







### **Transport and Energy**

### The Challenge of Climate Change

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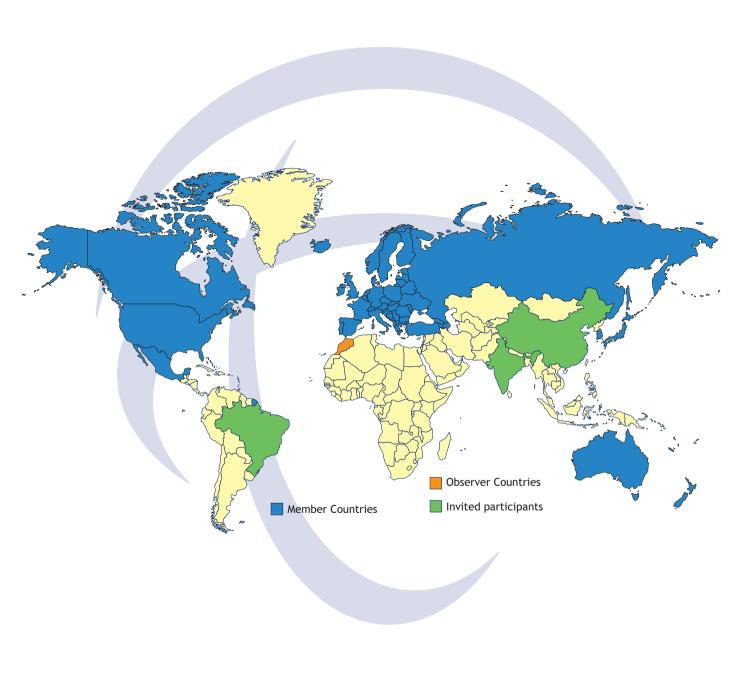
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# Transport and The Challenge of Climate



The Challenge of Climate Change

### The International Transport Forum

The International Transport Forum is an intergovernmental body within the OECD family. The Forum is a global platform for transport policy makers and stakeholders. Its objective is to serve political leaders and a larger public in developing a better understanding of the role of transport in fostering economic growth and the importance of transport policy in addressing the social and environmental dimensions of sustainable development. The Forum organises a Conference for Ministers and leading figures from civil society each year in Leipzig, Germany.

The International Transport Forum was created under a Declaration issued by the Council of Ministers of the ECMT (European Conference of Ministers of Transport) at its Ministerial Session in May 2006 under the legal authority of the Protocol of the ECMT, signed in Brussels on 17 October 1953, and legal instruments of the OECD. The Forum's Secretariat is located in Paris.

The Members of the Forum are: Albania, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Bosnia-Herzegovina, Bulgaria, Canada, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, FYROM, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Mexico, Moldova, Montenegro, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom and the United States.

The Organisation for Economic Co-operation and Development (OECD) is a unique forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practices and work to co-ordinate domestic and international policies.

The OECD and the International Transport Forum established a Joint Transport Research Centre in 2004. The Centre conducts co-operative research programmes addressing all modes of transport to support policy making in Member countries and contribute to the Ministerial sessions of the International Transport Forum.

Also available in French under the title "Faits Marquants du Forum 2008: Transport et énergie, le défi du changement climatique" and in German under the title "Höhepunkte des Forums 2008: Verkehr und Energie, die Herausforderungen des Klimawandels".

Further information about the International Transport Forum is available on the Internet at the following address: www.internationaltransportforum.org

## 20 Forum 08 Highlights



A Look Back

### A Look Back at the Forum by Jack Short

By calling for the establishment of a low-carbon transport system "as soon as possible", the International Transport Forum's Ministers have demonstrated strong political leadership at a time when soaring fossil fuel prices have put the sector's oil dependence at the forefront of public debate. By the same process, they have also sent an important signal on the long term goals of transport policy.

In considering this political aspiration, it needs to be recognised that countries are at very different stages in the development of their transport systems and that there is no simple or single way to reduce energy demand everywhere. Innovative policies and actions are needed to reconcile transport's economic and social functions with the need to reduce emissions.

What we can say is that, for transport to first limit and then reduce its emissions, a combination of policy and technological advances is needed. In the road sector, which accounts for three quarters of transport  $CO_2$  emissions, long-term vehicle efficiency gains must be combined and enhanced with a range of additional measures, from improved design of the road network to the widespread introduction of eco-driving. In short, all potential instruments should and must be employed together in order to meet the aim of a low-carbon transport system.

Transport policy increasingly needs to be designed and implemented through consultation with all stakeholders. The active role researchers, senior industry actors and civil society stakeholders played throughout our first meeting in Leipzig was an encouraging sign that the International Transport Forum is already on its way to becoming a platform where this consultation can take place at global level. Governments in turn need to create the certainty required by the industry for investing in eco-technologies, and send consistent signals through fiscal and other policies including setting examples in their public procurement policies.

"We need to find ways of decoupling traffic growth and energy demand while at the same time not losing sight of other transport policy objectives."

At the Forum, we have initiated an important dialogue which we want to continue. The success of our first event is an encouragement and a positive sign to build on for the future. There are ideas and lessons here for all actors, whether from Industry, Research or Government. We hope you enjoy reading these highlights and warmly invite you to take note of our next Forum meeting which will be devoted to the opportunities and challenges posed to the transport sector by the growth of international mobility and trade.



Jack Short,
Secretary General
of the International
Transport Forum
(ITF), Director of
the Joint OECD/ITF
Transport Research
Center (JTRC)

The Challenge

of Climate Chai

# Climate and Energy in the Transport Sector — Calling for a Global Approach

by Wolfgang Tiefensee, Minister of Transport, Germany



Wolfgang Tiefensee, Minister of Transport, Germany

This has been the first International Transport Forum, a successful premiere. We have developed this Forum because we wanted a new public platform for discussion which can provide diverse input for decision-making. For Germany and Saxony it is an honour and at the same time an obligation that the Forum will take place annually in Leipzig.

Globalization and the associated transport growth bring about enormous challenges for the transport sector with regard to climate protection and energy security. We need global approaches for that: today, there are already 600 million vehicles worldwide. It is expected that this will triple by 2050. Policymakers cannot leave these developments unguided. The key is to avoid unnecessary traffic, to use energy more efficiently and to reduce the dependence on oil of the transport sector in general. This is also the only way to ensure affordable mobility despite rising energy prices.

There is no alternative to decoupling transport growth from energy consumption.

In order to do this, a wide range of instruments is available. I am thinking, for instance, of the promotion of research and development in favour of new technologies like new drivetrains and second generation biofuels. In view of the predicted transport growth, however, we also have to realize that technological measures alone will not be enough. One of the top issues is the inclusion of aviation and shipping in emissions trading. Moreover, we need to better interlink the individual modes of transport for more efficiency of the overall system. And we need a strong and attractive local public transport system which convinces our citizens to think about alternatives.

Let us go ahead with determination. I have no doubt that the International Transport Forum has been a milestone on this way.



# Climate Change as a Triple Challenge: Moral, Economic and Political

by Angela Merkel, Federal Chancellor, Germany

Be it in industrial and knowledge-based societies or in emerging markets and developing countries — effective transport systems are key to development and growth. International trade and competition will generate growing traffic volumes. Freight traffic alone is expected to double within 15 years. The need for intermodal linkages is thus mounting.

In response, the European Ministers of Transport have launched the International Transport Forum giving, every year, policymakers, business people and academics a venue to deliberate the complex issues of mobility, transport and logistics. The decision, which I welcome, to focus on climate protection at this first meeting underscores that the forum will go beyond questions of traffic policy alone, also exploring the contributions the sector can make to solving the challenges of our times.

Climate change is surely one of the greatest challenges facing us. Global warming impacts — such as sea-level rise, extreme weather events and loss of agricultural

land — are ever more clear. Climate change is poised to become a source of economic and social upheaval. Only rigorous and timely action can prevent the most severe consequences. The industrial nations have the enormous, but solvable, task of cutting their greenhouse gas emissions by 60-80 percent by 2050. This can be done, but only if all sectors, including the transport sector, play their part. In view of growing demand for freight transport services, it will become increasingly important to decouple traffic volume from energy consumption. Significant energy efficiency improvements are also pivotal. Ultimately, systematic and coordinated deployment of technological innovations as well as regulatory and fiscal instruments are key, in private households and the transport sector alike.

This first meeting in Leipzig has delivered valuable impulses. I hope the International Transport Forum continues to contribute good ideas, path breaking strategies and recommendations to help solve the great challenges that lie ahead in creating sustainable transport systems.



Angela Merkel, German Chancellor



# Introduction

### Introduction by the Presidency

### by Anu Vehviläinen, Minister of Transport, Finland

This is a unique occasion as it is the first time that Transport Ministers have come together on such a scale to discuss this important topic.

Many ideas and policy approaches have been shared during our discussions, including the ambitious goal to work to decarbonise the transport sector. Policies in the sector to improve efficiency, reduce congestion, manage road traffic and support the development of public transport in cities are very widely shared and will help contribute to our aims.

The subject is complex and circumstances differ among countries and regions. It is not surprising therefore that there are areas where views on commitments or instruments differ and where further research, analysis and discussion are needed to find appropriate approaches, regionally, nationally and globally.

We are determined to take this agenda forward, and look forward to working closely together, sharing ideas, research, policy practices and technology.

The Presidency of the Forum is held by one of the Ministers of the Member countries elected on an annual rotating basis. In 2007-2008, the Presidency was held by Mrs. Anu Vehviläinen, Minister of Transport, Finland.



Anu Vehviläinen, Minister of Transport, Finland

## 20 Forum 08 Highlights



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# TRANSPORT & CLIMATE CHANGE — KEYNOTES

# Climate Change and its Implications for the Transport Sector

### Highlights of the Keynote by Rajendra K. Pachauri



Rajendra Kumar Pachauri, Chairman of the Intergovernmental Panel on Climate Change (IPCC)

Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level. Continued Greenhouse Gas (GHG) emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21<sup>st</sup> century that would very likely be larger than those observed during the 20<sup>th</sup> century.

### "The warming of the climate system is unequivocal."

In developed countries climate change is expected to magnify regional differences in natural resources and assets. Negative impacts will include higher risks of inland flash floods, higher frequency of coastal flooding, and increased erosion.

