

**Promoting alternative automotive technologies
and alternative fuels –
some insights from the EU-project
“ALTER-MOTIVE”**

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Graz, 10.02.2010

ALTER-MOTIVE

- **Coordinator:**
- EEG, Vienna University of Technology

- **Partners:**
 - Stichting Energieonderzoek Centrum Nederland, The Netherlands
 - Eni Corporate University S.P.A., Italy
 - IREES, Germany
 - Wuppertal Institut für Klima, Umwelt, Energie GmbH, Germany
 - AEOLIKI Ltd, Cyprus
 - Black Sea Energy Center, Bulgaria
 - Association Rhônealpennergie-Environnement, France
 - Centre for Renewable Energy Sources, Greece
 - Stowarzyszenie The Kraków Institute for Sustainable Energy, Poland
 - Chalmers Tekniska Högskola Aktiebolag, Sweden
 - Forschungsgesellschaft Mobilität-Austrian Mobility Research, Austria
 - Sociedade Por Quotas CEEETA-ECO, Portugal
 - Det Økologisk Råd (EcoCouncil), Denmark

- **Duration:**
1 October 2008 - 30 April 2011

Objective of the Project **ALTER-MOTIVE**

- The **core objective** of the project ALTER-MOTIVE is to derive effective least-cost policy strategies to achieve a significant increase in alternative fuels and corresponding alternative more efficient automotive technologies to head towards a sustainable transport system.
- The **heart of this project** is an investigation of about 80 recently implemented successful case studies of pilot projects for marketing alternative automotive technologies (AAMT) and alternative fuels (AF).
- Furthermore, prospective **scenarios** on the future deployment of AF & AAMT will be developed, showing how to meet EU targets with least-cost for EU citizens based on efficient & effective policy mixes.



COUNTRY REVIEW REPORT

A report compiled within the European research project

**Deriving effective least-cost policy strategies for alternative
automotive concepts and alternative fuels-ALTER-MOTIVE**

Intelligent Energy – Europe (IEE), STEER
Contract no. IEE/07/807/SI2.499569

(work package 2 – deliverable D3)

By
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Energy Economics Group (EEG), Vienna University of Technology

December 2009

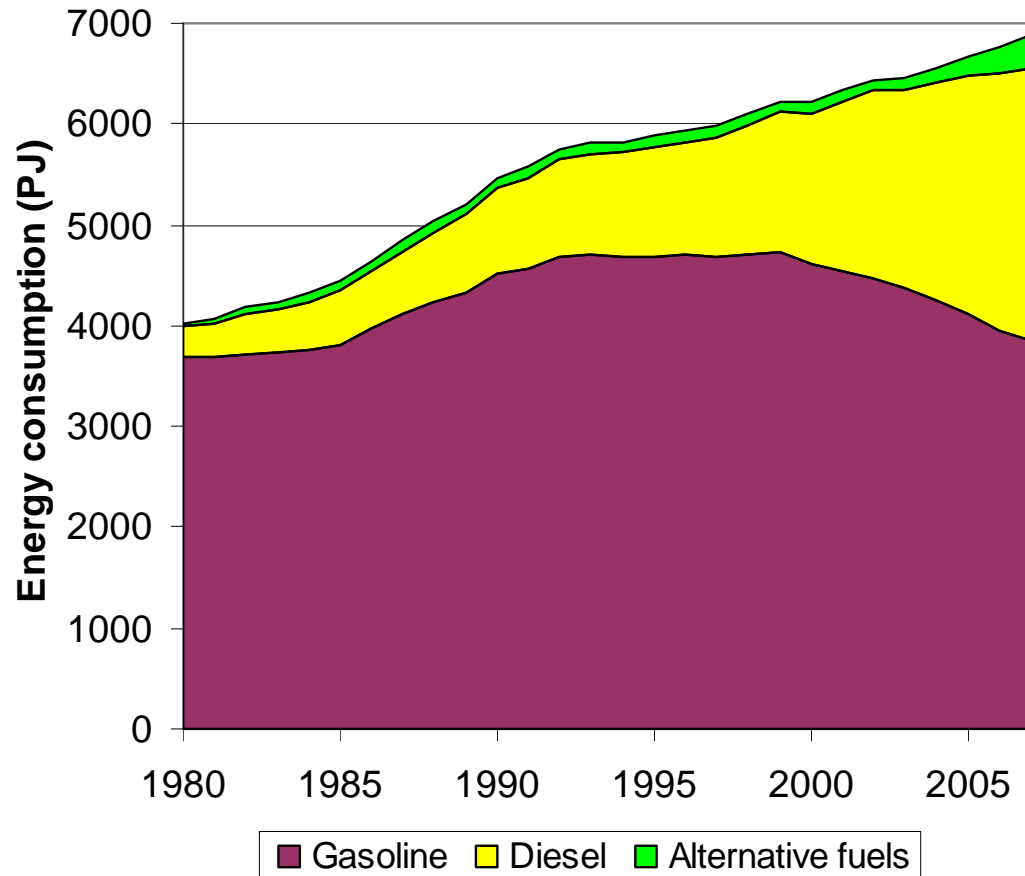
www.alter-motive.org

Cross-country comparison of the major indicators in EU

In detail the development of the following features is documented:

