



# Cleaner, More Efficient Vehicles: Reducing Emissions in Central and Eastern Europe

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# **Cleaner, More Efficient Vehicles: Reducing Emissions in Central and Eastern Europe**

*Global Fuel Economy Initiative Launch Dialogue Event for CEE*

**Conference Report  
Szentendre, Hungary, 5 - 6 May 2010**

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## ABBREVIATIONS

CEE	Central and Eastern Europe
CENN	Caucasus Environmental NGO Network
EASST	Eastern Alliance for Safe and Sustainable Transport
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EECCA	Eastern Europe, Caucasus and Central Asia
EIB	European Investment Bank
EU	European Union
EU ETS	European Union Emissions Trading Scheme
FLEX	Future Leaders Exchange Programme
FYROM	Former Yugoslav Republic of Macedonia
GDP	Gross Domestic Product
GFEI	Global Fuel Economy Initiative
GHG	Greenhouse Gas
GOST	State Standard, Russian Federation
HDV	Heavy Duty Vehicle
HEV	Hybrid Electric Vehicle
ICCT	International Council on Clean Transport
IEA	International Energy Agency
IFC	International Finance Corporation
IFI	International Financial Institution
IGO	International Governmental Organization
IRF	European Finance Investments
ISO	International Standards Organization
ITF	International Transport Forum
JAMA	Japan Automobile Manufacturers Association
LDV	Light Duty Vehicle
MPWTT	Ministry of Public Works, Transport and Telecommunications, Albania
MS	Member State
NEAP	National Environmental Action Plan/Programme
NGO	Non-Governmental Organization
OECD	Organization for Economic Cooperation and Development
OEM	Original Equipment Manufacturers
OPEC	Organization of Petroleum Exporting Countries
PCVF	Partnership for Clean Fuels and Vehicles
PPM	Parts per million
REC	Regional Environmental Center
SEE	South and Eastern Europe
SOCAR	State Oil Corporation of Azerbaijan
T&E	Transport and Environment
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
USD	United States Dollar
USSR	Union of Soviet Socialist Republics
WB	World Bank
WBCSD	World Business Council for Sustainable Development
WP.29	Forum for Harmonization of Vehicle Regulations
WTO	World Trade Organization

## **AUTHORS AND ACKNOWLEDGEMENTS**

This report has been drafted by Elisa Dumitrescu (UNEP/PCFV), Raisa Gerasina (REC), Emma MacLennan (EASST), Sheila Watson (FIA Foundation) and Ruslan Zhechkov (REC). Additional contributions have been provided by speakers, who shared their view on the vehicle and fuel economy problems and representatives of CEE countries who submitted their questionnaires and provided summary of country-specific situations during the conference.

## EXECUTIVE SUMMARY

**The conference** of the Global Fuel Economy Initiative (GFEI): *“Cleaner, More Efficient Vehicles: Reducing Emissions in Central and Eastern Europe”* took place in Szentendre, Hungary on 5<sup>th</sup> and 6<sup>th</sup> May, 2010. The event was organized by the GFEI in partnership with the Regional Environmental Center for Central and Eastern Europe (REC) and Eastern Alliance for Safe and Sustainable Transport (EASST). Some 64 participants representing various international organisations and national institutions including ministries, Non-Governmental Organizations (NGO), state agencies, universities, automobile clubs and associations from South and Eastern Europe (SEE), Central Europe, Caucasus and Central Asia attended the conference.

**The objective** of the event was to expand available information on the fleet characteristics of Central and Eastern European (CEE) countries, share experience, and begin to form a regional policy engagement network in order to promote a harmonized and informed approach to auto fuel economy. Attendees were expected to share their knowledge with others, learn about strategies already deployed, and gain valuable insights into the wider context of global, regional and national fuel economy policy developments.

Through this conference the GFEI **targeted 24 countries in Eastern Europe, Caucasus and Central Asia (EECCA) and CEE region<sup>1</sup>**, with the goal of establishing **links and relationships with industries, groups, NGOs, and governments** throughout the region. The GFEI aims at making a real difference to the fuel economy of on-road vehicles by working with governments to develop policies encouraging fuel economy improvements for vehicles produced or imported into their countries, and supporting regional awareness campaigns providing consumers and decision makers with the information needed to make informed choices. This event was expected to help put countries in the region on track to contributing to the 50by50 global challenge - a 50% improvement in auto fuel economy worldwide by 2050 - while also helping to meet national greenhouse gas (GHG) targets, achieve energy savings and improve mobility.

**This report** seeks to provide an overview of the main outcomes of the discussions over the two days of meetings, including the primary ideas of focus from the working groups, panel discussions, recommendations and presentations given by experts and organizations dealing with fuel economy worldwide – namely, the International Council on Clean Transport (ICCT), Transport and Environment (T&E), United Nations Economic Commission for Europe (UNECE), International Energy Agency (IEA), Japan Automobile Manufacturers Association (JAMA), FIA Foundation and United Nations Environmental Programme (UNEP). The programme took attendees through the issue of fuel economy from the widest perspective of global energy trends, to regional and local situations vis-a-vis fuel economy policies. Speakers gave a broad overview of energy perspectives across the globe and at national levels and presented regional approaches to fuel economy standards and technologies.

Detailed annexes to this report include summaries of presentations, along with summaries of working groups’ discussions and outcomes of national questionnaires related to automotive fleets and fuel economy regimes:

- Annex I provides a **summary of auto fuel economy and emission trends** in CEE;
- Annex II - a **detailed summary of presentations** on the evidence of fuel activity in CEE countries;
- Annex III - an overview of **fuel economy frameworks** in countries;
- Annex IV - a **summary of panel discussion**;
- Annex V - the **result of working groups’ discussion**;
- Annex VI - a **summary of policies for import restrictions**;
- Annex VII - a **list of participants** of the meeting.

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<sup>1</sup> CEE countries: Albania, Armenia, Azerbaijan, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Latvia, Lithuania, FYR Macedonia, Montenegro, Romania, Serbia, Slovakia, Slovenia, Turkey, Poland; EECCA countries: Belarus, Moldova, Russia, Ukraine

A large number of issues were covered, including the identification of key stakeholders in terms of fuel economy; actions and steps needed on regional and national levels; and resources, skills and expertise required to move forward and adapt GFEI to the regional context. Part of the discussion was based on the **GFEI Country Survey** submitted by country representatives prior the conference along with issues raised during the panel discussion itself (A summary of the results of this survey are at Annex III). The conference helped to identify gaps in information and knowledge on the issue of fuel economy in the region and initiated discussion on engagement of decision-makers into GFEI activities.

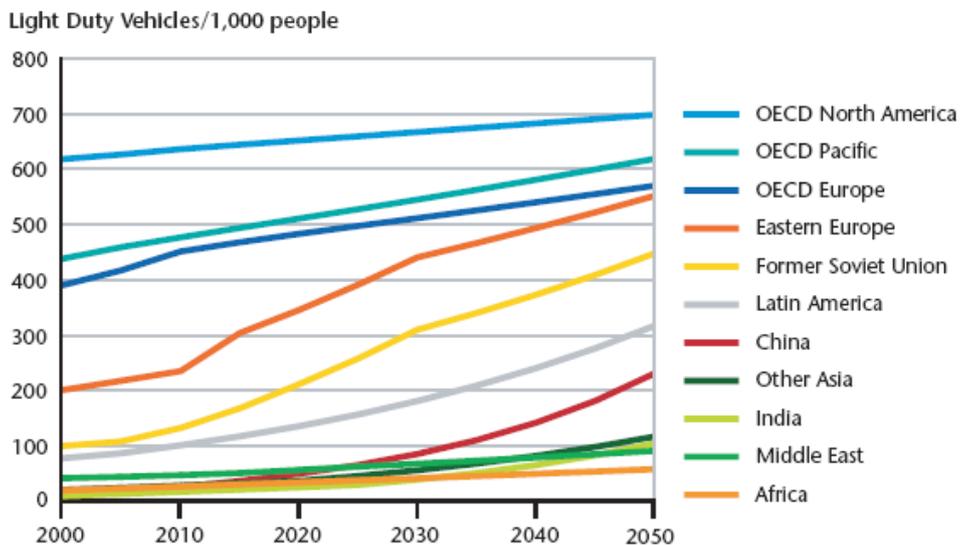
## INTRODUCTION

The global vehicle fleet is set to triple by 2050; over 90% of this growth will take place in developing and transition countries. Achieving ambitious, yet realistic, fuel economy targets is especially important in developing countries since most new vehicles in the world will be bought and operated in these countries by 2050.

These countries are also important for several other reasons. First, because of the converging consumption patterns and levels with developed countries, which is inherently unsustainable. Second, because there is a decreasing use of public transport in many transitional countries, as more individuals are able to afford vehicles, and as governments divert funds from public transportation infrastructure to vehicle-centred infrastructure development. And thirdly, transitional countries are in an advantageous position to derive the benefit of improving fuel quality (lead-free, low sulphur) more readily available to their economies.

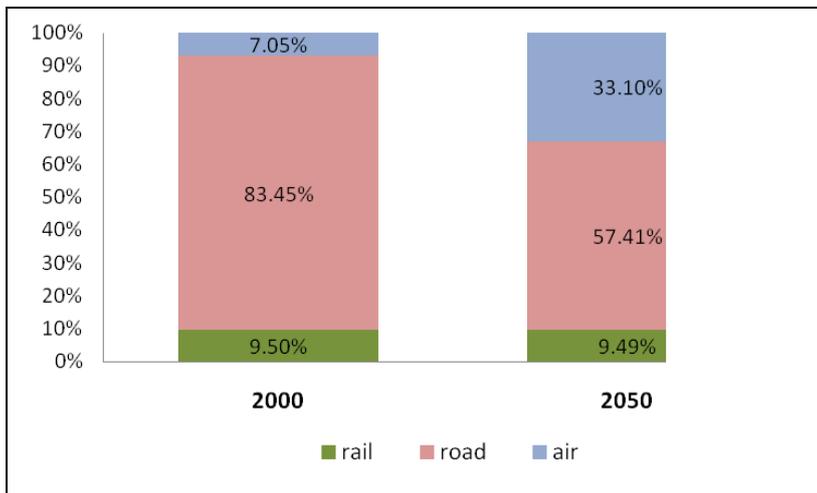
Passenger road transport is expected to increase significantly across CEE and EECCA in coming years. The World Business Council for Sustainable Development (WBCSD) predictions foresee that by 2050 motorized personal vehicle ownership rates per 1,000 people in Eastern Europe and the Former Soviet Union will be higher than those today in countries - members of the Organization for Economic Cooperation and Development (OECD) of Pacific region or OECD Europe.<sup>2</sup> According to WBCSD, by 2050, Eastern Europe and the former Union of Soviet Socialist Republics (USSR) will have closed the gap with OECD Europe and OECD Asia in terms of personal mobility opportunities. The Former Yugoslav Republic of Macedonia's (FYROM) 2003 climate change communication, for example, forecasts that the number of motor vehicles in the country will change from about 400,000 in 2005 to about 900,000 in 2025. In addition, the distance driven by each private car will also nearly double. In Serbia, there are currently about 2.4 million motor vehicles, and this number is expected to double in the near future. Within Member States (MS) of the European Union (EU) and the former USSR, total passenger travel will experience one of the strongest increases by 250% from 2000 to 2050.<sup>3</sup>

### *Projected growth in Light Duty Vehicle (LDV) ownership and travel by mode, 2000-2050*



<sup>2</sup> The World Business Council for Sustainable Development (WBCSD), 2004. The Sustainable Mobility Project Report: Mobility 2030: Meeting the challenges to sustainability.

<sup>3</sup> European Environment Agency (EEA), 2009. Trends and future perspectives in the Western Balkans: Environment and sustainable consumption.



Source: WBCSD, 2004.

Cutting global average automotive fuel consumption (to ~4L/100 km) by 50% would reduce emissions of CO<sub>2</sub> by over 1 gigatonne (Gt) a year by 2025 and over 2 gigatonnes (Gt) by 2050, and result in savings in annual oil import bills alone worth over USD 300 billion in 2025 and 600 billion in 2050 (based on an oil price of USD 100/bbl), in addition to lowering harmful pollutant emissions, including black carbon.

## WORKING GROUP OUTCOMES AND OPPORTUNITIES FOR FOLLOW-UP

An interactive network will be formed and used to pursue follow-up actions on national, sub-regional and regional levels and engage major stakeholders in fuel economy issues and exchange of information. The network will be hosted on [www.50by50campaign.org](http://www.50by50campaign.org).

The following steps and considerations were recommended by the conference participants for the promotion and adaptation of auto fuel economy issues in the CEE region:

- Improvement of the national vehicle fleet should be seen as a package deal, including both road infrastructure and technology improvements. Promotion of eco-driving, fuel economy standards for 2<sup>nd</sup> hand vehicles and mitigation of traffic congestion should be parts of a single policy package.
- As a first step information on vehicle fuel consumption specifications of models from manufacturers and importers should be improved for consumers and policy makers. Manufacturers should provide this information in addition to information on engine size and power, and national governments should develop and maintain databases with relevant information.
- As national vehicle import and registration taxation systems do not follow an efficiency imperative or rationale – a thorough evaluation of the taxation schemes for automotive vehicles and systems' impact on energy efficiency (including taxation parameters for imports, size vs. power taxation and taxation of 2<sup>nd</sup> hand vehicles) is needed in CEE.
- Technical and policy guidance on how to design a functional taxation regime that incentivizes energy efficiency in transport would be welcomed.
- There is a need to identify national stakeholders on a country-by country basis as institutions dealing with auto fuel economy may be different in each country and may include state agencies, local authorities, Cabinets of Ministers, business sector and civil society, international organizations and institutions and other non-traditional players (further information is listed in Annex V).
- Consumer education and awareness raising are necessary to push for governments' action on cleaner fuel and vehicle issues and help decisions-makers and consumers to make informed choices.
- Technology and knowledge transfer and good practice exchange are necessary and can be done through electronic, intergovernmental and inter-sectoral working groups and trans-boundary meetings.
- All these efforts should be combined with regulations for effective change.
- The upcoming GFEI Tool on *Auto Fuel Efficiency and Climate Change* can be used as a basis for exchange of information. The GFEI Tool will help to define the level of countries in terms of fuel economy, provide examples of best practices and standards and train officials on further steps needed to reach fuel economy.
- For nationalization of the GFEI, national stakeholder groups are needed, along with translation of relevant documents (including website) and the GFEI Tool into national languages.
- Participants recommended that auto fuel economy standards and plans in CEE be tracked and published on the GFEI website following better data collection through questionnaires at the national level. The GFEI Tool can be used for this purpose.
- Sub-regional actions followed by national programs represent the most efficient way of approaching auto fuel economy in CEE and also enable harmonization. Further action would be dependent on a country action to coordinate at the higher level – e.g. regionally.

