

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

Electro mobility or Biofuels?

REPORT

on the National Workshop

AUSTRIA



Authors: Amela Ajanovic, Reinhard Haas

Project Partner: Energy Economics Group (EEG)

Location and date: Vienna, 26 January, 2011

A. General information

Title of the workshop: Electro mobility or Biofuels?

Date of the workshop: 26 January, 2011

**Location: Vienna,
Vienna University of Technology**

Organisers: Energy Economics Group (EEG)

Number of Participants: 50 + 2 own staff

Number of invitations sent: ca. 200

B. List of participants

| Nr | Name | Organisation | Category |
|----|-------------------------|--|----------|
| 1 | Gerhard Ablasser | Stadt Graz | MUN |
| 2 | Cesar Jorge Aguiari | TU Wien | AC |
| 3 | Amela Ajanovic | EEG, TU Wien | OS |
| 4 | Harald Bala | tbb-Consulting | FUD |
| 5 | Markus Becherer | SOLARO s.r.o | CON |
| 6 | Hannes Blauensteiner | WALDLAND Vermarktungsges.m.b.H | INA |
| 7 | Bettina Bergauer-Culver | Bundesministerium für Wirtschaft, Familie und Jugend | POL |
| 8 | Ingo Bunzeck | Energy research Centre of the Netherlands (ECN) | PPA |
| 9 | Gerfried Cebrat | FGM-AMOR | PPA |
| 10 | Peter Czermak | Klimabündnis Österreich | NGO |
| 11 | Andreas Dorda | BMVIT | POL |
| 12 | Christian Dyczek | Münzer Bioindustrie GmbH | FUP |
| 13 | Andreas Eigenbauer | MD-Strategische Energieangelegenheiten | MUN |
| 14 | Christiane Edegger | energieautark consulting gmbh | CON |
| 15 | Christian Eugster | VKW | ENC |
| 16 | Sepp Essl | E4you GmbH | CON |
| 17 | Markus Gusenbauer | Magna Powertrain | VHP |
| 18 | Reinhard Haas | EEG, TU Wien | OS |
| 19 | Friedrich Herzog | ÖkoEnergie | CON |
| 20 | Josef Hochwald | Bundesministerium für Wirtschaft, Familie und Jugend | POL |
| 21 | Gerfried Jungmeier | Joanneum Research | AC |
| 22 | Franz Kirchmeyr | Biogasverband Österreich | INA |
| 23 | Vitaliy Kryvoruchko | HEI Eco Technology GmbH | CON |
| 24 | Josef Kaufmann | AK Steiermark, Abteilung Marktforschung | INA |
| 25 | Christian Kopecek | SBG | AC |
| 26 | Tobias Legerer | Consulting | CON |
| 27 | Ina Meyer | WIFO | AC |
| 28 | Ursula Mollay | Österreichisches Institut für Raumplanung (ÖIR) | AC |
| 29 | Walter Muskat | Enprocon GmbH | CON |
| 30 | Angelika Müller | Lebensministerium | POL |
| 31 | Tomas Müller | Osterreichs Energie | INA |
| 32 | Hans Pressl | AK Steiermark | INA |
| 33 | Gernot Prettenthaler | Raiffeisen-Leasing Fuhrparkmanagement GmbH | FIN |
| 34 | Willy Raimund | Energy Agency | R&D |
| 35 | Michaela Schnider | Raiffeisen-Leasing | FIN |
| 36 | Josef Michael Schopf | TU Wien | AC |
| 37 | Christine Schübl | WALDLAND Vermarktungsges.m.b.H | INA |

