

## **CDM INVESTMENT NEWSLETTER**

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### **Transportation**

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## Editorial

**TRANSPORT IS A KEY DRIVER OF ECONOMIC GROWTH** and hence a large contributor to greenhouse gas (GHG) emissions globally as well as a very big local environmental problem in mega cities of developing countries. It contributes up to 25% of current global CO<sub>2</sub> emissions and it has been estimated that this could double in the next 15 years!

Therefore, it is not surprising that there have been quite a few articles in the press recently on changes going on within the transport sector (see also the business news on CBNet's Web site). Coverage has included: the aviation sector and its possible inclusion in the European Union's Emissions Trading Scheme (EU ETS); the auto-industry (biodiesel, biofuels, fuel cells, hydrogen and hybrid cars, compressed natural gas (CNG) in India); a first biogas train in Sweden; and the re-introduction of sails as a hybrid solution for maritime transport. While at first glance, one might think that these are expensive technological changes and fuel switching going on in developed countries, one should not forget that a number of initiatives **are** coming from developing countries (e.g. Brazil and India but also suggestions are coming out of Africa [see ADB Finesse Africa Newsletter, August 2005]).

One of the recurring themes is biofuels/biodiesel, so much so that Newsweek devoted a special issue to the topic (August 8, 2005), stating that *"With oil prices going through the roof, so-called biofuels are at last becoming a viable alternative to gasoline and diesel"*—this issue made frequent mention of Brazil and India. Biofuels have been around for quite some time, and have been discussed and presented as an alternative to petroleum-based fuel products at least since the first oil shock in the 1970's. Given the recent headlines surrounding hurricane Katrina (Mother Nature), oil prices (whatever their origin), the growing concerns for national energy security (in developed as well as in developing countries) and the large portion of imports and foreign exchange affecting balance of payments, many fear that we are close to another energy crisis. As in the 1970's, some European cities are already introducing auto-free days and energy-related legislation is coming on-line promoting alternative fuels (renewables, including biofuels – as *per* recent discussions in the UK, USA and Germany).

Clearly, the transport sector will be a key mitigation issue in the coming years and discussions have been going on under the Climate Convention (side events at Conferences of the Parties and Subsidiary Bodies—see the CBNet Web site for COP 10 reports [www.climatebusiness.net/index.php?option=content&task=view&id=168&Itemid=62](http://www.climatebusiness.net/index.php?option=content&task=view&id=168&Itemid=62) and SBSTA 22 reports [www.climatebusiness.net/index.php?option=content&task=view&id=498&Itemid=63](http://www.climatebusiness.net/index.php?option=content&task=view&id=498&Itemid=63)), in various discussions groups of the Parties as well as in academic, research and policy forums outside of the Convention process proper.

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**SO WHY HAS TRANSPORT NOT YET SURFACED TO ANY GREAT EXTENT UNDER THE CLEAN DEVELOPMENT MECHANISM (CDM)?** What are the current problems facing the development and approval of transport CDM projects? What is the potential and, can the Clean Development Mechanism (CDM) be harnessed to assist in the transition to lower carbon transport systems in non-Annex I countries? These are some of the questions we had in mind when we decided to prepare an issue of the Newsletter on transport.

We recognized that transport and the CDM is still a difficult mixture and will be a matter of intense discussion in the future but nevertheless, we think it worthy of an attempt to bring forward (again) some of the issues. So far, there are no CDM projects in this sector. While there are four new methodologies in the CDM pipeline (Khon Kaen fuel ethanol project, Thailand [NM-82]; Bus Rapid Transit System for Bogotá, Colombia [NM-105]; biodiesel production and switching fossil fuels from petro-diesel to biodiesel in transport sector, India [NM-108]; and Sunflower Methyl-Ester Biodiesel Project, Thailand [NM-129]) we should not forget that four have already been rejected (Urban Mass Transportation System, Chile [NM-52]; Biodiesel Project in Andhra Pradesh, India [NM-69]; Road Transport Sector Fuel-Switching Project, India [NM-83]; and the first version of the Sunflower Methyl-Ester Biodiesel Project, Thailand [NM-109]). Clearly, as with other CDM sectors, it will take a significant volume of additional work (and cost) to get to the first approved methodology.