- A possible list of regional and sub regional platforms into which to 'plug' the GFEI and national actions is attached in Annex V.
- Labelling for new and used vehicles coming into a country, or produced nationally, should be provided. UNEP and the ICCT will look into options for labelling used vehicles. Regulation 101 of the UNECE is mostly applied for measuring and labelling purposes of vehicles with regard to CO<sub>2</sub> emissions and fuel consumption (see <http://www.unece.org/trans/main/wp29/wp29regs101-120.html>).
- An inventory of sub-regional and national partners will be drawn up with the help of the conference participants.
- Trade considerations, including World Trade Organization's (WTO) restrictions, should be taken into account when putting into place auto-related legislation at the national level in some CEE countries – particularly accession and candidate countries to EU. These same restrictions may also affect attempts of harmonization within the sub-region.

## EXPERT RECOMMENDATIONS FROM ORGANIZING PARTNERS

The GFEI partners would like to emphasize that a 50% potential reduction of fuel consumption of new vehicles by 2030 (with respect to 2005) is achievable, with CEE countries playing their full part in achieving that target. However the GFEI targets are global, so each region should do the necessary analysis of potentials to see what are the most appropriate target in that region. GFEI partner agencies (UNEP, the FIA Foundation, IEA and International Transport Forum (ITF)) can help with this.

The GFEI partners and participating expert institutions recommend that national, regional and sub-regional stakeholders in CEE and the Caucasus consider any or some of the following actions as they apply in each country, as part of the way forward to encouraging cleaner, more efficient vehicle policies and standards:

- Use the GFEI organizations (UNEP, the FIA Foundation, IEA, and ITF) as a resource for technical expertise, training, baseline, data gathering and analysis.
- Work with the GFEI and regional partners like the REC, EASST, Caucasus Environmental NGO Network (CENN), REC Caucasus (and any other partner with a sufficient national and regional impact and credibility) to identify and develop case studies for countries in CEE and the Caucasus, and undertake technology and policy analysis.
- Identify the most relevant national and regional stakeholders to engage in auto fuel economy discussions and implement fuel economy strategies.
- Ensure that national data (via the GFEI questionnaires on Auto Fuel Economy Policies) are as complete and accurate as possible.
- Help build and engage in GFEI sub-regional networks to build expertise and communities of practice for cleaner, more efficient vehicle fleets, lower air pollution and greenhouse gas (GHG) emissions from road transport.
- Evaluate national and regional contexts and needs – including data gathering and expertise – to help develop a better picture of fleet characteristics and trends and to build future fuel economy scenarios.
- Work to establish robust monitoring and reporting systems for vehicle sales/registration and fuel consumption.
- Ensure a comprehensive approach in the transport sector to reduce the use of fossil fuels and to foster, whenever possible, the use of sustainable biofuels and electricity:
  - a) Along with standards, promote consumers' education through comparative labelling of new and used vehicles;
  - b) Align fiscal incentives with the goal of reducing CO<sub>2</sub> emissions:
    - Vehicle taxes can be charged according to their consumption of fossil fuels;
    - Existing tax policies can be refocused to link taxes to vehicle CO<sub>2</sub> emissions;
    - Fee and rebate programs based on vehicle CO<sub>2</sub> emissions.
- Pay close attention to the EU Light-Commercial Vehicle standard development. Non-EU member countries may choose to adopt the EU 2015 gCO<sub>2</sub>/km target, adapting it to national contexts and timeframes.

- Engage with the GFEI Auto Fuel Efficiency and Climate Change Tool through national trainings and review of its content, as organized by UNEP.
- Develop eco-driving programmes to promote driver behavioural changes and consider incorporating such programmes into standard driver education and licensing examinations.
- A better understanding of the ‘tradeoffs’, or perceived tradeoffs, between fuel economy in vehicles and, e.g. safety concerns, air quality and fuel economy improvements, is needed among CEE stakeholders. The safety and fuel economy issue has been analyzed by ICCT and the relevant information will be circulated to participants and the GFEI network for CEE. ICCT information on *Sipping Fuel and Saving Lives: Increasing Fuel Economy without Sacrificing Safety* can be found from <http://www.theicct.org>.
- Further information on hybrid electric vehicle technology (HEV) and its application in developing and transitional countries can be found from the practical UNEP guide on HEV’s: [http://www.unep.org/pcfv/PDF/HEV\\_Report.pdf](http://www.unep.org/pcfv/PDF/HEV_Report.pdf).
- Support the ongoing activities of the UNECE’s World Forum for Harmonization of Vehicle Regulations (WP.29) with regard to:
  - a) the development of worldwide harmonized regulations for the construction of safe and environmentally friendly vehicles on the basis of innovative energy efficient technologies, such as HEV, hydrogen and fuel cell vehicles (HFCV),
  - b) the establishment of recommendations for market fuel quality to ensure that vehicles use in their daily service fuel of specific characteristics relating to the vehicle emission technology type.

## CONCLUSIONS

Fuel economy is a comprehensive cross-institutional and multi-sectoral issue comprising not only vehicle and fuel efficiency but wider notions of energy security, climate change mitigation and economic prosperity. As transport fuel demand is expected to double, while global vehicle fleet is set to triple by 2050 and to the date vehicle owners completely rely on diesel, gasoline, natural gas and biofuel, fuel economy will help to deal with current oil dependency, increasing energy supply and associated high fuel prices in the future. Energy efficient vehicles and clean fuels (unleaded and low sulphur), harmonization of regulations and standards for vehicle manufacturers, sustainable production of biofuels and sustainable generation of electricity are key points for reaching of fuel economy worldwide.

Developed countries have already elaborated comprehensive mandatory fuel economy standards and CO<sub>2</sub> emission limit values, while emerging economies, where most of new vehicles will be operated by 2050, just started to introduce fuel economy regulations. The EU, USA and Japan as frontrunners in setting fuel economy standards and regulations serve an example to the rest of the world and play the key role in global fuel economy adaptation as proximity to Europe and opportunity to join EU is one of the facilitating factors of the standard setting process in neighbouring countries. Strict diesel and gasoline regulations and standards are necessary for the improvement of fuel and vehicle efficiency and decrease of associated CO<sub>2</sub> emissions.

Introduction of the mechanisms for compliance, promotion of public demand and raising awareness of government on the issue are of utmost importance as, due to the lack of enforcement in many developing countries, only average fuel economy standards are met. It is important to think about these countries and introduce cheap, attainable and efficient standards. It is also necessary to focus worldwide on adoption, implementation, enforcement and monitoring of fuel economy legislation directly affecting the state of the vehicle fleet in countries.

Clean diesel, second generation biofuel and GHG neutralization provide solutions for present fuel efficiency improvements while development of the power train technologies used in internal combustion engines and introduction of innovative technologies for hybrid, hydrogen, electric and fuel cells engines will affect significantly vehicle efficiency in the future. 50% improvements in fuel economy will be achieved by wide introduction of hybrid engines coupled with electric technologies allowing cut of costs at smaller vehicles.

Technological improvements in light duty vehicles (LDVs) are expected to have significant spin-offs to heavy duty vehicles (HDVs), marine, air and light rail transport. Application of integrated approach to vehicle efficiency is necessary, such as: increase of fuel efficiency, mitigation of traffic congestion, improvement of real word driving/eco-driving, introduction of fuel economy standards for second hand vehicles, switch to alternative fuels and modal shift. However, taking into account that global improvement of fuel economy might result into significant rebound effect leading to increased travel, there is a need to change behaviour and driving culture affecting amount of travel and driving methods. Strong price signal should be kept to make people aware of the situation.

Fiscal and tax incentives are also required to cut CO<sub>2</sub> emissions and to improve fuel economy worldwide including introduction of lower vehicle taxes and purchase subsidies for high-cost energy efficient vehicles and increase of penalties for incompliance with CO<sub>2</sub> emission regulations for vehicle producers. Harmonization and comprehensive evaluation of taxation schemes for automotive vehicles and their impact on energy efficiency (including taxation parameters for imports, size vs. power taxation and taxation of 2<sup>nd</sup> hand vehicles) are needed.

Key players involved in fuel economy include: government, business sector, civic society, media, international organizations - UNEP, UNECE, WTO, United Nations Development Programme (UNDP), Organization of Petroleum Exporting Countries (OPEC), European Commission (EC) and Eastern Partnership and International Financial Institutions (IFIs) - European Bank for Reconstruction and Development (EBRD), European Finance Investments (IRF), the World Bank (WB) and others. Identification and collaboration of all stakeholders, including fuel makers, vehicle suppliers and consumers, e.g. through motoring clubs, and joint activities on a global and regional level

are also needed. Awareness raising, capacity building, pilot actions, networking, environmental education, technology and knowledge transfer, good practice and expertise exchange represent soft measures that might be used for the promotion of fuel economy.

Analysis of gaps in knowledge, research and data collection are required to create comprehensive fuel economy baseline. It is necessary to create a national fuel economy database allowing national governments to monitor vehicle fleet, its characteristics and international import-export trends as in many countries these data are not generally available or accessible. It is important to promote international tools facilitating creation of these databases as good database is a prerequisite for introduction of fuel economy regulations on national level. As first step information on vehicle fuel consumption specifications, engine size and power provided by vehicle manufacturers and importers should be improved.

The upcoming GFEI Tool on *Auto Fuel Efficiency and Climate Change* developed for national strategy development can be used as a basis for exchange of information. The GFEI Tool will help to define the level of countries in terms of fuel economy, provide examples of best practices and regulations and train officials on further steps needed to reach fuel economy.

## ANNEX I: OVERVIEW OF FUEL AND VEHICLE ECONOMY IN CEE

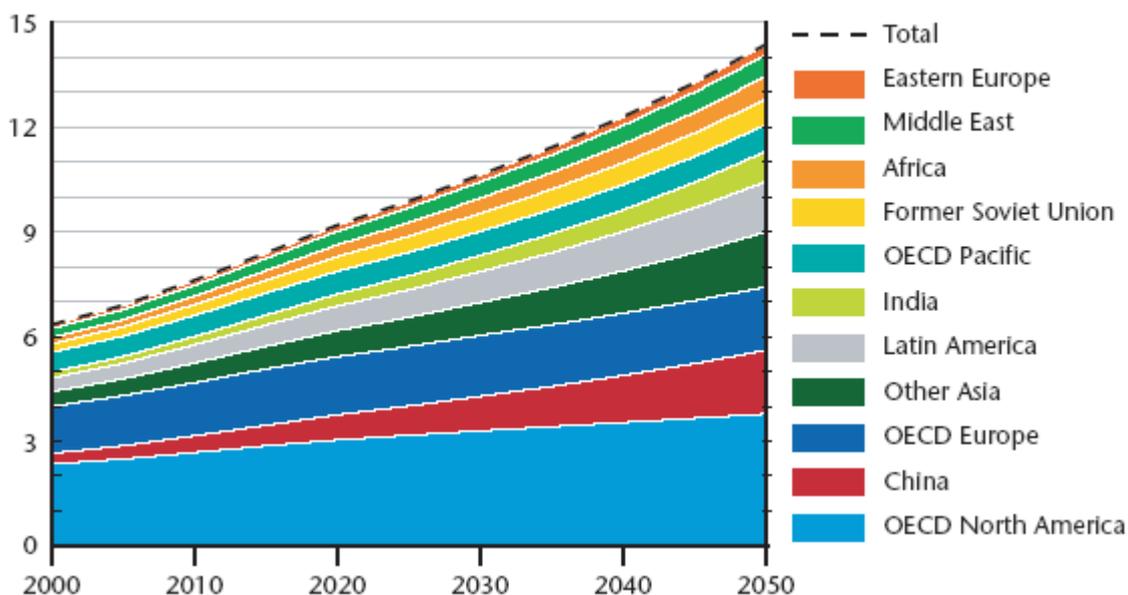
This section of the report seeks to paint a broad picture with regard to vehicle emissions, automotive manufacturing, fuel economy standards, vehicle flows, import restrictions, regulatory programs, fuel quality, trade implications, and the role of auto clubs in the region. Much of the information provided is based on outcomes of the UNEP/REC Country Surveys conducted in 2009, which have produced a wealth of information.

### CO<sub>2</sub> emission trends

All United Nations Framework Convention on Climate Change (UNFCCC) Annex 1 countries of CEE and EECCA show an increase in transport-related CO<sub>2</sub> emissions as a percentage of total CO<sub>2</sub> country's emissions from 1990-2007. The exception is Turkey, where total CO<sub>2</sub> emission levels will increase by 140.91% comparing to 1990-2007 emissions levels, and thus offset the smaller increase in transport-related CO<sub>2</sub> emissions (increase of 78.62%). In many cases, transport-related CO<sub>2</sub> emissions were increasing since 1990, the most extreme case being the Czech Republic where transport-related CO<sub>2</sub> emissions rose by 200.88%. Other notable cases of significant increases are Slovenia (97.16%), Romania (85.85%) and Croatia (70.15%). However, the trend is not homogenous. Belarus, Bulgaria, Lithuania, Russia, and Ukraine have all decreased the overall amounts of CO<sub>2</sub> emissions from transport since 1990. Outside of CEE and EECCA, the USA and Canada show an increase of CO<sub>2</sub> emissions from road transport comparatively to 1990-2007 emission levels, with the largest increase (40.31%) in Canada. Throughout the entire 27-country EU, total CO<sub>2</sub> emissions have decreased by 7.17% from 1990-2007. However, consistent with other large economies (Russia, USA, Canada), road transport CO<sub>2</sub> emissions over the same year period have increased, up to 28.31%. To ensure a future decrease in transport-related CO<sub>2</sub> emissions, it is essential that countries import cleaner vehicles, use low-sulphur and unleaded fuels, and increase the turn-over rate of their ageing vehicle fleet. Of total transport CO<sub>2</sub> emissions in all countries surveyed, road transport contributed the vast majority of GHG emissions to the sector.

### Transport-related Well-To-Wheels CO<sub>2</sub> emissions by region

Gigatonnes CO<sub>2</sub>-Equivalent GHG Emissions/Year



Source: WBCSD 2004.

