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Wuppertal Institute for Climate, Environment and Energy

NEWSLETTER OF THE PROJECT "JIKO DEVELOPMENT PHASE 2007–2009" · WUPPERTAL INSTITUTE · RESEARCH GROUP ENERGY, TRANSPORT AND CLIMATE POLICY

Editorial

Dear reader,

2008 seems to be another climate change policy year, as one event follows another. After the second meeting of the two ad-hoc working groups on the future of international climate policy, focus now turns to the G8 Climate Change Summit in Toyaku, Japan. Even though the American government went as far as to agree long-term global emission reduction targets, it remains doubtful as to whether the US will actually sign an international agreement in 2009.

One of the main causes of climate change, especially in the US, is the transport sector, which still harbours vast potential in energy efficiency. Emission reduction potential in transport is also significant in developing countries and transition economies.

This issue of JIKO Info is thus dedicated to CDM transportation projects, a project type which has received little attention to date. We look at the reasons behind this, comment on existing methodologies and those currently under debate, and show how more CDM and JI transportation projects could be implemented.

All on the JIKO team wish you an enjoyable and interesting read.

Christof Arens

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CDM Transport Projects Up and Coming

by Dr. Jürg Grütter, grütter consulting

Transport causes approximately one quarter of global greenhouse gas emissions. Around the world, transport is a growth sector, especially in developing countries. Measured against the share of CO_2 emissions and the reduction potential they offer, CDM transport projects are strongly underrepresented. This is particularly regrettable because transport projects can be of huge service to sustainable development in host countries. The CDM has the potential to play a significant role in reducing the social, economic and environmental costs of mobility.

There are essentially three ways of reducing transport-related emissions:

- Lower emissions per kilometre, achieved by using new vehicles and engine technology (e.g. hybrid vehicles), fuel switch (e.g. biofuels), a change in behaviour (eco-efficient driving) and infrastructural measures (fewer traffic jams).
- Lower emissions per transport unit, say through better use of freight capacities or a change in mode of transport (e.g. switching from road to rail freight).
- Shorter distances and traffic mitigation by means of land use planning, transport infrastructure and behavioural changes.

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JIKO Analysis

Complex and Cost-Intensive: CDM Methodologies for Transport

by Christine Clashausen, GFA Envest

Carbon emissions in the transport sector continue to rise worldwide and are disproportionately high in emerging economies and developing countries. But it is not just the emission levels that attract attention. The transport sector harbours huge emission reduction potential – potential that has yet to be exploited under the Clean Development Mechanism. As of May 2008, the CDM Executive Board (EB) had approved 114 methodologies of which 4 focused on the transport sector; and of the 1,033 CDM projects registered, only 2 were transport projects.

The CDM methodologies approved so far are highly complex, thus making methodology development extremely time and cost-intensive. This is why methodologies and projects for less complex sectors are better represented.

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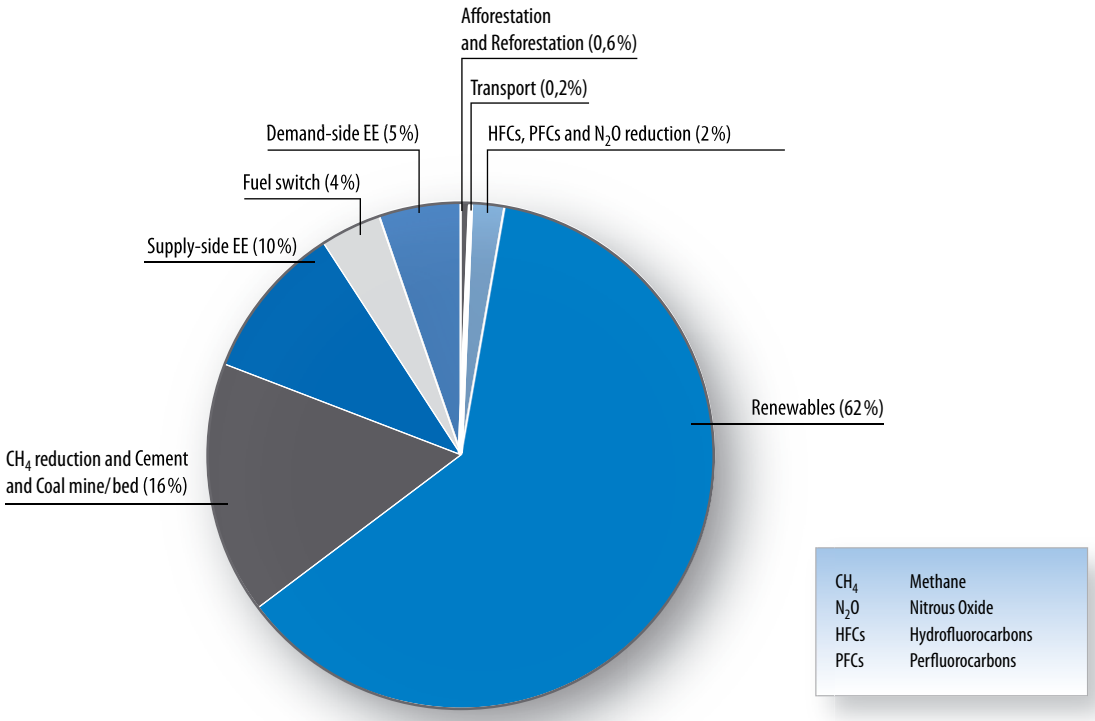