The following are issues that could be addressed in transport sector projects some of which may fit under the CDM in its current form, others not (drawing upon Browne, 2004):

- Policy options including price incentives for alternatives;
- Technology improvements (e.g. diesel to hybrid, fuel efficiency/economy);
- Fuel switching (to lower- or no-carbon content);
- Infrastructure (e.g. development of public transit systems);
- Social awareness and changes in habits/switching transport modes (private to public, car pools, auto to manual/bicycle);
- Land-use planning (reducing travel distances and improved town planning);
- Partnerships (development aid agencies together with investors and project developers to encourage sustainable development benefits that might not otherwise happen);
- Funding.

There are several difficulties involved in undertaking transport sector projects under the CDM, most of which are hurdles for other sectors too: additionality; baselines; monitoring; leakage; and, perhaps for the future, to change the CDM rules as they present a major hurdle for all but a few types of transport projects. Perhaps more pervasively, two things are critical to the transport sector: technology innovation and its application (this requires policy changes and institutional transformation [for example, India had to make a deliberate move due to the health implications associated with transport emissions] and conducive institutional structures that favour reductions from the transport sector); and the cost factor (due to this constraint, most developing countries opt for cheaper options and that is why emissions from this sector are on the increase). CDM provides an opportunity for some of these costs to be offset through carbon credits that attract additional investments and leverage resources for the transport sector.

The following article (page 4) explores some of the above issues in more detail and presents additional information and the perspective of the UNFCCC Secretariat. An article in an earlier issue of the CDM Investment Newsletter (Browne, 2004) stated that the CDM *“offers the possibility to increase funding for transportation projects, enhance local planning and project evaluation capacity and expand technology transfer opportunities”*. This view is further underlined in the Secretariat article and in the following one in which it is suggested (page 6) that funds generated under mitigation activities in Switzerland could be used for just this purpose. An article on a programme in

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Australia (page 9) presents another means of offsetting emissions from road transport through community sequestration projects and describes a yearly motoring event that highlights and even tests alternative automobile technologies.

*Reference*

Browne, Jodi (2004), "Transportation and CDM: Highlighting the Possibilities in Chile", CDM Investment Newsletter nr. 1/2004

## **Sustainable Transport and Climate Change Policy, by the UNFCCC secretariat**

**MOVING TOWARDS SUSTAINABLE TRANSPORT IS ONE OF THE KEY CHALLENGES OF CLIMATE CHANGE POLICIES THAT WE FACE AT THE BEGINNING OF THE TWENTY-FIRST CENTURY.**

**TRANSPORT IS CENTRAL FOR TACKLING CLIMATE CHANGE** The local and regional problems associated with transport are clearly visible and well known. However, sustainable transport has gained additional importance recently in the context of addressing the problem of global climate change. Transport has been the sector with the most rapid growth in GHG emissions. Inventory data, which the United Nations Framework Convention on Climate Change secretariat receives from industrialized countries, document that emissions from transport grew by 21% during the 1990s, which contrasts to an overall decline in emissions of 6% in these countries. At the same time, the share of transport emissions in the industrialized countries increased from 15% in 1990 to over 22% in 2002. International aviation can be singled out as a special cause for concern with a growth in emissions of 45% over the same time period. The situation in industrialized countries is clearly worrisome. The International Energy Agency's (IEA's) World Energy Outlook projects that between 2000 and 2030, transport energy use and CO<sub>2</sub> emissions in OECD countries will each increase by 50%. If one transferred the present unsustainable transport behaviour and structure of the industrialized world to developing countries, we would face an enormous additional growth in emissions. IEA projections suggest that the increase in oil demand for transport purposes will be much larger in developing countries than in OECD countries. The world clearly needs to find ways to decouple economic growth from an increase in emissions, and the transport sector plays a key role.

**UNFCCC AND THE KYOTO PROTOCOL OFFER NEW OPPORTUNITIES** The United Nations Framework Convention on Climate Change (UNFCCC) provides the structure for countries to develop measures to reduce GHG emissions. The Kyoto Protocol to the UNFCCC, which entered into force on 16 February 2005, has given a major boost to emission reduction efforts, which will also affect the transport sector. The Protocol sets legally binding targets for emissions of six major greenhouse gases in industrialized countries and defines the time period for achieving those targets. In the period 2008-2012, the first commitment period, industrialized countries that are Party to the Protocol have to reduce their emissions jointly by around 5% compared to 1990 levels.

In many countries emission reductions, required to fulfil the objectives of the UNFCCC and to meet the Kyoto Protocol's targets, cannot be achieved without appropriate action in the transport sector. The Protocol creates additional incentives for implementation of sustainable transport policies, as well as for development and introduction of new climate-friendly technologies in the transport sector.