## ***Fuel economy trends***

Current average fuel economy levels vary considerably country by country. Across the OECD the average figure in 2005 was around 8 litres per 100 km for new cars (including both gasoline and diesel vehicles). With a 50% fuel economy improvement, the average new car performance in OECD markets would improve to around 4 litres per 100 km (about 90 g/km of CO<sub>2</sub>). In non-OECD countries, more work is needed to better understand current fuel economy levels, but a level of 4 litres per 100 km (or even lower) should be attainable in most countries over the time frame considered by the GFEI, using existing efficiency technologies. There is a clear opportunity to improve new car fuel economy with 30% by 2020 and with 50% by 2030, in a cost-effective manner (e.g. low or negative cost per tonne of CO<sub>2</sub>). Improving the efficiency of new cars at this rate would make possible a 50% improvement in the average fuel economy of all cars on the road worldwide by 2050. It should be noted that improvements such as these will be impacted by variations in the test cycles used in different countries, although a consistent measurement and comparison approach is under development.

Current average fleet-wide fuel economy levels for LDVs in CEE and EECCA are not known due to the lack of reliable data. The only available data is for Russia, with average fuel efficiency for domestically produced vehicles of around 9 L/100km, and 10 L/100kms for imported vehicles, and Serbia with an average fuel efficiency of all LDVs of 7-8 L/100km. Additional data on national fuel economy is needed; the GFEI proposes the use of a simple yet harmonized baseline data collection methodology to gain insight into the current situation, and monitor change over time.

## ***Vehicle flows and import restrictions***

Strategies for introducing cleaner vehicles and scrapping old ones are of particular interest for CEE as the region grapples with its ageing vehicle fleet. Often over 50% of fleets are older than 10 years of age. In some countries large proportions of the fleet are older than 11 years and in particular, Serbia (91%), Armenia (90%), Georgia (82%), Moldova (80%), Russia (51%), and Montenegro (70%). In Bulgaria 40% of the vehicles are over 20 years old. However, some countries in CEE have shown an increase in the number of new vehicles being registered. For example, from 2005-2006, Bulgaria (29.7%), Estonia (30%) and Latvia (53.6%) each had substantial numbers of new cars registered as compared to previous years. The rate of vehicle renewal/turnover is unknown; additional data in this area would assist in fine-tuning emission and technology scenarios for CEE and EECCA. More in-depth information on vehicle flows (the movement of both new and second hand vehicles imported and exported) would also be useful in clarifying the sectoral picture in these regions.

## ***Policy Options***

A number of CEE countries have run scrapping and buy-back schemes with various degrees of success; in neighbouring EU states, numerous fleet renewal programs have resulted in a reduced transfer of old technology to CEE and SEE states. Renewal schemes in the EU involve cars at least 9 or 10 years old; their replacement benefits environment and safety in a number of ways:

- CO<sub>2</sub>, pollutant emissions and noise are reduced with newer technology;
- Old, polluting vehicles are scrapped instead of being exported to CEE countries, as was often the case until recently;
- Better equipment such as anti-locking brake system (ABS), electronic stability control (ESC), airbags and navigation systems make vehicles safer.

To counter the harmful effects of an aging vehicle fleet, countries have also instituted import restrictions for used vehicles, such as age and technology restrictions. A summary of country policies in place to restrict importation of inefficient, highly polluting used vehicles into the CEE and EECCA markets can be found in Annex VI.

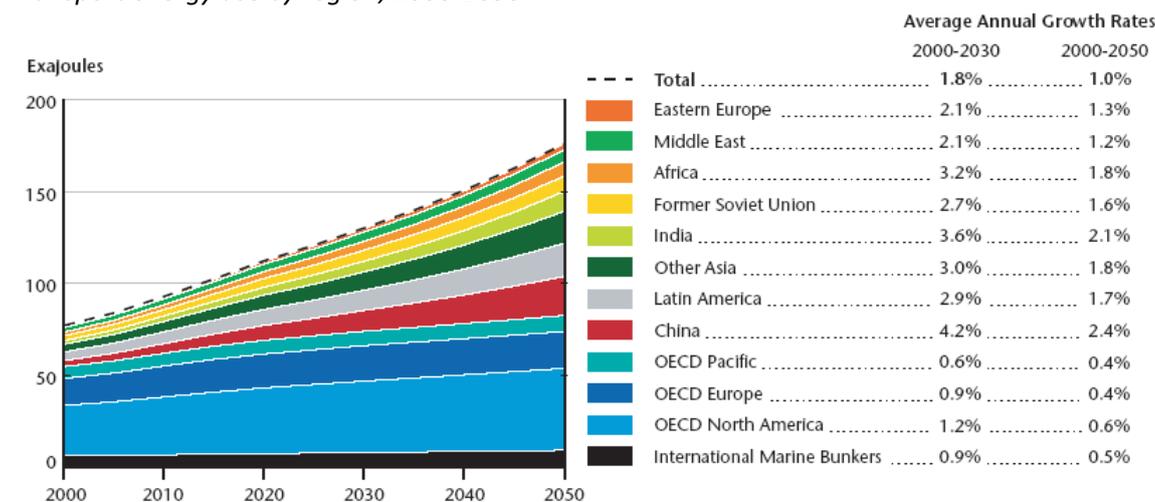
## Regulations to improve auto fuel economy

Subsidies or reduced road taxes for more fuel efficient vehicles have been introduced in several CEE countries, including Albania, Belarus, Croatia and Armenia. Azerbaijan's *Transport Policy* outlines plans to promote more fuel efficient vehicles and produce them domestically. Fuel efficiency is going to be increased through application of bio-additives, alternative fuel use and use of cleaner fuel with low sulphur content. The Belarus Ministry of Natural Resources and Environmental Protection has created incentive to start ecological classification of vehicles from 2010. There are also plans to introduce restrictions on imports of low environmental quality vehicles through the introduction of diversified tax, and banned entrance to certain city zones.

Ukraine has several regulations to improve the auto fuel economy of its fleet, such as inspection and maintenance programs according to European standards, introduction of energy and fuel efficiency on vehicles and alternative fuels, adaptation of Euro 3, 4, 5 standards for vehicles and fuels, and enhanced control over fuel and lubricants quality. Labelling programs are largely absent in CEE, with the exception of Croatia (regulation on vehicle labelling is in force) and Turkey (manufacturers are bound to include labels displaying fuel efficiency and CO<sub>2</sub> emission values on new vehicles).<sup>4</sup>

Russia, with one of the largest markets in the region and highest potential for vehicle per capita growth, has much room for prospective national policies to promote cleaner fuels and vehicles. Although unleaded since 2003 and with lower sulphur levels (150 ppm) available by law, the fuel quality still hinders the growth of clean or fuel efficient vehicles (see below), and limits the promotion of fuel and energy efficiency concepts at the federal level.

### Transport energy use by region, 2000-2050



Source: WBCSD, 2004.

## Fuel quality

Clean – low sulphur, lead-free – fuels are necessary for enabling the introduction and use of clean, more efficient vehicle technologies. Most modern petrol-fuelled vehicles, including hybrid electric vehicles (HEVs), require unleaded petrol because of the irreversible damage lead causes to emission control technologies such as catalytic converters. One of the goals of the UNEP-based Partnership for Clean Fuels and Vehicles (PCVF, [www.unep.org/pcf](http://www.unep.org/pcf)) is to phase out leaded petrol globally. In this respect, UNEP supports the development by the UNECE of harmonized recommendations for market fuel quality to ensure that the fuel available in the marketplace does not hamper the effectiveness of emission control devices (e.g. catalytic converter, particulate filter) of vehicles in use ([www.unece.org/trans/main/wp29/wp29wgs/wp29grpe/grperep.html](http://www.unece.org/trans/main/wp29/wp29wgs/wp29grpe/grperep.html)).

<sup>4</sup> UNEP/REC CEE Country Surveys 2009.

Diesel fuel with more than 50-500 ppm inhibits the use of any emission control technology available today, poisoning catalysts and particulate filters. Sulphur greatly reduces the efficiency of more advanced catalysts by blocking active catalyst sites; this effect is not completely reversible. Although conversion efficiency will improve with the use of low sulphur fuel (500 ppm or less), it does not always return to its original effectiveness after desulphurization. Optimal clean diesel vehicle function depends on the availability of near sulphur free diesel (<15 ppm) in order to attain specified emission levels and emission control technology durability. As vehicle manufacturers might decline warranty demands when higher sulphur fuels are used, ensuring adequate fuel quality for correct vehicle function is important.

Although almost universally banned, leaded fuel can still be found in a few countries in SEE. In Serbia, approximately 58% of the petrol market is leaded. This is set to change in 2010-2012 with a deadline for the ban of leaded fuel. Leaded fuel was also found in Bosnia-Herzegovina until recently. In Montenegro leaded fuel is available at 25% of the market share, with plans for going unleaded any time soon. These countries are unique cases, as no other countries in CEE allow leaded fuels.

However, high sulphur fuels (500ppm and above) are still used in a large share of the market in CEE. Laws in place and realities on the ground for sulphur levels often differentiate in countries in the region. For example, the maximum allowable sulphur level for diesel fuel in Turkey is 10 ppm, but high sulphur level diesel is still available on the market with a significant share of 70%. On the domestic side, there are two grades of fuel available: low sulphur diesel (less than 10 ppm) and rural diesel (10-1000ppm). The following countries allow high sulphur levels of petrol and/or diesel fuels: Albania (2000ppm petrol), Azerbaijan (2000ppm diesel, 1000ppm petrol), Armenia (500ppm petrol), Belarus (500ppm petrol), Georgia (500ppm petrol), Moldova (2000ppm diesel, 500 petrol), Montenegro (2000ppm diesel, 1000ppm petrol), Serbia (10,000ppm diesel, 2000ppm petrol), Turkey (1000ppm diesel), and Ukraine (2000ppm diesel). Although alarming, the vast majority of these countries have committed to lowering sulphur levels in diesel and petrol to under 500ppm in the near-term, and often in line with EU fuel and vehicle directives of 10ppm sulphur levels. E.g., in Macedonia, with the introduction of Rulebook on Quality of Liquid Fuels from Jun 2009, the leaded fuel was banned and the maximum allowable sulphur level for gasoline and diesel was set at 10 ppm.

## **Industry overview**

### *Automotive Manufacturing:*

CEE is quickly becoming a major automotive production hub, with local and Western Europe being the major export markets. Projections for approximately 5.5 million passenger cars to be sold in CEE by 2012 may seem small in comparison to the 15.3 million passenger cars expected to be sold in Western Europe, but the increase of sales projected for 2012, and the spin-off industries (parts manufacturers, dealers) resulting from such an increase is a major boost to the industry and economy of the region.<sup>5</sup> Already 18% of automotive-related employment in the EU as a whole is in Eastern Europe.<sup>6</sup>

In the Czech Republic, 75% of the \$4 billion-a-year automotive industry production is exported, and automotive exports amount to about 18% of total exports.<sup>7</sup> In 2004, the Hungarian automotive industry was valued at \$6 billion, or 3% of global automotive exports, and in 2005, 630 automotive companies accounted for 25% of total exports.<sup>8</sup> Similarly, Poland's automotive industry was valued at \$6 billion, or 3% of global automotive exports, and has the potential to develop a domestic market of more than 350,000 units within five years.<sup>9</sup> Romania has the potential to become a major net exporter of vehicles with the Ford acquisition of the former Daewoo plant in Craiova and the projected 1 billion EUR investment plan to modernize the plant to increase production to 300,000 cars per year.<sup>10</sup> Other countries such as Turkey, Slovenia and Slovakia also have developing automotive manufacturing industries. Despite much potential, there exist environmental liabilities to automotive

<sup>5</sup> <http://www.localglobal.de>

<sup>6</sup> <http://www.europeansupplychainmanagement.co.uk/article-page.php?contentid=2269&issueid=105>

<sup>7</sup> KPMG, 2008. Automotive Industry in Central and Eastern Europe.

<sup>8</sup> Nicou, C., 2009. "The Automotive Industry in Hungary". Automotive Industries. Find Articles.com.

<sup>9</sup> [http://www.localglobal.de/sixcms/detail.php?id=779351&template\\_id=4240&t=auto.world&rubrik=Aktuell](http://www.localglobal.de/sixcms/detail.php?id=779351&template_id=4240&t=auto.world&rubrik=Aktuell)

<sup>10</sup> [http://www.localglobal.de/sixcms/detail.php?id=779351&template\\_id=4240&t=auto.world&rubrik=Aktuell](http://www.localglobal.de/sixcms/detail.php?id=779351&template_id=4240&t=auto.world&rubrik=Aktuell)

manufacturing in CEE. The EU's *Integrated Prevention and Pollution Control* (IPPC) legislation states that all manufacturing companies will be required to identify risks and environmental liabilities in the automotive sector, and take subsequent actions, in principle, which will minimize harmful practices, such as closing of environment polluting plants.<sup>11</sup>

As a sizeable and growing automotive market and leader in terms of standard-setting in the EECCA region, Russia's adoption of more efficient fuel economy standards and cleaner fuels would be an important signal for neighbouring countries. According to the EBRD, auto sales in Russia rose by 35% in 2007 over 2006, while GDP increased by less than a quarter of that - 8.1%. In 2007 the Russian market moved from the fifth-largest passenger car market in Europe into third place, behind Germany and Italy, and is expected to be Europe's largest market in the near future. The passenger car market dominates domestic consumption and is expanding due to increasing disposable income and low interest rates. Market research also shows that the Russian automotive industry is growing at a fast pace. Russia has around 188 cars per 1000 inhabitants, as compared to Hungary, Poland and Bulgaria with between 300 and 370 and Germany, Austria and Switzerland with over 550. Therefore, there is plenty of room for expansion and government initiatives and incentives are developing the industry and attracting foreign investment and manufacturing firms to the market.

While consumer tastes are increasingly turning to international makers, many Russian-owned automakers are aggressively modernizing, restructuring, and re-tooling to produce components or to assemble cars sold under global brands.

#### *Trade Implications of Greater Harmonization<sup>12</sup>:*

Manufacturers are indirectly exposed to GHG emissions regulations and directly exposed to emissions regulations on private and commercial vehicles. Car makers are subject to various external regulations, especially in Europe, including: the implementation scheme of the European Directive on the trading of GHG emissions quotas; labelling regulations pursuant to the CO<sub>2</sub> Directive; tax policies; and green purchasing by public authorities and large corporations. Legislation or regulation changes will likely oblige an increase in fuel economy and/or a lowering of CO<sub>2</sub> emission intensity. The European Union Emissions Trading Scheme (EU ETS) is already stimulating GHG reduction efforts beyond Europe. Moreover, leading global manufacturers have already established self-imposed GHG reduction targets for facilities outside the jurisdiction of the EU ETS.

#### *Impacts on Related Industries<sup>13</sup>:*

Components used particularly by auto manufacturers – steel, aluminium, and glass – may increase in (relative) price, as climate change regulation imposes higher costs associated with CO<sub>2</sub> emissions on sectors which serve as supply to the automobile sector. More stringent fuel economy standards are likely to divert consumer demand towards smaller and more fuel efficient cars. Because Original Equipment Manufacturers' (OEM) product mixes differ with respect to carbon intensity standards, average OEM costs per vehicle to meet new carbon constraints could differ by a factor of 25, from \$650 for BMW to \$25 for Honda. In China, the consumption tax will be reduced by 30% for auto producers if they reach the low-pollution emission standards ahead of schedule.