Figure: Technology Types in the CDM Project Pipeline

Source: UNEP Risoe 2008, as of June 11, 2008

Biofuel use has been on the increase for a number of years. The is reflected in the CDM, with the majority of project proposals focusing on biofuel production. But even so, these projects bring a number of issues to light. One such issue involves the effective emission reductions in relation to the overall project lifecycle, not least in conjunction with land use change. Also, at least in the first generation, biofuels have potential problems in connection with biodiversity: monocultures like sugar beet and palm oil plantations can come to dominate species-rich regions and are a potential threat to food crop production.

So far, the CDM Executive Board has approved two biofuel-related methodologies: the first for biofuels derived from recycled fats and oils, and the second for plant oil-based biofuels. As no such project has been registered to date, the following does not address biofuels as a project type.

Current Status

The only large-scale transport methodology to be approved by the UNFCCC so far is AM0031 for Bus Rapid Transit (BRT) services. For small-scale projects, a methodology is available for vehicles equipped with low-emission technology and a comparable one has been devised for vehicle fleets. Other methodologies are under discussion (see below).

The CDM Executive Board had registered two CDM transport projects so far:

- The first and only project is the Bus Rapid Transit Project in Bogota (the TransMilenio Project) – see page 5.
- The second project involves enhanced energy efficiency in underground railway services through better use of regenerative braking energy (see page 6).

Two other Bus Rapid Transit projects are due to be registered in the near future.

Obstacles

The transport sector's poor representation in the CDM is largely due to the following:

- Methodologies for transport projects are far more complex than most other CDM methodologies. This is especially the case when it comes to baseline setting, allowing for leakage and designing monitoring processes. Further, they require assessment of the behaviour and attitudes of numerous individuals and groups.

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Dr. Jürg M. Grütter, owner of grütter consulting, has worked in the transport and emissions sectors in over 30 different countries since 1992. Dr. Grütter is an economist and author of the only UNFCCC-approved large-scale transport methodology and the first CDM transport project to be registered.

- Significant amounts of additional data are needed for transport projects which are developed as CDM projects. Data collection in this sector can be extremely cost-intensive: prior to a project getting off the ground, CDM-related transaction costs for transport projects can be far in excess of those for conventional CDM projects. Because these costs must be borne before a project is registered, they harbour a high degree of risk for project owners.

- Monitoring of transport projects is complex and can be costly. Forecasts predicting effective CO_2 reductions are subject to great uncertainty. Such factors make CDM transport projects considerably less attractive.

- The CDM Executive Board *Methodologies Panel* (Meth Panel) demonstrates limitations in its understanding of transport methodologies and sometimes expects more of such methodologies than with other project types. One example involves construction-related upstream emissions, which can be neglected in the case of dams (under methodology ACM 002) but not in that of bus routes. Another example is the possible rebound effect of project implementation-caused traffic. The Executive Board affords great attention to this effect in transport methodologies, but it is not considered at all in relation to energy and energy efficiency methodologies where the effect can be at least as great.