The market-based mechanisms of the Kyoto Protocol have a large potential to help overcome barriers for emission reductions required in the transport sector and to transfer new technologies to developing countries. In this context, the Clean Development Mechanism (CDM) plays an important role, as it promotes climate-friendly investment in developing countries assisting them in their sustainable development efforts. At the same time, it generates credits that can be used by industrialized countries to comply with their Protocol targets.

The CDM is already fully operational: the first CDM project was registered in November 2004, counting a total of 13 in July, and 25 by early October 2005, although there are none yet related to transport.<sup>1</sup> The CDM provides for a methodology for small-scale projects that promote emission reductions from vehicles with low greenhouse gas emissions. Proposals for methodologies for

larger project activities are mainly relating to fuel switching to bio-diesel and are still under consideration.

The small number of proposals in the area of transport may be due to relatively high reduction costs accompanied by technical difficulties in stipulating baseline emissions and leakage, and the difficulty in accounting for emission reductions. At its last session in December 2004, the Conference of the Parties of the Convention singled out transport and requested a higher priority to be placed on proposed CDM methodologies in this area.

**ACTION UNDER WAY** Technologies and policy instruments are available to move towards the sustainable transport systems and behaviour that we need. Prominent examples covering a wide spectrum of transport-related policies and measures have been reported by Parties to the UNFCCC as part of their national communications. They include policies aimed at improving the energy efficiency of cars and light-duty vehicles through voluntary agreements with car manufacturers in Europe, and the application of energy efficiency standards in Japan and China. Promotion of public transport is also part of the policy portfolio of many countries. Recently, measures to increase the share of renewable energy sources in the form of bio-fuels have gained attention. In some countries, the use of emissions trading is currently being discussed as an option to address the rapid growth of international aviation.

Canada, host of COP 11 and COP/MOP 1, is an example of a country that has recently taken steps to deal with emissions from transport in the context of implementing the Kyoto Protocol. In April 2005, the Canadian Government signed an agreement with the national Vehicle Manufacturers Association to cut greenhouse gas emissions from road vehicles by 5.3 million tons by 2010. The agreement includes increased fuel efficiency, more alternative-fuel and hybrid vehicles and an advertising campaign urging the purchase of more efficient cars.

Finland provides another interesting example of an industrialized country in which mitigation of greenhouse gas emissions has been an integral part of the national transport policy for a long time. Finland's 1994 'Action Plan on Transport and Environment' aimed at stabilizing the sectoral emissions at 1990 levels. This was indeed achieved in 2000 by implementing a well-tuned mix of policies, with strong taxation of vehicles and fuels at its core, complemented by promotion and development of public transport, walking and cycling.

A number of developing countries have also reported on steps taken to mitigate their transport-related emissions. This includes switching to natural gas in Argentina and Ghana, and the promotion of cleaner vehicle fleets in Georgia and of public transport in Indonesia and Lebanon. A particularly interesting example is the introduction of new bus rapid transit systems. Such systems have been installed in cities like Porto Alegre in Brazil, Quito in Ecuador and Bogotá in Colombia. These success stories of high-quality urban transport systems that offer affordable mobility to all citizens are being followed with great interest all around the world, and concrete plans for similar new systems are currently being considered in dozens of other cities across Latin America, Asia, Africa, Europe and the USA.

**THE ROLE OF TECHNOLOGY** The implementation of the Kyoto Protocol gives an additional boost to development of the new technologies in the fuel sector and the tightening of vehicle performance standards. In Europe and Japan, technologies that increased the energy efficiency of vehicles, such as new diesel engines, direct-injection gasoline engines and - more recently - hybrid propulsion systems, have already contributed considerably to reducing the emissions of carbon dioxide per kilometre driven. The blending of fossil fuels with bio-diesel and bio-ethanol in countries such as Germany, the United States and Brazil is another example of promising technical solutions. These and other technologies need to be further deployed.