Developing countries, however, are hit hardest by global warming. Increases in the frequency of droughts and floods are projected to affect local crop production negatively, especially in subsistence sectors. In some African countries projections estimate reductions in yield as high as 50% by 2020. Accordingly, crop net

revenues could fall by as much as 90% by 2100, especially affecting small-scale farmers.

While adaptation is essential, particularly in addressing near-term impacts, it alone is not expected to be able to cope with all the projected effects of climate change — especially not over the long run as most impacts increase in magnitude. Impacts of climate change are very likely to impose net annual costs which will rise over time as global temperatures rise.

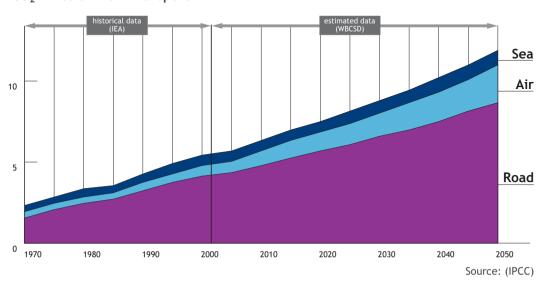
### "Transport energy use and carbon emissions are projected to be about 80% higher than current levels by 2030."

In 2004, transport was responsible for 23% of world energy-related GHG emissions with 74% coming from road vehicles. Over the past decade, transport's GHG emissions have increased at a faster rate than any other energy using sector. Unless there is a major shift away from current patterns of energy use, world transport energy use is projected to increase at the rate of about 2% per year, with the highest rates of growth in the emerging economies.





### CO<sub>2</sub> Emission from Transport



Transport energy use and carbon emissions are projected to be about **80% higher** than current levels by 2030.

Beyond technology innovation the needed reduction of GHG emissions in the transport sector requires an integrated solution adopting adequate instruments, policies and practices with cooperation and knowledge exchange across different subsectors of transportation. These include among others carbon-price regulations, standards, and taxes as well as a change in land use, in lifestyles and consumption patterns.

The costs of many of these measures is projected to be very low — even within the transport sector there would not be

a major loss of jobs and economic output but instead a net benefit.

Despite the necessity of finding different solutions according to requirements differing from one country to another a common framework and direction is required.

"I think the transport sector — if it is concerned about creating a planet that essentially is sustainable and will be able to manage the challenge of climate change — has to make a start by itself."

Transport Sector

The Challenge of Climate

### **Transport and Climate Politics**

### Highlights of the Keynote by Yvo de Boer



Yvo de Boer, Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC)

The UN Climate Change Conference in Bali in December last year saw a political breakthrough — the launch of a negotiating process that will conclude in Copenhagen at the end of 2009. The Bali Action Plan asks us to explore ways and means on how we can catalyse and enhance cooperative and effective action on climate change among various groups and stakeholders. The real work is now only beginning.

The Bali meeting highlighted not only the difficulties in ascertaining how the burden will be shared between developed and developing nations, but also between the different sectors within the national economies, and transport is one of the most challenging sectors in both developed and developing countries.

"Addressing these fundamental questions in the light of the stark contrast between projected emissions growth of 80% by 2030 and needed reductions of 60 to 80% by 2050 would ask for nothing less than a paradigm shift in transport."

All of the current trends in transport fly in the face of what science tells us is required.

Present political action in the transport sector is woefully inadequate. It is therefore crucial that key stakeholders in transport and climate change provide input to the political process under the UN as to what sound policies need to be in place so emissions from transport stop rising at their present rate and actually begin to fall in the way the IPCC clearly indicates they need to.

New technologies will certainly be part of the answer. But we simply cannot afford to wait for them and hope for a "silver bullet" to global problems, which may only be commercially available at some stage in the future. We all need to think hard about the extent to which international transport could be included in an emissions trading system established as part of the Copenhagen agreement.

"It is high time to take action now by adopting more immediate national or regional approaches for all transport modes which make real contributions and could set examples for others."





### A Dignity-Based Vision

### Highlights of the Keynote by Prof. Pekka Himanen

What is our current dream for the world? History has also been changed by dreams. But if we ask what our current dream for the world is, it is already revealing that we have even replaced the very word "dream" with the technical term "vision." I have a dream that we live in a world where every human being has a right to a dignified life, including the right to clean environment. A world where not caring about the environment is perceived as stealing from children.

### "What I am calling for is a broader goal for our leadership."

Environmental threats, together with global poverty and the challenges of multicultural coexistence are some of the biggest challenges our society faces. We need to make capitalism and innovation work for these challenges. We have possibilities of finding solutions based on innovation.

Yet innovation is not spread evenly across the world. It is driven by a number of centres of excellence which can be pinpointed by the location of leading universities, the number of patent applications or the intensity of content production on the Internet. In a competitive world, you need three elements to establish innovation: Creative people who have benefited from high quality education, a Community of enrichment that helps turn ideas into business opportunities and a wider Culture of creativity.

We need to apply this logic to clean transportation and energy issues. As customer values shift, the environment is now becoming a competitiveness issue and a business opportunity for countries and companies alike. Climate change is a scientific fact, the question is: are we going to turn it into a competitiveness advantage? By fostering innovation, we can turn environmental issues into an opportunity.

If we look at leaders who have made an imprint on history, which ones do we really remember? Those who developed a dignity-based vision of the world. With all the resources available to us, how can we even fail?



Prof.
Pekka Himanen,
University of Art and
Design, Helsinki

# Transport and Climate Change in Figures

#### The Challenge of Climate Change

The United Nations Intergovernmental Panel on Climate Change (IPCC) has identified anthropogenic emissions of greenhouse gases (GHG) as the primary driver behind significant and potentially critical changes in global climate.

The concentration of  $CO_2$  in the atmosphere has increased from a pre-industrial value of 280 parts per million to 381 ppm in 2006. The current level of carbon dioxide concentration in the atmosphere significantly exceeds the natural range over the past 650 000 years and is growing at an accelerated pace.

Robust evidence collected by the IPCC indicates that the emission of these gases leads to a chain of events that are likely to have impact on global average temperatures, weather patterns and, ultimately, human life. The 4th Assessment Report of the IPCC from 2007 indicates that a 50-80% reduction of global GHG emissions by 2050 compared to 2000 is required in order to avoid serious and enduring climate change.

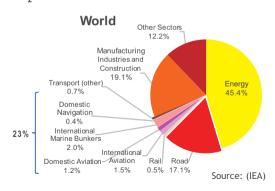
#### Transport and Climate Change: Past Trends

Transport is a key economic sector, supporting development and growth, and facilitating exchange. At the same time, the transport sector is a significant and growing contributor to GHG emissions. Transport is responsible for 13% of all anthropogenic emissions of greenhouse gases and for 23% of world  $CO_2$  emissions from fossil fuel combustion. The sector is to 95% dependent on oil and accounts for 60% of all oil consumption.

The road sector dominates, representing approximately three quarters of total transport  $CO_2$  emissions while rail has diminished its share of  $CO_2$  emissions in many countries. But this only accounts

for fossil fuel-burning rail traction and not electric traction which is largely represented in the sector. The balance of CO<sub>2</sub> emissions remaining after accounting for the road sector is more or less equally divided between aviation and shipping according to data from the International Energy Agency (IEA) but it should be noted that recent estimates of global CO<sub>2</sub> emissions from international maritime shipping undertaken for the International Maritime Organization (IMO) revise IEA estimates upwards by approximately 55%.

#### CO<sub>2</sub> Emission from Fuel Combustion 2005



In most countries, transport  $CO_2$  emissions are growing faster than total  $CO_2$  emissions. Generally, the creation of more wealth per capita in ITF countries has been accompanied by rising per-capita  $CO_2$  emissions from transport activity. However, some countries such as Germany, Japan





and France stand out in having stabilised or even decreased their emissions caused by transport in recent years despite economic growth.

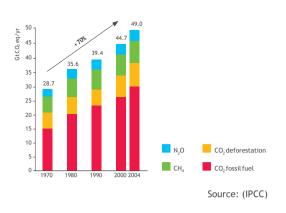
### Transport and Climate Change: Future Projections

The IEA projects that use of energy within the transport sector will grow by 120% until 2050 compared to 2005 if no significant action is taken and result in an increase of lifestyle "well-to-wheel" CO<sub>2</sub> emissions of 150%. These projections assume continued strong growth in the number of cars and other light-duty vehicles as well as in transport volumes, especially in countries which are not part of the Organisation of Economic Co-operation and Development (OECD).

According to ITF studies car and other light-duty passenger kilometres are projected to more-or-less double from 2000 to 2050 worldwide. And — if rising incomes should result in demand for driving similarly in non-OECD countries as they have in the USA — it is quite possible that  $CO_2$  emissions from cars will grow even much faster than predicted so far.

Aviation and maritime transport are expected to grow, and even accelerate their growth.

Global anthropogenic Greenhouse Gas Emissions, 1970-2004



The projections made by Boeing for passenger air travel indicate a more than doubling of activity from 2005 to 2025 while Airbus Industries projects freight cargo to triple over the same period — a trend which has important repercussions given the additional climate impacts of aviation.

International maritime activity is expected to continue growing strongly in the future. Recent projections undertaken for the IMO indicate a doubling or even more than tripling of  $CO_2$  emissions from international maritime activity between 2000 and 2050, largely due to the growth in the container sector.



# Ministerial Session and Key Messages

### An Immense Challenge — A Promising Opportunity



"Fuel prices are impacting on the world economy in several dimensions and the effect on transport is one of the most significant." Anwarul Hoda, Member, Planning Commission, Government of India



Ministerial Session

The Ministers of Transport of the 51 member countries discussed and passed a set of Key Messages of the International Transport Forum which call for a strategic approach to meeting the energy and climate change challenge to the transport sector. The complete text of the Key Messages is available from www.internationaltransportforum.org.

46 A diverse range of policy measures and instruments show significant potential to improve efficiency in and reduce emissions from the transport sector. These policy choices necessarily reflect the specificities of individual countries, which are approaching these problems from different starting points and under different economic, institutional, social and political circumstances.

If all measures currently proposed by countries are fully implemented, the projected growth in emissions can be reduced by over a third. Despite this, most indications are that transport emissions will increase by two thirds over the next thirty years unless transforming technologies are developed.

This presents an enormous challenge for the transport sector that carries with it an urgent need for action [...] And meeting this challenge will provide promising new opportunities for business and industry.