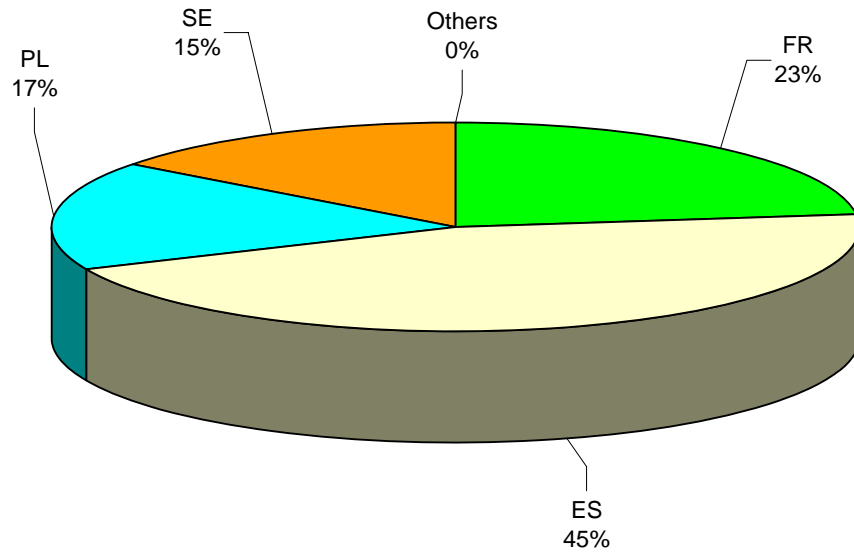
- **Amount of fuel used** (*energy consumption of passenger cars*)
- **Biofuels consumption and production,**
- **Fuel price,**
- **Vehicle stock** (*including the number and type of vehicles*),
- **Travel activity** (*vehicle-km driven*),
- **Fuel intensity** (*litre/100 km*)
- **Policy instruments** implemented (*types of taxes, tax levels and tax incentives, CO₂-dependent policies, subsidies...*).

Energy consumption of passenger cars



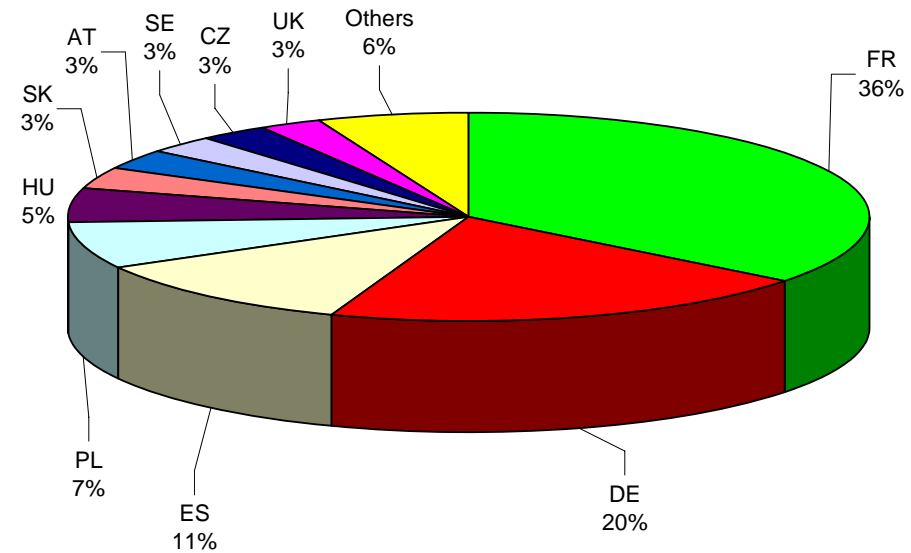
Energy consumption in car passenger transport in EU-15 by fuel, 1980 – 2007