Continuation of these positive trends, and their expansion to other countries, would be a clear sign of progress. Developing countries have an opportunity to leapfrog and avoid mistakes previously made in industrialized countries, however in most cases they have to rely on external assistance in this process. The UNFCCC actively supports projects that promote environmentally sustainable transport through its financial mechanism, the Global Environment Facility (GEF). Since 1999, the GEF has allocated approximately USD 147 million in grant financing, and, in addition, leveraged through co-financing roughly USD 450 million to support the implementation of 23 projects in the field of transport. The projects are well targeted to include some of the world's largest urban agglomerations, in Brazil, China, India, the Philippines, Egypt, Peru, and Mexico. Implementation

of the CDM will further advance the transfer of climate-friendly technologies and generate additional investment, including in sustainable transport, in developing countries.

**MOVING FORWARD** Addressing greenhouse emission increases from transport is crucial for the success of efforts to combat climate change. It is important to learn from existing successful practices and to facilitate expansion of sustainable transport policies and technologies across the globe. The CDM has the potential to play a critical role in this process by transferring technologies and successful policy models alongside the investment needed for their implementation to developing countries.

Sustainable transport has multiple benefits, including mitigation of global climate change, and improving regional and local air quality. Emphasizing local benefits of sustainable transport, such as reduced noise levels and a better use of urban space, will help to make the necessary changes acceptable. It takes about ten years to have a full turnover of the vehicle fleet and even longer to make substantial changes to transport systems. Therefore, we can not allow any more time to be wasted; it is urgent to act now.

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<sup>1</sup> *In August 2005, a CDM small scale activity "Shift to low greenhouse gas emitting vehicles for materials transport to and from Doom Dooma plant of HLL." was formally proposed. The purpose of the project is to shift the mode of transport from road to railways in two freight transport corridors of a private company in India. On 29 September 2005, the proposal concluded the input step at validation. The DOE (Det Norske Veritas) is expected to finalize its decision regarding requesting registration in October 2005.*

## Funding Transport Sector CDM\*<sup>1</sup>, by Anne Arquit Niederberger, (Policy Solutions)

**IN MOST COUNTRIES, GREENHOUSE GAS EMISSIONS FROM THE TRANSPORTATION SECTOR ARE GROWING, IN SOME CASES RAPIDLY.** Yet the transportation sector is one of the most challenging to address, as policies that would be effective in reducing emissions either require international harmonization to be effective, have relatively high marginal abatement costs or are unpopular, as they affect personal mobility. Furthermore, building an adequate transportation infrastructure is crucial, if we are to achieve the Millennium Development Goals, so we can expect even greater transport volume, if poor countries' economies develop as we hope.

Globally, transportation currently accounts for approximately 20-25% of greenhouse gas emissions (roughly 2 billion tons of carbon dioxide). Yet fossil fuel use for transportation is also of concern for myriad other reasons, including pollutant emissions that contribute to respiratory disease and death, dependence on foreign sources of oil, uncertainty of supply (a headline concern since two extreme hurricanes devastated the Gulf of Mexico – a key oil-producing and refining region for the US market – within a month of each other), the drain on national economies due to use of scarce foreign exchange to import oil products, as well as habitat destruction to build transportation infrastructure. Furthermore, the mobility divide is a barrier to sustainable development and achieving the Millennium Development Goals.

CDM Project Bazaar

(current content)

\*\*\*\*\*volume ca. 5.0Mt/yr (total 86.8Mt)\*\*\*\*\*

*Projects have already been received from CBN partners in: Bangladesh, Brazil, China, Georgia, India, Indonesia, Kazakhstan, Kenya, Morocco, Nigeria, Senegal, South Africa, Vietnam, and Zambia. More are under preparation.*

*PINs & concepts available cover: Renewable energy (SHP, wind, biomass, biogas) for the grid & within industrial facilities; Energy efficiency; Energy distribution efficiency (NG & electricity); Cogeneration/CHP; Heat recovery in industry; Fuel switching; Transport; Household energy (district heating, SHS, thermal performance, energy efficient lighting & solar water heating); Urban wastes (solid & gaseous/landfill gas) to electricity; Associated gas utilization (reduced gas flaring); Coalbed methane capture & utilization; Sequestration/LULUCF*