#### Political Commitment and Action are now Urgent

Whatever the policy mix, strong commitment and determined action to reduce transport's energy consumption so as to reduce  $CO_2$  emissions is now imperative. The broad objective for all countries should be to reduce transport's dependence on oil and to move towards a low-carbon transport system as soon as possible. [...]

Countries are urged to continue to exchange experience and good practice to help ensure that the most effective and appropriate policies are implemented in each case.

### A Strategic Approach is Required

Countries should aim to develop a broad strategic policy approach — both within and across modes and at all appropriate levels of government. [...]

The approach should be built on packages of policy measures which include: technology development, strengthened research into new technology and fuels, increased use of information technology and integrated mobility management as well as a wide variety of non-technology policy tools with potential to improve economic efficiency and reduce emissions. [...] The particular circumstances in countries or regions will determine the choice and appropriate mix of these policy tools.

### Transport Policies and Measures are Indispensable

Transport policy measures that encourage behaviour change are essential parts of the packages needed to combat climate change and simultaneously meet other objectives of transport policy.

These measures include:

- Improved organisation and telematics to optimise the modes and especially the interlinkages between them.
- More effective use of rail, inland waterway and short sea shipping for freight transport.

"One of the ways for transport officials to gain public acceptance is to not only talk about the climate benefits, but to marry those up with transportation benefits." Tyler Duvall, Assistant Secretary for Transportation Policy, USA



"We need to think and act globally. But before that, we need to act locally, nation-based." Binali Yıldırım, Minister of Transport, Turkey



Ministerial Session

"Governments can help strengthen cooperation with industry by means of incentives for investment and involving new stakeholders in the process."

Humberto Trevino, Under Secretary of Transportation. Mexico



"Quantifying emission reduction targets should be determined according to the development level of the transportation system in each country." Jae Gyoon Lee, Vice-Minister of Land, Transport and Maritime Affairs, Korea

- Enhanced promotion and service quality of public transport and rail, as well as support for non-motorised means of travel such as walking and cycling, especially in cities where the vast majority of people live.
- · Measures to manage traffic demand and reduce congestion.
- More efficient logistics concepts.
- Continued efforts to better integrate land use and transport planning.
- Pricing mechanisms to encourage behavioural change and ensure that externalities are taken into account.
   [...]

### Support for Technological Development is Crucial

Reaching a low-carbon goal for transport will require increased support for research, development, demonstration and innovation. Sharing technology and good practice, as well as setting good examples in government procurement, are among the possible steps to meeting this goal. In the shorter term, opportunities should be seized to promote the significant fuel efficiency improvements to existing technology that can be attained through combinations of instruments such as regulations, economic and fiscal incentives and information campaigns designed to encourage consumers to opt for the most fuel-efficient technologies. [...]

Production of biofuels must be pursued in an environmentally, economically and socially sustainable way. Current work to improve the sustainability of biofuels should be continued and



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shared, and research to develop second generation biofuels should be further encouraged and prioritised.

#### Action Must be taken at all Levels of Authority

A variety of actions locally, regionally, nationally and among countries to mitigate transport  $CO_2$  emissions are needed. These include:

- Systematic consideration of the CO<sub>2</sub> emission impacts of transport policy and investment decisions.
- A focus on transport policy measures that generate the highest returns in terms of greenhouse gas emissions, account for possible trade-offs with other environmental impacts and are cost-effective. Cost-effectiveness is essential in order to maximise the impact of policies with the limited resources available.
- Improvements to national data quality, availability, comparability, consistency and analysis in and across countries so that policy actions and their effects are measurable, reportable, and verifiable.

#### The Way Forward

Transport Ministers must play a proactive role in meeting the energy and climate change challenges facing the sector, working across government and together with all sector stakeholders to implement cost-effective ways to reduce dependence on oil and CO<sub>2</sub> emissions."

"It is very important that, in our future discussions about reduction of emissions, we do not stop the development of economies in new member countries." Ainars Slesers, Minister of Transport, Latvia



Ministerial Session

"The UK government believes that biofuels can play a part in helping to tackle emissions and the impact of climate change, but only if the fuel is sourced responsibly."

Jim Fitzpatrick, Undersecretary of State, Department for Transport, United Kingdom

## 20 Forum 08 Highlights



Advances in Energy-Efficient Transport Technologies

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Changing Behaviour in Passenger Transport 32 Reducing CO<sub>2</sub> Emissions in Goods Transport 35

Transport CO<sub>2</sub> Emissions in Emerging Economies 37

### WORKSHOPS

# Advances in Energy-Efficient Transport Technologies



Julia King, Aston University, UK



Patrick Oliva, Michelin



Jürgen Leohold, Volkswagen

Chair: Julia King
Aston University, United Kingdom

### **Participants:**

- Jos Dings
   European Federation for Transport and Environment (T&E)
- Stephan Herbst Toyota Europe
- John Heywood MIT, Boston, USA
- Jürgen Leohold
   Volkswagen
- Patrick Oliva Michelin
- Volker Schindler
   Technical University of Berlin,
   Germany

### Main Findings

Potential and Timescales for Technologybased Fuel Economy

The workshop on advances in energy-efficient transport technologies proved guardedly optimistic on the potential to reduce CO<sub>2</sub> emissions from cars. How quickly improvements can be delivered was less clear.

"Even with the best of intentions and very vigorous action, changing things on this scale takes longer than we are willing to admit." John Heywood, MIT Boston

Nonetheless there was general consent that an improvement in fuel economy of 30% through advances in conventional mainstream automotive technologies is possible in the coming decade.

Improvements of 50% and above, required to reverse the growth in emissions from the sector worldwide, will require more time. Opinions are devided on the nature of technological development necessary.

"Within ten years, we could be seeing an improvement in emissions from conventional automotive technologies by 30%." Julia King, Aston University, UK

"Reducing energy consumption of cars by 50% is feasible with existing state of the art technology." Patrick Oliva, Michelin

Greater penetration of hybrid vehicles, alternative fuels and propulsion systems will be required, starting with all-electric vehicles for urban use.



"Biofuels are not the silver bullet that some people had seen them to be." Julia King, Aston University, UK

"Since we don't have this silver bullet you must look into every potential that is available." Jürgen Leohold, Volkswagen

"At the moment there is no strong mainstream candidate for alternative fuelled cars." Stephan Herbst, Toyota

There was a widespread agreement on electric vehicles outperforming fuel cell technology in terms of reduced cost/complexity and total  $CO_2$  emissions reduction potential. It was stressed that

### **Core Discussion Group**

- Greg Archer Low Carbon Vehicle Partnership
- Vincent Blervague, ERTICO
- Pierpaolo Cazzola International Energy Agency (IEA)
- Ian Hodgson
  European Commission
- Paul Jenne, Van Hool
- Gary Kendall
   World Wide Fund For Nature
   (WWF)
- Paul Nieuwenhuis
   Cardiff Business School,
   United Kingdom
- Harry Turpeinen
   Neste Oil Corporation

development of high power density and sustainable battery technologies deserves to be prioritised in research and requires funding not only by industry but also by government.

### The Pressing Need for 'Clean and Green' Electricity

The possibility of achieving improvements of 50% and more in fuel economy with, for instance, electric vehicles greatly depends on the emission levels associated with supply of electricity. However, as timescales for new technologies and power plants are many times higher than in the automotive industry, according to the experts, this must be a priority for governments.

It is imperative to broaden focus and not only involve OECD countries, but also rapidly developing economies, as this is where the largest growth in vehicle fleets will come. While OECD members may take the lead, technology collaboration with emerging countries is highly desirable, with a potential role for public funding by OECD member countries.

#### **Technology Costs**

The costs to the consumer of introducing mainstream technology to improve fuel economy by 30% were estimated near to zero as the increase in car prices to pay for the technology would be compensated by savings on fuel within two or three years. However, consumers are naturally averse to spending money up-front for future savings that may not in the end



Kurt van Dender, International Transport Forum



John Heywood, Massachusetts Institute of Technology



Stephan Herbst, Toyota Europe



Jos Dings, European Federation for Transport and Environment (T&E)



Volker Schindler, Technical University of Berlin, Germany

materialise — if, for example, oil prices fall or they only hold on to their new car for a year. The experts also pointed out that all of the technological potential available needs to be used for improving fuel economy and not for increasing the performance of cars, which is where consumers traditionally spend their money. In order to convince manufacturers and consumers to choose fuel efficient cars workshop participants saw a clear need for policy intervention.

"The benefits of car regulation are, as a rule, underestimated and the costs overestimated." Jos Dings, T&E

"It may well be forced by policies, but ultimately consumers have to buy this technology, so the costs are extremely important." John Heywood, MIT, Boston

### Fuel Economy Standards are a Key Policy Instrument

In order to achieve considerable reduction of  $CO_2$  emissions the experts called for fuel economy standards (or  $CO_2$  emission standards) as the key tool capable of stimulating the use of technology for improving fuel efficiency. In addition to the near term fuel economy standards introduced in a number of countries and the proposed EU  $CO_2$  emissions standard, longer term targets could be used to guide the market and reduce risks for manufacturers investing in new technology.

#### **Taxation**

As experience shows, differentiation of taxation according to  $CO_2$  emissions can strongly affect choice when buying a car. This therefore is seen as a useful policy instrument for steering consumers towards fuel economy rather than increased power



and it can deliver quick results. Some order needs to be brought to the situation in Europe's "single market", however, where each country has a different system for differentiating taxes, fragmenting the market and weakening the power of the incentives.

"The magnitude of the challenges we have to overcome cannot be met by market forces alone." Patrick Oliva, Michelin

Some of the most cost-effective technologies available to cut emissions, such as efficient tyres and low friction lubricating oils, require specific new standards and tax incentives to accelerate their uptake, as they are not covered by the standard measurement procedures for the fuel economy of cars. Driving behaviour is also an important factor with a significant effect on fuel consumption. Accordingly, technology designed to make cars run at 'eco driving' settings could result in considerable payoffs.