Bioethanol production in EU-27



Country shares of bioethanol production 2003 in EU-27 countries

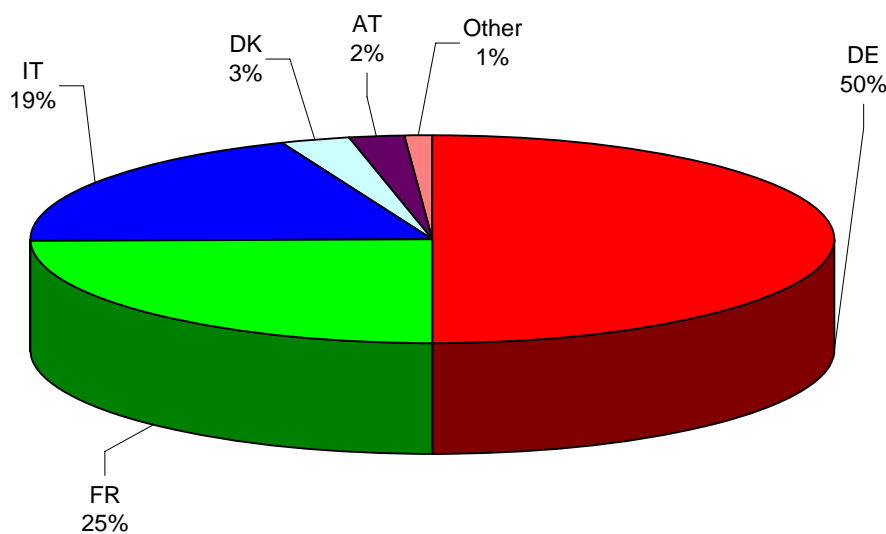
9 PJ



Country shares of bioethanol production 2008 in EU-27 countries

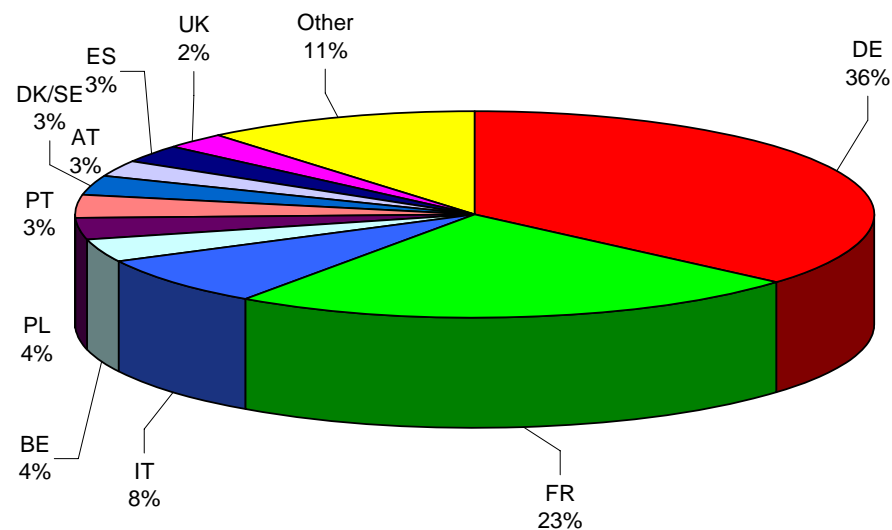
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Biodiesel production in EU-27



Shares of biodiesel production 2003 in EU-27 countries

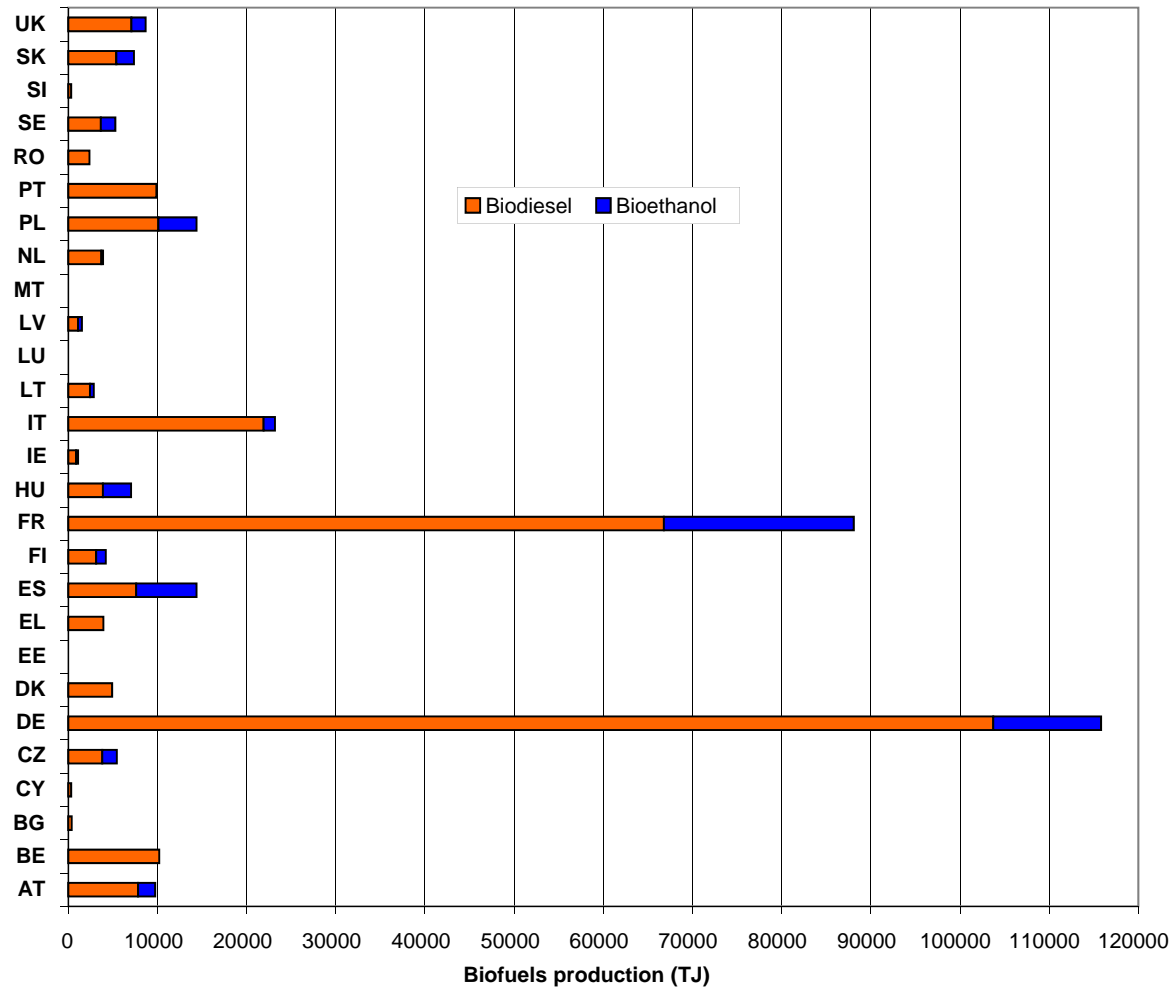
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Shares of biodiesel production 2008 in EU-27 countries