Companies with worldwide operations have already been expressing concern over the rising cost of energy, and energy security is a well understood concern too. To avoid the threat to profit margins, sector leaders are working to decrease energy intensity. Some materials will be in heightened demand, because of their intrinsic characteristics, e.g. aluminium because of its low density (important in achieving lower fuel consumption of cars), and platinum (for catalytic converters used to oxidise pollutants).

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<sup>11</sup> [http://www.pwc.com/en\\_CZ/cz/automobilovy-prumysl/eastern-influx-1.pdf](http://www.pwc.com/en_CZ/cz/automobilovy-prumysl/eastern-influx-1.pdf).

<sup>12</sup> Section excerpted from Llewellyn, J., 2007. *The Business of Climate Change. Challenges and Opportunities*.

<sup>13</sup> Section excerpted from Llewellyn, J., 2007. *The Business of Climate Change. Challenges and Opportunities*.

### ***Role of auto clubs***

Consumers clearly have a crucial role to play in the debate about fuel efficiency. Globally over 100 million motorists are members of motoring clubs. Whilst they may offer a different range of services, and operate in a range of different ways, they are therefore uniquely well-placed to engage on the issue of fuel economy from the consumer's perspective.

Clubs in the region have already begun to engage on the issue both through the FIA Foundation's 'Make Cars Green' campaign and through engagement with the GFEI via the FIA Foundation. For example, the Georgian Motoring Club is currently engaged in a project to promote greener driving choices to its members and more widely in the driving community.

## ANNEX II: DETAILED SUMMARY OF PRESENTATIONS

Please note that all presentations are available from

<http://www.50by50campaign.org/updates/2009/Pages/50by50SymposiumforCentralandEasternEurope.aspx>

### DAY 1

#### Opening Session

For REC this event is the beginning of a new initiative in the region and extension of previous work with UNEP (PCVF). This year REC celebrates a 20 years old anniversary and one of the important directions of REC work has always been related to energy efficiency, energy saving and sustainable transport. REC has had a continuous cooperation with PCFV which was a factor in reaching an almost complete phasing out of leaded fuel in SEE and significant decrease of sulphur content of the fuels in the whole SEE region. There will be many environmental challenges in the region in the future and work within GFEI will help to deal with at least some of them.

FIA Foundation is actively working on global, regional and local levels and among other issues aims at development of innovative toolkit promoting adaptation of fuel economy policies all over the world. Questionnaires submitted by participants provided a good overview of the regional situation and demonstrated the fact that the topic is new to everybody and not well developed in the region.

#### **Keynote address: energy perspectives across the globe**

The world should move in the direction of reduced energy consumption and CO<sub>2</sub> emissions and fuel economy is one of the solutions to this problem. 450 ppm target in concentration of CO<sub>2</sub> in atmosphere by 2050 can only be achieved by complete decarbonisation of electric power production and addressing transport related CO<sub>2</sub> emissions. Fuel economy (amount of fuel used per one kilometre) intended to make vehicles more fuel efficient will help to mitigate climate change and save significant amount of fuel used in transportation sector. It will also help to deal with the oil dependency, energy security and associated high fuel prices in the future as transport fuel demand will double by 2050. As stock of the vehicles is expected to increase, the only way to meet such demand under current growth trends is to change human behaviour patterns and introduce fuel economy.

The **blue map approach** elaborated under IEA will lead to a significant reduction of fuel intensity by 2050 in all modes of transport. It is expected that cars/LDVs will have the biggest impact on the decrease of transport related fuel consumption. 50% improvement in the fuel efficiency will happen with the **transition to new technologies** – electric vehicles and hydrogen fuel cells. Just the use of incremental technologies improvements and introduction of the most fuel efficient vehicles (using 4 litres of fuel per kilometre) will result into substantial decrease of CO<sub>2</sub> emissions in 20 years. **Sustainable production of biofuel and generation of electricity** will have an important role along with **smart energy efficient travelling**, car free cities and promotion of sustainable urban transport. Japan and EU with a target of 95 gm of CO<sub>2</sub> emissions per km by 2020 will serve as an example for the rest of the world. Serious analysis of gaps in knowledge and research is needed, as national vehicle taxation systems and technologies vary significantly and provide inconsistent signals for the world vehicle market.

Biofuel is not a panacea and will not solve all problems till global vehicle fleet is made energy efficient. There will be a high demand for biofuel in all types of transport, especially in heavy vehicles: aircrafts, ships and tracks. It is preferable to use biofuel in the short distance running vehicles. Sustainability of biofuel is under the question, it is necessary to move from food crops to the second generation biofuel.

## Session 1: Setting the scene

### *An overview of the global approach to fuel economy*

Current regulations on CO<sub>2</sub> emission values adopted in EU, Japan, USA, and Canada are already quite strong. **EU and Japan are frontrunners** in setting examples related to the fuel economy regulations and standards for the rest of the world. Asian countries such as China and South Korea just started to introduce limit values for fuel consumption and Australia has only voluntary GHG emission standard and is planning to introduce mandatory regulation.

It is obvious that without **strict regulations** there will be no decrease of CO<sub>2</sub> emissions from transport, while regulations force vehicle efficiency improvements equal to 2-3% per year. It is necessary to formalize energy and CO<sub>2</sub> content of the fuel globally to measure and synchronise targets related to the increase of fuel efficiency and reduction of CO<sub>2</sub> emissions per km or litre of fuel. **Clean diesel** is one of the solutions to CO<sub>2</sub> emissions reduction, including the use of GHG neutralization technologies. In EU vehicle weight-based CO<sub>2</sub> emission standard is in operation and as smaller vehicles have to meet more stringent standards than larger vehicles, this does not provide incentive for manufacturers to produce more compact cars. USA and Canada use size of the vehicle as a metric, which is more appropriate and beneficial in terms of fuel economy. However, vehicle metric does not matter as much as energy security and associated fuel consumption problems as fuel efficiency is more relevant to CO<sub>2</sub> reduction targets than vehicle efficiency.

If regulation gives enough flexibility to the vehicle manufacturers, it protects them from backsliding and allows setting of the overall higher standards. It is possible to get the same power from the engine with simultaneous downsize of the weight and size of the cars. It is also possible to introduce one flat standard for all vehicle producers but it might be not accepted by all manufacturers. However, it is the most important to **set the mechanism for compliance with regulations**. In China and India compliance is quite low and only average standards are met. For non EU countries EU should provide an example. As it is necessary to track vehicle fleet on national level – mechanism to monitor data should be put in place. E.g. in EU data provided separately by 27 MS should match with the data collected on EU level.

**Fiscal incentives** are also required to cut CO<sub>2</sub> emissions from transport. In general, penalties for non-compliance are so low, that manufacturers prefer to pay but not to comply with the regulations and standards as different set of fiscal penalties is chosen by each country. Harmonization of taxation scheme is also necessary for CO<sub>2</sub> emissions and fuel consumption regulations introduction.

### *Setting fuel economy standards in Europe*

**Voluntary target** of 140 g of CO<sub>2</sub> emissions per km set by EU car industry in 2006 completely failed by 2008. Though car industry is making some progress in decreasing CO<sub>2</sub> emissions from the vehicles, only two car producers managed to meet their CO<sub>2</sub> emission reduction targets up to the date. Acknowledgement of this fact initiated a discussion about introduction of legally binding EU fuel economy regulations as manufacturers are not willing to invest and adapt new technologies on a voluntary basis.

Mandatory EU fuel economy regulations were adopted in 2008 stating that the target of 130 g of CO<sub>2</sub> emissions per km should be met by 2015 and of 95 g of CO<sub>2</sub> by 2020. **Differentiated penalties** in terms of a weight and modality of the vehicle were introduced for each gram of CO<sub>2</sub> emissions exceed in comparison to average EU CO<sub>2</sub> emissions standard. Unfortunately several loopholes were created due to the introduction of eco-innovations and super credits notions – dealer that sold one super low carbon car was allowed in addition selling 3 oil consuming cars which led to the increase in overall fuel consumption.

The fourth car monitoring report issued by T&E in 2008 demonstrated strong acceleration of the car industry in terms of decrease of CO<sub>2</sub> emissions from vehicles. Those car producers who were further from their initial CO<sub>2</sub>

emission reduction targets achieved higher cuts in emissions than those who were closer to their goals. Overall industry demonstrated strong interest in CO<sub>2</sub> based vehicle taxation.

There is still a significant difference between the official CO<sub>2</sub> emissions from vehicles taken during the test cycle and real on-road emissions. **Significant shortfall in fuel economy** was identified – at least 20% difference for standard cars, 40% for cars with low CO<sub>2</sub> emissions due to the fact that driving methods and road conditions significantly affect final emissions. Drivers of vehicles are not efficient – this causes fundamental fraud in measuring emissions. It became obvious that EU targets will not help to cut CO<sub>2</sub> emission by 40% but only by 25%. The testing cycle and methods for measuring performance, tyres pressure standards need to be reviewed. Communication of the real-world data to consumers is needed as well as introduction of CO<sub>2</sub> emissions labelling system for the second hand vehicles.

## **Session 2: Fuel Economy – a regional overview**

### ***Fuel issues***

Environmental projects of the State Oil Corporation of Azerbaijan (SOCAR) related to the decrease of atmospheric pollution and GHG reduction are carried out in collaboration with the World Bank (WB). The company aims at zero impact on environment and it is obliged to decrease its CO<sub>2</sub> emissions after Azerbaijan's ratification of the Kyoto Protocol.

Most of the company's products are compliant with EU fuel regulations: most of the fuel meets Euro 2 standard. In Azerbaijan, from 2010 all new vehicles should also meet Euro 2 standard. The environmental policy of SOCAR is supported by three measuring stations controlling emissions of CO, CO<sub>2</sub>, NO<sub>x</sub> and other pollutants from the vehicles. Rewarding policy is developed for those vehicles owners who meet or exceed the best vehicle standard.

### ***Setting standards***

**Harmonization of vehicle regulations and standards** focussing on energy efficiency are of the key importance for improving fuel economy. Road vehicle emissions constitute 73% of the transport related CO<sub>2</sub> emissions and 17% of the total man-made emissions. The **World Forum for Harmonization of Vehicle Regulations (WP.29)** is the main forum best positioned to cut CO<sub>2</sub> emissions by 50% by 2050 - it works on the regulations related to the construction of vehicles, market fuel quality and the introduction of innovative engine technologies to improve the energy efficiency of vehicles. Under WP.29 there is an **informal group on environmentally friendly vehicles (EFV)** which is working on the development of a methodology to evaluate EFV on the basis of an integrated well-to-wheels approach taking into account issues of vehicle recycling and decrease of energy input into vehicle construction and maintenance. An **informal group on heavy vehicle hybrids** within WP.29 has a mandate to develop new test provisions with respect to pollutant emissions and CO<sub>2</sub> emission from heavy duty vehicles (HDVs) as currently such regulation is missing.

Passenger cars entering EU market are tested according to UNECE Regulation 83<sup>14</sup> and as this test cycle was set up in 1970s it does not longer reflect today's real traffic conditions. Furthermore, it does not include a measurement method and limit values for CO<sub>2</sub> emissions. In this respect, Governments are mostly referring to the measurement method specified in UNECE Regulation No. 101 or to their own legislation as of now. However, these regulations are continuously amended to adapt the provisions to the technical progress. In this respect, WP.29 started to work on a new globally harmonized test cycle for LDVs with regard to their gaseous emissions of pollutants (CO, HC, NO<sub>x</sub>) and particles, including CO<sub>2</sub>. Regulations covering vehicles in use and their compliance with standards, new vehicles design and construction will be developed in the nearest future and it will take approximately 4-6 years to develop emission limit values for new test cycle. Car manufacturers, consumers and

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<sup>14</sup> Regulation No 83 of the Economic Commission for Europe of the United Nations (UNECE) – Uniform provisions concerning the approval of vehicles with regard to the emission of pollutants according to engine fuel requirements

relevant associations participating in the forum are entitled to make their proposal regarding development of the regulation.

The WP.29 Round Table on Climate Change and Transport is promoting energy efficiency measures in road transport through not only the introduction of innovative vehicle technologies by the automotive industry, but also through adoption of eco-labelling, tax incentives and fiscal measures for vehicles by governments, awareness raising campaigns to foster the engagement of drivers and consumers (eco-driving, use of biofuels, cycling, walking, etc.) and initiatives by national authorities to improve traffic management by a better urban planning, road infrastructure including intelligent transport systems, and by promoting public and inter-modal transport (see [http://www.unece.org/trans/events/ClimateChange\\_Transport.html](http://www.unece.org/trans/events/ClimateChange_Transport.html)).

### ***Fuel economy technologies***

In passenger LDVs fuel consumption is correlated with their CO<sub>2</sub> emissions. Diesel vehicles tend to emit less CO<sub>2</sub> and use less fuel per km. For all kinds of vehicles the logic **'the larger the engine the larger fuel consumption'** remains the same. However, some engines can deliver the same amount of power even having significant difference in size, due to the different technologies applied.

There is a significant difference in engine size across the world - in Japan and China most of the engines is small, in USA engines are dominantly large. The same relates to the fuel consumption parameters. EU, Japan and India have reasonable level of fuel economy due to the high share of diesel cars (60%) in the vehicle fleet and small size of the vehicles and engines. State of fuel economy in Russia and Ukraine is similar to the Western European and Eastern markets as they are influenced by both.

There are **different methods to improve fuel economy** worldwide including use of tyres with low rolling resistance, improved aerodynamics, decreased vehicle weight and energy efficiency of electric components. Power train technologies development is needed for internal combustion engines and introduction of innovative technologies, including hybrid, electric, hydrogen and fuel cells engines is necessary. 50% improvements in the fuel economy will be achieved by a wide introduction of hybrid engines coupled with electric technologies. Hydrogen engines will allow going beyond this goal but tend to be more expensive. Electric vehicles will help to cut costs at smaller vehicles. Behaviour changes such as minimization of congestion and acting on driving style (eco-driving) is needed. In general, regions face different potentials in technologies improvements due to the size and weight of the vehicles' engines. There is an option to add fuel economy technologies in wealthier countries at higher costs and less opportunity to do so in poorer countries.