# Transport Technology-Efficient

## Changing Behaviour in Passenger Transport



Gerd-Axel Ahrens, Dresden University



Alain Bonnafous, LFT



Philippe Crist, International Transport Forum

Chair: Gerd-Axel Ahrens
Dresden University, Germany

### **Participants:**

- Alain Bonnafous
   Laboratoire d'Économie des Transports (LET), Lyons University, France
- Phil Goodwin
  University of the West of England,
  United Kingdom
- Sungwon Lee Korea Transport Institute, Republic of Korea
- Bruce Schaller New York Transport Commission
- Dan Sperling
  University of California

### Main Findings

This workshop discussed the scope for changing travel behaviour as a way of addressing transport-related energy and climate concerns. Existing political and economic frameworks and empirical evidence suggest that governments will have to address travel behaviour if CO<sub>2</sub> emissions are to be reduced significantly below current levels.

The discussion in this workshop highlighted that a 20-30% reduction in car use was feasible through a coherent and sustained series of measures. A key point was that the long-term impact of these policies — say, at more than five years out — can be twice as high as the short-term impact.

### The Potential of Changing Passenger Behaviour

According to empirical evidence a reduction in car use is achievable by up to 20-30% through the coherent and sustained application of a variety of measures. **Anthony May** pointed out that these measures, if well designed, can be self-financing.

Travel behaviour cannot be reduced simply to the choice between cars and public transport as often seems to be the case in public discourse. Other important behavioural aspects need to be taken into account such as volume and location of travelling, choice of modes, driving style, and the question of where to live, work and shop. For instance, the first response to increasing fuel prices is not to switch to public transport but to decrease fuel consumption. Empirical evidence suggests that the elasticity of fuel consumption is at least twice as high as the elasticity of travel volume.





According to the experts, transport authorities have in the past largely treated travel demand as an exogenous factor and have simply sought to cater for the rise in passenger travel. Now, however, many authorities realise that such policies not only meet demand, but spur it on as well, and that catering to demand when prices are below social costs eventually is ineffective. Furthermore, many authorities now understand that travel behaviour has constantly evolved in adaptation to government policies, even when they have not expressly targeted behavioural

**Core Discussion Group** 

- Cyril Condé Régie Autonome des Transports Parisiens (RATP)
- Walter Hook
   Institute for Transportation & Development Policy (ITDP)
- Anthony May
   Institute for Transport Studies (ITS),
   Leeds University, United Kingdom
- Adolf Müller-Hellman Verband Deutscher Verkehrsunternehmen (VDV)
- Carlo Sessa
   Institute of Studies for the
   Integration of Systems (ISIS), Italy

changes. Policy focus on impacting travel demand in line with shared and agreed objectives, such as reducing  $\text{CO}_2$  emissions, at least has the benefit of bringing in line political will and practical outcomes.

### Policy Packages and Levers

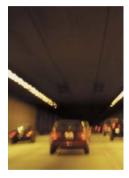
Travel demand management policies need to be comprehensive as well as consistent and should cover all fields of government including integrated, cross-sectoral planning. Even the very act of involving citizens in planning processes can lead to spontaneous change in behaviour that can be significant. Transport authorities, though, should take into consideration that voluntary policies only have a limited effect.

"The most effective form of transport interventions will be a coherent overall package whose elements are all consistently pulling in the same direction, and sustained for a number of years." Phil Goodwin, University of the West of England

Concerning effective levers to facilitate travel behaviour change, workshop participants listed a wide range of examples applicable in governance, for instance:



Dan Sperling, University of California, Davis





Sungwon Lee, Korea Transport Institute

### Changing Behaviour



Phil Goodwin, West of England University





Bruce Schaller, New York Transportation Commission

- charges for parking and tolls on the use of roads
- vehicle and fuel taxation
- planning and investing in transport infrastructure and coordinating this with relevant planning systems for land-use
- parking policy

"People's responsiveness to changes in parking prices is greater than their responsiveness to fuel prices, highlighting the importance of parking policy over public transport fare policies in seeking to change overall volume of car travel." Sungwon Lee, Korea Transport Institute

The experts also highlighted eco-driving as a key element of national strategy in many countries for reducing  $CO_2$  emissions. Testing skills in eco-driving as part of the examination for drivers' licence might result in significant emissions savings, the participants concluded.

"A city carbon budget policy provides a durable and integrating framework for managing greenhouse gas emissions on the local level." Dan Sperling, University of California

#### **Avoiding Oversimplifications**

Travel behaviour cannot be dissociated from work, housing, household, leisure and other social and economic systems that have an impact on the number and nature of trips taken. Policies seeking to influence travel behaviour — especially fiscal and pricing policies — have a real impact on the distribution of costs and benefits. Policies that might bring about the greatest change in behaviour and those that are most efficient from an economic perspective may not be the most fair from a social perspective. This finding cannot be ignored.

"Behavioural mobility changes are not easy to implement, since they are based on long-term decisions of where to live, what cars to buy and on a very habitualised lifestyle. Both "push" and "pull" measures are necessary."

Gerd-Axel Ahrens, Dresden University



# Reducing CO<sub>2</sub> Emissions in Goods Transport

### Chair: Werner Rothengatter Karlsruhe University, Germany

### **Participants**

- Erik van Agtmaal Green Logistics Consultants Group
- Jan-Anne Annema
   Netherlands Institute for Transport
- Hasse Johansson Scania
- Barbara Lenz
- Alan McKinnon Heriot-Watt University United Kingdom

### **Core Discussion Group**

- Wilhelm Heeren Jan de Rijk
- Jan-Olov Lundow
  Bombardier Transportation
- Martin Wegner
  DHL, Deutsche Post World Net

### Main Findings

This workshop emphasised the feasibility of change in behaviour and business organisation in freight transportation.

### **Status Ouo**

Freight transport and logistics are responsible for about one third of transport emissions with a strong tendency to grow. A substantial potential can be identified in increasing the carbon efficiency at the level of individual transport companies — but even more so if logistic players cooperate.

### Potential Actions for Logistic Players

Businesses can reduce CO₂ emissions by using appropriate technology and improving their logistic concepts and operations or by employing alternative modes of transport. Options such as hybrid technology or hydrogen based propulsion, however, can only be expected to kick in on the long run whereas training drivers in eco-driving can contribute to fuel savings immediately.

"By getting companies to switch transport modes, raise vehicle load factors and improve fuel efficiency, it is possible to decouple CO<sub>2</sub> emissions from the growth in ton-km." Alan McKinnon, Herriot-Watt University



Jan-Anne Annema, Netherlands Institute for Transport



Alan McKinnon, Heriot-Watt University



Erik van Agtmaal, Green Logistics Consultants Group







Jari Kauppila, International Transport Forum



Hasse Johansson, Scania



Werner Rothengatter, Karlsruhe University, Germanv



Barbara Lenz, DLR

"Reducing the consumption of energy and raw materials, and limiting emissions and waste from production and logistics processes, are key contributions that businesses can make to tackling local and global environmental challenges." Erik van Agtmaal, Green Logstics Consultants Group

### Political Instruments and Voluntary Agreements

A global trading system for CO<sub>2</sub> emissions is considered by many as an ideal solution from the economic point of view. In such a world-wide regime, which would include all economic sectors, the market would decide on least cost strategies. As a global agreement appears hard to achieve, partial emission trading schemes including for instance aviation and maritime shipping in the Emission Trading Scheme (ETS) of the EU might be possible. Without a broad international approach, however, counterproductive arbitrage practices such as outsourcing or outflagging are likely to arise.

#### **Further Strategies**

Other strategies include taxes, charges, regulations, standards, and investment in alternatives to road haulage. Another possible approach is to set obligatory standards for  $CO_2$  emissions from truck fleets. At the same time companies are increasingly interested in communicating their  $CO_2$  performance to customers, NGOs and the state.

Therefore voluntary actions seem set to become the most important element in climate policy.

### Short-, Mid- and Long-Term Measures

Recommended short-term measures include voluntary agreements, eco-driving training and the reinforcement of existing business strategies towards saving energy.

Mid-term measures were seen in modest technological changes, as well as tolls for city roads and the extension of interurban and network wide road tolls. More integration of rail in supply chains also offers some CO<sub>2</sub> mitigation potential. In the long run technological innovations in fields such as hybrid technology or hydrogen-based propulsion systems seem appropriate as well as change in logistic networks (warehouses, inventories, supply chains) and basic changes in spatial production patterns.





## Transport CO<sub>2</sub> Emissions in Emerging Economies

### Chair: Marc Juhel The World Bank

### **Participants**

- Manfred Breithaupt
   Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ)
- K.G. Duleep
  Energy and Environmental Analysis
  (EEA-ICF)
- Ralph Gakenheimer

  Massachusetts Institute of
  Technology, Boston, USA
- Sanjivi Sundar
   The Energy and Resources Institute,
   New Delhi, India

### **Development Imperative**

Adequate transport infrastructure and services are essential for economic development and improvement in welfare. This includes improving air quality and road safety as well as reducing congestion. These local problems should dominate the agenda of governments in emerging economies — not least due to the fact that these policies also provide opportunities for mitigating  $\text{CO}_2$  emissions.

### **Core Discussion Group**

- Feng An
   Innovation Center for Energy and Transportation (ICET), Beijing,
   China
- Vadim Donchenko
   Scientific and Research Institute of Motor Transport (NIIAT),
   Moscow, Russia
- Lew Fulton
   International Energy Agency
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- Reiner Koblo KfW Entwicklungsbank
- Sergio Sanchez Clean Air Institute, Washington, USA
- Lee Schipper
  World Resources Institute,
  Washington, USA
- K.L. Thapar
  Asian Institute of Transport
  Development, India
- Michael Walsh Car Lines, USA



Marc Juhel, The World Bank



Ralph Gakenheimer, Massachusetts Institute of Technology



Stephen Perkins, International Transport Forum

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## Transport CO<sub>2</sub> Emissio

**e** Economies



Manfred Breithaupt, GTZ



K.G. Duleep, EEA-ICF



Sanjivi Sundar, TERI

#### **Growth in Private Motorisation**

Car ownership has entered a phase of exponential growth in the largest emerging economies. Regulations for cleaner fuels and car technology will be essential for containing growth in  $CO_2$  emissions.

"Fuel economy in major developing nations is already very good, and exceeds US targets for 2020 in India and Mexico, and almost equals them in China." K.G. Duleep, EEA-ICF

Technologies currently being developed in the US, EU and Japan for fuel efficiency are suited to high power vehicles and come at a cost that is much higher in relation to car prices in emerging economies than in OECD countries.

The technology solutions for improving fuel efficiency in the short term are therefore different in emerging economies. Idle stop-start systems offer the most cost-effective savings in emerging country conditions, because they are suited equally to low and high power vehicles and because of the extent of congestion in typical cities in these countries.