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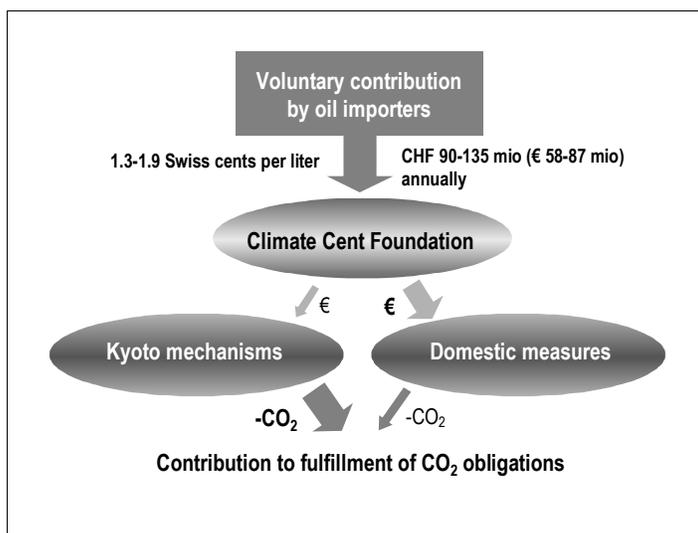
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Although hopes that greater use of biofuels and fuel cell technology will replace oil as the main transportation fuel are alive and well, we must act now to make wise choices about our immediate investments in transportation infrastructure, which will be with us for decades to come and constrain future policy options. This paper describes an innovative voluntary instrument that will be operational in Switzerland beginning 1 October 2005 that can link transport policy in industrialized countries with Clean Development Mechanism (CDM) investments in transport sector mitigation projects in developing countries.

**THE SWISS PRIVATE SECTOR HAS CONCLUDED A VOLUNTARY AGREEMENT WITH THE GOVERNMENT** under which Swiss oil importers agree to contribute CHF 0.015 (approximately € 0.01) per liter of motor fuels (gasoline and diesel) sold in Switzerland. The contributions – amounting to approximately CHF 100 (€ 64) million annually – accrue to the newly-formed, independent Climate Cent Foundation (Figure 1).

Figure 1. Swiss Climate Cent Scheme

The greater share of the funds will be used to provide financial incentives for domestic greenhouse gas reductions (e.g., promotion of Eco-Drive® as an economical driving technique, Car-Sharing or the use of alternative fuels such as bioethanol, biodiesel or biogas), but it is expected that the purchase of Kyoto certificates will cover a larger fraction of the compliance gap, because of their current and anticipated relatively lower cost. The marginal abatement cost of greenhouse gas emission reductions in the Swiss transport sector to comply



with domestic legislation and the Kyoto Protocol has been estimated at over CHF 150 per ton of CO<sub>2</sub> on average (Factor, 2002), whereas EU allowances are currently trading at € 20-25 per ton, and forward contracts to purchase certified emission reductions (CERs) under the CDM are in the € 3-6 range.

**THE PRIMARY MOTIVATION FOR THE PRIVATE SECTOR TO COMMIT TO MAKING PAYMENTS** into a voluntary climate protection fund was not corporate social responsibility. Without taking voluntary action, Swiss oil importers stood to lose a significant share of revenues under the legally mandated CO<sub>2</sub> tax, since the prevailing tank tourism by citizens of neighbouring countries buying gasoline in Switzerland would have been largely reversed. The oil importers were able to convince the Federal Council that the objectives of the CO<sub>2</sub> Act could be met more cost-effectively with the voluntary Climate Cent, so the Government agreed to refrain from introducing a CO<sub>2</sub> tax on motor fuels, at least until mid-2007, when the Climate Cent must have met certain milestones<sup>2</sup>.

Under the voluntary agreement with the Department of Environment, Transportation, Energy, and Communications (concluded on 30 August 2005), 200,000 tons of emissions reductions annually must be achieved domestically (not limited to the transport sector) and 1.6 million tons can be sourced via the Kyoto mechanisms, including the Clean Development Mechanism. To what extent funds will flow to the CDM, let alone transport sector CDM projects, remains open. There is a certain logical appeal of investing Climate Cent funds into transportation sector mitigation projects, but this is not required and is not necessarily the optimal approach from the point-of-view of cost effectiveness. On the other hand, the CHF 100 million annual budget of the Climate Cent should be

more than enough to achieve the necessary domestic reductions and obtain the required 8 million tons of Kyoto certificates during the 5-year commitment period ending in 2012.