### ***Civic society perspective***

**Sustainable transportation is not a priority for Georgia** but there is a recognition of the need to address air pollution related to the traffic as levels of CO<sub>2</sub>, SO<sub>x</sub> and NO<sub>x</sub> are much higher than allowed concentrations and citizens' health is significantly impacted. Lead and sulphur content of the fuel is still high although they have been banned or limited officially. Rapid increase of traffic is taking place due to the absence of transport regulations – outdated fleet of 10-15 years old doesn't meet any standard of emissions. Catalytic converters are not used even on new cars sold in the region, because of the low quality of market fuels. Technical inspection of vehicles is bad or non-existent due to the poor administration. Air quality monitoring system is very weak, public awareness on sustainable transportation is not promoted.

The way forward would be to **elaborate national guidelines for cleaner and sustainable transport** applying international experience. A set of recommendations on governance and public awareness to improve air quality was developed under CENN including: EC compliant air quality protection measures, comprehensive air quality monitoring system, improved system for vehicle inspection and monitoring of fuel quality, moving from heavy duty gasoline to diesel vehicles and phasing out low octane passenger vehicles with high octane vehicles.

There is **no separate national policy on transportation, fuel quality and fuel consumption**; and government is not interested in the promotion of mandatory inspections of the vehicles as there is a concern of public protest against high payment for the inspection. International organizations like International Finance Corporation (IFC), WB and EC are important to put pressure on the government and create conditional assistance. The role of NGOs is to increase awareness on the road safety issues and explain the benefit of mandatory vehicle inspection. There is a need to coordinate activities on business and community level in terms of public awareness in South Caucasus region through public campaigns on eco-driving and transfer of know-how on transportation as the awareness of the government on the fuel economy and road safety is rather low and politicians believe that vehicle efficiency will increase the start-up costs.

### ***Manufacturers perspectives***

Real world CO<sub>2</sub> emissions from driving are 33% higher than tested CO<sub>2</sub> emissions due to the use of air-conditioning, aggressive driving methods and poor traffic conditions. The model mixture of vehicles significantly affects the real fuel efficiency and without fuel regulations efficiency does not improve in any country. The gap between certified and on road vehicle efficiency can be bridged through **application of integrated approach to the vehicle efficiency** – high fuel efficiency, traffic congestion mitigation, adaptation of more stringent gasoline and diesel regulations, improvement of the real word driving/eco-driving, switch to alternative fuels and modal shift. This way a decrease of CO<sub>2</sub> emissions from transport and travel distance stabilisation were achieved in Japan in 2001.

As in the past decades **Japanese investors concentrated on fuel economy**, high fuel efficiency was achieved by advances in technologies, modification of engines and adaptation of the law on vehicle improvements. Currently next generation and alternative energy vehicles (hybrids, electric or hydrogen) are actively introduced to the market (26 models available). Integrated approach will achieve the best results if collaboration of all stakeholders, including fuel makers, vehicle suppliers and consumers through joint activities on the global level will take place.

Government having leading role in the moving to sustainable carbon society should adopt stricter fuel efficiency regulations and **motivate owners to purchase modern high-cost vehicles** through tax incentives and purchase subsidies. Authorities should improve traffic flow and collaborate better with fuel and energy suppliers on the provision of high quality fuel and renewable energy. To work better with customers Japan Automobile Manufacturers Association (JAMA) has developed 10 tips for eco-driving and it is also involved in controlling of the vehicle design process to monitor that recycling is an essential part of it and that car can be properly recycled in the future.

Next generation vehicle is the key factor for the sustainable automotive society – therefore technical barriers such as high cost or low buttery performance should be removed. Steps for integrated approach implementation also include data collection for assessment studies and sharing of best practices.

### ***Consumers perspective***

Number of automobiles in Georgia is constantly increasing: 90% of vehicles are second hand cars having an age of 10-14 years. Since 2004 environmentally safe municipal transport was eliminated and up to the date there is no labelling system introduced for fuel efficiency of vehicles. Promotion of new modes of transport such as hybrids and electric cars is absent.

Automobiles imported have high power and fuel consumption (15-17 litres per 100 km) as liberalization of customs legislation and comparatively low fuel prices are favourable for their import. **Technical inspection of automobiles and air quality control is weak and fuel quality control is minimal** even though a law obliging importers to provide quality control data of the vehicles and fuels is in place. The awareness index of automobile owners is very low (many drivers remove catalytic convertors from their cars as power consumers). Driver's

culture related to eco-driving and recommended tire pressure is undeveloped. Media is incompetent in relation to the problems of air pollution and associated climate change which makes it difficult to reach target groups.

It is necessary to raise the index of “eco-education” of drivers through the public campaigns, regular media-activity and participation in social networks. Media representatives should be informed on the issue of atmospheric pollution and there is a need to promote eco-driving methods in auto-schools. Currently Georgian Green Auto Club is working with the Parliament of Georgia on introduction of changes in the Code of Customs related to the custom privileges for hybrid and electric vehicles.

### **Session 3: Evidence of fuel economy activity in CEE – Facilitated Panel Discussion**

#### ***Overview of fuel economy in CEE***

Introduction of EU air pollution regulations, full flow filter technologies and catalytic converters will help significantly to decrease air pollution associated with transport by 2020 in Western European countries. However, climate change and increasing energy supply will be a problem of 21<sup>st</sup> century as people still completely rely on diesel, gasoline, natural gas and biofuel. Hybrids and hydrogen cell technologies will be fully introduced only in 15-20 years as significant investments in the infrastructure are required.

After 2000 all EU countries introduced Euro 1 and 2 regulations and Euro 2 standard is now the average, while vehicle emission standards in Asia are also comparative to this standard. In Baltic countries 70-80% of the stock is used cars. Free movement of cars in EU results in mixed picture when automobile meeting Euro 2 standard can come back to the country even if it is officially banned on the national level. Renewal of HDV stock is rather low in EU and the average age of the vehicle is 15 years. Typical EU LDVs are smaller (under 1500 cc fuel consumption of the engine), cheaper and consume less energy in comparison to the vehicles coming from USA and Canada which will result in significant decrease of CO<sub>2</sub> emissions on EU level. As fuel consumption of diesel cars is 25% lower than the same of the gasoline car as well as operational and fuel costs EU citizens tend to buy diesel vehicles. Under EU legislation the vehicle emission limit of 130 g/km of CO<sub>2</sub> emissions has changed from 180 g/km in 2000 due to the dieselisation of the vehicle stock.

At the moment moving from the gasoline to the hybrid engine is too expensive and it is difficult to support such transition. Major policies to decrease CO<sub>2</sub> emissions include fuel regulations and fuel taxation, improvement of fuel efficiency, introduction of fiscal incentives, eco-driving, fuel efficiency labelling and biofuel and reduction of travel demand. Electric vehicle is not a solution to all problems in EU. In general, it is very difficult to give long term and middle term forecasts on fuel efficiency improvements under current financial crisis as significant drop in the demand took place in 2 years and stock renewal is much slower.

## **DAY 2**

### ***Keynote address, UNEP***

UNEP is promoting **threefold approach to sustainable transportation** – avoiding of transport and emissions, shifting from energy intensive to more efficient modes of transport and cleaning up of the vehicles. UNEP works in partnership with all stakeholders involved in the transportation sector at regional and sub-regional level to support policy development for cleaner fuels and technologies. Strategic partnership launched in CEE through REC assistance helped to establish multi-sectoral working groups with ministries and develop new regulations on national levels. This work also paved the way for the introduction of clean vehicles, fuel economy and new fuel efficiency technologies in the region.

GFEI is expected to fill the gap in knowledge related to fuel economy and intends to work with officials interested in fuel efficiency improvements and climate change mitigation – to define tools, approaches and methods to

engage in various economies. GFEI work is based on data collection and analysis, information campaign, policy support and technical harmonization.

Recently a **GFEI fuel economy tool** is being developed for national transport strategies support – to define the level of countries in terms of fuel economy, provide examples of best practices and standards and train officials on further steps needed to reach fuel economy in their respective countries. The tool includes three parts: **Why** (to consider), **What** (is done) and **How** (to include fuel economy into national development).

**Why:** problems, emissions, benefits and environmental impacts associated with fuel economy.

**What:** national approaches to auto fuel economies and types of intervention - bay backs schemes, registration fees, emission test cycles, traffic circulation, priority zones and parking fees, investments made in new technologies and labelling programmes for vehicles, which all will be linked to the case studies.

**How:** development of vehicle fleet baseline at national level, cost-benefit analysis of options recommended and creation of scenarios.

UNEP will require inputs on content, relevance and use of the tool in CEE countries including case studies and examples. Fuel economy will be implemented through creation of sub-regional networks, national focal points, evaluation and analysis of the data.

## ANNEX III: COUNTRY PROFILES

The country summaries are based on the GFEI CEE Survey developed by UNEP in consultation with REC, FIA Foundation and EASST and sent to the participating countries prior to the conference plus on information received during the panel discussions. The reporting year in the questionnaire was 2010.

### ***Republic of Albania***

Albania within the framework of National Environmental Action Plan (NEAP) 2002 takes into account the need to integrate environmental considerations into other sectors and foresees the development of a strategy and action plan for sustainable transport. Albanian National Transport Plan approved by the government in 2006 and the National Strategy for Transport 2008-2013 were developed to make the control of the vehicle exhaust emissions compatible with EU standards by 2009. The Ministry of Public Works, Transport and Telecommunications (MPWTT) is reviewing all transport related legislation to put it in line with EU *acquis communautaire*, while the Ministry of Environment and its agencies bear responsibility for National Environment Strategy, Ministry of Finance controls taxes and fees system and the Ministry of Public Works and Transport through General Directorate for Road Transport Service is responsible for the registration of imported vehicles. The Ministry of Trade Energy and Economy and subordinate agencies also take part in the fuel economy regulations on national level. In general, automotive emissions and vehicle efficiency are perceived as important issues in the country and are frequently discussed in the media.

Annual technical control is compulsory for all vehicles in Albania. In order to apply the Directive 2009/40/EC "On roadworthiness tests for motor vehicles and their trailers", in 2009 MPWTT signed a 10 years concession agreement with a Swiss private company on the annual compulsory technical inspection services for the vehicles operating in Albania. It is expected to finish the reconstruction of the technical inspection centres and installation of new testing technology by the end of 2010. The CO/CO<sub>2</sub> exhaust emission of the vehicles will be the subject to the test as national CO<sub>2</sub> emissions regulations are being developed, but are not homogenous and due to the lack of equipment for testing are not enforced. The vehicles failing to meet the exhaust emission limits during the test will be rejected from receiving the technical inspection certificate.

The Road Code and Regulation for Seatbelts were recently changed, however their enforcement is still lacking. Level of the vehicle taxation is high and taxation system is not in favour of the vehicles older than 10 years – different taxation system is applied. As country does not produce vehicles domestically, majority of automobiles is imported from EU, USA, China and Korea and all national auto importers are obliged to publish information on the vehicle models imported to Albania.

It is necessary to raise public awareness in the country, not only through the increase of police control and penalties, but through campaigns of eco-driving and environmental education. Significant improvement of the fuel quality and promotion of catalytic converters on vehicles is needed.

### ***Republic of Armenia***

National legislation related to fuel economy is elaborated and as country is within EU Neighbourhood Policy many pieces of EU legislation are transposed, but implementation and funding mechanisms are still missing. In 2007 Armenia adopted National Programme for Energy Saving and Renewable Energy promoting energy efficiency in transport sector. Environmental agenda is also planned to be included into the Road Safety Action Plan and government is in the process of preparation of the national vehicle fuel economy/GHG standards. The Ministry of Economy and Ministry of Environment are the main agencies involved in the development and implementation of national vehicle regulations.

There are no vehicle production facilities in the country and majority of automobiles is imported from Georgia, Russia, USA and EU. Due to the high custom taxes imported automobiles are relatively expensive; vehicle import restrictions relate to the banned vehicles older than 15 years old and vehicles without catalytic converters. Taxes on vehicles older than 10 years were recently increased which made second hand automobiles more expensive than new ones. However, fuel taxes and sales requirement for the use of fuel efficient technologies are not yet

introduced. In Armenia fuel economy is also a social issue - current economic conditions and poor quality of the roads significantly affect consumers, who are often unable to pay for the vehicle maintenance.

Mandatory seatbelt use was not regulated in Armenia till 2007, but even after respective law's official introduction seatbelts were not used – people tend to use old vehicles and demonstrate lack of understanding on the road safety. Enforcement of this law started in 2009 when official figures of seatbelt use impact on economy and mortality were communicated to the government.

Majority of data and statistics related to transport is still missing in Armenia and even the number of vehicles registered is perceived as confidential information. Media coverage of fuel economy is rather low. There is a need to establish working groups, start discussions of the fuel economy issues and involve partners from all sectors including business, vehicle manufacturers, dealers, governments, NGOs and consumers. Political will of leaders, involvement of decision-makers into fuel economy and promotion of the enforcement of the regulations on the country level are needed. Sharing of best examples and EU best practices would be also necessary.

### ***Republic of Azerbaijan***

National Energy Efficiency Strategy, which is currently in the process of preparation, is expected to cover climate change issues and energy efficiency in transport sector. In addition, Azerbaijan's Transport Policy outlines plans to promote more fuel efficient vehicles and start their domestic production. Increase of fuel efficiency is planned to be achieved through the use of bio-additives, alternative fuels and cleaner fuels with low sulphur content. Energy efficient vehicles and automobile emissions represent the important issues for the country and discussion of the fuel economy topic takes place in the national media. Due to the absence of the national vehicle production facilities, country imports all vehicles from abroad, particularly from EU, USA, Russia, Turkey, Japan and Korea.

The Ministry of Fuel and Energy, Ministry of Ecology and Natural Resources, State Standardisation Committee and State Oil Company of Azerbaijan Republic (SOCAR) are the main institutions involved in the transport policy implementation. Introduction of the national fuel economy/GHG emission standards for LDVs is expected in the nearest future. From 2009 financial restrictions were introduced for LDVs not meeting environmental, esthetical and exploitation requirements to limit the import of old vehicles in the country. Incentive systems for cleaner, more efficient vehicles are in the process of preparation - government plans to introduce restrictions on importing vehicles older than 5 years from EU and older than 3 years from CIS countries. For now diversified vehicle tax applied to the automobiles is based on the engine's volume. There is also a certain governmental support to the research and development of cleaner and alternatives fuels.

### ***Republic of Belarus***

Official vehicle fuel economy/GHG standards are not introduced in Belarus and state institutions involved in the transport policy implementation work accordingly to the "Program to reduce the harmful effects of transport on the environment of the Republic of Belarus for 2006-2010". Up to the date this programme allowed upgrading up to 10% of national vehicle stock to more modern and cleaner modifications and decreasing of transport related emissions by 1.2% (comparatively to 2005 levels). From 2010 the Ministry of Natural Resources and Environmental Protection is planning to start ecological classification of the vehicles and to introduce restrictions on the imports of old polluting vehicles through the application of diversified tax, and banned entrance to certain city zones. Government also tries to restrict import of old cars by applying bigger customs duty for vehicles older than 10 years. However, little attention is paid to the improvement of transport logistics (e.g. stimulation of public transport, creation of bicycle lines, efficient routes for cars). The Ministry of Transport and Communications, Ministry of Internal Affairs and StateStandard are the main agencies responsible for the transport policy development and implementation.