"The automobile and oil industries have a major role to play. They must look beyond cost considerations and assume a global responsibility to support measures for combating climate change." Sanjivi Sundar, The Energy and Resources Institute New Delhi

Motorised two and three wheelers are a major part of traffic in many emerging economies, and they are less readily susceptible to the demand management measures discussed for cars. They are important as they provide essential mobility to families on modest incomes. but they are also the source of serious local air pollution, even though their CO<sub>2</sub> emissions are modest. The freight transport sector is showing rapid growth of road haulage and at the same time decreasing rail and waterway traffic. As trucks generally account for high levels of emissions, low diesel tax rates — aligned with low tax on kerosene for cooking and heating — should be abolished. Instead incentives towards efficient vehicles and more efficient logistics should be introduced.

### **Demand Management**

The rapidly expanding cities in emerging economies pose a major challenge for mitigating  $CO_2$  emissions and at the same time present the greatest opportunities for curbing emission growth. The pattern of land use determines transport demand while transport infrastructure development plays a major role in determining land use. Integrated land use and transport planning therefore is crucial.

Road tolls and urban road pricing were seen as essential for managing the expansion of the developing world's mega cities and addressing both congestion and emissions. More immediately, parking controls and





parking charges with enforcement of parking regulations are a widely applicable instrument for managing demand for road space and are considered quite effective in inducing modal switch and containing CO<sub>2</sub> emissions.

"Fiscal policies cannot be implemented as isolated instruments, but — to be successful – have always to be embedded in a comprehensive framework of Demand Management Transport measures." Manfred Breithaupt, GTZ

### **Public Transport**

In some emerging economies rapid urbanisation has been accompanied by a decline in public transport services, exacerbating the expansion of private motorisation. Elsewhere, public transport investments have greatly improved urban mobility and move more passengers per ton of CO<sub>2</sub> emitted. In this context integrated ticketing systems that facilitate interchange between rapid transit, local bus and rail systems are considered effective in promoting use of public transport.

Good timing of investments in public transport is crucial because rising incomes permit an exponential growth in motorised vehicle ownership. Generally the earlier the investment, the more successful it will be in managing private road traffic growth. International financial institutions can play an important role by supporting governments in developing the institutional capacity for public transport and an integrated approach to planning land use and transport.

"The ITF can play a major role in influencing its developed member countries to provide the necessary technology and financial support for enabling developing countries implement GHG mitigation strategies." Sanjivi Sundar, The Energy and Resources Institute New Delhi











## 20 Forum 08 Highlights



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## **PANELS**

## Prospects for an Energy-Efficient, Low-Carbon Future for Transport

### Chair: Camiel Eurlings Minister of Transport, Netherlands

### Panellists:

- Thomas Enders CEO, Airbus
- Ivan Hodac Secretary General, ACEA
- Jack Jacometti Vice-President. Shell
- Thierry Morin CEO. Valeo
- Liv Signe Navarsete
  Minister of Transport, Norway
- Nobuo Tanaka Executive Director, *IEA*

Rapporteur: Claude Mandil Former Executive Director, International Energy Agency (IEA)

Panellists in this opening session were asked to share their perspectives on the strategies adopted by public authorities and market actors in coping with energy consumption and  $CO_2$  emissions from the transport sector. Initiatives aimed at improving efficiency and reducing emissions were reviewed, focusing in particular on the experience gained to date.

### The Energy Crisis

In his preliminary remarks **Camiel Eurlings** described how every individual is currently feeling the rising prices of fuel, and how awareness of this challenge is bigger than ever before. While conventional tactics for saving energy seem useful in the immediate future, completely new directions need to be explored in the long run. Therefore Eurlings called on industry and governments to work more closely together, and look for a convergence of views on which directions to choose, as well as strategies for maintaining public support in the face of difficult policy choices.

Nobuo Tanaka called the high oil prices at present the "third oil crisis", pointing out that the current situation is very different in nature to the previous two in that it is caused more by a huge increase in demand within emerging economies — particularly India and China — than with limited supply. Tanaka stressed that due to the low oil prices of the 1990s, energy efficiency efforts, R&D for technologies and investment in energy infrastructure capacity had been inadequate. He appealed to governments to decisively invest in energy infrastructure and take initiative to reduce demand.

### "Hard truths are emerging." Jack Jacometti, Shell

Agreeing with Tanaka, **Jack Jacometti** underlined a strategic focus on energy efficiency and energy conservation as useful and necessary. He pointed out that not only can supply not keep up with demand; demand itself is growing at an increasingly fast pace. **Thomas Enders** appealed to politicians and other stakeholders not to mistake the current high oil and kerosene prices as a reliable incentive for turning towards new technologies.







Camiel Eurlings, Minister of Transport, Netherlands



Nobuo Tanaka, Executive Director, IFA



Jack Jacometti Vice-president, Shell



Claude Mandil, IEA

Enders warned that no airline could afford prices beyond 200 dollars per barrel and that there is a risk of a massive collapse of the aviation sector, if prices soar further.

### Is Technology the Answer?

With regard to technology, each member of the panel stressed that high oil prices draw attention to energy efficiency on the one hand and alternative energy sources on the other.

Referring to a recent publication by the "Energy entitled Technology Perspectives" which proposes strategies for reducing CO<sub>2</sub> emissions by half by 2050. Nobuo Tanaka highlighted the prospects for a carbon-free transportation sector. These would be based on carbon-free electricity, hydrogen fuel cells or electric vehicles or a combination of both, as well as plug-in hybrids or a second generation of biofuels. The executive director of the IEA described energy efficiency as the first option to be taken, allowing for relatively quick and cost-effective progress. In his opinion fuel efficiency standards should be mandatory for the transport sector.

After pointing to advances in aviation's use of alternative fuels — including experimental flights operating on fuel gas to liquid and fuel cells — Thomas Enders also reported tremendous changes in the average kerosene consumption per passenger per 100 kilometres since the mid-1980s: From about 8 litres then it is now down to almost 5 litres, he said, and

the Airbus A380 works even below 3 litres

"We have achieved enormous progress, but we think we need to do more." Thomas Enders. Airbus

Focussing on alternative energy sources and especially on a second generation of biofuels, Jack Jacometti emphasised that their development is extremely important and needs to take place in a totally responsible and holistic way, with all elements taken into consideration including change in land use and societal impacts. Ivan Hodac agreed and called for global standards and sustainability criteria for second generation biofuels.

"We have just made a statement that all our cars by 2010 will be able to drive on ethanol, and we will go to higher plans in 2015." Ivan Hodac, ACEA

Thierry Morin underlined the necessity of sustainable and coordinated political and scientific programmes instead of changing attitudes towards certain technologies every three or four years. In France, for example, four million tons of carbon could be saved each year, he said, if cars were equipped with start/stop systems. But cars with efficient technology need to remain affordable at the same time, Hodac pointed out.



Liv Signe Navarsete, Minister of Transport, Norway



Thomas Enders, CEO. Airbus



Ivan Hodac, Secretary General, ACEA



Thierry Morin, CEO, Valeo

### Where can Policy help?

The discussion clearly revealed that there is no single solution for bringing about a reduction of emissions, and that an integrated approach is essential.

It is a major task, according to **Liv Signe Navarsete**, to bring the results from research and development into society and into people's everyday lives. Politicians have to make decisions which might not be popular at first, but are necessary in the long run. Therefore — and this point was generally agreed within the panel — not only regulations and taxes are necessary, but also incentives which will encourage people and the industry to make the right choices.

Politicians have the responsibility, she said, to set targets and to convince people of the necessity for a change in lifestyle and consumption patterns, particularly in the rich part of the world. Navarsete described effective carbon price signals as important, asserting that politicians all over the world have to make environmentally good behaviour attractive, for instance by massive development of public transport. At the same time, environmentally bad behaviour needs to be made less attractive, through, for instance, increased taxes on high-emission vehicles, congestion charges in cities, or restrictive parking policy.

"Without a wide set of actions, including some tough ones, and an integrated approach, emissions from transport will continue to grow, and we cannot allow that." Liv Signe Navarsete, Minister of Transport, Norway

In addition, Nobuo Tanaka pointed to the need for consistency in the system in order to avoid the problem of very different and misleading messages to producers and consumers.

Concerning taxation, Ivan Hodac suggested that it should be reviewed in order to ensure that car usage, and not ownership. is the target of the tax. He expressed his view that CO2-related taxation both for fuel and cars would solve many problems but this taxation has to be harmonised. across the EU and beyond. At the same time he recommended support for ecodriving, claiming that significant amounts of CO<sub>2</sub> could be saved by teaching people how to drive more efficiently. Furthermore, regulation in his view is important, as it enables fair competition and ensures that manufacturers can achieve the economic benefit of their efforts.

### Global Cooperation is Key

All panellists agreed that global cooperation across industry and governments is a key factor in finding lasting solutions to the transport and energy problem and rising CO<sub>2</sub> emissions from the sector.



Jack Jacometti, for instance, outlined Shell's "blueprints" energy scenario which would see a world with more effective cooperation between industry, governments, foundations, and NGOs. Only this scenario with its broad cooperation really results in an acceptable future, he said.

Ivan Hodac emphasised that effective regulation and a level playing field are necessary, noting that global industries require global solutions.

### "I do not believe that the solution is to be found just in the European Union." Ivan Hodac, ACEA

Minister Navarsete agreed, recalling the need for a double strategy with both short- and long-term targets. Therefore regulations are required which have to be taken into account by the industry all over the world when making plans for producing cars for the years to come.

Navarsete also suggested including aviation and shipping in a global emissions trading system.

Thomas Enders and other speakers underlined however that, if aviation were to be subjected to emissions trading in addition to already existing burdens on airlines such as high kerosene prices, then the trading system would have to be fair and global.

Acknowledging emissions as part of a wider problem in aviation, the Airbus CEO called for more efficient infrastructure as well as a single air traffic management system for all of Europe, asserting that this could reduce CO<sub>2</sub> emissions per flight by at least 10%.

The aviation industry in his view needs to intensify its strategies in fields such as technology and operational measures, including, for instance, better routes and optimal altitudes for more efficiency.







