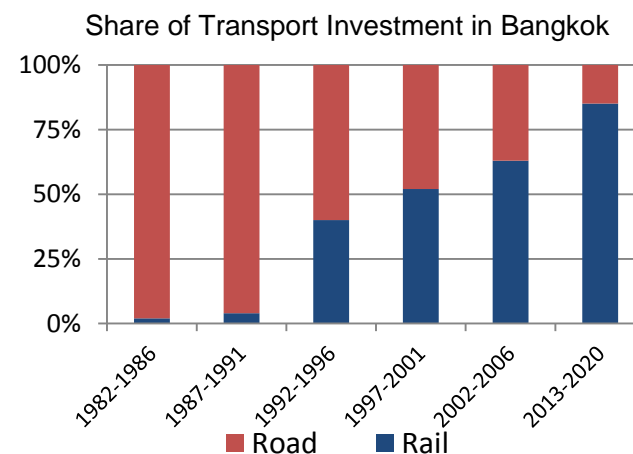
- The IPCC reported that global CO₂ emissions need to be reduced by half from 1990 to 2050 in order to avoid more than 2°C temperatures increase from climate change. According to the report, developed countries set long-term CO₂ mitigation targets to meet the necessary global mitigation.

- In Asian developing countries, the governments have set CO₂ mitigation targets over a medium term. However, as their economies grow in a longer term, they have more potential of CO₂ mitigation, comparing emission levels between developing and developed countries.

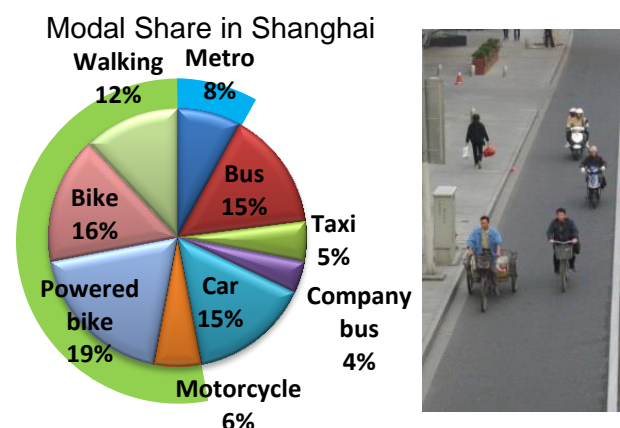
Policy Shift to Green Transport Development

Early Implementation of Low Carbon Transport Policy is Important

- In Bangkok, road oriented development had caused heavy congestion in 1990s. To tackle this problem, the first urban rail transit was open in 1999, which has been further developed to 80km in 2010. By generating 3% rail use in modal share, the development has made people realize the importance of rail, which has led to a proposal to invest 80% of the national transport budget in rail improvement, including 464km urban rail transit systems in 2020.



- Shanghai city has started Metro development in the early 1990s, and had accelerated the development to 450km to prepare for the world EXPO in 2010. The development realized 8% Metro use in modal share. On the other hand, high density and polycentric urban development has also promoted short-distance travel, which is reflected by more than 50% modal share by motorcycle, electric bike, bike, and walking. To meet their large demand, bike-dedicated lanes are developed on arterial roads.