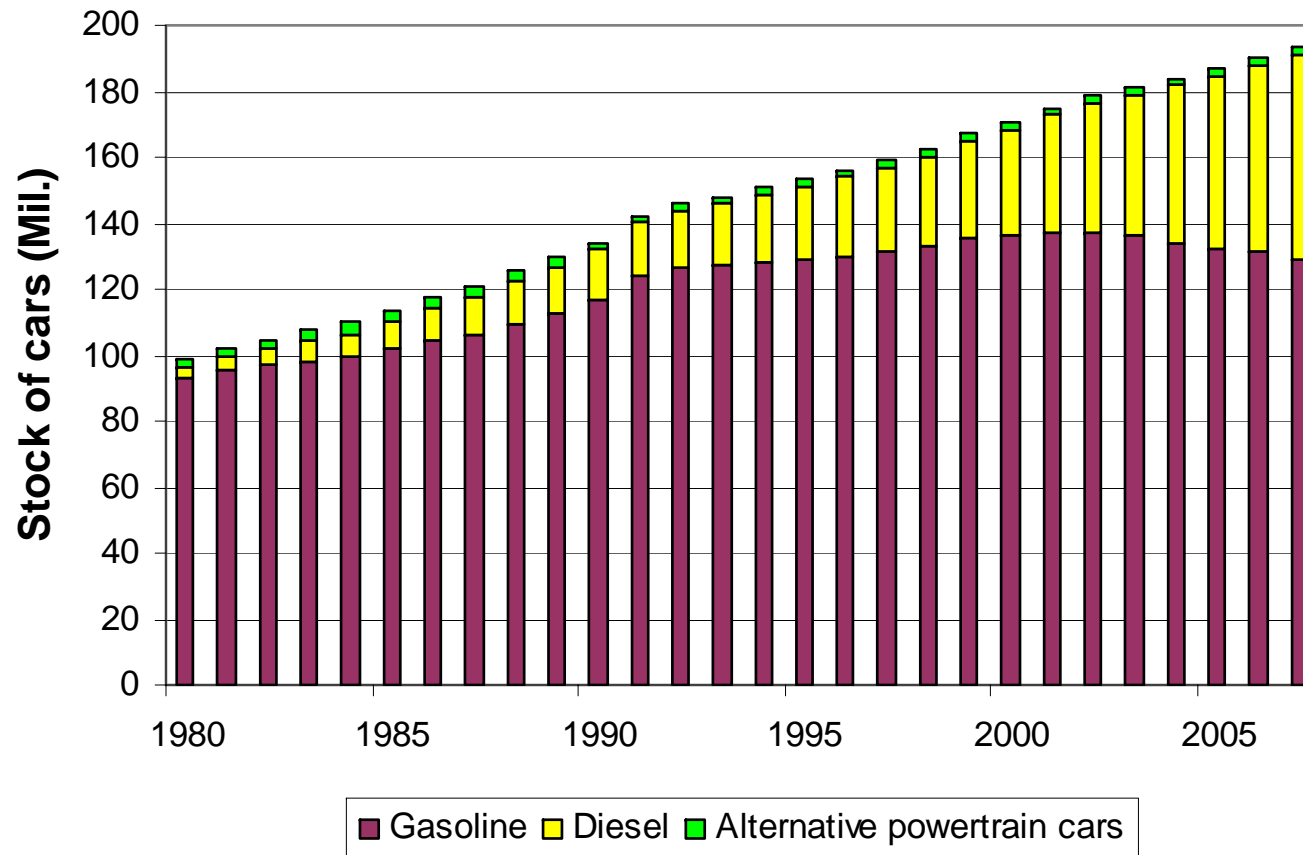
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Biofuels production in EU-27