The programmatic and sectoral approaches that are repeatedly discussed in this field are no less complex than the project-based approach and have huge methodological, data and monitoring problems. Also, many other factors influence transport sector emissions thus making baseline setting extremely complicated in a sectoral approach.

Projects in the pipeline

Despite these obstacles, a number of new methodologies and projects are either under discussion or being drafted:

With regard to **public transport,** the Meth Panel is currently reviewing several methodologies: a new methodology for bus rapid transit systems (NM 0257), one for overhead cable car transport and one for underground/local railway systems (NM 0266). And at its meeting last June, the Panel discussed a methodology for better use of public transport capacities (NM0258). The results were unfortunately unavailable prior to going to print.

The MetroCable system in Medellin is one of the few overhead cable car systems in the world that were specially designed as a means of mass transport. grütter consulting is currently working on a new project phase which will be carried out as a CDM transport project.
Photo: grütter consulting

JIKO Analysis

ground railways by operational means such as greater frequency and connections to shuttle buses.

With regard to public transport, experts are currently discussing a methodology for **Transit Oriented Development** (TOD). This is an extremely interesting approach to sustainable mobility because it increases vehicle efficiency and actively prevents traffic. The approach focuses on the integration of urban land use planning into public transport development. This involves forming finely meshed, mixed-use, pedestrian-friendly urban hubs located around public transport bus stops and stations.

In the **freight sector,** the debate concentrates on switching the mode of transport from road to sea or rail. Most logistics providers do not, however, have the capacity needed to adequately implement the measures involved in a large-scale CDM project. Given the long methodology and project development phases, projects of this type are unlikely to be registered before 2012.

Projects involving **vehicle substitution** (such as the use of gas vehicles) are repeatedly discussed. On the whole, the emission reductions expected from this type of project are rather low. This can make clear identification of a baseline difficult because it would be impossible to arrive at a conservative, credible forecast of the situation in the future. Information is needed on how many more gas vehicles would be used anyway if the project were not to be implemented.

Outlook

The outlook for the CDM and for transport is thus cautiously positive. The Executive Board will no doubt approve more new methodologies over the next twelve months. This will open the door to new projects. Given the amount of time it takes to develop a project and the investment involved in collecting additional data, it is unlikely that a significant number of CDM transport projects will be registered before 2010.

The majority of the projects expected in the coming years will focus on new public transport systems, notably bus rapid transit projects. Looking at the plans for rapid bus systems around the world, up to 100 transport projects could be implemented in this sector in the medium term. Whether it actually happens will partly depend on the results of the negotiations on a post-2012 climate change agreement. Other deciding factors are risk reduction and the Executive Board's inconsistency in project evaluation.

Underground systems harbour considerable efficiency potentials, p.ex. through better use of regenerative braking energy. This potential can be exploited for JI/CDM projects. The picture shows a metro system in an Annex-I-Country (Tokyo, Japan).
Source: Daniel T. Yara, morguefile.com

JIKO Projects

Registered CDM Transportation Projects I

Colombia: TransMilenio Bus Rapid Transit System (BRT), Phase II to IV

Project activity

The project focuses on the introduction of a modern, efficient public transport system in Bogota, Colombia. It will create a new infrastructure with dedicated bus lanes, new vehicles (low-emission, spacious buses) and specially designed bus stops to allow passengers easy entrance and exit to vehicles. Shuttle buses will ferry passengers to and from the main bus routes. A new ticket system will be introduced which, among other things, will ease passenger congestion when entering buses. These measures will provide an attractive form of mass transport which will cut fuel consumption and reduce per-journey emissions. Greater reliability, shorter journey times, more comfortable buses and an improved system all round will serve to switch traffic from cars to buses.

The project began back in 2001 as a VER project. VER projects are climate change initiatives designed to reduce emissions in developing countries. They are usually funded by investors in industrialised countries who want to offset their carbon emissions. Investors provide funds voluntarily or with a view to compensating for air travel and not out of obligations such as those arising from the EU Emissions Trading Scheme. Since 2006, the second, third and fourth project phases have been conducted as CDM projects. The project has an initial validity period of seven years with options for two extensions. The first credit period runs from 2006 to 2012.

