April 2010, issue no. 2/2010

AMFI Newsletter

AMFI Newsletter Editor travelling to Finland by train from an IEA meeting in Paris. European air transport disrupted by eruption of Eyjafjöll volcano in April 2010. Photo by Pasi Leskinen.

The AMFI Newsletter is prepared for the members of the Implementing Agreement on Advanced Motor Fuels of the International Energy Agency (IEA/AMF).

The AMFI releases four electronic Newsletters each year, with recent news on advanced motor fuels, vehicles, energy and environmental issues in general. The AMFI Newsletter is available online at:

www.iea-amf.vtt.fi

CONTENTS

GENERAL INTEREST

US Clean Energy strategy

In the US, a strategy for clean energy was announced on 3 February 2010. Three measures were laid out to boost biofuels and to reduce dependence on foreign oil. The Environmental Protection Agency (EPA) has finalised a rule to implement the long-term renewable fuels standard (RFS) of 36 billion gallons by 2022, established by Congress. The US Department of Agriculture has proposed a rule on the Biomass Crop Assistance Program (BCAP) that would provide financing to increase the conversion of biomass to bioenergy. The President's Biofuels Interagency Working Group released its first report – Growing America's Fuel. The report lays out a strategy to advance the development and commercialisation of a sustainable biofuels industry to meet or exceed the nation's biofuels targets.

In addition, President Obama announced a Presidential Memorandum creating an Interagency Task Force on Carbon Capture and Storage to develop a comprehensive and coordinated federal strategy to speed the development and deployment of clean coal technologies. *Sources: White House, Press release, 3 February 2010 (www.whitehouse.gov). Report: Growing America's Fuel (www.whitehouse.gov).*

US RFS2 issued

US EPA is taking final action to amend the Renewable Fuels Standard Program (RFS2) regulations published on 26 March 2010 (75 FR 14670), scheduled to take effect on 1 July 2010. The RFS2 requires biofuels production to grow to 36 billion gallons in 2022, with 21 billion gallons to come from "advanced biofuels". EPA is setting volume standards for specific categories of renewable fuels including cellulosic, biomass-based diesel, and total advanced renewable fuels. Requirements are set regarding lifecycle greenhouse gas (GHG) emission reductions of renewable fuels in order to be counted in volume requirements (see AMFI 3/2009). These GHG emissions include both direct and significant indirect emissions, such as emissions from land use changes. The emission reductions are relative to the 2005 petroleum fuel baseline.

In 2010, a mandate of nearly 13 billion gallons of renewable fuels should be met, including a cellulosic biofuel standard of 0.0065 billion gallons (proposal 0.1 billion gallons), and a biomass based diesel standard of 1.15 billion gallons (combining 2009 and 2010).

The EPA relaxed its GHG estimates for a number of conventional biofuels, which are now meeting the RFS2 requirements. The 20% GHG reduction threshold is met with biobutanol from corn starch and ethanol produced from corn starch in new advanced, efficient facilities fulfilling certain requirements. Ethanol from sugarcane complies with the 50% GHG threshold for advanced biofuels. Biodiesel from soy oil and renewable diesel from waste oils, fats, and greases meet the 50% GHG threshold for biomass-based diesel, as well as algal-based biodiesel. Cellulosic ethanol and diesel comply with the 60% GHG reduction threshold applicable to cellulosic biofuels. *Source: US EPA, Renewable Fuels Standard Program, published 26 March 2010 (www.epa.gov).*

US Fuel Economy and GHG limits

The US Department of Transportation (DOT) and the US EPA established new federal rules that set the first-ever national GHG emissions standards for all new passenger cars and light-duty trucks sold in the United States. This collaboration allows for clearer rules instead of three standards (DOT, EPA, and a state standard). The rules require automobile manufacturers to improve fleet-wide fuel economy and reduce fleet-wide GHG emissions by about 5% every year starting with 2012 model year vehicles. NHTSA's fuel economy standards strengthen each year, reaching an estimated 34.1 mpg (6.9 l/100 km) for the combined industry-wide fleet for model year 2016. However, credits for air-conditioning improvements can be used to meet the EPA standards, and thus the manufacturers are to achieve a combined average vehicle CO_2 emission level of 250 g/mile (155 g/km) by the 2016 model year, which would mean 35.5 mpg (6.7 l/100 km), if all the GHG reductions came from fuel economy improvements.