According to the national regulation automotive fuel efficiency (the average is 8-9 L/100km) depends on the type of the vehicle and differentiated import taxes introduced are based on the vehicle age. Environmental part of the fuel tax is relatively low and does not influence its price. There is a governmental support to domestic biofuel production, but the fuel's quality is rather low. Due to the absence of domestic LDVs production majority of the vehicles is imported from EU, Japan and Korea. New cars imported by official dealers have to meet Euro 2 regulation and for second hand cars no more than 160 g of CO<sub>2</sub> emissions per km is allowed. Monitoring of

vehicles' emissions takes place during the border vehicle inspection. Even auto importers are obliged to publish information on the vehicle modes imported their emission values are not indicated. Early a number of imported vehicles is increasing (up 15.0%), accompanied by a stable positive trend in growth of new cars import (up to 30% annually) and cars from 3 to 7 years, resulting in the reduction of the amount of cars older than 7 years.

There is a minor activity related to fuel economy in the mass media and it is difficult to find information in open sources such as internet, specific magazines and newspapers. Public awareness or discussion on pollution, public health, transport efficiency, fuel economy and eco-driving are almost absent. Vehicle labelling system has been developed but not yet applied to the practice. According to the experts current level of pollution on the roads is dangerous for the public health. The political situation is difficult, NGOs are not many and only few of them are competent; there is low understanding of the interaction of transport and environment. Vehicle utilization system is not introduced and there are only some attempts to utilise used tyres.

### ***Republic of Bulgaria***

National Energy Efficiency Strategy defines the level of energy efficiency in transport sector and ways of its achievement. Up to the date improvement of the vehicle efficiency and decrease of the automotive emissions attracted less attention from the government than current economic crisis, but fuel economy related discussion randomly takes place in the media. However, Bulgaria fulfils all conventions and agreements of EU related to the vehicle and fuel efficiency. The Ordinance regulating the GHG emission standard for newly imported LDVs requires the official average fuel efficiency for Bulgaria to be updated annually in accordance with the Decision no. 1753/2000EC of the EU Council. Labelling of newly imported LDVs vehicles also takes place according to this ordinance. There are attempts to start domestic production of vehicles, but majority of automobiles is still imported from EU, Japan, Korea and USA.

Development and enforcement of national GHG/fuel economy regulations is expected after the launch of national vehicle production. The State Agency Automobile Administration will be the main institutions involved in these standard setting and implementation. Higher registration fees for the second-hand vehicles in comparison to new ones are introduced to limit the import of old vehicles. In addition national vehicle importers and producers are obliged to publish information on all vehicle modes they import/produce. There is a minor governmental support to the fuel economy related research and development, but many private companies, universities and researchers are involved in work in this area. Predominantly private companies are dealing with the buyback of older vehicles for scrapping and utilization. In several big cities congestion zones are established.

### ***Republic of Croatia***

National Law on Environmental Protection and Strategies on Energetic Development and Energy Efficiency include provisions for energy efficiency in transport sector. Though these documents are adopted they are not enforced and national authorities demonstrate the lack of willingness to comply with these laws and adopt fuel economy measures. However, fuel economy perceived as an important issue is quite often discussed in the national media. The Croatian Standard Institute, State Office for Metrology, Vehicle Center of Croatia and the Ministry of Internal Affairs are the main institutions responsible for the introduction and enforcement of the vehicle emissions regulations.

Vehicle taxation in Croatia is based on the engine size; therefore taxation based on CO<sub>2</sub> emissions would be also appropriate. Fuel tax constitutes more than 50% of the fuel price, which makes fuel relatively expensive. As country produces only components and parts for LDVs majority of the vehicles is imported from EU, Japan, Korea, Russia, USA and India. Import restrictions are introduced for the vehicles older than 7 years and without functioning catalytic converters. Country is in the preparation phase for the production of electric vehicles.

National GHG emission standards are developed in accordance with the United Nations Economic Commission's for Europe (UN-ECE) regulations and EU norms and depend on a type of the vehicle and year of manufacture. Certificate regulations are applied for new vehicles imported. According to the law national vehicle importers are obliged to publish information on modes imported. Since 2004, as a part of standard technical inspection, ECO-test is performed to determine vehicle gaseous emissions. To pass ECO-test inspection (depending on the type of the engine) vehicle must meet following standards: CO<3,5% (without catalyst) and CO<0,3% (with catalyst).

A program of “selling” used vehicles for scrapping is fully operational and when buying brand new vehicles price of a new car can be decreased by “selling” used car (for scrapping) for certain value. The Croatian Automobile Club is promoting more efficient vehicles and fuel quality control at the fuel stations and provides explanations on best tire pressure. It also organizes campaigns to make cars greener and promotes training of young drivers to raise public awareness on eco-driving.

### ***Republic of Estonia***

The National Energy Efficiency Strategy which will also cover transport sector is under parliamentary discussions. Vehicle efficiency and automotive emissions have low importance on the political agenda and rarely discussed in the mass media. Currently fuel economy and fuel consumption are regulated by the tax policy. In Estonia only fuel tax is available and it already reached maximum EU level (around 60% of the total retail fuel price). There is no vehicle tax, neither for new nor for second hand vehicles. Due to the absence of the domestic vehicle manufacturing vehicles are imported from EU, USA, Japan and Korea. Vehicle fleet is not too old and consumers prefer to switch from buying powerful large cars to smaller more efficient ones. However, a share of relatively inefficient cars is still high as many people have old cars with higher fuel consumption which were popular 10 years ago (such as sport vehicles) and vehicle stock renewal process is rather slow.

National fuel economy/GHG standards are not adapted and no governmental decision was indicated for their development in the nearest future. Country specific vehicle import restrictions are not introduced, only those adapted on EU level. Automotive fuel economy labelling, public information and awareness raising on fuel economy and governmental support to the research and development of alternative fuels are also missing. Neither there is an industry reporting requirements on the vehicle produced/imported to the country. Political decision was taken in Tallinn related to the promotion of hybrid vehicles through free parking, but then it was cancelled due to too many hybrids purchased. However, a programme of free charging of electric vehicles is operating in Tallinn. The Ministry of Economy and Communications is the main institution involved in the national fuel economy regulations.

### ***The former Yugoslav Republic of Macedonia***

National Energy Efficiency Strategy referencing climate change mitigation doesn't consider transport sector. Recently adopted “Regulation on a singular approval of a vehicle” (OG if RM, No. 16/2010) demonstrates that limitation of automotive emissions becomes an important issue in the country, but this regulation only sets emission standards for the vehicles and does not include GHG emissions limit values. Presently there is some overlap/gap in responsibilities on regulation of GHG/emission standards for vehicles. The Ministry of Environment and Physical Planning is in charge of GHG emissions control, while the Ministry of Economy sets emission standards for vehicles. Once the authority is precisely determined, GHG emissions from vehicles and transport sector will be properly addressed. CO<sub>2</sub> emissions (g/km) of new vehicles will be regulated by the Ministry of Economy.

Even domestic HDVs production is developed, LDVs are still largely imported from EU, Japan and South Korea, given that they all fulfil EU vehicle emissions standard. This can be certified through the national system of industry reporting where vehicle importers are obliged to post information on vehicle modes put on the market. There used to be an import restriction allowed import of vehicles only meeting Euro 3 standard and higher, however, recently it was cancelled and import of older vehicles was resumed. This was decided due to the economic crisis and lack of the appropriate national financial schemes allowing purchase of new cars. Imported old vehicles are subject to taxation, but current taxation system does not provide incentive for the improvement of fuel efficiency in transport. Though government promotes alternative fuels through subsidising of the production of biodiesel. Buy-back scheme for vehicles is only arranged by DACIA.

## **Georgia**

Besides the fact, that energy efficiency is considered as one of the most important priorities in governmental policy, there have not been taken practical steps for its promotion in Georgia. Work on the Energy Efficiency Act in Georgian Parliament, which was directed by United States Agency for International Development (USAID) and by the Ministry of Energy of Georgia is delayed because of the political resistance. No separate policy document on fuel and vehicle efficiency is developed.

Transport is the greatest contributor to CO<sub>2</sub> emission in Georgia (95% of air pollution comes from transport). Environmental awareness of the public and decision makers is rather low; public information campaigns are only organised by national NGOs - CENN, Safedrive and Green Auto-club. Georgian media covers fuel economy issues with the lack of competence - there are not so many publications on the issue. Introduction of mandatory LDV's technical inspection (and standards related to GHG emissions) is postponed till 2015. Vehicle emissions standards are subjects of evaluation by the Ministry of Environment Protection and Natural Resources. Road police of the Ministry of Internal Affairs (this department is not operational now) is responsible for the control and enforcement of these standards. There are no regulations or restrictions connected with the environmental protection or road safety, while vehicles' custom duty. Plans of the government for the introduction of national fuel economy/GHG emission standards, automotive fuel economy labelling and incentives for cleaner vehicles are not defined. Reporting of vehicle importers on the vehicle modes imported is not introduced and there is no restriction on the import of old vehicles. Due to the absence of domestic vehicle production automobiles are imported from EU, USA, Japan, Korea and Russia.

Partnership memorandum between "Georgian Green AutoClub" and the Ministry of Environmental Protection and Natural Resources – "Partnership for Environment Protection" will be the first step in governmental support to the fuel economy issues. "Green AutoClub" is working on the car emissions control and one of the main goals of club's activities' is to raise public information and awareness on "eco-education" and fuel and energy efficiency in transport sector. Organization implements activities foreseen by financed projects, as well awareness-raising in the media and promotion of information on "eco-driving".

## **Republic of Hungary**

Climate change issues are covered by the National Energy Strategy considering transport sector due to the country's high dependency on fossil fuels. Fuel efficiency is also an important issue because of the increasing price and high share of imported fuels. The Ministry of Transport, Communication, and Energy was previously responsible for the vehicle emissions regulations setting and implementation. Now the Ministry for National Development acquired its responsibilities. In general, fuel economy is a frequently discussed topic in the media especially in popular scientific programs and articles.

The exhaust emissions of road vehicles are regulated from the early 80's as highest volume of air pollution in big cities comes from transport. National fuel economy/GHG emission standards for LDVs and automotive emission levels are regulated according to the UNECE and EU Exhaust Emission Regulations and therefore import of old vehicles is indirectly restricted. The official average CO<sub>2</sub> emissions of a vehicle (gCO<sub>2</sub>/km in case of the European driving cycle) is calculated on a yearly basis, but only for the new registered passenger cars. As customer has to be informed on the fuel consumption and CO<sub>2</sub> emission of vehicles measured according to EU Regulations, national auto importers and producers are obliged to publish technical data related to the vehicles. Hungary being a vehicle producing country (such as Suzuki, Audi and Volvo) also imports large amount of vehicles from EU and Japan.

High fuel taxes have a determinant effect on the composition of the vehicle fleet and relatively high first registration tax for LDVs also impacts the state of the fleet. To provide incentive for cleaner vehicles reduced registration fees are introduced for hybrid and electric vehicles. Introduction of clean alternative fuels and retrofit particulate filters are supported by the government and the low emission zones are under design in Budapest. Sales requirements for the use of certain types of fuel efficient technologies are also under the process of introduction. Many public information and awareness raising campaigns covering eco-driving programs and fuel efficient maintenance of vehicles were organized in the country in the near past. Valid labelling system exists in relation to the vehicle emission categories (EURO I-V).

## ***Republic of Kosovo, under UNSCR 1244***

The Long-term National Plan for Energy Efficiency (2009-2016), approved by the Ministry of Energy and Mining includes transport sector and measures for improving energy efficiency in transport. The importance of the automotive emissions and energy efficient vehicles is highlighted in the Draft Strategy of Air and Action Plan for Air Quality planned to be approved by the government in 2010. The Administrative Instruction for discharges of gases from vehicles, where the preliminary gas emission standard for LDVs is drafted, now is under discussion on the ministerial level; it is expected to be adopted on the governmental level afterwards. Otherwise incentive systems for cleaner vehicles and labelling of automotive fuel economy are not introduced.

The Ministry of Environment and Spatial Planning jointly with the Ministry of Transport and Telecommunications are responsible for the transport policy implementation and setting of the vehicle emission standards. According to the Administrative Instruction and Restrictions of Kosovo import of the vehicles older than eight years is banned and national vehicle importers are obliged to publish information on the vehicle modes brought to the country. As country does not produce vehicles domestically they are imported from Western European countries. Under National Plan for Energy Efficiency it is planned to draft an Administrative Instruction for the use of bio fuels. The Draft Air Strategy and Action Plan for Air Quality envisaging public information campaigns on the harmful effects of the transport related emissions is expected to promote cleaner means of transportation (public transport, cycling, walking) and fuel-efficient driving. Driving schools are planned to be involved as well - for them to integrate the issue of air pollution and measures of its mitigation in their curricula. National Plan for Energy Efficiency also includes awareness campaigns aimed at the improvement of the roads quality, use of fuel efficient vehicles, promotion of public transport, use of bio fuels and introduction of limitations of use of public and private vehicles with high emissions of pollutants.

## ***Republic of Lithuania***

The draft Lithuanian Transport and Communications Strategy includes the Programme for Increasing the Energy Efficiency in the Transport Sector foreseeing concrete informational measures and instruments and falling under the responsibility of the Ministry of Environment, Ministry of Transport and Communications and Lithuanian municipalities. Energy efficiency in transport sector is also indicated in the National Strategy for Energetics. However, there is no governmental decision indicated on setting of national fuel economy/GHG standard. During the obligatory regular maintenance inspections it is only checked whether the CO<sub>2</sub> emission level does not exceed the level approved by the manufacturer. Common vehicle EU standard is applied for the automotive vehicle labeling and requires data on the average fuel consumption and CO<sub>2</sub> emission level. EU Eurovignette directive (1999/62/EC) provides guidance on the road charging and requirements to use renewable fuels.

Although vehicle emissions and fuel efficiency are quite new topics of discussions in Lithuania, public awareness is rapidly growing and more efficient and economic vehicles are gaining popularity due to growing congestion in big cities. Fuel economy is widely discussed in the media, including professional scientific publications, internet and popular channels targeting specific automotive audience. As the result eco-driving is gaining more importance (incl. private initiatives). High fuel taxes resulted in the growth of fuel prices for the end-users, and therefore reduced the fuel demand and accelerated the search for cheaper fuel alternatives such as liquefied petroleum gas. Currently there are no congestion zones in cities; however, the parking fee is used to reduce traffic in three biggest Lithuanian cities. Lithuanian capital Vilnius is planning to establish a special congestion zone at the old town.