| | | | |
|----|-----------------------|--|-----|
| 38 | Michael Sigmund | oekonews | INA |
| 39 | Andreas Stepniczka | Austrian Biodiesel Institut | INA |
| 40 | Reinhard Traxler | Erdgas-Mobil, Wiener Stadtwerke | ENC |
| 41 | Herbert Thanner | Magna E-Car Systems GmbH & Co OG | VHP |
| 42 | Erich Wagner | ENERGIEALLIANZ Austria GmbH | ENC |
| 43 | Christoph Wolfsegger | Klima- und Energiefonds | R&D |
| 44 | Lydia Ninz | ARBO | INA |
| 45 | Petra Tscheber | Raiffeisen-Leasing Fuhrparkmanagement GmbH | FIN |
| 46 | Fritz Kreuzroither | PTS Pflanzenöl Technologie Systeme | INA |
| 47 | Daniel Olev | TU Wien | AC |
| 48 | Alexander Bachler | Landwirtschaftskammer Österreich | INA |
| 49 | Franz Mühlbacher | TU Wien | AC |
| 50 | Andreas Vormailer | Techn. Museum Wien | MUN |
| 51 | Doris Holler-Bruchner | Bundesverband nachhaltige Mobilität | INA |
| 52 | Arnold Holler | oekonews | INA |

- 1) Own staff are listed first
- 2) Stakeholder category (type): **OS**=own staff, **ENC**=energy company, **FUP**=fuel producer, **FUD**=fuel distributor, **AC**=academia, **INA**= Interest association, **FLT**=fleet, **POL**=policy maker, **MUN**=municipality, **NGO**=non-governmental organisation, **R&D**= research and development, **VHP**=vehicle (technology) provider, **VHD**=vehicle dealer, **FIN**=financing, **PPA**=project participants, **CON**=consulting company

C) AGENDA of the Workshop

- 9:30 Registration
- 10:00 Welcome and opening of the Workshop – Amela Ajanovic, Reinhard Haas (EEG, TU Wien)
- 10:10 Presentation of the ALTER-MOTIVE Project – Amela Ajanovic (EEG, TU Wien)
- 10:40 The relevance of alternative fuels and alternative automotive technologies from the Austrian point of view – Andreas Dorda (BMVIT)
- 10:55 The relevance of alternative fuels and alternative automotive technologies from the economic point of view – Josef Hochwald (BMWfj)
- 11:10 Effective policies to facilitate the introduction of alternative fuels – lessons from EU-countries – Ingo Bunzeck (Energy research Centre of the Netherlands (ECN))
- 11:35 Lessons learned from international case studies – Gerfried Cebrat (FGM-AMOR Graz)
- 11:55 Austrian experience with biogas in transport sector – Franz Kirchmeyr (Biogasverband Österreich, biogas association of Austria)
- 12:15 The ALTER-MOTIVE Action Plan – 10 policy steps towards a sustainable future European transport system (with discussion) – Reinhard Haas (EEG, TU Wien)
- 13:00 – 13.45: Lunch
- 13.45 – 14.35: panel discussion with:
- Christoph Wolfsegger (Klima- und Energiefonds, an Austrian R&D foundation),
 - Reinhard Traxler (Erdgas-Mobil, Wiener Stadtwerke, municipal utility of Vienna)
 - Lydia Ninz (ARBÖ, a car drivers's association)
 - Alexander Bachler (Landwirtschaftskammer/Agricultural chamber of Austria)
 - Tomas Müller (Österreich's Energie, Association of electric utilities)
- 14:50 Biofuels for transportation and electric vehicles: There is currently room for both – Andreas Stepniczka (Austrian Biodiesel Institute)
- 15:05 Sustainable transport: reality or utopia? – Harald Bala (tbb-Consulting)
- 15:20 The initiative to promote alternative fuels usage for local public transport: Biodiesel Public Bus Fleet in the City of Graz– Gerhard Ablasser (Stadt Graz)
- 15:35 VLOTTE - a large electric mobility demonstration project in Vorarlberg– Christian Eugster (VKW)

- 15.50 Electro mobility and biofuels from the banks point of view– Gernot Pretenthaler (Raiffeisen-Leasing)
- 16.05 Summary and close of the workshop – Amela Ajanovic, Reinhard Haas (EEG, TU Wien)
- 16.30 Networking event

D. Short summary

Considering the number and profile of the participants, its very positive feedback and involvement in discussion, we think that the ALTER-MOTIVE national workshop in Austria was very successful.

A wide range of Austrian stakeholders within the areas of biofuels and electro mobility took part in the workshop. The participants represented local and regional policy makers, academia, energy companies, fuel producer, vehicle provider, interested associations within fuels and fleets as well as other research and development partners.