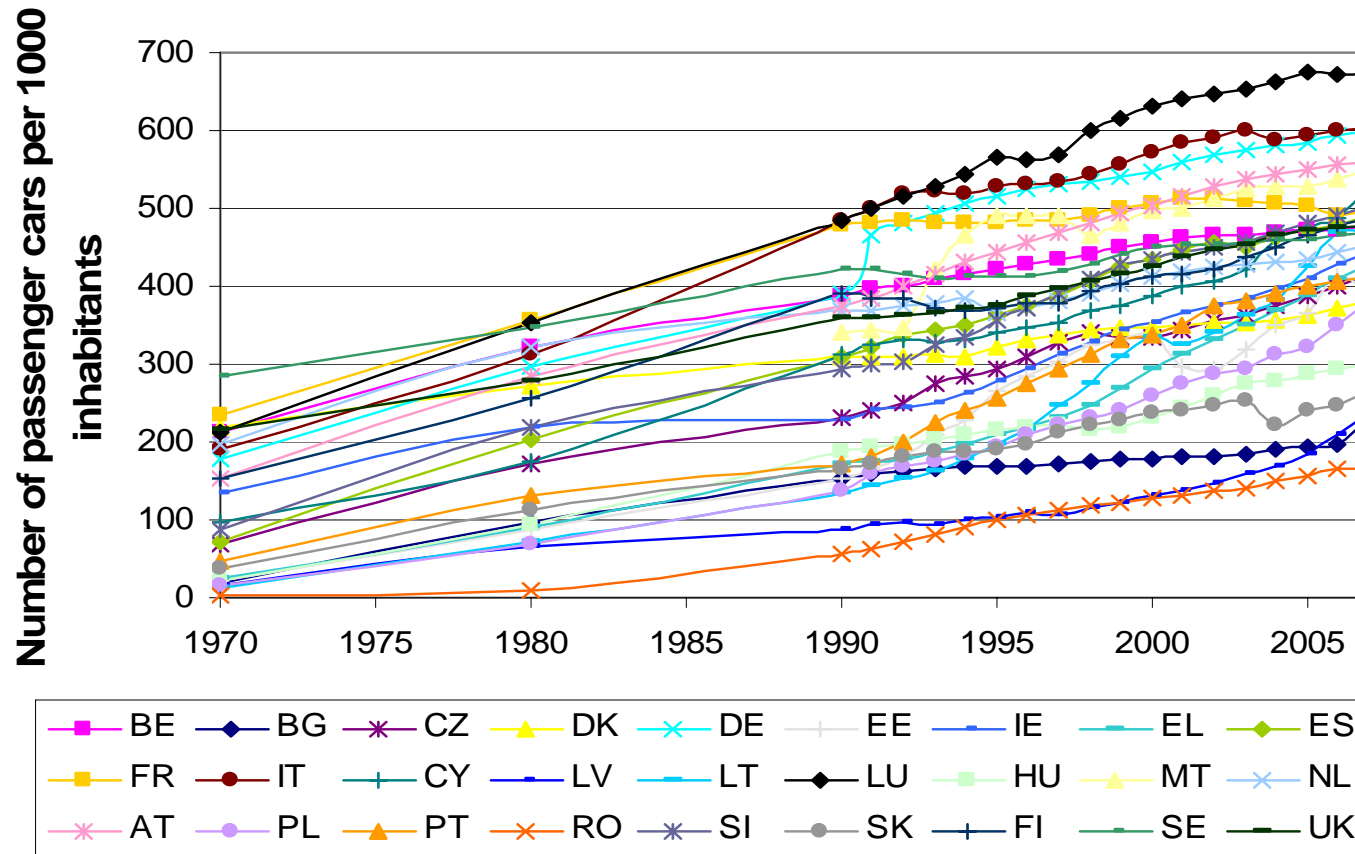
Comparison of biofuel production in 2008 in EU-27 countries (Data source: EBTP, EBB)

Development of car stock



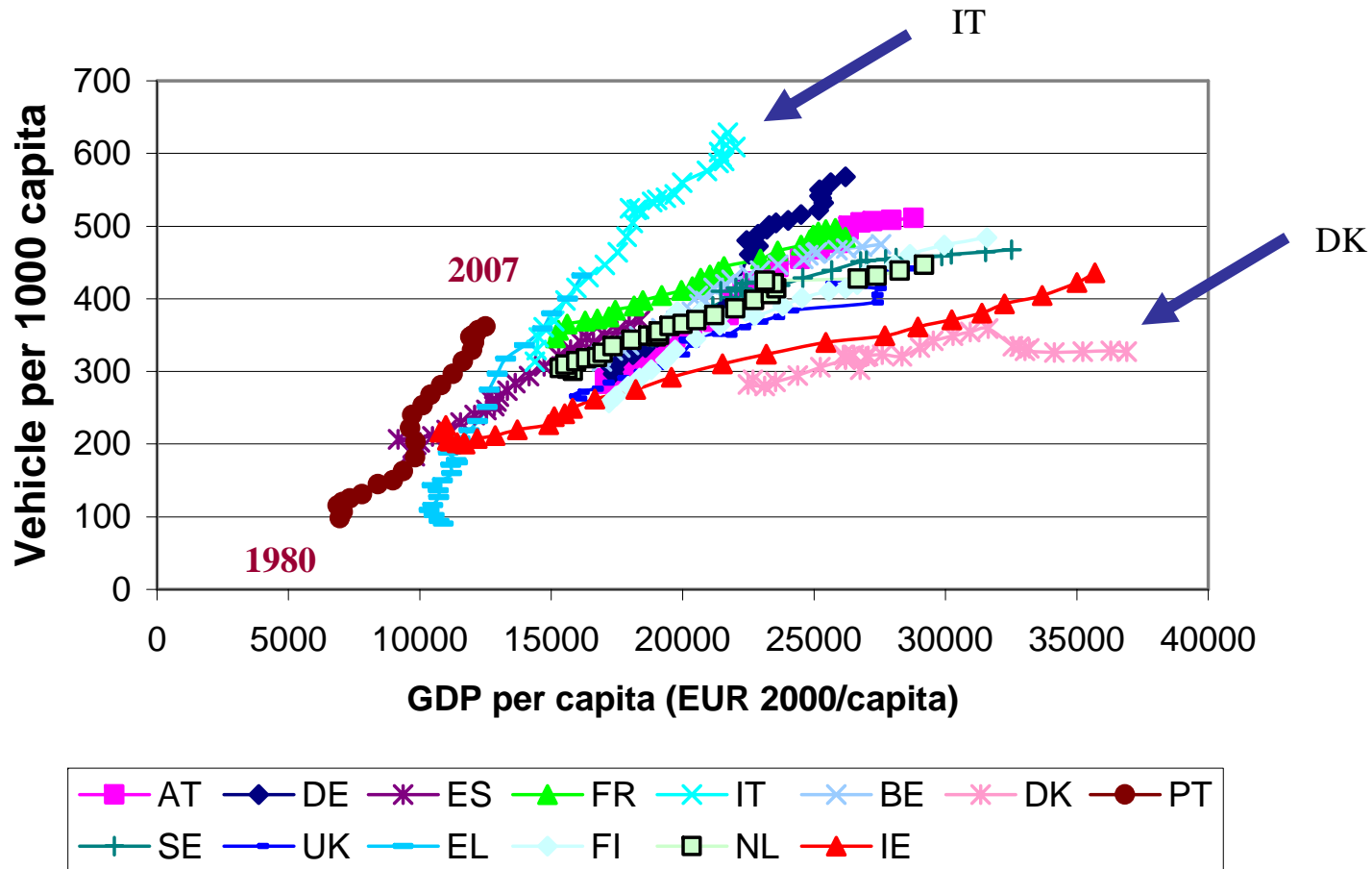
Development of car stock in passenger transport in EU-15, 1980 – 2007