Energy-effic



### Rapporteur's Summary

Rounding up the lively discussion the rapporteur, former Executive Director of the International Energy Agency Claude Mandil, highlighted the agreement among panel members that the challenges of transport, energy and climate change are both enormous and urgent. Panellists were unanimously of the opinion, he said, that the present 'oil crisis' is mainly driven by demand and not by supply. which means that among all available tools, energy efficiency improvement is the most important and urgent. There was a very strong agreement in the panel that the solutions need to be global and integrated, he said, as well as consensus on the need for both market mechanisms and regulation, including incentives for research and development. Innovation in business models and behaviour was also seen as essential, Mandil noted. As this will be very costly, least cost options should be applied first.

"I think that governments should prepare themselves to be sure that the momentum for reduction and consumption of CO<sub>2</sub> emissions is maintained, even with lower prices than those right now, which are a curse but very helpful as an incentive." Claude Mandil, Rapporteur





## Introducing Energy-Efficient Transport Technologies

Chair: Wolfgang Tiefensee Minister of Transport, Germany

### Panellists:

- Peter Augustsson former CEO, SAAB
- Tyler Duvall
   Assistant Secretary for
   Transportation Policy, USA
- Hans-Jörg Grundmann CEO Mobility, Siemens
- Hartmut Mehdorn
   CEO, Deutsche Bahn (DB)
- Thierry Morin CEO, Valeo
- Spyros Polemis
  Chairman, International Chamber
  of Shipping (ICS)

Rapporteur: Julia King Aston University

This panel session focused on strategies for and problems in bringing fuel-efficient transport technologies to markets: this included examination of the factors of success, barriers to implementation, and how to overcome them. The respective roles of government and the private sector were highlighted, with particular focus on governmental support for research and innovation on the one hand and a sufficient institutional framework for transforming technology over time on the other hand.

The discussion was opened by German Minister of Transport Wolfgang Tiefensee, who posed some of the most pressing questions concerning the introduction of energy-efficient transport technologies: where is the greatest potential for success? How can we pave a way for these technologies in order to ensure that they reach the consumer quicker than they do to date? What instruments can we use? Does it make sense to set objectives for CO<sub>2</sub> reduction or efficiency gains?

Rapporteur **Julia King** summarised discussions held at the Forum workshop on Advances in Energy-Efficient Transport Technologies held the previous day, stating that there had been cautious optimism among workshop participants: an improvement of around 30% in car efficiency was considered realistic in the



Wolfgang Tiefensee, Minister of Transport, Germany



Julia King, Aston University, United Kingdom



Hans-Jörg Grundmann, CEO Mobility, Siemens





Hartmut Mehdorn, CEO Deutsche Bahn



Spyros Polemis, International Chamber of Shipping



Tyler Duvall, Assistant Secretary for Transportation Policy, USA

short term by developing and optimising existing conventional technologies. But in order to achieve this, the historic trend of offsetting efficiency improvements through performance and feature creep has to be avoided in future. According to King's summary there will be a significant development in the market for plug-in hybrids by 2030 and for electric vehicles by 2050.

### **Automotive Technologies**

Tyler Duvall and Peter Augustsson both agreed that the solution is linked to technological development. Augustsson pointed to the importance of vehicle weight reduction, but signalled the accompanying higher vehicle costs as a major challenge to the automotive sector. He noted, however, that customers who have once bought an environmentally friendly car will not turn back to buying non-environmentally friendly Furthermore, many technologies could be introduced on the basis of state of the art combustion engines, he said, and therefore these and also fuels need further development.

Concerning conditions for the industry when it comes to investing in development, Augustsson and **Thierry Morin** both called for firmer steps by politicians to produce guidelines that do not distort competition — a view shared by many on the panel and among Forum participants.

"This is why regulation might be as important as technology at the end of the day." Thierry Morin, CEO Valeo

Morin stated that he does not believe the full hybrid to be profitable. Instead he recommends looking for alternatives between the full hybrid and the current internal combustion engine, for example by downsizing the gasoline engine and increasing the size of the electrical engine.

In addition, he said, every single component of the car needs to be developed in such a way that it consumes less energy. The CEO of Valeo put forward the microhybrid as an example, which starts the car each time that it is needed and recharges the battery when it is not. Morin considered this technology as especially promising in city traffic, as opposed to combustion engines which, he said, have demonstrated only a small portion of their potential efficiency.

Referring to government intervention, Tyler Duvall cautioned against regulating performance, but instead setting incentives based specifically on the desired objective, which in this case is fuel economy and emissions mitigation. With the technology currently available, he said, the car market in the United States has to substantially improve fuel economy instead of favouring performance. He also described a change in behaviour observed since the price of oil has increased.





"We have reached a tipping point."
Tyler Duvall, Assistant Secretary for
Transportation, USA

### **Railway Technologies**

Looking at the United States Hans-Jörg Grundmann focused on the tram, calling it a modern and economical means of mass transport with a promising future. Combining modern mass transport with appropriate policies such as congestion charges can bring about a significant reduction in emissions, Grundmann said, mentioning London as a good example where 125 000 tons of CO<sub>2</sub> are saved each year in its charging scheme.

Wolfgang Tiefensee pointed to difficulties in finding a modus operandi for international rail transport, particularly with regard to available capacity and cross-border traffic. Neighbouring railway systems need to interface much better than road carriers do. But so far internationally, railway systems do not work together very well, he said, as they are still too oriented towards their national borders. In future, apart from supporting the European control system, it is necessary to use the same signals as well as an international driving licence.

Comparing railways with motor vehicles, HartmutMehdorn stressed the significantly longer investment cycles with the life expectancy of trains reaching at least 25 to 30 years. Along with technological



Peter Augustsson, former CEO, SAAB





Thierry Morin, CEO, Valeo

innovation, Mehdorn said more efficient use of rail infrastructure was necessary, as was accelerating the entire logistical process.

The CEO of Deutsche Bahn outlined the commitment of all European rail operators — "although some still have to be pushed" — to reducing their emissions by 20-25%. Referring to Germany, he listed several approaches in use, including power recycling brake systems, training for engine drivers in eco-driving as well as monitoring and incentives for ecologically aware drivers.

He also underlined the necessity for rail to attract more attention from university and research institutions through funding of research, as do the aerospace and automotive industries.

## "Once the money is there, ideas will be born." Hartmut Mehdorn, CEO Deutsche Rahn

As concerns fuel cells, everything tested to date has turned out to be either too small or not good enough for rail, Mehdorn said. Therefore, the exchange of results and ideas with other industries is important.

Finally, he called for an integrated and strategic master plan for logistics in Europe including road, rail and air transport.

### **Shipping Technologies**

The Chairman of the International Chamber of Shipping (ICS) Spyros Polemis addressed Ministers of Transport, requesting more consultation with industry in order to develop more effective regulations. Recognising shipping as the most global industry, carrying more than 90% of the world's goods, he called for global solutions in order to avoid distortion in competition. He predicted that areas such as Europe risk losing shipping altogether.

He also described shipping as by far the most carbon-efficient form of commercial transport, especially after undergoing a "quiet revolution" with improvements in efficiency of almost 20% during the last few years by changing engines and ship design.

According to Polemis the industry assumes that it will remain reliant on fossil fuels in the medium term. Immediate efforts have therefore focused on reducing fuel consumption, though more radical long-term alternatives have not been forgotten. Renewable energy sources have not proven practical for providing sufficient power for operating ships, he said, while fuel cells at present appear too limited in range to offer a viable solution, the ICS chairman said.

Referring to the impact of lower speeds on emissions reduction, Polemis claimed that detailed studies are necessary first.





### Rapporteur's Summary

In her role as rapporteur Julia King summarised the panel discussions, stressing that a very strong message to governments, and Ministers of Transport in particular, had been sent out, calling for an open Europe for transport within all modes.

A further message to politicians was the general acceptance of regulations by industry, as long as these respect competition and are developed in cooperation with industry.

Concerning innovation, it was pointed out that in addition to development of new technologies, conventional automotive engines should not be forgotten, as innovation can bring about a huge amount of improvements in that field. Furthermore technology spill-over among the different transport modes can result in interesting opportunities.

"So we must make sure that in our R&D thinking, for example in European R&D funding, that knowledge is available right across all the sectors."

Julia King, Aston University, UK

Innovation does not concern only technologies, but operations and infrastructure as well, King said. Efficient movement among modes is a good way to make use of both the  $CO_2$ -effective and cost-effective modes.

In order to accomplish all these goals, it is imperative to inspire young people and to convince them to work in these areas and across all of the sectors.

"We need them to be enthusiastic about research in, for example, rail and shipping, reminding them that it is perhaps not always aerospace and sometimes cars that are going to be the way by which they can help save the world."

Julia King, Aston University, UK







## Implementing Integrated Policies and Planning



Moritz Leuenberger, Minister of Transport, Switzerland



Werner Rothengatter, Karlsruhe University

Chair: Moritz Leuenberger Minister of Transport, Switzerland

### Panellists:

- Klaus Axelsen
  Group VP, A.P. Moeller-Maersk A/S
- Peter Hendy
   Commission on Integrated Transport,
   United Kingdom
- Joakim Larsson
  Vice-Mayor Stockholm, Sweden
- André Navarri President Bombardier Transportation
- Scott Price
  CEO DHL Express Europe

Rapporteur: Werner Rothengatter Karlsruhe University

This panel session served as a platform for representatives of government and industry to discuss the possibilities and limitations of transport policy in meeting the energy and climate change challenges of the transport sector. The panel reviewed the policy experience to date with measures adopted by public authorities, particularly as concerns economic and regulatory instruments. The lively debate included questions on who actually controls transport activity politicians or business, and touched on

the pros and cons of regulations and other types of policy incentive as a means of moving the general public towards more sustainable travel behaviour

Swiss Minister of Transport Moritz Leuenberger opened the session, asking panellists `who actually controls mobility policy — politicians or the business sector?' He pointed out that travel behaviour and mobility more generally are largely driven by the automotive industry, with the government in a more reactive role — called upon to fund and provide the necessary infrastructure.

Werner Rothengatter noted that influencing the desire of people to travel is difficult to change via policy, whilst choice of transportation mode and destination can be more readily influenced. If costs of car travel increase, and if a sufficient variety of mobility services is provided, people will then be more susceptible to behaviour change. This means in the first instance that either the production of carbon has to become more expensive or that saving carbon should be rewarded, he said.