Baseline and emission reductions

The reference case comprises continued operation of the existing uncoordinated, at times illegally operated bus service with its ageing vehicles. Emissions in this scenario would amount to 4.7 million tonnes of CO_2-equivalent. With the introduction of the TransMilenio project, savings of around 3.8 million tonnes CO_2-equivalent are expected by 2012.

The baseline calculation involved setting a fixed emissions factor per vehicle category which is then multiplied by the number of passengers per bus. Passengers using the TransMilenio buses are asked how they would make their journeys if the project had not been implemented.

Monitoring

Monitoring occurs as part of a separate programme which like the project itself was

TransMilenio-Bus at a specially designed bus stop
Photo: grütter consulting

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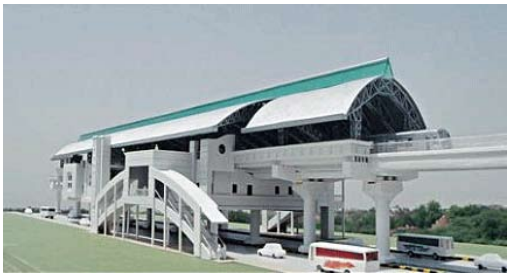
developed by grütter consulting. TransMilenio monitors passenger numbers, fuel consumption and the distances travelled. A survey is carried out every two months on the type of transport that passengers would have used if the TransMilenio buses were not available. Parameters are also identified for leakage, the quantity of cement used to build motorways, the use of taxis and the remaining bus fleet.



Mumbai Rail Project: The expansion of Mumbai's metro system is to be carried out partly as CDM project. Photo: grütter consulting

Project implementation

Registered in December 2006, the project was the first CDM transport project to be registered. By the end of 2006, some 250 kilometres of new bus lanes had been built and there were already 850 articulated buses and 350 large shuttle buses in operation.

Project Details
Project type: CDM transport project
Project partner: Corporación Andina de Fometo (CAF) (as intermediary for The Netherlands) District of Bogotá/ TransMilenio
Category: Transport
Project location: Bogotá, Colombia
Project lifecycle: 2006–2012 (first period)
Expected emission reductions: Around 3,8 million tCO_2e by 2012, with about 2,1 million tCO_2e from VERs (from 2001–2006) and 1,7 million tCO_2e from CERs.
Project status: The project is registered and the first validation period is in progress.

Baseline and emission reductions

The baseline is the amount of energy that would be used using existing vehicles x the average annual use per vehicle x the number of vehicles involved x the emission coefficients of the fuel used in existing vehicles. The baseline emissions were estimated at 112,460 tCO_2e per year and emissions from the project activity at 71,300 tCO_2e.

Emission reductions amounting to 411,600 tCO_2e are expected for the period November 2007 to October 2107. This represents 41,160 tCO_2e per year.

Monitoring

Monitoring involves the use of online resources like the Train Integration Management System (TIMS) which records the identification number, the energy used, the energy generated and the distance travelled by each vehicle.

Registered CDM Transportation Projects II

India: Introduction of low-emission vehicles into the Metro System

Project Activity

The aim of the project is to use new low-emission vehicles in New Delhi's metro system. The vehicles are equipped with regenerative brakes and will replace those now in use.

Project implementation

Start date: November 2007
As of 31 January 2008, savings amounting to 5,081 tCO_2e had been achieved since the project was implemented.

Project Details
Project type: CDM
Project partner: Japan Carbon Finance, Delhi Metro Rail Corporation
Category: Introduction of low-emission vehicles
Project location: New Delhi, India
Project lifecycle: November 2007 – October 2017
Expected emission reductions: 41,160 t CO_2e per year
Project status: Project ist registered, the first credit period has begun.

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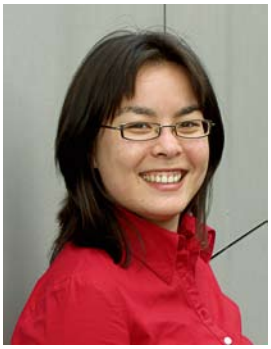
CDM Methodologies
Continued from p. 1



Christine Clashausen studied geography, sociology and ethnology at the University of Heidelberg. She has worked as a CDM project developer for Hamburg-based GFA ENVEST since 2005 and is responsible for bioenergy and programmatic CDM. Prior to joining GFA ENVEST, she was employed at GTZ where she worked on a biofuels for transportation projects and analysed the use of the CDM for energy crop production.