In Lithuania fuel economy is a question of mentality – powerful and sport cars are exceptionally popular. There is also a high share of used cars in Lithuania as it is large re- exporter and importer of the second hand and brand new automobiles, coming from Western Europe, USA, China and India. Common EU requirements are applied to all imported new vehicles and no specific national requirements are placed on the imported used vehicles. Currently consumers started to switch to the cheaper travel options including the use of less fuel per drive. It is necessary to advertise purchase of smaller cars. Provision of information on the second hand cars is also important, as at the moment there is only information on new cars as vehicle importers and producers are obliged to publish information on the categories, manufacturers and models of the vehicles sold.

Improved management of the urban traffic and urban transportation systems is needed. Automated street lightning traffic system was recently introduced in Lithuania. Currently it is not working to the full, but at some

corridors travel time was already reduced by 15% and significant reduction in CO<sub>2</sub> emissions was achieved. Intelligent transport systems and smart traffic management are as important as a sustainable lifestyle – it is necessary to promote eco-driving and reduced need for mobility. Alternative means of public transport should be improved as currently they are not attractive and convenient for the public. This will presumably decrease the use of private cars.

### ***Republic of Moldova***

In April 2010 the Government of Moldova has approved the draft Law on Energy Efficiency. Under this legislative act will be developed and approved a National Program on Energy Efficiency which will include transport sector. Currently several working groups under the Ministry of Economy, Ministry of Environment and Ministry of Transport and Road Infrastructure are responsible for the improvement of vehicle fuel efficiency and adaptation of European fuel economy regulations as by now Moldova is guided by CO<sub>2</sub> emissions regulations developed in the former USSR. National GHG emission standards are at the research and development stage by the Institute of Ecology and Geography of the Academy of Sciences of Moldova. Fuel economy is discussed in the media only by the NGOs initiative as the result of lack of local fuel resources and continuous increase of fuel prices.

Due to the absence of domestic vehicle production, LDVs are imported from EU, China, Russia and Japan. Country prohibited import of cars older than 7 years and heavy vehicles older than 10 years. Currently, the fees applied to the imported cars are based on the engine's volume. Industry reporting on the vehicle modes imported, mandatory labelling of the automotive fuel economy and sales requirements for the fuel efficient vehicles are not introduced. However, the incentive systems for cleaner, more efficient vehicles will be developed in the nearest future as a condition for EU accession. Transposition of Directive EC/2003/30 of the EC on the promotion of the Use of Biofuels or Other Renewable Fuels for Transport into the national regulatory framework is expected by the end of 2010 according to the Business Plan of the Ministry of Economy.

Public information on the fuel economy will be also included into the National Energy Efficiency Programme. Awareness raising campaign will be organized by the Agency of Energy Efficiency (to be established in 2010). Also in 2010 Automobile Club of Moldova will carry out various actions of Make Roads Safe Campaign in Moldova (including advertisement of policy on fuel efficiency to raise public awareness).

### ***Republic of Montenegro***

In Montenegro a working group on the Strategy on Energy Efficiency was recently established. Transport sector will be an essential part of this document, which is planned to be adopted by the Ministry of Economy by the end of 2010. Until now, there is no official national fuel economy or GHG emission standards in place for LDVs. Once received the proposal for the development of such standards or following the development of EN/ISO standard, the Institute for Standardization of Montenegro will take responsibility for their development while line Ministries (by including these standards in the relevant regulations) will make the relevant standards compulsory for implementation. As fuel economy is a cross-institutional issue in the country several institutions bear control for its promotion and enforcement.

Montenegro does not have vehicle manufacturing facilities and majority of the vehicles is imported from Western Europe. Country has introduced legislation allowing only import of the vehicles meeting Euro 3 standard or higher. Otherwise import of old vehicles is banned – imported vehicles should be less than 3 years old. Also import restrictions on vehicles without functioning catalytic converters and subsidies/reduced import or procurement taxes for cleaner vehicles are used as incentives for the promotion of energy efficient vehicles. However, reporting of the vehicle importers and automotive fuel economy labelling systems are still absent. Governmental support to the alternative fuel research and development is also missing. Public information and awareness campaigns on vehicle efficiency are run in Montenegro in cooperation with REC Montenegro, the Ministry of Economy and Ministry for Spatial Planning and Environment.

## **Romania**

The Ordinance no. 22/2008 “On energy efficiency and promotion of the use by the end users of renewable energy” enables measures for the improvement of energy efficiency in means of transportation (introduction of tire pressure control systems, devices and additional equipment to improve energy efficiency of vehicles, use of fuel additives and high power lubricating oils) and soft measures including combination of public and private transport, car sharing and car free days. Transport Minister Order no. 508/2008 “On national sustainable transport strategy” and Governmental Decision no. 163/2004 also require improvement of energy efficiency in transport sector. Several legislative acts were also introduced to promote use of biofuel and other renewable fuels in transport. The Ministry of Environment, Ministry of Finance, Ministry of Transport and Ministry of Economy, Commerce and Business Environment are responsible for the implementation of fuel economy standard and regulations in the country.

The Emergency Ordinance no. 50/ 2008 defines the size of the pollution (environmental) tax for vehicles which is calculated according to the automobile’s technical characteristics (such as engine capacity and year of production) and based upon the vehicle’s pollutants (including CO<sub>2</sub>) emissions. Regulation no. 715/2007 “On type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles” and Regulation no. 443/2009 setting emission performance standards for new passenger cars serve as a reference for the setting of national fuel economy/GHG standards and mandatory reporting of the vehicle industry.

Scrapping scheme introduced in Romania in 2005 providing customers with 900 euro for the vehicle older than 10 years has the dual aim of stimulating the automobile industry and removing inefficient, high emissions vehicles from the road. However, this programme initiated a rebound effect when people started to sell old unused cars and buy instead new ones, which caused additional driving and increased air pollution. In 2004 an automotive fuel economy label was introduced showing the official fuel consumption and CO<sub>2</sub> emissions of vehicles. This information provided by manufacturers, importers and car dealers allows customers to make informed choices. LDVs are only produced by Dacia recently acquired by the Renault, while the rest of the automobiles is imported from Western and Central Europe, Japan, Korea and USA.

Public awareness is relatively low in Romania – customers are more concerned with the engine’s power and size and vehicles’ price than its CO<sub>2</sub> emissions. Fuel economy will gain more attention from the public when Dacia-Renault starts production of electric vehicles in 2011. However, vehicle promotional literature used in marketing and advertisement such as technical manuals and brochures already provide necessary technical information on the vehicles to consumers. There are several problems related to the legislation enforcement and non-cooperation with authorities as almost no attention is given to the fuel economy problems by the government.

The Terra Millennium NGO develops public information campaigns promoting public transport in Bucharest. Other NGOs promote bicycle’s use and intermodal ways of transport. In addition, the Polytechnic University of Bucharest and Research Center on Transportation Design conducted a research project which proposed and analyzed technical, economic and financial approach to the road congestion charging in central area of Bucharest.

## **Russian Federation**

In Russia fuel economy legislation is adopted (Energy Strategy of Russian Federation) and information on vehicle emissions and their impact on the environment and public health is publicly available (currently automotive emissions constitute 38% from the total air pollution and 90% from the total vehicle emissions due to the considerable growth of the vehicle stock during last 10 years). There are a few professional magazines – e.g. Oil and Gas where open information on fuel economy is published. Governmental control and monitoring of the vehicle emissions and vehicle emission regulations implementation are fully operational. GOST R 41.83-2004 providing unified emission limit standard for vehicles is based on the engine’s fuel consumption. Transport sector being one of the largest sources of emissions in the cities is an essential part of National Energy Strategy aiming at 40% increase of energy efficiency in transport. Fuel economy is widely discussed in the media. However, in Russia it is mostly a political issue. Rostehregulirovaniye is the main institution responsible for the vehicle emission standards implementation and control.

Country imports EU vehicles in the Western part and Japanese, Kazakh and Korean - in the East. From 2010 LDVs imported to the country and domestically produced should meet Euro 3 standard and higher and Euro 4 standard will be adopted in the nearest future. Vehicle import restrictions refer to both import taxes (that depend on the

vehicle's age and type of the engine), and the level of emissions (from the 01.01.2010 vehicles with the level of emissions lower than those set by the Government Decision from 12.10.05 № 609 (in its edition from 26.11.2009 № 956) are forbidden). In Russia local authorities bear responsibility for the quality and environmental characteristics of the fuel used in their municipalities. However, national automotive fuel economy labelling programme and public information campaigns on the issue are not available. The federal program of buying back and recycling of old vehicles in Russia was recently started and many questions were raised about its economic efficiency. There are also federal research programmes devoted to the solution of existing environmental problem caused by transport system and used vehicles, and studies are made in different fields including alternative energy resources and nano-technologies.

### ***Republic of Serbia***

National transport sector is regulated by the Ministry of Infrastructure, Ministry of Mining and Energy, Ministry of Infrastructure and Spatial Planning, Ministry of Environment, Energy Efficiency Agency and Agency for Road Traffic Safety. Many associations and universities are also involved. In 2005 the country has signed the Energy Community Treaty for SEE and recently elaborated an action plan to improve energy efficiency by 9% by 2016. Law on rational use of energy is under preparation. Transport sector is addressed under National Energy Efficiency Action Plan, National Strategy for Sustainable Development and Energy Sector Development Strategy of the Republic of Serbia by 2015, but development of energy efficiency in transport sector in accordance with EU Directives is still needed. These documents contain a list of energy efficiency measures and minimal energy efficiency standards that should be implemented in transport sector. In general, reduction of automotive emissions and more efficient vehicles play an important role on the national agenda as a part of mandatory harmonization of national vehicle emissions standard with EU. Introduction of the country specific automotive fuel economy/GHG standards is expected in the nearest future. Decree to promote bio-diesel is envisaged by 2011 as a very good potential for biofuel is available in the country. Liberalisation of oil market is expected to happen in 2011 and oil producing companies will be obliged to stop production of leaded gasoline. Currently gasoline taxes and prices are relatively high and vehicles are taxed according to the engine size.

There is only one domestic car manufacturer – FIAT Serbia in Kragujevac which used to be former company Zastava. However, there are few bus producing companies like Ikarbus in Belgrade, Nis Ekspres in Nis, Neobus in Novi Sad and FAP in Priboj (FAP is also producing trucks). Otherwise vehicles are imported from Germany, France, USA, Japan, Korea and China. According to the state requirements all imported second hand vehicles should meet minimum Euro 3 standard and there are also import restrictions introduced for the vehicle without functioning catalytic converters. Government started subsidizing of vehicles working on liquefied natural gas, hybrid and electric automobiles by 1000 EUR to promote their production and use in the country (10 million EUR fund was created). Industry reporting on the vehicle modes imported/produced in the country is not fully developed yet.

NGO sector is relatively active in the country – there are several transport projects implemented and fuel economy topic become more and more present in the media. Research and development is subsidised by the Ministry of Science and Technological Development through a special programme on energy efficiency and renewable energy. National Eurostat procedures are in the process of establishment to provide better quality of the data. Targeted credit lines by EBRD, KfW, EIB for HDVs and agricultural cars were recently introduced. Vehicle recycling programme for old cars is in operation. However, public information and awareness raising campaigns on the issue are still missing as well as sales requirements for fuel efficient technologies and vehicles.

### ***Republic of Turkey***

Turkey's Climate Change Action Plan is being developed to formulate country's strategies and policies on climate change. National Energy Efficiency Law is in force and covers transport sector, but it does not include specific targets for the reduction of CO<sub>2</sub> emissions just recommendations. The Turkish government is in the process of development of national action plan and formulation of CO<sub>2</sub> reduction goals covering transport and building sectors. Campaigns on eco-driving and fuel efficient vehicles are organized by private companies to demonstrate the importance of automotive emissions and more efficient vehicles on a national level and the government is

planning to include eco-driving in respective law. Fuel economy is also widely discussed in the media. Therefore, consumers are informed about fuel economy and tend to consume less fuel and purchase smaller cars.

Fuel price is high due to the high fuel tax which constitutes more than 2/3 of fuel price. The vehicle tax is also high (especially for passenger cars having engine size larger than 600 cc) and calculated according to the engine's size. The Vehicle Labelling Directive was transposed into national legislation in 2009 (with Euro 4 vehicle emissions standard official adaptation) and information on the automotive emissions and vehicle imports and exports is publicly shared through special website of the Ministry of Industry and Trade. This ministry in cooperation with the Ministry of Environment and Forestry are responsible for the vehicle efficiency and vehicle emission regulations implementation and enforcement in the country. However, national vehicle efficiency regulations contain only recommendations without real values given.

There are 15 manufacturers producing passenger cars, LDVs and HDVs plus Japanese and Korean producers. Majority of imported cars comes from EU. Turkey has a right not to import used vehicles from EU according to the custom union decision until accession to EU. GHG standards are intended to be developed in the nearest future. Otherwise, Turkey is following EU vehicle emissions standards. Sales requirements for the fuel efficient technologies and incentive systems for the promotion of cleaner, more efficient vehicles are not introduced.

Turkey is producing ultra sulphur fuel which was previously sold to EU. Fuel utilised in the country had much higher sulphur content as consumers did not know about its existence – no adequate labelling of the fuel quality was available. Market was not developed - education of consumers and government was needed to grow domestic demand.

## ***Ukraine***

Fuel economy situation in Ukraine is similar to other former Soviet Union countries. Due to EU neighbourhood policy and prospects to enter EU the policy and legislation on fuel economy and transport are close to European. Even an action plan was adopted after signing of the Kyoto protocol to decrease CO<sub>2</sub> emissions – it relates to energy security and introduction of alternative fuels but not to transport sector itself. Though the country is missing national Energy Efficiency Strategy there is a state economic programme on energy efficiency for 2010-2015 aiming at the decrease of national energy consumption. As development of biofuel is a priority for the government, its research and production will be facilitated and supported - in 2009 government requested National Academy of Science to develop state scientific-technical program of production and use of biofuel. The Ministry of Transport, Ministry of Health and Ministry of Environment are the main agencies involved in the national fuel economy and transport regulations.