The Austrian workshop was focused on electro-mobility and biofuels. Some Austrian case studies in these fields, which are part of the ALTER-MOTIVE Show Case Directory, have been presented and discussed. However, we have presented briefly all our activities in ALTER-MOTIVE project (e.g. available deliverables, web-tools, discussion forum etc), especially the Action Plan 2020 with the recommendations for the policy makers. The Action Plan was presented in detail by project coordinator, Reinhard Haas and his presentation is followed by very comprehensive discussion with the participants. Moreover, we have organized a panel discussion with five invited Austrian experts from different stakeholders groups.

The contribution from Mr. Andreas Dorda from the Federal Ministry for Transport, Innovation and Technology was very informative showing current activities in Austria on governmental level. Also other presentations were very useful and informative (for more details see part E).

During and after the workshop we have received 33 written feedbacks to our workshop. The audience found the ALTER-MOTIVE project very interesting and the workshop was useful for most of the participants.

The issues addressed:

- | | |
|---|-----|
| 1) Critical review of the state of the art | yes |
| 2) Recent and planned policy development | yes |
| 3) Action plan for an EU strategy towards a sustainable transport | yes |
| 4) Coordination/harmonisation of the support systems | yes |
| 5) Specific national requirements | yes |
| 6) Policy integration | yes |

E. Detailed report on the speakers' subjects and the debate

The Workshop was opened by Amela Ajanovic and Reinhard Haas, the coordinators of the ALTER-MOTIVE project.

At the beginning **Amela Ajanovic** presented the overall framework of the ALTER-MOTIVE project. She presented the consortium, the main project tasks and outlined briefly the work done so far. Special focus was put on the presentation of internet-based scenarios.

Andreas Dorda, from the Federal Ministry for Transport, Innovation and Technology, show in his presentation relevance of alternative fuels and alternative automotive technologies from the Austrian point of view. In detail, he presents roadmap for alternative propulsion systems (with the special focus on electro mobility) and fuels, Austrian and EU climate goals as well as funding programmes launched by the Federal Ministry for Transport, Innovation and Technology (BMVIT).

Josef Hochwald, from the Federal Ministry of Economy, Family and Youth, discussed the relevance of alternative fuels and alternative automotive technologies from the point of view of the Austrian economy. He presents global challenges, EU and national targets and the possible strategies for the emissions reduction. According to this presentation, an Action plan for mobility should encompass change in mobility behaviour, increase in energy efficiency and increasing use of different alternative fuels.

Ingo Bunzeck, ALTER-MOTIVE project partner from ECN, the Netherlands, presented the work done in scope of the ALTER-MOTIVE project on evaluation of policy effectiveness. He discussed policies for successful introduction of alternative fuels and alternative automotive technologies. The major conclusions from his presentation are:

- Technology-specific measures are needed to address technology-specific barriers
- Policy packages need to 'follow' the development of a technology over time
- Policy measures can serve to...
 - ... 'kick start' a market
 - ... trigger 'learning-by-doing'
- Effectiveness depends on the creation of a solid investment perspective
- Policy only needs to address key barriers

Cerfried Cebrat, ALTER-MOTIVE project partner from FGM-AMOR Graz, Austria, presented experience from international case studies related to electro mobility and biofuels. The case studies analysed has proven that experience on the local level is very important and this is a promising approach to be pursued further. It has a high acceptance, CO2 emission savings potential and reasonable economic performance.

Austrian experience with biogas in transport sector was presented by **Franz Kirchmeyr**, ARGE Kompost & Biogas. He discussed biogas production capacities in Austria and present some experience from Austrian biogas pilot projects (e.g. CBG refuelling station in Margareten am Moos). The experiences so far are very positive regarding noise, energy consumption,

operating rates. However, infrastructure (density of refuelling stations) could be better, so that CNG/CBG is the best option for vehicles with limited and determined operating range (e.g. taxicab, delivery service, buses etc.)