Development of car stock



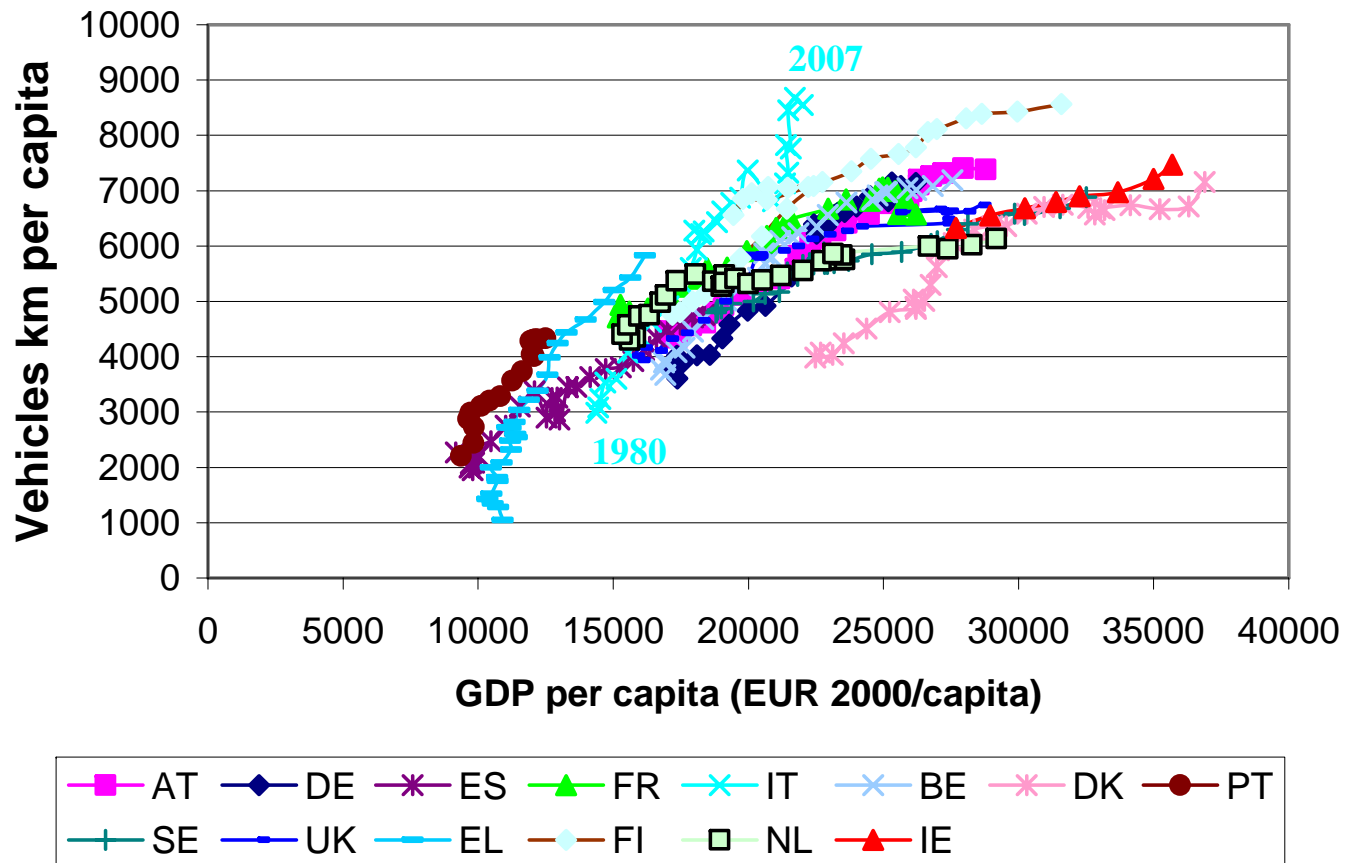
Development of car ownership per 1000 capita in EU- 27, 1970 – 2007

