

# Mobility 2030: Meeting the challenges to sustainability



The Sustainable Mobility Project

Executive Summary 2004



# Foreword

Promoting mobility is a key part of our companies' business. We seek to do this in ways that satisfy the widespread desire for affordable and safe transport, reduce the impact transport has on the environment and utilize the most appropriate technologies as they are developed.

We are making progress on these objectives and are reassured that many societies share similar goals. However, the policies adopted to achieve these goals can differ widely and the context in which our companies operate is becoming more complex every year. One of our tasks is to respond to this diversity.

Transport and mobility are now high on many agendas as countries and regions across the world seek to increase mobility and to lessen transport's impact. Our collective view has always been that both these goals are attainable. Four years ago we decided to work together to achieve better understanding of the challenges and options.

The result of this cooperation is *Mobility 2030*. It reflects the collective efforts of more than 200 experts from a broad set of 12 industrial companies who have taken part in the Sustainable Mobility Project's committees and work streams. Normally our companies compete vigorously, so to produce such an in-depth, agreed analysis is a distinct accomplishment.

Our thanks go to the WBCSD for serving as an invaluable catalyst and for providing the platform that facilitated this accomplishment. We also acknowledge with gratitude the many contributions made by outside experts including the Assurance Group.

*Mobility 2030* sets out a vision of sustainable mobility and ways to achieve it. The report has developed a framework to connect a diverse set of economic, social and environmental strands; and in identifying the key issues and choices we face it has developed a set of goals to provide focus for future action, and charted a number of pathways as a basis for this. But we clearly recognize that a project like this can only be an introduction to an extraordinarily complex, diverse topic that confronts all societies.

We began with the project's initial study *Mobility 2001* which assessed the worldwide state of mobility and identified the particular challenges to making mobility more sustainable.

Our new report develops this thinking and shows how sustainable mobility might be achieved and how progress towards it could be measured. We have concentrated on road transportation, reflecting our member companies' expertise in this area. What *Mobility 2030* says about fuel and vehicle technologies is a key contribution. Our hope is that other industries and stakeholders will be inspired to undertake their own studies with a similar focus to this report.

As companies operating in a competitive market we can, and do, hold different views about some of the technology choices and timescales. We think that *Mobility 2030* reflects these differences without diminishing its core purpose of identifying and suggesting the most appropriate solutions.

We acknowledge that much remains to be learned, in particular about the best ways to engage societies effectively around sustainable mobility issues. Nevertheless, as companies deeply involved in the provision of transport products and services,

we think this project has moved the sustainability agenda forward in ways that can be developed.

We believe that *Mobility 2030* points to new collective initiatives. Yet, much is already happening. On road safety our companies have a number of programs to improve the safety prospect for vehicle occupants and pedestrians in both developed and developing countries. And much is going on in other areas such as the industry partnerships that are now advancing the development of alternative fuels and powertrains, as our companies seek to provide the mobility choices customers ask for while moving to address

the issues clearly spelt out in the report. We recognize the focus the report provides on the significant challenges in the developing world.

A clear message from *Mobility 2030* is that if we are to achieve sustainable mobility it will require contributions from every part of society throughout the world. Our companies are committed to making their contribution, and the work of this project will help us to clarify our own role and areas for further collaboration. It is with the hope that your country and your organization will want to build on what is offered here that we pass this study on to you.

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# Executive summary

For the last four years 12 leading international automotive and energy companies have worked together to consider how global mobility patterns might evolve in the period to 2030 and beyond, what strategies exist to influence this evolution in ways that might make transport more sustainable, and what is required to enable these strategies to succeed.

The resulting report, *Mobility 2030: Meeting the Challenges to Sustainability*, sponsored by the World Business Council for Sustainable Development, finds that the way people and goods are transported today will not be sustainable if present trends continue.

It considers that the long term success of each of the companies that participated in this project depends on finding ways to make mobility sustainable. It concludes that with sufficient commitment by society, mobility can indeed be made sustainable.