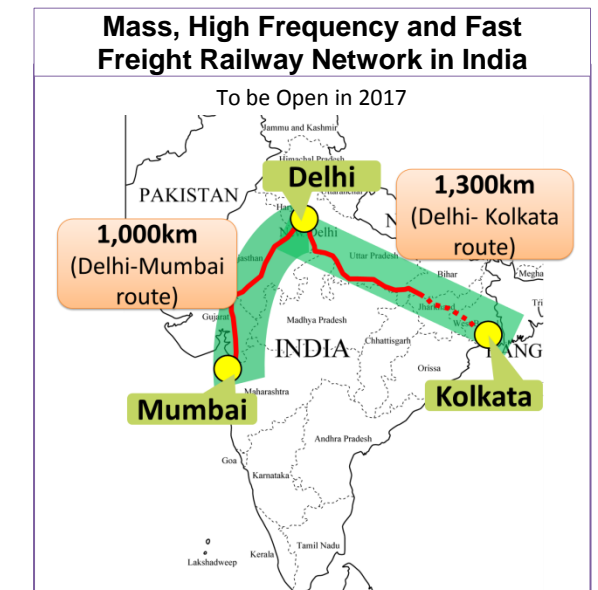
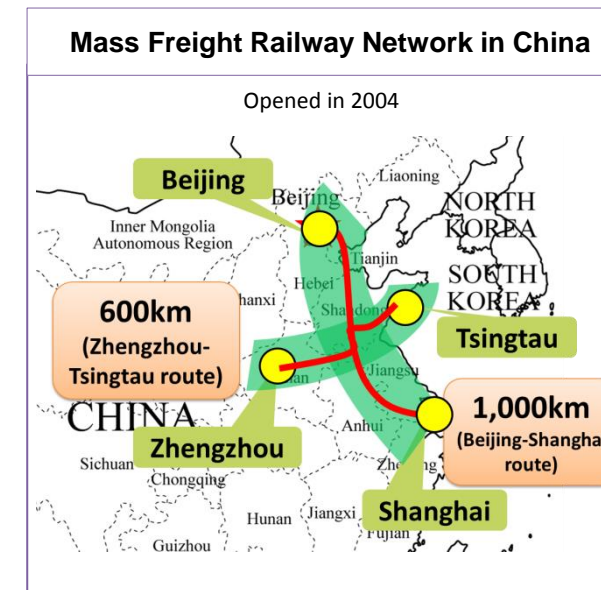


Development of Dedicated Freight-Rail Corridor

Mass, High Frequency and Fast Freight Transport can be Low Carbon

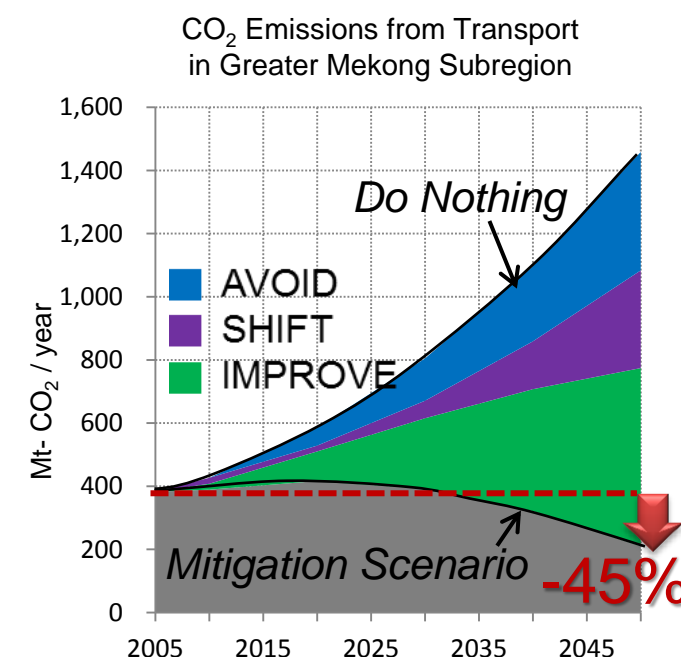
- China opened a dedicated freight-rail corridor in 2004 which increased freight-rail capacity by doubling container-stack size and train length. It saved 33% energy consumption, and 25-40% freight-cost, compared to single container-stack size with short train length.

- India plans to develop a dedicated freight-rail corridor between megacities until 2017. The plan includes not only doubled container-stack size, but also high speed (over 120km/h) and high frequency (over 70 trains/ day).