Emissions in the transport sector can be reduced in a number of ways:

- Making the transport sector more energy efficient
- Changing the modes of transport use
- Effecting a fuel switch

Energy efficiency methodologies

With this project type, the use of better technologies and improved mass transport models will enhance energy efficiency to reduce emissions per kilometre per person. Better transport models take in things like more effective route management and better coordination of the transport system as a whole. So far, the CDM EB has approved two methodologies and two projects, one for each methodology, have been registered (see the page5–6). The methodologies involved are:

The small scale methodology, **ASM III C**: *Emission reduction by low-greenhouse gas emitting vehicles*, was developed for the use of low-emission vehicles, e.g. electric and hybrid vehicles.

The large scale methodology, AM 31: *Baseline Methodology for Bus Rapid Transit Projects*, can be used with existing public urban road transport systems. The methodology takes in a range of options to achieve emission reductions:

- More efficient fuel use by means of new and bigger buses
- Encouraging people to use alternative forms of transport by offering more attractive public transport services
- Use of low-emission fuels such as natural gas

Implementation difficulties
Transport methodologies use factors such as vehicles and vehicle types, passengers and distances travelled, and are thus more complex and involved than other methodologies.

The **ASM III C** methodology was initiated and developed by the Small Scale Working Group (SSC WG) to provide a basis for transport projects. The SSC WG developed SSC methodologies to support small scale project development and to reduce the transactions costs involved in devising methodologies.

The AM 31 methodology makes a significant contribution because it explains methodology issues involving baseline setting, allowing for leakage and monitoring. The development of a transport methodology and project are time and cost-intensive because data must first be collected before the baseline can be set. According to project developers, the studies needed to obtain data can cost as much as US$100,000. Given the high transaction costs involved, a Bus Rapid Transit project only makes sense in cities with populations of at least 350,000.

Future developments
Under AM 31, three further projects were submitted which are currently being reviewed by the CDM EB. The EB Methodologies Panel is also assessing three new methodologies which are all based on AM 31:

- NM 258: *Methodology for Bus Lanes*
- NM 266: *Methodology for Rail Based Urban Mass Rapid Transit Systems (MRTS), which focuses on urban rail services*
- NM 257: *GHG Reductions through Supply Optimization Measures of Public Transport*. This focuses on improved energy efficiency in existing public road transport services.

As opposed to AM 31, NM 258 and NM 266 allow passengers to make their journeys using the existing local transport service and the project activity: AM 31 focuses on passengers who make their whole journey using the new mode of transport, while the new methodologies are based on the actual distance (kilometres) travelled per passenger. Passengers can also use differing modes of transport and only the distance travelled on the new transport service is counted towards emissions reduction. AM 31 can only be used if the entire public transport system is altered, whereas the new methodologies allow for partial changes within existing systems.

Modal shift

With these methodologies, emission reductions are achieved by shifting to low-emission modes of transport. No such methodology has been approved by the CDM EB to date. The AM 31 methodology allows for a modal shift and thus serves as a basis for transport methodology proposals.

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The Megabus project in Pereira, Bolivia. This Bus Rapid Transport project, developed by grütter consulting, is nearing CDM registration.
Photo: grütter consulting

Implementation difficulties
The Meth Panel has criticised the methodologies submitted so far for poor baselines setting (e.g. the improvement factor for the future baseline scenario), insufficient consideration of leakage (such as emissions caused in the production of necessary materials like concrete) and the project-specific methodology development (making them inapplicable for other projects).

Future developments
Two methodologies are currently under Meth Panel review:

- SSC 06 covers *Cable Cars for Public Transit*
- NM276 *Modal shift transportation for less intensive GHG emission* was developed for freight transport shifted from road to sea

Both methodologies build on methodology AM 31. It can be assumed that issues as yet unaddressed will be solved methodologically.