**THE CLIMATE CENT INVESTMENT STRATEGY WITH RESPECT TO KYOTO TRANSACTIONS REMAINS TO BE FORMULATED IN DETAIL.** Certainly, earmarking some share of the funds specifically for transport sector CDM and/or JI projects and work on the necessary baseline and monitoring methodologies could be a catalyst to greater investment in the sector. To date, only one small-scale methodology for emission reductions by low greenhouse gas emitting vehicles has been approved, and no transport sector CDM projects have been registered. Many of the mitigation options in the sector are associated with high up-front investment costs and long payback periods, are methodologically complex or require government regulation. There are some exceptions, such as fuel switching in buses (from diesel to lower carbon fuels) or vehicle efficiency improvements, but their potential is relatively limited. More work on baselines for more complex projects – such as the methodological work done for the bus rapid transit corridor in Mexico City by the World Resources Institute Center for Transport and the Environment (EMBARQ, <http://caudillweb.com/embarq/en/Index.aspx>) – would help to identify the most attractive carbon investment opportunities. Such investments can have a positive, long-term impact on transport infrastructure and shift the balance of transport modes in developing countries with rapidly growing transport emission trajectories.

Given the desire of the Climate Cent Foundation Council to maintain only a small core management team, partnerships with other organizations involved in the development of transportation sector projects are the way forward to invest in transport sector CDM. The World Resources Institute EMBARQ Center, which was established with the support of the Shell Foundation, is working with officials and experts in major cities such as Mexico City, Porto Alegre (Brazil), Shanghai (China), and Hanoi (Viet Nam) to address urban transport issues. In the context of EMBARQ's Mexico City bus rapid transit project, a great deal of preliminary work was done to develop a robust, accurate and cost effective accounting and reporting system for changes in CO<sub>2</sub> emissions. Unfortunately, baseline data were not collected before the project was implemented, so it might be difficult to estimate emission reductions with a high degree of confidence. This important generic methodology will be applied in Porto Alegre (2006) and possibly Hanoi (Vietnam) in 2006-07, before major transport project begin, with a view to verifying carbon savings from urban transport projects (Kete, 2005).

**THE CLIMATE CENT APPROACH CAN PROMOTE EFFICIENT, CLIMATE-FRIENDLY TECHNOLOGIES AND/OR DIRECTLY ADDRESS GROWTH IN TRANSPORT SECTOR EMISSIONS,** and would be consistent with a wide range of proposed international and domestic policy proposals, such as action targets under the UN climate regime (Goldberg and Baumert, 2004) or the 5-year, \$1 billion energy efficiency and biofuel incentive program called for recently by a consortium of former US national security officials (Energy Future Coalition, 2005). However, there is no guarantee that these funds will flow to transport sector CDM projects. Credible methodologies for complex transport sector projects are sophisticated and require a significant up-front investment, but the pay-off could be substantial, as a single methodology approved by the CDM Executive Board could pave the way for many future projects.

The Swiss Climate Cent approach may well have the potential for broader application, even though other countries may not be under regulatory pressure to reduce transport sector emissions to a specific level by 2010. A US fund built on voluntary contributions corresponding to the parameters set for the Swiss Climate Cent, for example, could generate over \$9 billion annually for investment in climate mitigation programs<sup>4</sup> (Arquit Niederberger, 2005). A US fund could provide financial incentives for low-carbon/energy efficient transport technologies/fuels, thus reducing demand for foreign oil, or contract for greenhouse gas emission reductions amounting to 1 billion t CO<sub>2</sub>e annually (assuming a carbon price of US\$ 9 per ton of CO<sub>2</sub>e). If only half of this amount were used to purchase offsets, approximately 25% of the US transport sector emissions projected between 2002 (1.86 billion tons CO<sub>2</sub>) and 2010 (2.25 billion t CO<sub>2</sub>) could be offset on an annual basis (EIA, 2004). The Climate Cent approach might also appeal to developing countries. It can be implemented under a private sector model, as was done in Switzerland, enabling enterprises to pool resources to invest in domestic climate protection projects, including CDM projects that could leverage additional carbon finance from industrialized country investors.

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<sup>1</sup> This paper draws heavily on Arquit Niederberger (2005).

<sup>2</sup> The political background to the initiative is described in detail in Arquit Niederberger (2005), and up-to-date information can be obtained via [www.stiftungsklimarappen.ch](http://www.stiftungsklimarappen.ch).

<sup>3</sup> Unfortunately, baseline data were not collected before the project was implemented, so it will be difficult to estimate emission reductions with a high degree of confidence.

<sup>4</sup> This statement is based on the following data and assumptions: (i) the level of voluntary contributions would be US\$ 0.055 per gallon (which is equivalent to the initial Swiss Climate Cent contribution of CHF 0.015 per liter, with 1 CHF = 0.8 USD); (ii) sales of gasoline (80%) and diesel (20%) amounted to 172 billion gallons in 2002 (Federal Highway Administration, 2001), and we use this reference year to make the calculation).