Necessary Policy Implementation for Leap-Frog

Implementation of Extensive Measures is Needed



Case of Greater Mekong Subregion

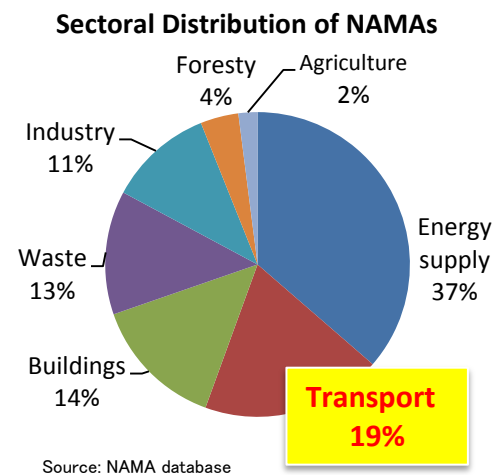
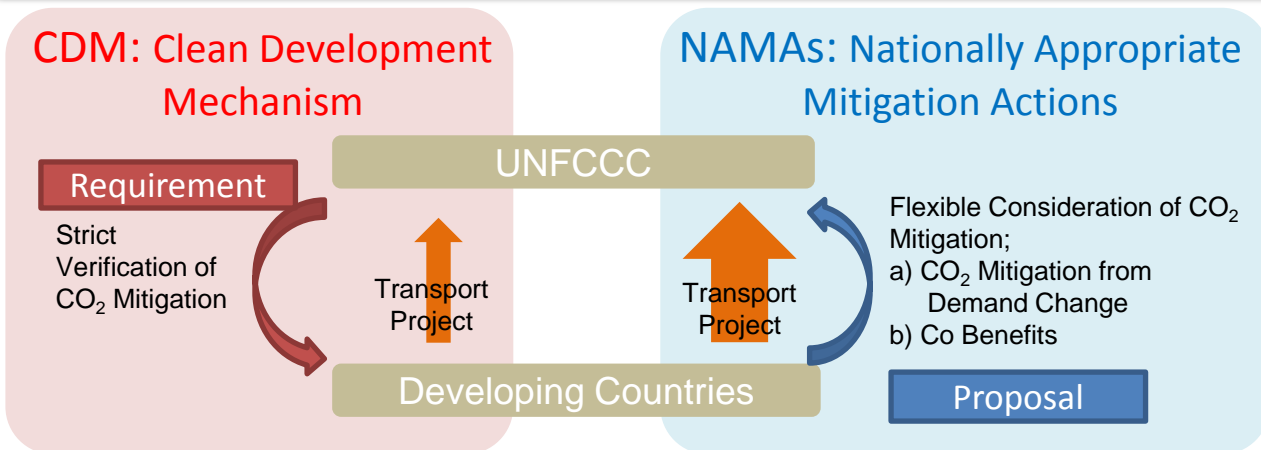
- In order to achieve CO₂ mitigation goal by 45% from 2005 to 2050, it is requested to reduce by 20% in urban transport and by 62% in interregional transport by combining the below low-carbon transport strategies.

- In urban transport, even though assuming all fuel passenger cars become low emission vehicle (IMPROVE), trunk public transport should be developed for 4,569km urban railways and 23,000km Bus Rapid Transit in megacities (960km per city on average) (SHIFT & AVOID).

- In interregional transport, even though assuming fuel-efficiency of truck, railway and ship is improved by 70% from current efficiency (IMPROVE), dedicated freight-rail networks need to be developed for 8,526km (SHIFT & AVOID).

Financial Support for Low-Carbon Transport Projects

More Bottom-up Approach is Suitable for Transport Projects



More Attention to Transport in NAMAs than CDM

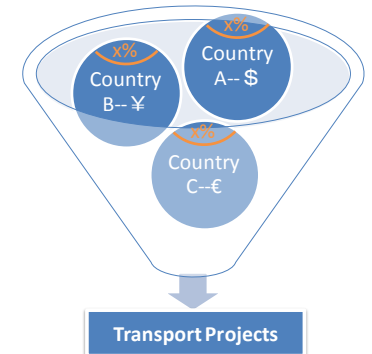
More Transport projects are promoted in NAMAs than CDM. Developing countries show their interests in transport development in NAMAs mainly through public transport improvement (**SHIFT**) and technological advancement (**IMPROVE**). In addition, to enhance the effectiveness of the transport projects, they should promote the integration of public transport improvement with land-use planning (**AVOID**) in the long term rather than only the short term.

Improvement of International Frameworks

a) Cooperative Fund:

Transport projects are more likely to need large financial investments for infrastructure development. This is enabled by cooperative financial contribution among many developed countries and institutions.