In Ukraine the biggest concern is the roads quality which impacts the vehicles and increases amounts of the on-road CO<sub>2</sub> emissions as vehicles are not able to move at optimal speed outside of the cities. Economic growth has led to increased number of cars, traffic problems and levels of pollution in the cities (70% of pollution in Kiev is due to the transport and there is a need to limit the traffic inside the city). Ban on the import of the vehicles older than 8 years was cancelled in 2007 as the result of Ukrainian membership in the World Trade Organization (WTO), while significantly higher registration fees were imposed for older vehicles. Only vehicles meeting Euro 2 and higher standard are allowed to be imported to the country and import tax is relatively high for such vehicles. Country also plans to introduce Euro 3 standard from July 2010 for new imported and domestically produced vehicles, Euro 4 standard from July 2011 and Euro 5 from January 2014. Industry reporting mechanism is at place and importers publish information on the vehicles' engine size. Many LDVs are produced domestically at two factories: ZAZ (Zaporigga car factory) and LuAZ (Lutsk car factory), while ZAZ being the biggest car manufacturer partners with GENERAL MOTORS to produce OPEL, DAEWOO, CHEVROLET in Ukraine. Otherwise vehicles are imported from Europe, Russia, China, Korea, Japan and USA.

Euro 3 fuel quality standards are mandatory in Ukraine and Euro 4 will be introduced from 2011. Quality of diesel is relatively low and imported vehicles have problems with running on this type of diesel during 3 years of the guarantee term. Liquid petroleum gas is used by private persons but is not included into the national transport strategy. Price of the fuel is relatively low, which diverts people from thinking about fuel economy and quality of the fuel. GHG emissions standards and regulation on fuel consumption per km are old and require modifications. In general, state policies are not favouring fuel economy, public awareness is low and mass media is not targeting this issue. Governmental support of cleaner, more efficient vehicles, automotive fuel economy labelling and road pricing is not available. Several urban transport projects were initiated by NGOs on the health and air pollution.

## ANNEX IV: SUMMARY OF PANEL DISCUSSION

- **Trade off between weight and road safety standards** might be taking place in many developing countries where manufacturers produce lighter vehicles through the removal of safety features of the vehicles – airbags or strengthened frames adding to the weight of the vehicle. However, it is possible to avoid any trade off between safety and weight of the vehicle with the use of current technologies. Even under mass production it is possible to make vehicles 5-7% lighter without affecting safety measures. It is much more difficult to address countries without road and vehicle safety standards and it is necessary to target emerging economies such as China and India. In the EU a compromise between weight of the vehicle and road safety is not possible as standards are already quite high and five stars safety rating according to Euro-NCAP rating is a must for all European countries.
- Even though fuel economy is improving worldwide absolute fuel consumption is constantly increasing and significant **rebound effect** takes place due to the fact that that money saved on the vehicles fuel bills are spend on additional long-distance flights and longer drives. Therefore it is required not only to aim at the achievement of fuel economy through application of modern technologies but change behaviour and driving culture affecting amounts of the travel and driving methods. It is possible to design transportation system in the way to avoid any rebound effect as it done in French **bonus malus system** taxing vehicles with high CO<sub>2</sub> emissions and rewarding vehicles with low CO<sub>2</sub> emissions. Diesel is perceived as a better choice per km in terms of fuel savings, but recent EC proposal to increase minimal diesel taxation in EU could take over gasoline taxation and provide bad incentive for the whole system. Provision of clean diesel in developing countries might be also an issue. In the future when fuel prices are higher rebound effect will take place in electricity market when people switch to electric cars and initiate increase of electricity consumption and subsequently its costs. **Strong price signal** should be kept to make people aware of the situation.
- **Hydrogen** is one of the future available technologies for better fuel economy but there is a concern related to the safety of infrastructure, especially hydrogen supply stations. In future hydrogen will be one of the key players, even it is difficult to introduce hydrogen engine for passenger cars, but it will be a good solution for a truck or big van driving on long distances at one time as big tank installation is required. Nevertheless, it is obvious that the production of hydrogen must be sustainable too.
- There is more potential for the construction of **hybrid truck** than fully electric HDVs as it is unrealistic to manufacture pure electric heavy vehicle due to the long distance covered. Second generation biofuel will help to address fuel economy problem in HDVs. Initiatives promoting fuel economy in LDVs will spin off to heavy and light commercial vehicles through the application of technologies used in passenger cars.
- **Central Asia should not be left un-noticed** even it is left aside in terms of EU integration and out of EU Neighbourhood Policy. Central Asia is a big oil exporter and fuel producer where gas and fuel are supplied for ultimately low price to vehicle owners. In this region change of standards and regulations and customers' behaviour and attitude is also necessary. Recently Central Asian countries became part of the NAMA elaborating strategies and plans for climate change mitigation.
- Problems with the vehicle efficiency regulation relate not to the regulation itself but to its **enforcement, public demand, willingness of authorities to push for it** as there is no interest among population. People buying second hand cars directly demonstrate their financial and fiscal incentives. Fuel economy regulations help to support economic prosperity as they contribute to the lower fuel demand and fuel prices. Some countries will face more difficulties with implementation than others and their economic situation should be taken into account during elaboration of the vehicle regulations. It is important is to focus on adoption and implementation of **road safety standards and fuel economy legislation** directly affecting the state of the vehicle fleet in the countries. Enforcement and monitoring of national regulations and standards play the key role in their implementation. Enforcement should be an international tool as fuel and vehicles are both export and import items and subjected to international trade rules which should be modified accordingly. Proximity to Europe and opportunity to join EU serve as

facilitating factors of the standard setting process. Both internal pressure coming from consumers and civil society and external pressure coming from international community are needed.

- The main growth of the vehicle stock is happening in developing countries and it is expected that more than half of vehicles in use in 2020 will be operating in emerging economies where fuel economy and vehicle safety standards are not applied to the full. It is important to think about these countries and introduce **cheap, attainable and efficient standards** and put pressure on producers to reach fuel economy.
- Availability of data on the vehicle fleet is as important as the introduction of vehicle standards. Countries need to know their fleet characteristic and import-export trends to create a sufficient **fuel economy baseline** as this data is not generally available. Only joining EU forced member states to create databases of their vehicles. In other countries there is a significant lack of information on fuel economy and amount of vehicles sold provided by state statistical offices. It is important to address these issues and introduce international tools facilitating **creation of national vehicles database** as good database is a prerequisite for the introduction of fuel economy regulations on the national level. It is necessary to fund projects devoted to the collection of background data related to fuel economy to create a baseline and start working with governments on the issue.
- **Impact of transport on public health** is as important an issue as the lack of enforcement. Reforms in transport sector should be linked with the issue of public health as it is necessary for governments to know how to improve public health in addition to coping with pollution and mitigation of climate change. The same approach could be used as the one dealing with the ozone hole: report issued in US demonstrated state spending needed on public health if ozone depletion continues, which turned to be too expensive. Case studies, best practices and reports are needed to demonstrate how fuel economy standards and road safety regulations can increase public health. Awareness of the society on the interconnection of public health and fuel economy should be raised. The Ministry of Health should be involved in fuel economy working groups to communicate health benefits of improved vehicle efficiency to the government.
- Each EU country has its own approach **to vehicle and fuel taxation**. Vehicle taxes differ significantly and depend on the charging of the emissions of gaseous pollutants (CO, HC, NOx) and/or CO<sub>2</sub> under national vehicle taxation system – in France owners of the vehicles with higher CO<sub>2</sub> emissions pay higher tax, while vehicles with lower CO<sub>2</sub> emissions are subjects to rebate; in Norway and Denmark vehicle taxes are high for all types of vehicles. Recently EU new member states have to increase fuel taxes due to the treasury problem and harmonization of taxation schemes in EU. Currently CO<sub>2</sub> emission taxes for vehicles are calculated using engine size/power, which is not perfectly correlated with CO<sub>2</sub> emissions and vehicle efficiency. Therefore, the system for vehicle taxation for CO<sub>2</sub> emission should be also amended in the nearest future.
- End of life regulation which is in place in EU and Japan is causing shipment of old vehicles to Eastern European countries and further to Africa and Asia. This regulation incentivises people to get rid of the old vehicle and not to deal with its recycling and comply with regulation. It is necessary to **enforce end-of-life regulation** to avoid shipment of outdated vehicles to developing countries.

## ANNEX V: WORKING GROUPS SUMMARY

Participants of the conference were divided in working groups and asked to answer following questions:

- Who do we engage and who are the key stakeholders in terms of fuel economy?
  - What actions and steps are needed on the regional, sub-regional and national levels?
  - What resources, skills and expertise are required to move the work forward?
- 
- Fuel economy is a complex cross-institutional issue covering a lot of state agencies, social and financial formations and independent stakeholders. In many countries the legislation is not explicit about institutions responsible for transport and fuel economy. State agencies involved include: Ministries of Economy, Environment, Transport, Industry, Health, Energy, Finance, EU Integration (in accession and candidate EU countries), Cabinet of Minister (in former Soviet Union countries), Energy Agencies, Scientific Research Institutions as well as departments of statistics and local authorities. Representatives of business sector involve: vehicle and fuel manufacturers, exporters and importers, commercial banks, insurance companies, automotive services, repair facilities and fuel producers. Civic society is represented by NGOs working on environment or transport, automobile clubs, associations of drivers and consumers.
  - Media is playing an important role in the awareness raising, formulation of public opinion and behaviour changes. International organizations and International Financial Institutions (IFIs) are the key players in promotion of fuel economy on a global level.
  - Actions and capacity building are needed on all levels: political, social, economic and financial. Legislation, policies and strategies to encourage fuel economy improvements and promote sustainable and clean transport should be developed in primary cooperation with national governments and integrated into national development strategies and initiatives. Research is important due to the absence of systematized data on fiscal or policy measures available. Therefore collection of the solid data and information is necessary for creation of a comprehensive baseline. Awareness raising and capacity building on the regional and national level for decision-makers and consumers will help them in making informed choices.
  - Technology and knowledge transfer and good practice exchange are necessary and can be done through the electronic, intergovernmental and inter-sectoral working groups and trans-boundary meetings. Platforms for discussion between the government, NGOs and private sector should be established and delegation of the focal points and coordinators on a regional and national level should be initiated. Education and pilot actions will help to demonstrate the benefits of fuel economy initiatives and promote eco-driving in auto-schools. Identification of national champions will also help to facilitate the process.
  - EU vehicle legislation and UNECE vehicle regulations are important throughout the world and, therefore should be further developed and straightened. EU and UNECE expertises in establishing similar standards should be disseminated. The potential to make an input into global fuel economy achievement of the existing international platforms – ENPI, FLEX, UNDP, UNEP, WTO, OPEC, IGOs, EC, Black Sea Initiative and Eastern Partnership should be further explored. Support from IFIs - EBRD, IRF, WB through carrying out of a cost-benefit analysis of the national transport strategies and policies and provision of favourable loans containing requirements for the reformation of transport sector are necessary. Business society, including vehicle manufacturers and fuel producers and dealers should give their support to fuel economy activities. NGOs should play a crucial role in pressuring government into fulfilment of its international and national obligations. New customs rules should to be adjusted to EU standards and association agreements with EU candidate countries should include transport and environment issues.

- International partnerships and assistance should play an instrumental role in the development of national taxation systems and economic incentives for cleaner fuel and vehicles, strengthening of air and fuel quality monitoring and improvement of the vehicle inspection and maintenance. Assistance in the data collection and analysis should have uniform approach. Baseline is extremely important to complete the data collection and follow up of the questionnaires is necessary to have solid data on each country. GFEI Toolkit is a great resource to be utilized - translations and regional trainings or workshops are needed.

## ANNEX VI: POLICIES FOR IMPORT RESTRICTIONS

<b>Country</b>	<i>Age-Cap Restrictions</i>	<i>Technology Import Restrictions</i>	<i>Emission Standards</i>	<i>Taxation schemes for imported used vehicles</i>	<i>Other</i>
Albania	No restrictions	No restrictions	No restrictions		
Armenia	Imported vehicles must be less than 15 years old	Import Restrictions on vehicles w/o functioning catalytic converters			
Azerbaijan	Plans to introduce restrictions on importing vehicles older than 5 years from Europe and older than 3 years from Russia and CIS countries			Diversified vehicle tax was introduced on 01.01.2007 depending on vehicle engine volume	From 01.01.2009 restriction was introduced for light duty vehicles not meeting environmental, esthetical and exploitation requirements
Belarus	No restrictions	No restrictions	No restrictions	Differentiated import taxes for vehicles newer than 3 years (from 0.6 euro to 0.75 Euro per 1 cm <sup>3</sup> of engine volume), for vehicles with age from 3 to 10 the tax is from 0.35 Euro to 0.6 Euro per cm <sup>3</sup> of engine, 10 to 14 years the tax is 0.75 Euro per cm <sup>3</sup> and for vehicles older than 14 years it is 2 Euro per cm <sup>3</sup> of engine's volume	
BiH	Cap on vehicles older than 7 years	Import Restrictions on vehicles w/o functioning catalytic converters	No restriction		
Croatia	No restrictions	Import Restrictions on vehicles w/o functioning catalytic converters	For vehicles M1 and N1 category: Euro IV for new vehicles and Euro III for second hand vehicles; for vehicles N2, N3, M2 and M3 category: Euro IV for new vehicles and Euro II for second hand vehicles		

Montenegro	Imported vehicles must be less than 3 years old	Import Restrictions on vehicles w/o functioning catalytic converters	The engine must be in conformity with Euro 3 standards	Subsidies or reduced import or procurement taxes for cleaner vehicles	
Russia	From 2006 import of Euro 2 vehicles is banned	No restrictions	Introduction of Euro 3 standard from 01.01. 2008 and Euro 4 from 2010 for new domestic and imported vehicles	30% tax increase on imported cars older than 1 year (from 1.2 to 2.8 Euro for 1 cm3 of engine volume) from 13.01.2009; 35% tax increase for on imported vehicles from 3 to 5 years old; for vehicles older than 5 year the tax is within 2.5 and 5.8 Euro for 1 cm3 of engine volume	Import of automobiles by parts will be banned
Serbia	No restrictions	Import Restrictions on vehicles w/o functioning catalytic converters	Minimum Euro 3 on imported vehicles		
Turkey	No restrictions	No restrictions	No restrictions		Restricted import of second-hand vehicles in accordance with EU-Turkey Association Council Decision 1/95 (Article 5); For M1 Class new vehicles, Type Approval Certificate is required
Ukraine	Restriction on importing vehicles older than 8 years from 01.01 2007 was annulated by decision of government N 760 from 27th August 2008	No restrictions	Only Euro 2 and higher standard vehicles are allowed to be imported and import tax is relatively high for such vehicles; Plans to introduce from July 2010 Euro 3 standard for new imported and domestically produced vehicles, Euro 4 standard from July 2011, Euro 5 from January 2014		

## ANNEX VII: LIST OF PARTICIPANTS

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