## Greenfleet Australia – An innovative program to reduce the greenhouse impact of transport, by Henry O'Clery, CEO, Greenfleet Australia

**“AUSTRALIANS LOVE THEIR CARS, AND IT IS UNREALISTIC TO EXPECT PEOPLE TO STOP USING THEM,”** says chief executive of Greenfleet Australia, Henry O'Clery. While the search for affordable technologies to dramatically reduce vehicle emissions at source continues, Greenfleet offers individual motorists and organisations the opportunity to start protecting the environment now.

Greenfleet is a not-for-profit organisation whose core business is neutralizing greenhouse gases by offering motorists and organisations a native tree-planting programme to soak up the CO<sub>2</sub> emissions from their vehicles.

Transport is Australia's fastest growing source of greenhouse gas emissions. The sector now contributes 14.3 per cent to emissions nationally, and the contribution from cars is expected to rise by 40 per cent by 2010.

The average car in Australia produces approximately 4.3 tonnes of CO<sub>2</sub> per annum. For a subscription of AUD\$40 (tax-deductible), Greenfleet plants 17 native trees on the motorist's behalf. As they grow, they will absorb the CO<sub>2</sub> greenhouse emissions that the average car produces in one year.

**THE INSPIRATION FOR GREENFLEET CAME ABOUT BY CHANCE.** Henry O'Clery was driving in his car when he heard an interview on the radio with the research director at the Australian Bureau of Transport Economics. The researcher explained that the most cost-effective way to reduce the impact of greenhouse emissions from transport was to plant trees. He went on to explain how many trees were needed to lock up the emissions from the average car. This connected Mr. O'Clery's life-long passion for cars, and latter-day conversion to cleaner vehicle technology with his colleagues' biodiversity-focussed tree planting program, *“we went ‘EUREKA!’, and from that idea Greenfleet was born,”* he says.

Since 1997, Greenfleet has planted more than two million trees across Australia, and the native forests established with these are on their way to absorb over 500,000 tonnes of CO<sub>2</sub> from the atmosphere.

Many Australian organisations wishing to be a step ahead or needing to meet environmental targets are turning to the Greenfleet scheme. Subscribers include the Victorian, Queensland and ACT governments, AAMI, Australia Post, MECU, Cities of Sydney and Melbourne, Monash University, SAI Global and Telstra.

**WHILE SOME CARBON OFFSET SCHEMES INVOLVE THE PLANTING OF A SINGLE SPECIES MONOCULTURE FOREST**, where the trees are logged and the rotation of harvesting provides a 'carbon pool', the Greenfleet program is based on the regeneration of permanent bio-diverse forests.

Greenfleet's policy is to plant the trees in areas of environmental concern. Its largest tree-planting project is called 'Murray Darling Rescue', a partnership with Scouts Australia, which aims to re-vegetate vast tracts of land while drawing public attention to the plight of the river system.

Massive clearing of vegetation in the Murray Darling Basin and an ever-increasing demand for water have caused a huge salinity problem that threatens to make the water unfit for human consumption, and to destroy the land. *"While issues surrounding the health of the Murray are complex, everyone agrees one aspect requiring urgent attention is re-vegetation,"* says Mr. O'Clery.

Greenfleet sources land from both private landholders and government, with a focus on high-priority areas. The landholder signs a carbon agreement before the planting explains Mr. O'Clery. *"The agreement specifies that the trees will never be harvested and that Greenfleet maintains the rights to 'count the carbon' soaked up by those trees during their lifetime,"* he says. *"We were very grateful to receive this letter from a landholder at Wagga Wagga, where 6,500 trees were planted last year as part of our Murray Darling Rescue project,"* says Mr. O'Clery:

*"I am writing on behalf of my partners in Koorinal Pastoral Company, to thank you all most sincerely for facilitating the recent tree planting project on our property on Sunday 6 July. We all thought it was the most wonderful day with regard to a shared view for the future, productivity, organisation, community building and friendship. I am also delighted today to report that last night we received 20.5mm of rain which should consolidate the soil around the new plantings and set the site on its way to become an extremely valued portion of our catchment area. Would you kindly formally extend our sincere thanks to Scouts Australia who I understand are your partners in the project. Their support and enthusiasm was exemplary..."* Annette Lamont, Partner, Koorinal Pastoral Company

Since 2001, more than 800,000 trees have been planted by Greenfleet and Scouts in the Murray Darling Basin. As the forests mature they will help to combat dryland salinity, improve soil quality and provide essential habitat for native species. *"It's a positive start – one that's funded by motorists, planted by the community, and beyond government policy,"* says Mr. O'Clery.