### **Drivers of Mobility Demand**

André Navarri expressed the opinion that governments can and should influence behaviour and demand. Despite the growth







in car numbers in countries like China, there are still opportunities to influence travel behaviour, and investments in mass transit are "massive" in China, he said.

"The Chinese government understood that it cannot slow down the demand for cars, but it can increase the number of alternative offers." André Navarri, Bombardier Transportation

He also mentioned France as a positive example of government intervention, demonstrating with the TGV that politicians can influence the way people and goods are moved. Accordingly France is currently deploying the biggest fleet of regional trains, he said, demonstrating that government can influence demand.

Peter Hendy called any proposition that governments only follow and markets lead entirely false, at least as concerns urban transport. He argued that there is barely a developed city in the world in which the provision of public transport is a commercial proposition on its own account. Instead the development of the city — where half of the world's population lives — is in his opinion acutely dependent on adequate mass transit, which by its nature in general is neither successfully financed nor operated privately without some sort of public intervention.

Furthermore, Hendy argued, there is no commercial interest in promoting walking and therefore it is left to governance to persuade drivers to leave their car in the garage more often and walk instead.

Referring to congestion charging and improvement of bus services such as those in London, the Commissioner on Integrated Transport spoke in clear favour of incentives. Furthermore, governance in his view also comes in where education is concerned as a precondition for raising awareness and altering behaviour in everyday life.

Because people need to be able to work where they live. Joakim Larsson insisted on land use and city planning alongside public transport as key factor to reducing CO<sub>2</sub> emissions. Comparing the United States and its CO<sub>2</sub> emissions reportedly at 20 tons per person with Stockholm, where emissions lie at 3.5 tons per person, he clearly recommended the Swedish strategy of taking infrastructure, city planning, and clean cars into consideration together. In this way, Stockholm also achieved success by introducing a congestion charge which helped increase the number of people choosing public transport over private cars by at least 20%.



Peter Hendy, Commission on Integrated Transport, United Kingdom



André Navarri, President Bombardier Transportation





Joakim Larsson, Vice-Mayor, Stockholm



Scott Price, CEO DHL Express Europe



Klaus Axelsen, Group VP, A.P. Moeller-Maersk A/S

#### Limits of State Intervention

Taking a different view, Klaus Axelsen stated that political action should not govern demand, as supply and demand together serve as a natural regulator. Attempts to promulgate regulation on a large scale have never proven to be successful, he said. He did not, however. rule out overnance on smaller scales, for example for transport in and around towns and as a source of incentive for more sustainable travel behaviour. Wherever regulations are necessary, though, Axelsen said they should be global and neutral in order to avoid distortion of competition. Accordingly his company supports local initiatives, but regulations have to be global.

Raising general awareness of energy efficiency in his view is not only a job for politicians, he said. In this respect, his company is planning to launch a massive energy efficiency campaign addressing all employees.

He also cautioned politicians not to look at transport distance alone when choosing modes and suggested they take into account the total life cycle of products with regard to their CO<sub>2</sub> footprint. Picking tomatoes in Spain or other places may pay off, he suggested, if there are no CO<sub>2</sub> emissions produced by heating greenhouses.

Agreeing with Axelsen, DHL Express Europe's CEO **Scott Price** referred to current high oil prices and strongly advised

governments not to attempt to control supply and demand macroeconomically and instead to rely on market mechanisms. He pointed out as an example the rush to China five to seven years ago of all the major corporations because of the wage arbitrage. With oil prices now as high as 150 dollars per barrel, however, the scenario has changed in such a way, he said, that the costs of transport are higher than the wage arbitrage. Therefore corporations are reconsidering.

For Price, the role of government is that of motivating the right behaviour, for example through cooperation with industry; providing infrastructure and public transportation, as well as tax and other incentives and informing the public.

"Through the UN we have committed to reducing our carbon footprint by 30% by 2020." Scott Price, DHL Express Europe

Highlighting the case of railways, the CEO of DHL Express Europe criticised governments for having done a poor job at making adequate infrastructure available. He stated that he would be more than happy to load all of DHL's 2 000 tons a night onto trains instead of planes, if sufficient infrastructure was provided.





### Rapporteur's Summary

In his summary Werner Rothengatter stressed the need for individual country policy approaches to influence travel and transport demand, pointing out that those applicable in countries like Switzerland, for example, might not be appropriate for other countries.

He asserted that the desire for mobility and the benefit provided by international exchange cannot be influenced by government, but what can be influenced is the way mobility and logistics are carried out. Rothengatter recalled a general dilemma in governance between social and environmental needs on the one hand and economic growth on the other.



In this context he also highlighted the fact that people who are affected by pricing systems or other political instruments are also voters, and therefore in a position to put pressure on politicians. This means, he said, that environmentally friendly behaviour has to pay off in the long run.











## International Architecture Session

### **Participants**

- Luc Aliadière
   Secretary General, International
   Union of Railways (UIC)
- Marek Belka
   Executive Secretary, United Nations
   Economic Commission for Europe
   (UNECE)
- Marc Juhel
  Sector Manager Transport,
  World Bank
- Miguel Palomares
   Director for Environment,
   International Maritime Organisation
   (IMO)
- Susan Pikrallidas
  Secretary General, Fédération
  Internationale de l'Automobile
  (FIA)
- Heiner Rogge
  Vice-president, International
  Federation of Freight Forwarders
  Associations (FIATA)
- Yves van der Straaten
   Secretary General, International
   Organization of Motor Vehicle
   Manufacturer (OICA)

Moderated by Melinda Crane Journalist The final panel discussion was designed as an opportunity for the international transport community to reflect on the measures needed to translate political aspirations into systemic changes commensurate with the challenge of global warming.

#### Support from Global Institutions

The United Nations have declared a war on global warming, Marek Belka explained, pointing to the increasing number of UN-led activities geared towards this societal issue. Within this framework, UNECE works through the World Forum for Harmonisation of Vehicle Regulations tasked with introducing global regulations supporting the introduction of vehicle technologies in areas ranging from safety to environmental protection.

On vehicle emission standards, the process has contributed to spectacular drops of 95-97% in emission limits over the last 20 years. Carbon emissions are already being addressed through harmonised emission test procedures, a process which could extend to fuel quality standards — including biofuels — and the development of environmentally friendly vehicles with equally promising perspectives.

UNECE also offers an institutional framework where mitigation measures can be addressed in parallel, with reflection on transport infrastructure designed to address new climatic conditions, such as flooding and storms. Standards need to be discussed and agreed at global level, though progressive phase-in schedules may be introduced.





"If global warming is inevitable, we need to look at new ways of designing transport capacity."

Marek Belka, Executive Secretary, UNECE

The question of targets, however, needs to be considered in light of development criteria and country-specific circumstances. In the short term, this may translate into a competitive disadvantage, but experience suggests that countries that have taken on the environmental challenge at an early stage will typically leap-frog ahead of others in terms of technological leadership.

Faced with exponential energy growth demand and hampered by rudimentary policy tools, transition countries face an extraordinary set of challenges, according to Marc Juhel, but need not sacrifice economic growth on the altar of environmental protection. Cities are a main area where transport and development meet and therefore need to concentrate the most political attention.

Cities are engines of economic growth but also typically contain major concentrations of the poor, who need transport to improve their lives. Public transport systems therefore need to be designed to provide access for the very poor while offering an acceptable substitute to private car use for the better off.

"There are no lost causes." Marc Juhel, Sector Manager Transport, World Bank Land use management policies coupled with urban transport planning can ensure city growth patterns are geared towards more compact, less transport-intensive cities.

On 21 May 2008, the World Bank launched a new transport business strategy for 2008-2012 "Safe, Clean, and Affordable Transport for Development" articulates how transport and development goals come together. In the developing world, greenhouse gas emissions from transport are growing at 3-5% each year. compared with 1-2% a year in the developed countries. As a result, it is expected that transport energy use in the developing countries will increase from 32% of the global transport total in 2000 to 46% in 2030. The bank's strategy encompasses the transport-energy-environment nexus, from energy consumption to emissions and climate change impact perspectives.

### **Modal Perspectives**

Freight forwarders typically select supply chain services according to reliability, capacity and cost, according to Heiner Rogge. Fuel prices are an increasing concern which companies are responding to by investing in new vehicles and technologies as well as driver training. They have not yet translated into an observable shift in the logistical chain on account of consumer preferences with low price-sensitivity (e.g. high tech goods from Asia) or lack of realistic substitutes (e.g. temperature-controlled goods).



Marek Belka, UNECE



Melinda Crane, Moderator



Marc Juhel, World Bank

## International Architecture Se



Luc Aliadière, Secretary General, UIC



Miguel Palomares, Director for Environment, IMO



Susan Pikrallidas, Secretary General, FIA

### "Consumer preference ultimately drives demands put on the logistical chain." Heiner Rogge, Vice-president, FIATA

Moreover, the length of the supply chain is not the only decision factor, with other hurdles such as cross-border administration and reliability issues adding to the total costs borne by FIATA members.

Luc Aliadière noted that the rail sector is now far more market-oriented in developed countries and working hard to increase capacity and attract new markets over long distance freight transport, as illustrated by recent efforts to invest in high-growth markets between Europe and China. Rail operators increasingly perceive their role as bringing the best and most environmentally sustainable service to the customer within a more extensive supply chain involving other modes of transport.

## "Rail is competing with and complementing other modes." Luc Aliadière, Secretary General, UIC

Hurdles remain, especially where investment in new capacity — often a governmental prerogative — is concerned. Intergovernmental organisations also have a role to play in supporting this expansion through international regulation and better harmonised cross-border administration. UIC members remain committed to reducing their environmental footprint, having recently agreed to reduce carbon emissions by 30% in the European Union in 2020.











Shipping moves 90% of trade, began **Miguel Palomares**, the vast majority of which takes place without environmental incidents, but the persisting use of high-sulphur fuels gives rise to an unwarranted dirty label.

IMO is working on the issue of airborne pollutants through global mandatory regulations on sulphur, NOx and volatile compounds which have translated into a recent proposal to update the MARPOL convention.

## "Shipping moves over 90% of trade." Miguel Palomares, Director for Environment, IMO

Encouraged by these results, IMO is also looking at ways of minimising the effects of shipping on global warming by assessing scenarios with the shipping community leading to proposals for regulatory, technical and/or market-based instruments in July 2009.