Fuel switch

Emission reductions are achieved by substituting fossil fuels with biofuels such as biodiesel and bioethanol. Compared with AM 31, consideration must be given in the case of biofuels to the emissions caused by biomass production and to issues surrounding the associated threat to food production. The CDM EB has approved methodology AM 47: *Production of biodiesel based on waste oils and/or waste fats from biogenic origin for use as fuel* and **ASM III T** *Plant oil production and use for transport applications.*

Calculations based on the methodologies proposed so far show that, after deducting project-related emissions, substituting one tonne of diesel with biodiesel can save around 0.5 t CO_2. Gross emissions from diesel amount to approximately 3 t CO_2.

Implementation difficulties
Most methodology-related problems appear to have been solved. For a project to be approved, a Life Cycle Analysis is needed which takes account of all emissions arising from the production and distribution of biofuel ("from field to pump"). The required certification within the value chain must be agreed in writing, fuel may not be exported to Annex I countries and final use must be verifiable. The Meth Panel and the EB are extremely stringent when it comes to determining biomass origin, so that land use change and biomass availability in the project region must be described in minute detail.

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CDM Methodologies in the Transport Sector*

Table 1: Current methodologies

	Fuel Switch		
	Reference-number	**Name**	**Projects (approved/ under review****
Proposed methodologies	AM 47 ver 2***	Production of biodiesel based on waste oils and/ or waste fats from biogenic origin for use as fuel	(0/2)
	AMS III.T	Plant oil production and use for transport applications	(0/0)
	Efficiency Improvements		
	AM 31	Baseline Methodology for Bus Rapid Transit Project	(1/2)
	AMS III.C	Emission reductions by low-greenhouse gas emitting vehicles	(1/3)

Table 2: Proposed methodologies for the transport sector

	Fuel Switch		
	Reference-number	**Name**	**Status**
Current methodologies	NM 253	Baseline methodology for the production of starch based anhydrous bio-ethanol that comes from cultivating renewable biomass for transportation using Life Cycle Assessment (LCA).	NM 266
	NM 233	Methodology for vegetable-derived fatty acid methyl ester biodiesel production for transportation	Incorporated in AM 47 ver 3 draft
	NM 228***	Biodiesel production from oil seeds cultivated in dedicated plantations on severely degraded land and under-utilized agricultural land for use as fuel for identified domestic consumers	Incorporated in AM 47 ver 3 draft
	SSC NM 009***	Substitution of fossil fuel in combustion engines through biofuel from degraded land	SSC WG 16 30 Jun 08
	Efficiency Improvements		
	NM 266	Methodology for Rail Based Urban Mass Rapid Transit Systems (MRTS)	Meth Panel 34 (25–29 August 2008)
	NM 258	Methodology for Bus Lanes	Meth Panel 33 (23–27 June 2008)
	NM 257	GHG Reductions through Supply Optimization Measures of Public Transport	Meth Panel 33 (23–27 June 2008)
	Modal Shifts		
	NM 276	Modal shift transportation for less intensive GHG emission	Meth Panel 34 (25–29 August 2008)
	SSC NM 006	Cable Cars for Public Transit	Pending discussion

* As of 16 June 2008.
** All projects are listed that have been validated using this mehtodology, some were not carried out.
*** Can also be used for projects for stationary use.

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Future developments

The methodologies currently under Meth Panel review are to be integrated into AM 47. This means that AM 47 version 3 would not only be usable for organic waste, but would also take in the production of biomass for biofuel production. The EB wants to publish a set of guidelines on biofuels in relation to land use and the threat to food production. The guidance will be based the changes contained in AM 47.

Conclusion

The transport sector is known to be highly complex and this is why methodology development concentrates on other sectors. For this reason, few methodologies have been proposed for transport and thus few projects have been developed. Since AM 31 was approved, the most important methodological questions have been addressed and the greatest hurdles have been cleared in this regard. Modification of AM 47 (to produce Version 3) will create the basis for biofuel projects which include biomass production in the form of energy crops. Project development would then be less risky because it could build on existing methodologies. Transport projects are nonetheless likely to remain complex and time-consuming.