A very important part of this event was the presentation and discussion of the ALTER-MOTIVE Action Plan. **Reinhard Haas** presented the 10 major hypotheses of the Action Plan. This presentation was followed by very interesting and lively discussion with the invited experts (**Christoph Wolfsegger, Reinhard Traxler, Lydia Ninz, Alexander Bachler and Tomas Müller**) as well as with all Workshop participants.

In this discussion on whether biofuels or E-Mobility or both or none of them are more beneficial for society the major highlights were:

Tomas Müller from the association of the Austrian Electricity supply Industry pointed out that model regions for E-Mobility are the most important tool for a continuous development of individual EV.

Mr. Alexander Bachler from the Austrian Landwirtschaftskammer (???) explained that there is still a large additional potential from wood and wood residues to be tapped in Austria. These resources could be used for a wide variety of biomass-based fuels.

The representative of the local municipal utility **Mr. Reinhard Draxler** described the historical activities of WIENENERGIE. Furthermore he announced, that his company plans to switch the whole bus fleet from 2012 on towards hybrid electric busses. He also stated that this workshop has confirmed this strategy.

While these three panel participants rather soon agreed on the idea of a life-cycle CO₂-differentiated fuel tax the representative of a car drivers' association **Lydia Ninz**, finally after a very heavy discussion also agreed on this view. **Mrs. Ninz** also stated that she is very sceptical that the quota for biofuels will really lead to CO₂-reductions.

Finally, **Mr. Christoph Wolfsegger** provided an insight on the R&D strategies of the KLIEN – the Austrian climate and energy research foundation – for electric mobility. He pointed out that there is a clear focus on the concept of model regions for obtaining practical evidence of what works, what does not work, which infrastructure is really needed and what has to be changed and improved.

After the panel discussion which took about 70 minutes the workshop was continued with further stakeholder presentations.

Andreas Stepniczka, from Austrian Biodiesel Institute, in his presentation entitled “Biofuels for transportation and electric vehicles: There is currently room for both” gave a broad overview of the current advantages and disadvantages related to the use and production of biofuels. He stressed the problems with the land use change and increasing food prices.

However, the largest expectations are from the 2nd generation biofuels.

According to this presentation, to increase sales of 1st generation biofuels in Austria, specific vehicles or fleets of vehicles compatible with blends above E5 or B7 must be targeted. Major conclusions/recommendations related to biodiesel in Austria are:

- Modern diesel vehicles with self-cleaning particulate filters can suffer engine damage due to oil thinning at biodiesel blending levels above 7%. Changes must be made to many vehicles on the road today if they are to be fuelled with blends above B7.
- With its blending of 6.5% biodiesel into diesel in 2009, Austria is already close to the maximum that can be achieved with a fuel intended to be used in all diesel vehicles.
- To increase sales further, higher concentrations of biodiesel must be used by specific vehicles or fleets of vehicles that are compatible with it.

Major conclusions/recommendations related to bioethanol in Austria are:

- All gasoline-powered vehicles are compatible with ethanol at blending levels up to 5%
- With its blending of 4.9% ethanol into gasoline in 2009, Austria is already close to the maximum that can be achieved with a fuel intended to be used in all gasoline vehicles.
- To increase sales of ethanol in Austria, concentrations above 5% must be used by specific vehicles or fleets of vehicles that are compatible with it.

Regarding electro mobility his major statements are that electric vehicles could help break our addiction to fossil fuels but to reduce greenhouse gas emissions, new power plants have to be built. With our current system of power generation, electricity vehicles will most likely be charged with electricity from coal power plants. Note, that this view was not shared by many participants.

Harald Bala (tbb-Consulting) in his presentation “Sustainable transport: reality or utopia?” discussed some effects which could contribute to the emission reduction (e.g. switch to public transport, walking or biking, reducing travel activity), but the main focus of his presentation was methaPUR project. The goal of this project was to construct Austria’s first biogas-upgrading plant in connection with a local fuel station without any connection to a natural gas grid. With an average turnout of 33 Nm³ biomethane (methaPUR) it is the smallest commercially running upgrading plant in Europe. 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. More about this project can be found on the ALTER-MOTIVE website in “Show Case Directory”.