Development of car stock



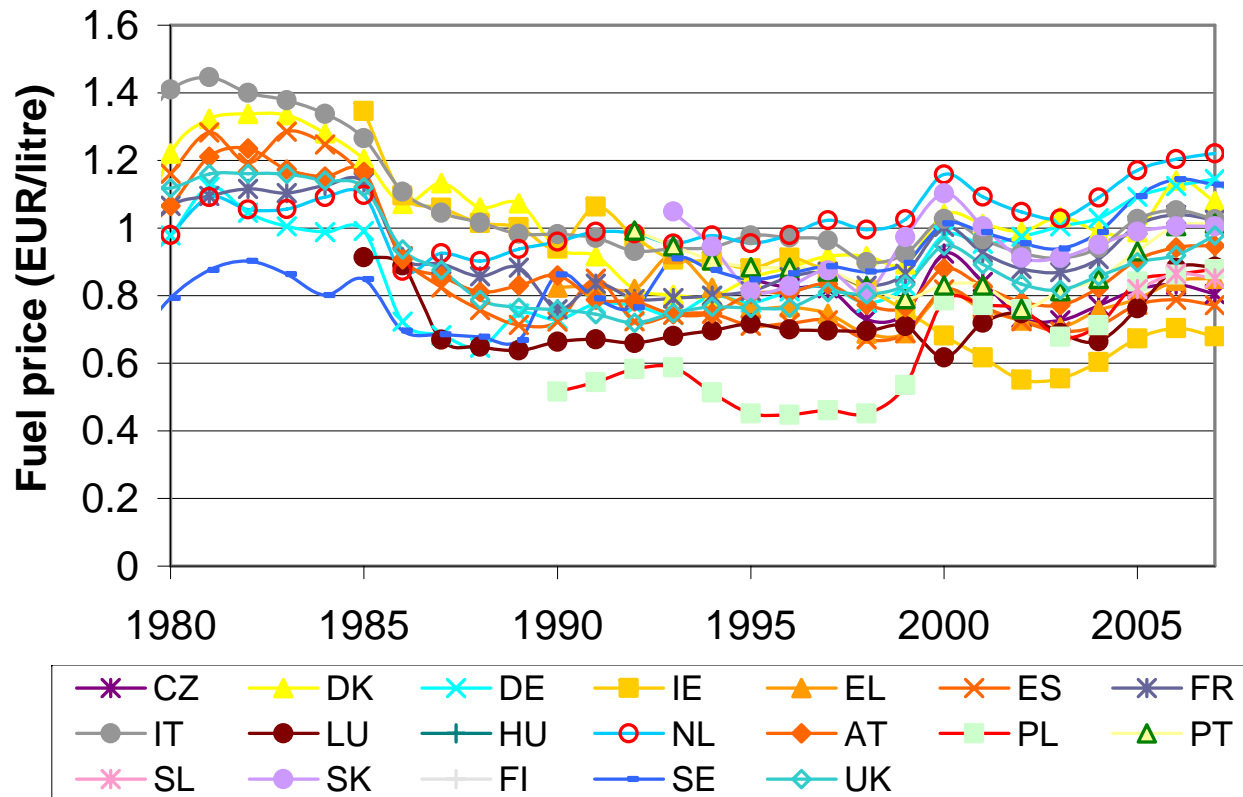
Car ownership versus GDP per capita 1980-2007

Development of vehicle-km driven



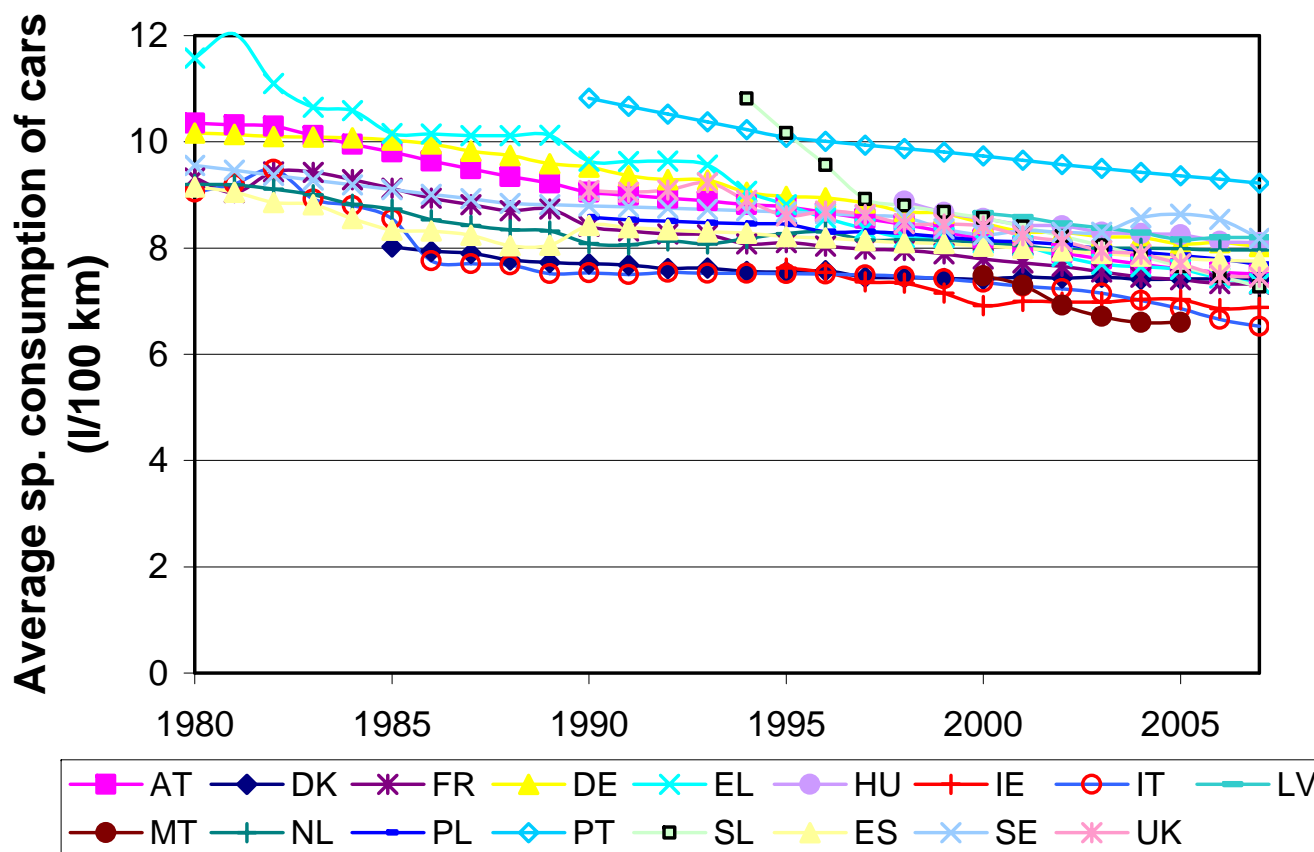
Development of vehicle kilometer per capita in selected EU countries 1980-2007