By “sustainable mobility” the project means “the ability to meet the needs of society to move freely, gain access, communicate, trade and establish relationships without sacrificing other essential human or ecological values today or in the future.”

*Mobility 2030* makes clear that no single solution exists that can turn an unsustainable mobility situation into a sustainable one. Many of the challenges identified by the report will take decades to resolve. In addition, finding solutions will require input from a broad coalition of governments, industry, non-governmental organizations and society at large working together over a sustained period. It will include developing countries as well as developed. And it will involve a major step-change in vehicle and fuel technologies.

Seven goals are proposed by *Mobility 2030* that, if achieved, would improve the prospects for sustainable mobility substantially. The companies supporting the project regard these goals as a framework that could form the basis of a global initiative to make the world's transport systems sustainable in the 21st century.

*The goals are:*

- Reduce conventional emissions from transport so that they do not constitute a significant public health concern anywhere in the world.
- Limit greenhouse gas (GHG) emissions from transport to sustainable levels.
- Reduce significantly the number of transport-related deaths and injuries worldwide.
- Reduce transport-related noise.
- Mitigate traffic congestion.
- Narrow "mobility divides" that exist within all countries and between the richest and poorest countries.
- Improve mobility opportunities for the general population in developed and developing societies.

*Mobility 2030* is divided into four chapters. In the first, critical challenges are defined and 12 dimensions of mobility – called "indicators" – identified: accessibility; financial outlay; travel time; reliability; safety; security; emissions of greenhouse gases; other impact on the environment and public well-being (including emissions of conventional pollutants and transport-related noise); resource use; equity; impact on governmental revenues and expenditures; and prospective rates of return to private business.

In Chapter 2 an assessment is made of how these indicators may develop assuming current socio-economic trends are largely unchanged. Chapter 3 is about potential – what might occur over the next several decades in terms of vehicle technologies and fuels, and how such developments could serve as a basis for sustainable mobility. In Chapter 4 various ways of achieving the sustainability goals are outlined.



*Mobility 2030* predicts that progress is possible on all seven goals. But it finds that few if any can be fully realised by 2030.

Running through the report is recognition of a central dilemma. Mobility is an essential part of human development, but the way contemporary society moves people and goods is not sustainable indefinitely.

Today the immense benefits provided by mobility are accompanied by increasingly serious impacts. These consequences are likely to intensify given the huge global growth in transport activity forecast for the next 30 years. Potentially, these effects could be sufficiently adverse to inhibit transport systems from performing their vital economic and social roles.

Against this complex background, the report emphasises that the underlying challenge facing all societies is clear - to continue to facilitate the movement of people and freight at affordable prices, but to do so in such a way that the unwanted side-effects of mobility are reduced substantially.

To achieve this and thereby to achieve sustainability, *Mobility 2030* asserts that all elements in society will need to come together. Political, social and economic considerations will be crucial but human ingenuity will also be important. Major changes in transport use will be involved, and it is probable that different countries will adopt different approaches according to individual circumstances.

In this scenario the role of industry will be central and critical.

A mass of challenges, spelled out in the report, must be overcome to make new technologies and fuels acceptable and affordable to potential users. The most likely way ahead, according to the report, is the development of a combination of technologies. At this point, estimates of the performance attributes and/or cost characteristics of such innovations are regarded by the member companies as too speculative to be useful.

A key to achieving sustainable mobility will be the involvement of the developing world. By 2030 half the global population will be living in urban areas in developing countries, creating huge new demands for mobility. Such countries will account for most of the net increase of the world's motor vehicle fleet over this period, resulting in a significant growth in GHG emissions.

*Mobility 2030* argues that improvements in access to advanced vehicle technologies, as well as global regulatory changes, will narrow the performance gap between vehicles in developed and developing countries. But without a strong political commitment from developing countries, sustainable mobility on a global scale will not be possible.