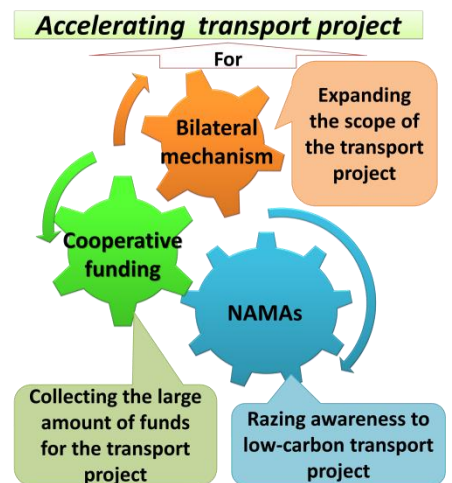
A CDM Program Compensation Fund should be introduced to allow a fluctuation by a given percentage in emission rights from individual CDM projects, while still achieving targeted reductions for the CDM program as a whole. As another form of the cooperative fund, the newly-introduced Green Climate Fund (GCF) can also support demand of developing countries for mitigation and adaptation projects in NAMAs. The GCF receive financial contribution from developed country parties and a variety of other public and private sources.



b) Bilateral Mechanism :

Bilateral mechanism is a more de-centralized international approach based on inter-governmental negotiations. It can provide a flexible framework to facilitate low-carbon transport projects, because assessments for transport projects are conducted by the mutual agreement. The scope of the transport project can be expanded by the bilateral mechanism.

The Official Development Assistance (ODA) program, an inter-governmental grant from developed countries to developing countries, is the largest financing resource for carbon reduction in developing countries. However, ODA projects are based on proposals from the recipient developing countries, and the majority of transport proposals focus on the improvement of roads. WCTRS proposes instead the concept of a 'Green ODA', which requires proof that the requested project is the best in reducing CO₂.



Keys to Promote Transport Projects in NAMAs

a) Development of MRV(Measurement/Report/Verification) for Transport Projects:

Special interest group 11 of WCTRS has been developing an systematic method to draw up the road map by appropriately combining Avoid, Shift and Improve strategies to step by step reduce CO₂ emissions to reach the set up goal. This will help very much the process to measure and report for verification of projects.

b) Assessment for Co-benefits:

As transport projects can generate many co-benefits, each developing country needs to flexibly assess low-carbon transport systems. These may include mobility improvement, efficient supply chain, mitigation of air pollution, and energy saving, through calming traffic congestion from better/sustained enforcement of traffic management.

c) Self-Financing Mechanisms:

Besides the financial support helps initial investments for transport development, self-sustaining finance systems should assist the development. Value capture is one of the most promising methods to take advantage of economic growth promoted by transport development in developing countries, in combination with taxation and subsidization.

Proposers

- David Banister, University of Oxford, UK
- Yves Crozet, University of Lyon II, France
- Atsushi Fukuda, Hisayoshi Morisugi Nihon University, Japan
- Karst Geurs, University of Twente, Netherlands
- Shinya Hanaoka, Tokyo Institute of Technology, Japan
- Yoshitsugu Hayashi, Hirokazu Kato, Kazuki Nakamura, Nagoya University, Japan
- Cornie Huizenga, Partnership for Sustainable, Low Carbon Transport, China
- Ali Huzayyin, Cairo University, Egypt
- Reiner Koblo, KfW Development Bank, Germany
- Jamie Leather, Asian Development Bank (ADB)
- Anthony May, University of Leeds, UK
- Fumihiko Nakamura, Yokohama National University, Japan
- Takaaki Okuda, Nanzan University, Japan
- Tae Oum, University of British Columbia, Canada
- Haixiao Pan, Tongji University, China
- Marco Ponti, Milan Polytechnic University, Italy
- Werner Rothengatter, Patrick Jochem, Karlsruhe Institute of Technology, Germany
- Wiroj Rujopakarn, Kasetsart University, Thailand
- Wolfgang Schade, Fraunhofer Institute for Systems and Innovation Research, Germany
- Sanjivi Sundar, The Energy and Resources Institute (TERI), India
- Louis S. Thompson, Thompson, Galeson and Associates, USA
- Michael Wegener, Spiekermann & Wegener Urban and Regional Research, Germany
- The late Lee Schipper