Recommended literature:

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see: http://www.jiko-bmu.de/378

JIKO Analysis

Rail Transport and its CDM/ JI Potential: The Example of Deutsche Bahn

by Erhard Michel and Constantin Vogt,
Deutsche Bahn AG

Around a fifth of Germany's greenhouse gas emissions stem from the transport sector. While the EU has set a target to cut CO_2 emissions by at least 20 percent by 2020 compared with the base year 1990, forecasts predict a significant rise in transport-related carbon emissions. The latest forecasts say this trend is set to continue until 2020, with overall emissions from transport in Europe set to rise by around 40 percent compared with those in 1990. A strong increase in transport-related emissions is expected worldwide. The projected growth in the transport sector could jeopardise achievement of the climate change targets. All industry sectors must thus play their part in cutting greenhouse gas emissions. A key role is played by the transport sector, both nationally and internationally. But despite the huge importance assigned to transport in climate change policy, there have been very few CDM/JI transport projects to date.

Deutsche Bahn AG (Germany's railways operator) has shown that climate change mitigation is also possible in the transport sector. Between 1990 and 2002, we cut specific CO_2

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Erhard Michel
studied geography before joining Deutsche Bahn AG (DB). He has worked in the transport policy section since 2001. He promotes fair competition in the transport sector, with particular focus on creating the framework for energy taxation and charges.

emissions (i.e. emissions per service mile) from rail transport by more than 25 percent. Our Climate Change Programme 2020 builds on this success, aiming to cut emissions by a further 20 percent by 2020. One new aspect is that along with rail transport, other modes of transport operated by DB will be included in the programme.

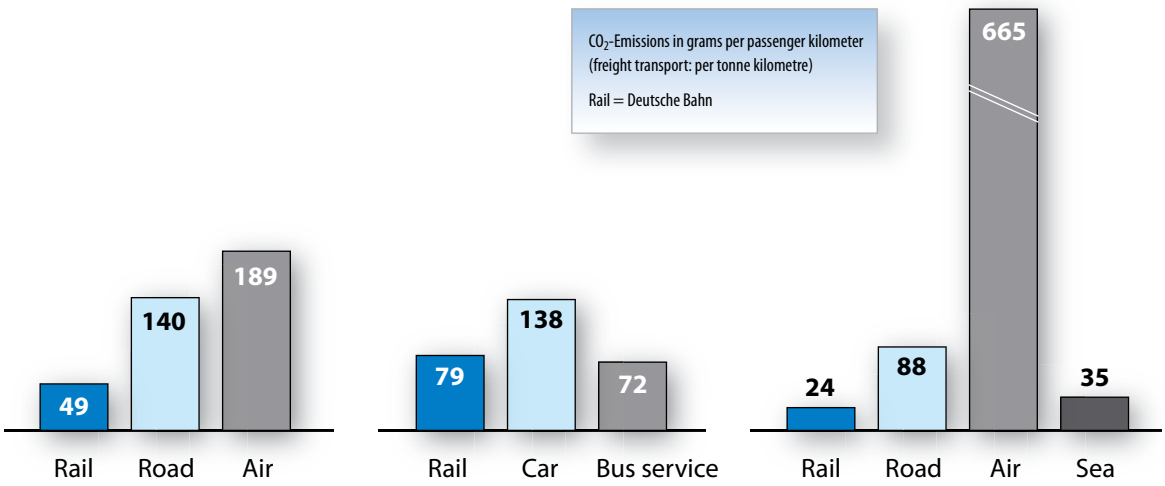
One of the key contributions to climate change mitigation involves a modal switch to rail transport. In Germany, rail freight causes only about a third of the CO_2 emissions produced by road freight. Against this backdrop, the Kyoto Protocol's flexible mechanisms provide an opportunity to improve the transport sector's climate balance and to reward the role played by climate-friendly modes of transport in achieving climate and transport policy objectives. Back in 2003, Deutsche Bahn began to investigate whether its climate change strategies could be implemented using the project-based mechanisms. It has since developed the following project-based approaches:

- Reducing emissions from diesel-powered rail vehicles: using more energy-efficient vehicles, improved operational processes, greater transparency in fuel consumption and well-trained staff, significant reductions can be achieved in direct CO_2 emissions from rail transport.
- A modal switch from road to rail: by expanding the railway network, freight transport can be relocated from the roads to the rails, thus effecting cuts in CO_2 emissions.
- Reducing energy consumption and CO_2 emissions in stationary facilities: efficiency potential can be increased in areas such as heating and ventilation of railway stations and repair workshops.