Gerhard Ablasser (Stadt Graz) also presented a case study which is documented in the ALTER-MOTIVE case study directory. He was talking about the initiatives to promote alternative fuels usage for local public transport in the city of Graz. His focus was on the case study “City of Graz - biodiesel from waste oil for public bus fleet”. Major lessons learned/recommendations from this case study are:

- you need a very motivated team in all sectors of the partnership that is responsible for the running fleet
- high international interest about the experience of Graz but less followers in Austria
- using Biodiesel as a fuel made from waste material was the right step but only a step in the right direction
- The experience of Graz opened the way for blending biodiesel in a large scale
- no future for 100% biodiesel with new generations of engines EEV , EURO VI but a way to do something positive with all older buses immediately
- problems with particulate catalytic converters; livetime of 2 – 3 years is not acceptable

- Problems with heating system can be solved with a dual tank system
- do not discuss – you start to do it

For more details about this project please visit ALTER-MOTIVE website.

Third pilot project presented in the scope of the ALTER-MOTIVE workshop by **Christian Eugster** was project VOLTTE. This project is a large electric mobility demonstration project in Vorarlberg, Austria.

The vision of the project is to present and really use the electric mobility as a solution for the continuous expansion of the public transport and the problems of climate change and CO₂ emissions which come along with it. In addition to a potential reduction of individual traffic, the mobility of the future has to become more gentle and environment- friendly. Since 16th of June 2009, thirty vehicles are on the road in daily traffic. Within the first year of the VLOTTE project it is planned to have 100 electric vehicles in use. In doing so, profound experiences about practicability, consumption, cruising ranges, service costs, different accumulator technologies, the actual use of the charging infrastructure as well as different car types and changes in mobility behavior will be gained and evaluated. The fleet currently consists of mainly Norwegian Th!nk vehicles but also contains redesigned models of Renault Twingo, Fiat Panda, Fiat 500 and Mazda 2.

For more details about this project please visit ALTER-MOTIVE website.

The last presentation in the scope of this Workshop was presented by **Gernot Prettenthaler** (Raiffeisen-Leasing). He has talking about electro mobility and biofuels from the banks point of view. He presented the role of the banks as a financial manager. He showed current Austrian activities for a support and promotion of electro mobility in different model regions (e.g. Wien, Graz, Eisenstadt).

F. Overall conclusions

The major conclusions of this workshop are:

- There was a quite intensive discussion between apologetes /lobbyists of E-mobility and biofuels each group pointing to the disadvantages of the other technology. In this discussion the final agreement was reached that fuels should be taxed due to their WTW-emissions;
- Another major conclusion was that there is actually no need for the public to support investment in infrastructure. It is rather highly preferable to extend the idea of model regions for E-Mobility as well as for biogas and hydrogen-fuelled vehicles. Moreover, there should rather be an agreement of the industry and the (local) policy makers to provide a minimum reliable infrastructure at park&ride, airports and other crucial locations. However, for Teslas it will become difficult to have a proper infrastructure fast;

G. Recommendations for policy makers

1. Regarding infrastructure for E-mobility: No financial public support justified.
2. Lessons for Eco-driving should be mandatory
3. The requests to the automobile industry should be stronger!
4. R&D as well as financial promotion should be technology neutral; e.g. there should not be excise tax exemptions for low carbon fuels but the tax should be CO₂-based considering the whole Well-to-Wheel chain
5. Eco- electricity for E-mobility is not available self-evident now and not indefinite available in the future and not for free; In this context in the future the relevance of capacity markets in addition to conventional electricity markets might increase;
6. Regarding biofuels it is important to increase the ecological performance and to prove it by means of certification
7. Regarding emission-free zones: It is rather favourable to introduce zones for low-emission- vehicles with a specific max emissions
8. Energy density is an aspect in favour of biofuels and could also lead to the recommendation to use biofuels for other segments of transport than passenger cars

H. Feedback

Number of questionnaires handed in: 32

Results from the feedback questionnaires can be summarized as following. Conclusions from the questionnaires will be drawn in a separate Alter-motive report.