The Murray-Darling Basin plays an integral part in Australian society and economics. The river system supports 40 percent of the nation's agricultural production amounting to \$10 billion per annum.

**IN 2004, GREENFLEET LAUNCHED AN ONLINE GREENHOUSE CALCULATOR** (at [www.greenfleet.com.au](http://www.greenfleet.com.au)) to provide a simple tool for people to assess and neutralise the CO2 greenhouse emissions that they create by their particular car (based on annual fuel consumption or kilometers travelled), household energy use and air travel. The user is then invited to subscribe to Greenfleet's programme where, for a tax-deductible payment, Greenfleet plants the corresponding number of native trees on their behalf.

*"People often feel overwhelmed by the concept of climate change" says Mr. O'Clery. "Our programme hopes to empower people by offering a positive solution amongst a whole range of efforts to help combat this issue, by engaging with people regarding the greenhouse emissions that we produce in our everyday lives."*

*"We have systems and practices in place to ensure that the total carbon expectation from our forest estate substantially exceeds the commitments that we have made to motorists since the inception of our programme,"* says Mr. O'Clery. Where substantial losses occur, Greenfleet either replants the relevant sites or replaces them with trees planted elsewhere. *"We overplant continuously to achieve this carbon buffer,"* he says. *"Our models are quite conservative, so that we are well ahead of our commitments at all times."*

**GREENFLEET IS ALSO ACTIVE IN PROMOTING FUEL-EFFICIENT TECHNOLOGIES AND LOW CARBON FUELS TO REDUCE EMISSIONS AT THEIR SOURCE.**

It is hoped that the fast-tracking of cleaner technologies to the marketplace will result in a substantial reduction of environmental damage from motor vehicles.

In 2003, a special 'Greenfleet Class' was introduced to the Darwin to Adelaide World Solar Challenge, to showcase emerging transport technologies from Australia and overseas. This was immediately followed by an international 'Emerging Transport Technology Conference – the future of the motor car!' - a two-day event in Adelaide that provided a forum for government and industry to consider policy directions for the future.

The 2005 WSC event has featured new-generation diesel as well as hybrid petrol-electric production cars, demonstrations of pure ethanol and bio-diesel fuelled vehicles, and hybrid petrol/solar/electric and electric-only prototypes.

This 3,500km staged event from Darwin to Adelaide via Yalara (Ayers Rock) provides a great test of endurance and energy efficiency whilst offering crews the opportunity to experience many unique wonders of the Australian outback. Teams have been able to swim in the Katherine Gorge, luxuriate in the thermal pools at Mataranka, visit 'the Rock' and the Olgas, and stay in underground motels at Coober Pedy.

With the cost of fuel soaring, and the expectation that the price of crude oil will only continue to rise in the longer term, there is suddenly a lot of interest by the media and in the community in not just smaller, more fuel-efficient vehicles, but also in the sorts of advanced technologies and fuels that are starting to appear in the marketplace.

As a part of the whole 'festival' of future automotive technology in Adelaide, we also borrowed a Mercedes Benz hydrogen fuel cell bus from the Perth trial, and this has created quite a buzz on the city streets. Suddenly the spotlight has been thrown onto our future transport energy and the attendant question about Sustainable Mobility "How do we get from Here to There?"

These are indeed exciting and challenging times!

More information about Greenfleet is available at: [www.greenfleet.com.au](http://www.greenfleet.com.au).

*Footnote: The tree calculation is based on a number of factors. The Australian Greenhouse Office and the Australian Bureau of Agriculture and Resource Economics, and the Australian Bureau of Statistics publish statistics regarding the average distance covered by an Australian Car (~16,000kms pa) and the average fuel consumption of the Australian Passenger fleet (predominantly unleaded fuel). From this, the average annual fuel emissions per vehicle have been calculated at 4.3 tonnes per vehicle. This formula was developed by the founders of Greenfleet in conjunction with energy engineers.*



[Murray Darling Rescue' is Greenfleet's largest tree planting project, a partnership with Scouts Australia.]

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