Much of the report is given over to an evaluation of where the world stands in terms of each of the seven identified sustainable mobility goals. *Mobility 2030* finds the following:

*Reducing emissions of conventional pollutants.*

Substantial progress has been made in reducing conventional pollutants in the developed world. By 2030 transport-related emissions of such pollutants in the developed world should have been reduced to levels where they do not constitute a significant public health concern. Progress is beginning to be made in the developing world, but full achievement is unlikely until after 2030.

At present, the report finds that a relatively small number of "high emitter" vehicles are responsible for a disproportionate share of transport-related conventional emissions. The progressive renewal of the existing fleet should improve, though not totally eliminate, this situation. The vehicle technologies needed to control such emissions are being progressively developed as are the fuels required to permit these technologies to operate reliably.







Meantime, by 2010 unleaded gasoline will be available almost everywhere in the world. Low sulphur gasoline and diesel fuel will be the norm in the developed world after 2010 and by 2030 should be available in all countries.

Another significant improvement driver in the developing world will be the adoption of effective vehicle emission control technologies applicable to powered two and three wheeled vehicles. In these vehicles, two-stroke engines are expected to disappear over the next decade to be replaced by more economical, cleaner four-stroke engines.

**Limiting emissions of transport-related greenhouse gases.**

Limited progress has been achieved in limiting transport-related greenhouse gases (GHGs). Total emissions are growing rapidly in most regions, with an increasing share accounted for by developing states. A range of stabilizing measures exists, but to be effective they need to be part of an agreed global strategy to limit man-made CO<sub>2</sub> emissions from all sources.

*Mobility 2030* argues that no single approach is likely to limit transport-related GHGs inexpensively and quickly. Only the successful development and general adoption of a number of advanced technologies – about which much remains to be learned – will achieve this goal. These technologies include improvements in mainstream gasoline engines, dieselization, hybridization, advanced bio-fuels, fuel cells, carbon-neutral hydrogen and other vehicle efficiency improvements.

The report points out that reducing transport-related GHGs massively would be a huge task for industry, requiring the production of vehicles with advanced propulsion technologies, the production and distribution of fuels to power such vehicles through a suitable infrastructure, and the commitment of individuals and governments across the world to replace their existing vehicles with new ones that use carbon-neutral fuels.

**Reducing vehicle-related deaths and serious injuries.**

In the developed world vehicle-related

deaths and serious injuries are declining. However, in many developing countries and regions, they are increasing and, in some countries, are likely to go on rising as traffic densities increase in line with economic growth.

*Mobility 2030* indicates that traffic-related deaths and injuries can be reduced substantially in both the developed and developing worlds by changes in driver behaviours achieved through education and law enforcement, improvements in infrastructure, and improvements in crash avoidance technologies.

**Reducing transport-related noise.**

An increase in transport-related noise is taking place in many places due to the rapid growth in motorization coupled with a relative lack of interest in and resources devoted to enforcement of noise regulations.

The report notes that noise is highly location-specific and often vehicle-specific. In some developed world urban areas its impact has been limited by the installation of noise barriers. Elsewhere, little is being done to offset the effect of increasing traffic volumes. Among other things, the report urges governments to make greater use of improved road surface materials that have the potential to lower noise.

**Mitigating traffic congestion.**

Traffic congestion is an issue in virtually every urban area in the world. The report predicts that congestion is likely to worsen, particularly in the developing world, and cannot be eliminated entirely.

It suggests, however, that more effective mitigation efforts can be made, and identifies three key actions – increasing infrastructure capacity, eliminating infrastructure “choke points,” and making more efficient use of existing

mobility systems and infrastructure through the implementation of telematics and through pricing strategies.

**Narrowing “mobility opportunity divides.”**

Significant “divides” in mobility opportunity exist between and within different societies and regions of the world. These divides, the report concludes, inhibit economic growth and work against the efforts of the very poorest countries and peoples to escape poverty. Sustainable mobility requires that the divides be narrowed.

Various mobility divides exist - between the developed and developing world; between urban and rural dwellers; between rich and poor; between racial groups; and between the elderly, handicapped, and disabled and the population as a whole. Projected demographic changes threaten to exacerbate these divisions as does the progressive suburbanization of most urbanized areas.