Our investigations showed the modal switch project category as the most promising. It allows CO_2 reductions from a modal shift to be translated into emissions certificates. This makes energy efficient rail transport more attractive because the climate advantage provides an economic incentive for potential customers.

CDM and JI transport projects are compatible with the EU Emissions Trading Scheme. Their inclusion should be fostered both on economic and on environmental grounds. Deutsche Bahn AG supports the concept that only those projects that actually result in additional emission reductions should be approved. This is already the case when it comes to expanding railway services and promoting eco-friendly mobility chains. The task at hand is to define clear project boundaries, say in the form of specific routes or customer groups.

Constantin Vogt,
Deutsche Bahn AG, studied political science in Berlin and Copenhagen. He wrote his Diplom thesis in Beijing on the subject of Implementing the Clean Development Mechanism in the People's Republic of China. He has worked in DB's Environment Centre in Berlin since 2006. His work largely focuses on climate change.



Source: based on data from Deutsche Bahn/Ifeu Institute 2007

Specific CO_2 emissions from rail freight are about a third of those from road freight

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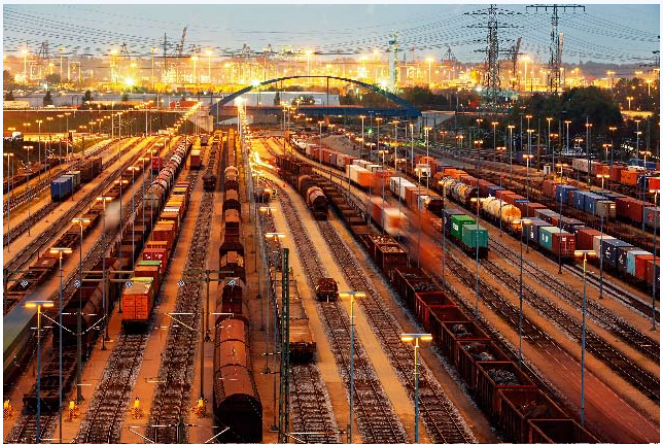
Nonetheless, Deutsche Bahn has found initiating CDM/JI projects in the transport sector to be a huge challenge. This is largely due to a lack of methodologies for modal shift projects. Another obstacle is the small scale of the individual activities. In the narrowest sense, the project-based approach could require that each successfully conducted modal switch in transport, including the specific transportation service concerned, be subjected to the complex and cost-intensive project approval process. To date, this excessive bureaucracy has made this instrument economically unfeasible for the transport sector.

From Deutsche Bahn's standpoint, it is more important for programmatic approaches (such as the JIM-NRW project) be used for JI projects. They allow reference cases to be used as a basis on which to develop programmatic JI projects which result in a modal switch. Also, the level of effort involved in setting project boundaries and developing adapted methodologies for JI first track projects would appear manageable. Deutsche Bahn is currently assessing whether a project of this type is feasible.

In areas where rail transport is rejected for economic reasons, it is hoped that the increased attention given to climate change mitigation will foster a modal shift and make the railways more attractive. Also, transport projects can help balance the disadvantages that exist as regards electrically-powered rail transport. Although Deutsche Bahn is not entitled to participate in the EU Emissions Trading Scheme (EU ETS) in its own right, it uses electricity for its electricity-powered rail services and has thus been affected by the scheme from the outset. Because other modes of transport are excluded from the EU ETS, Deutsche Bahn suffers a disadvantage. This underlines the importance of potential projects when it comes to the required economic additionality. In 2008, the additional burden caused by the price hike sparked by emissions trading is expected to amount to over 100 million euros. From 2013, increases of over 250 million euros per year are anticipated.

CDM/JI projects would be an ideal supplement to Deutsche Bahn's strategy of integrating as many climate-friendly rail services into the transport chain as possible. The climate advantage enjoyed by public transport could then benefit the transport system as a whole.



Hamburg's Waltershof shunting yard. Source: DB AG/ Heiner Müller-Elsner 2006 © DB AG

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