Development of fuel price



Fuel price (including all taxes) for selected countries 1980 – 2007

Fuel intensities



Average on road fuel intensity of stock of cars, gasoline equivalent (Diesel and LPG are converted to liters of gasoline at their energy content. 1 litre diesel = 1.12 litre gasoline)

Conclusions

The major (preliminary) conclusions are:

- Registration and ownership tax system
- Fuel taxes
- Regarding alternative fuels
- Regarding alternative automotive systems

Deliverables already available

Download from www.alter-motive.org:

- Concise report with country reviews on AF & AAMT in the context of overall historical developments in road transport
- Database of transport indicators with special focus on AF & AAMT
- AF & AAMT database (state of the art)
- Documentation of past and current pilot projects



Case studies

(BIO) gas local fuel station

The biogas processing unit plus biogenic CNG filling station in Margarethen am Moos is the smallest commercially run facility of its kind anywhere in the world. Its simple, compact design has advantages both for operation and economically.

Background

The project (BIO) gas local fuel station lasted from January 2007 to September 2008. The upgrading plant and the local fuel station were implemented in Margarethen am Moos near Schwechat at the site of a 500kW biogas plant. The biogas plant delivers the additional biogas that is converted into fuel by simply increasing its biomass input. This project was initiated by TBB Consulting in cooperation with EVM (Energie Versorgung Margarethen am Moos) Vienna University of Technology, AGRAR PLUS, AXIOM, BAUER-Foseidon (fuel station), FIAL and LUKENEDER.

Major targets

The goal of the project (BIO) gas local fuel station was to erect Austria's first biogas-upgrading plant in connection with a local fuel station without any connection to a natural gas grid. The proper technique for the local upgrading plant is the membrane technique. With an average turnout of 33 Nm³ biomethane (methaPUR) it is the smallest commercially running upgrading plant in Europe. Throughout the project the membranes could always deliver the needed gas-quantity and gas-quality. The upgrading plant also was capable to operate in the supply on demand mode, by turning off/on when needed. The offgas from the upgrading plant is reinjected into the biogas plant and converted into heat and power by the installed gas engine. This makes the upgrading station a zero emission plant, because there is no energy loss because of unused offgas. The fuel station was licensed and built for non public access in self service operation. Therefore every user has to register once after that he has unlimited access. The fuel station had in 2008 about 20 customers, and it is expected that within three years there will be a fuel consumption of 150.000 kg (approximately 200 cars) a year. This represents the needed fuel output for a profitable operation.

Major results and lessons learned

The project goal has been achieved completely. Currently the fuel station has about 30 customers. From the beginning the project was funded by the Land NÖ as well as ÖKK and FFG. The total costs of the project of about 642.000 EUR (442.000 investment costs and 200.000 operation and maintenance costs) are covered mostly by FFG (94.000 EUR), Land NÖ (150.000 EUR) and ÖKK (143.550 EUR). The remaining costs were paid by the operator of the plant, the EVM. The public was informed about this project through different activities such as presentations, nomination for Klimaschutzpreis 2008, as well as the win of the NÖ Energy Globe 2008. After the success of demonstration-plant in Margarethen am Moos it is now planned, to find 25 more locations in Austria to construct an upgrading plant and a local fuel station similar to Margarethen am Moos.

More information

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MID-TERM CONFERENCE

20. April 2010, 9:30 – 16:00

Festsaal, Vienna University of Technology

- World-wide problems and future perspectives of alternative transport systems
- Biofuels
- Ecological assessment of alternative fuels in transport
- Electro mobility
- Case studies
- Policies

National/regional workshop

07.01.2010 Bron, France **Title:** *"Renewable Fuels and Alternative Motorization to Fight Against Greenhouse Gas Emission"*

03.02.2010 Uddevalla, Sweden **Title:** *"Alternative fuels and vehicles: different aspects on current and future policy instruments"*

22.04.2010, Greece **Title:** *"Transferring good experience for other countries"*

17.05.2010, Italy **Title:** *"Alternative fuels and vehicles: solution for sustainable transport policy"*

10.2010 Poswietne, Poland **Title:** *"Financial instruments for promotion of biofuels"*

21.10. 2010 Lisabon, Portugal **Title:** *National/regional workshop – Portugal*

11.2010, Netherlands **Title:** *"Analysis of policy effectiveness"*

11.2010, Germany **Title:** *National/regional workshop – Germany*

16.11.2010 Vienna, Austria **Title:** *"Electric and biogas cars and filling stations"*

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Thank you !