Today about 900 million people living in rural areas – 30% of the total – lack access even to an all-weather road. The report urges governments to step up efforts to provide basic road

access, lower the cost of transport, and encourage the development and production of inexpensive vehicles suitable for use in harsh road conditions.

Narrowing mobility divides in these ways might increase transport-related GHGs. But the report argues that this is not sufficient reason to deny the inhabitants of the world’s poorest regions the mobility opportunities that will encourage economic development.







**Improving mobility opportunities for the general population.**

Mobility 2030 finds that improved mobility opportunities in all societies – developed and developing – are an important pre-requisite for future economic growth as well as forming the basis of a more sustainable global mobility system based on wider access and greater affordability.

It argues that the key to improved opportunity lies in utilizing a variety of new mobility options. These include the use of pricing strategies to broaden access, exploiting new strategies such as paratransit, spreading the concept of car-sharing beyond North America, Japan, and Western Europe, developing completely new transport systems, and ensuring that these new systems lessen the need for people to rely on privately-owned vehicles in high-density urban areas.

“Society’s goal,” concludes this section of *Mobility 2030*, “should be to fit transport systems to people’s desired living patterns rather than to fit

people’s desired living patterns to transport systems.”

Chapter 4 of the report ends with a discussion about how companies such as those that sponsored *Mobility 2030* can contribute to achieving the seven goals identified in the report. It points out that most of the issues described are not new to the companies concerned and many are being tackled including the control of transport-

related emissions, better road safety, and the development of carbon-neutral fuels and vehicles. It notes, too, that the ability of companies to act independently is “extremely limited” in many areas, and that on some topics – such as the provision of roads in rural areas – companies can only play a tangential role. Nevertheless it recognizes that, by innovation and dedication, there is much that companies can do.

**The Way Forward:**

**The WBCSD’s Sustainable Mobility Project does not pretend to have found all the answers to achieving sustainable mobility. But member companies believe the initiative has defined a number of clear ways forward that will permit them, working with many others, to get the job started and “to deliver the progress which is clearly possible.”**

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**About the WBCSD**

The World Business Council for Sustainable Development (WBCSD) is a coalition of 170 international companies united by a shared commitment to sustainable development via the three pillars of economic growth, ecological balance and social progress.

Our members are drawn from more than 35 countries and 30 major industrial sectors. We also benefit from a global network of 50 national and regional business councils and partner organizations involving some 1,000 business leaders.

**Our mission**

To provide business leadership as a catalyst for change toward sustainable development, and to promote the role of eco-efficiency, innovation and corporate social responsibility.

**Our aims**

Our objectives and strategic directions, based on this dedication, include:

**Business leadership**

> to be the leading business advocate on issues connected with sustainable development

**Policy development**

> to participate in policy development in order to create a framework that allows business to contribute effectively to sustainable development

**Best practice**

> to demonstrate business progress in environmental and resource management and corporate social responsibility and to share leading-edge practices among our members

**Global outreach**

> to contribute to a sustainable future for developing nations and nations in transition

**What is the Sustainable Mobility Project**

The Sustainable Mobility Project is a member-led project of the World Business Council for Sustainable Development (<http://www.wbcscd.org>). The project develops a global vision covering the sustainable mobility of people, goods and services in road transport. The project shows possible pathways towards achieving sustainable mobility that will address environmental and economic concerns if society is prepared to recognize the issues and act upon them.

**Disclaimer**

Mobility 2030 has resulted from collaborative work among executives from the twelve member companies of the WBCSD’s Sustainable Mobility Project, sponsored by the WBCSD as a member-led initiative and supported by the WBCSD secretariat. Like other WBCSD projects, the SMP has involved extensive stakeholder engagement in locations around the world. Prepared with the help of Charles River Associates and several other consultants, the report was reviewed by all project members to ensure broad general agreement with its principal views and perspectives. However, while a commendable level of consensus has been achieved, this does not mean that every member company necessarily endorses or agrees with every statement in the report.

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