A. Questions about the Alter-Motive Project:

1. In your opinion, based on the presentation of the ALTER-MOTIVE Project, do you think that the Project addresses the issues raised sufficiently clearly and in a way making it possible to provide effectively new ideas or suggestions? (rank 0-5, where 5=very clear)

0: None

1: None

2: 1 person

3: 8 persons

4: 15 persons

5: 7 persons

Total number of answers: 31

2. In your opinion, based on the presentation of the ALTER-MOTIVE Project do you think that its results have a chance to positively influence the EU policies? (rank 0-5, where 5=great chance)

0: None

1: 2 persons

2: 10 persons

3: 9 persons

4: 10 persons

5: 1 persons

Total number of answers: 32

3. The same question as above referred to influencing the national policy of your country. (rank 0-5, where 5=great chance)

0: None

1: 2 persons

2: 7 persons

3: 11 persons

4: 8 persons

5: 4 persons

Total number of answers: 32

4. Do you have any suggestions concerning the scope/goals of the project? (give a narrative answer):

- Stop promotion of biofuels
- more focus on e-mobility

B. Questions about the Workshop:

1. Did you find the Workshop useful in general? (rank 0-5, where 5=very useful)

- 0: None
- 1: None
- 2: 1 person
- 3: 7 persons
- 4: 16 persons
- 5: 5 persons

Total number of answers: 29

2. Did you find the presentations given informative (rank 0-5, where 5=very informative)

- 0: None
- 1: None
- 2: None
- 3: 5 persons
- 4: 18 persons
- 5: 7 persons

Total number of answers: 30

3. Did you find the discussions useful/constructive from your point of view? (rank 0-5, where 5=very useful/constructive)

- 0: None
- 1: 1 person
- 2: None
- 3: 9 persons
- 4: 17 persons
- 5: 3 persons

Total number of answers: 30

4. Did you find the spectrum of the stakeholders present at the Workshop appropriate? (rank 0-5, where 5=very appropriate spectrum)

- 0: None
- 1: 1 person
- 2: 2 persons
- 3: 5 persons
- 4: 15 persons
- 5: 7 persons

Total number of answers: 30

If not please specify who was missing:

- Car industry (4) , biologists and environmentalist, critical position about biofuels, providers/user of car fleets (e.g. taxi)

Total number of answers: 7

5. Has the discussion and the Workshop as a whole influenced your views/opinions on the subjects raised?

- Yes: 17 persons
- No: 12 persons

Total number of answers: 29

C. Questions of a General Nature

1. Do you think that in your country (Austria) there is a serious conflict between wide use of biofuels and nutrition needs? (yes/no)

- Yes: 10 persons
- No: 20 persons

Total number of answers: 30

2. Do you think that there is a serious conflict between wide use of biofuels and nutrition needs on the global scale? (yes/no)

- Yes: 23 persons
- No: 7 persons
- Partly: 1 person

Total number of answers: 31

3. Do you think that in your country (Austria) there is a serious conflict between wide use of biofuels and wilderness protection? (yes/no)

- Yes: 10 persons
- No: 22 persons

Total number of answers: 32

4. Do you think that there is a serious conflict between wide use of biofuels and wilderness protection, on the global scale? (yes/no)

Yes: 28 persons

No: 2 persons

Partly: 1 person

Total number of answers: 31

5. Do you think that the environmental standards related to production of biofuels are good in your country? (rank 0-5, where 5=very good) 0: None

0: None

1: 4 persons

2: None

3: 12 persons

4: 12 persons

5: 2 persons

Total number of answers: 30

6. Do you think that biofuels, fuel cell cars, electric cars etc. provide a solution for environmental friendly automotive mobility in near future (15 – 20 years)? (rank 0-5)

0: None

1: 1 person

2: 1 person

3: 13 persons

4: 11 persons

5: 5 persons

Total number of answers: 31

7. In your personal opinion, do you think that alternative fuels and electric vehicles alone provide a sufficient environmental solution, or that emphasis should be put rather on systemic solutions (public transport, rail, behavioral change, working time/place re-organization, influencing the settlement structure, eg. minimizing the urban sprawl)? Please rank the importance of including the latter. (rank 0-5, where 5=very important)

0: None

1: 1 person

2: 1 person

3: 2 persons

4: 12 persons

5: 15 persons

Total number of answers: 31