Yves van der Straaten noted that automotive manufacturers are investing heavily in R&D but are sometimes constrained by numerous technical regulations. Authorities do not always appreciate that the typical lead time for the introduction of new technologies is 5-7 years, after which the existing fleet still needs to be replaced, a process which can easily take 15 years in developing countries and is slowing down in developed countries on account of additional costs brought on by new requirements.

## "We invest 85 billion Euros in R&D." Yves van der Straaten, Secretary General, OICA

Regulations must therefore avoid picking "technological winners" and instead be designed to encourage technological innovation from car manufacturers within a reasonable time frame. The car industry requires a coherent, stable fiscal and regulatory environment — policies simply cannot change every year.

Pikrallidas Susan remarked that consumers are increasingly responsive to market signals but the cost of new fuel efficiency technologies is sometimes perceived as a tax on car ownership. The FIA supports transparency, environmental labelling and progressive shift in taxation from ownership to usage, leading to more informed consumer choices. Policies that overtly discourage vehicle ownership. however, ignore the many reasons why people use their cars. The FIA's ongoing "make cars green" campaign aims to encourage a radical rethink in the way cars are considered in society by being at the forefront of encouraging considerate and ecologically sound mobility.

"We want informed consumers."

Susan Pikrallidas, Secretary General, FIA

Mobility



Heiner Rogge, Vice-president, FIATA



Yves van der Straaten, Secretary General, OICA

## International Architecture Se

## 20 Forum 08 Highlights



# Further Highlighten Future

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## **FURTHER HIGHLIGHTS**& FUTURE PROSPECTS

### A Focal Point of Exchange

The exhibition held alongside the main sessions of the Forum constituted an important focal point for exchanges and display in the field of energy efficiency technologies and good practices.

The exhibition was open to companies, transport stakeholders as well as national, regional and local authorities.

### List of Exhibitors:

- Allgemeiner Deutscher Fahrrad-Club e.V.
- British Airport Authority
- CER UIC UNIFE
- Challenge Bibendum / Michelin
- Clean Energy Partnership (CEP)
- Connekt
- Deutsche Bahn AG
- DHL Deutsche Post World Net
- FGM-AMOR
- GVZ Logistic
- Hyundaï
- IMG Investitions- und Marketinggesellschaft Sachsen-Anhalt mbH
- Industrie- und Handelskammer Magdeburg
- Korea Railroad Research Institute
- Mitteldeutscher Verkehrsverbund (MDV)
- Modalohr
- OECD
- Ride Shark
- · Saxony Region
- SenterNovem
- Stadt Leipzig
- Transrapid International GmbH & Co. KG
- LIIRR
- Vägverket (Swedish Road administration)
- Valed
- Wirtschaftsinitiative für Mitteldeutschland





"I think it is very rare to have places where researchers can talk with decision makers in an open and informal way like it is the case here."

Stéphane Hallegatte, Researcher Météo-France, Centre International de Recherche sur l'Environnement et le Développement



ITF guests visit BMW Plant, Leipzig

## "Innovation requires the international perspective." Daniel Sperling, Director, Institute of Transportation Studies, University of California

### ITF quests visit DHL Hub, Leipzig



### DHL's European Hub

Deutsche Post World Net presented its new state-of-the-art air hub in Leipzig/Halle. It sets industrial standards with the largest sorting system in Germany and will provide 3 500 new jobs.

The plans at the new hub schedule up to 60 DHL airplanes per day, handling approximately 2 000 tons of freight.

### World Class Manufacturing at BMW

BMW's manufacturing plant is one of the youngest and most modern automobile manufacturing plants worldwide. It produces cars for the BMW 1 series and 3 series — vehicles with reduced fuel consumption (BMW EfficientDynamics).



"The operators in public transport are not only European but also international; so they need global approaches." Frédéric Descrimes-Favraud, European and International Affairs. RATP



## A Focal Point of



### Innovation in Rolling Stock at Leipzig Train Station

As a pioneer in climate protection Deutsche Bahn launched a programme in 2002 with the aim to consistently extend the environmental advantages of rail in comparison with other modes and to cut carbon emissions from transport activities by at least 20% by 2020. Some of the means to climate protection presented at the Forum were a modern fleet of trains working at full capacity and drivers trained in eco-driving.



"The mixture of different people from different fields is remarkable and has created a highly constructive atmosphere." Matthias Knobloch, Auto Club Europa



"Our expectations have definitely been met as the concentration and know-how of the visitors enabled us to present our commitment in green logistics."

Christoph Selig, Corporate Representative Office. Deutsche Post AG

### Children's University

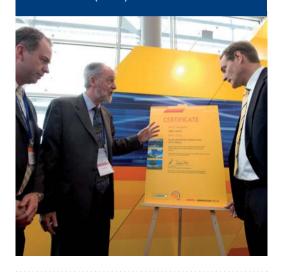
On the occasion of the 2008 Forum, Leipzig area schoolchildren aged 8-11 were invited to ask questions of German Transport Minister Wolfgang Tiefensee, transport scientist Prof. Gerd Ahrens and renowned Olympic medallist Birgit Fischer.



## Exhibition

### Carbon Compensation Scheme

A carbon offset charge was levied from all Forum participants to compensate for the estimated 1020 tonnes of CO<sub>2</sub> arising from the organisation of the conference. The necessary emission rights were acquired from a small-scale renewable energy programme located in Brazil and registered with the United Nation's Clean Development Mechanism (CDM).



"I share the hope that this forum will become the Davos of transport."

Theo de Pencier, Chief Executive, Freight Transport Association

### **Eco-Driving**

Throughout the Forum, energy-efficient driving was presented as a way of reducing fuel consumption and greenhouse gas emissions across all transport modes.

Eco-Driving is about driving in a style suited to modern engine technology: smart, smooth and safe driving techniques that lead to average fuel savings of 5-10% quickly and cost-effectively.

### Golden Rules of Ecodriving:

- Shift up as soon as possible
- Maintain a steady speed
- Anticipate traffic flow
- Decelerate Smoothly
- · Check the tyre pressure frequently

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### **Prize Winners 2008**



STMicroelectronics, Prize for Mobility Management



Helen Harwatt, Young Researcher Award

As both promoter and beneficiary of innovative research the International Transport Forum awarded two prizes in 2008: the Young Researcher Award and the Prize for Mobility Management in Companies. Furthermore four Special Jury Prizes were also awarded this year for innovative thinking on the one hand and for mobility management on the other hand.

### The Young Researcher Award

**Helen Harwatt** from the Institute for Transport Studies at the University of Leeds received the Young Researcher Award for her paper on "Reducing Carbon Emissions from Personal Road Transport through the Application of a Tradable Carbon Permit Scheme".

The paper is based on a study in which a tradable carbon permit scheme was designed to significantly reduce  $CO_2$  emissions caused by personal road transport in the UK. A series of interviews was conducted to investigate the behavioural response to the scheme as well as its impacts and its public acceptability. For comparison a system of fuel price increases designed to achieve the same emissions target was included. The paper

revealed considerable differences in terms of how these two policies were perceived. One further key finding of the paper is the clear superiority of trading permits over fuel increases in achieving carbon reduction targets. Clearly, it is the policy dimension combined with the high degree of relevance to the main theme of the 2008 Forum which particularly impressed the members of the jury.

### Special Jury Prize for Innovative Thinking

The jury decided to grant a Special Jury Prize to François Gusdorf and Stéphane Hallegatte from the Centre International Recherche sur l'Environnement et le Développement for their paper entitled: "Time and Space Matter: How Urban Transitions Create Inequality". It reproduces the evolution of a monocentric city in continuous time and captures the interactions between household moves. changes in flat sizes, rent levels, and the density of housing supply. It therefore permits analyses of both parameters, time and space. When applied to climate policies, this model suggests smooth and early implementation of climate policies such as transportation tax, which may cause large welfare losses and inequalities if it is not planned far enough in advance.





### Mobility Management in Companies

The Prize for Mobility Management in Companies was awarded to ST Microelectronics in Grenoble, France, The company's mobility plan included three objectives: to reduce the environmental impact of employee commuting; to avoid having to build new parking lots, despite the significant increase in workforce: and to enable employees to reach work with less stress and more exercise. It was meant to be accomplished within two campaigns with a duration of five years each. The first campaign included for instance greater use of public or green transport. The second campaign on until 2010 focusses on more car-pooling and partnerships with local players for public transport networks and cycle tracks. All in all the plan addresses all employees and even those of outside firms with facilities at the site saving CO<sub>2</sub> emissions worth 1050 tons in 2007 by its own account. The expressed vision is to see 60% of ST Grenoble staff using alternative transport by 2010.

Furthermore three Special Jury Prizes for Mobility Management were awarded to **Stansted Airport Ltd.** in the UK in the category large company: to **Inficon AG** 

in Liechtenstein as small company and last but not least to the London borough of Lambeth in the category public organisation. All three laureates received the prize for significantly reducing their  $CO_2$  emissions by several means such as enhancing the use of public transport and bicycles among staff.





## Prize Winners 2008

## International Transport Forum

Transport & Globalisation

# The 2009 Forum on "Transport & Globalisation" in Leipzig

The next International Transport Forum to be held in Leipzig 27-29 May 2009 will address the topic "Transport and Globalisation".

Ministers of Transport from the 51 Forum countries will again come together with top leaders of industry, research, and civil society in order to discuss the challenges of globalisation for the transport sector and particularly its implications on investments in infrastructure

In high-level workshops and panel sessions, the participants will explore some of the major questions posed on the sector by globalisation today, such as:

- How can more efficient transport services enhance global trade?
- What are the impacts of today's skyrocketing energy prices on the international supply chain?
- With public budgets under increasing pressure, how can finance and investment be secured in order to ensure high-quality transport infrastructure for globalised trade? Where do priorities lie?
- How does transport determine the costs and benefits of globalisation for society?

### Discussions will focus on specific topics including:

- Transport costs and efficiency of international trade.
- ✓ Facilitating trade: the right regulatory framework for transport.
- Opening new markets: is liberalisation the answer?
- ✓ Enhancing cooperation across borders.
- Reducing the environmental impacts of globalised transport.
- Understanding the costs and possible benefits of enhanced security measures for trade.
- Enhancing transport infrastructure assessment and investment in a global economy.
- ✓ The growing importance of international transport gateways as a multi-modal response to globalisation.
- ✓ Improving transport organisation and logistics across the international supply chain.

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