NHTSA and EPA expect automobile manufacturers to meet these standards by adopting technologies that are already in commercial use, such as improved aerodynamics, lighter materials, and more efficient engines, transmissions, and tyres, as well as improvements in air conditioning systems. The agencies also expect some manufacturers to pursue more advanced fuel-saving technologies such as clean diesel engines, hybrid vehicles, plug-in hybrid electric vehicles, and electric vehicles. *Source: DOT press release 56-10, 1 April 2010 (www.dot.gov).*

Indirect emissions from biofuels

The European Commission published a report which evaluates the effect of indirect land use change on sustainability of biofuel feedstocks. The report concludes that going beyond a 5.6% share of biofuels in road transport in the EU may rapidly increase the indirect land-use change (ILUC) emissions and erode the

environmental sustainability of biofuels. The study assumes that 1st generation biofuels represent 5.6% of the EU's renewable energy target of 10% for road transport fuels by 2020 (55% ethanol and 45% biodiesel). The rest of the target would be covered by 2nd generation renewable fuels and electricity. Biodiesel would originate mostly from the EU and bioethanol mostly from Brazil. Emission savings from biofuels are estimated at 13 Mt CO_2 over 20 years, even when considering additional emissions from ILUC (5.3 Mt CO_2 mostly in Brazil). According to the study, palm oil is as efficient as rapeseed oil, even when peatland emissions are taken into account. The model simulations show that trade opening is beneficial for the environment, and that the effect of EU biofuels policies on food prices will remain very limited. However, the report warns that ILUC emissions may rapidly increase when the share of biofuels in road transport goes above 5.6% in the EU.

In April 2009 the EU adopted the Renewable Energy Directive (RED), which included a 10% target for the use of renewable energy in road transport fuels by 2020. RED defines sustainability criteria for countable biofuels: minimum GHG savings are defined (35% in 2009 rising to 50% in 2017) and restrictions placed on the types of land that may be converted for production of feedstocks. However, RED covers direct land use changes only, and therefore the Commission launched four studies to examine the question of indirect land use change, including possible measures to avoid this. The published report is one of these studies. *Source: Global Trade and Environmental Impact Study of the EU Biofuels Mandate, International Food Policy Institute (IFPRI) report, March 2010 (www.ifpri.org).*

Angola approves biofuel law

A new law has been approved in Angola to support the production of biofuels. The law includes rules for producing biofuels and regulates the role of foreigners in the industry. The general principle is that biofuel projects are promoted on "marginal" lands, not on rich soils, to avoid competition with food production. Under the new law, foreign companies that invest in biofuels will have to ensure that the local populations have access to water, basic services and medical care. Foreign firms will also be required to sell a portion of their biofuels to the state oil company Sonangol to supply the local market. Angola is an oil producer, but it does not refine enough fuel to meet the national demand. *Source: African Agriculture News, 31 March 2010 (www.africanagricultureblog.com) and AngolaPress, 24 April 2010 (www.portalangop.co.ao).*

GASEOUS FUELS (NG, LPG, biomethane, DME)

Liquid biogas in the Netherlands

Rolande LNG introduced the first truck in Europe running on liquified biogas (LBG), which is a similar fuel to liquified natural gas (LNG). LNG is already used for vehicles in the USA, the UK and Spain. Rolande LNG has received a subsidy from the Ministry of Economic Affairs to assist in implementing the entire distribution chain – providing filling stations, distribution points, procurement, clients and truck conversions in the Netherlands. Rolande LNG plans to have around 20 filling stations installed by 2015, which should be sufficient to meet the tanking requirements of around 2000 LNG trucks. The high energy density of LNG/LBG fuel increases the driving range: around 1400 km on one tank of fuel, which makes this an interesting option for the heavy-goods transport sector. Natural gas or biogas is first cleaned, water and CO_2 are removed, then gas is converted into liquid form by cooling it to a temperature of -162°C. LNG is transported in tanks, where a vacuum is created between the two walls of the tank – so-called cryogenic storage tanks. Filling up the tank with LNG is as quick as with diesel or petrol.

It is currently not possible to buy LNG trucks direct from the factory, but the Rolande Group specialises in converting diesel engines into LNG engines. The engine is modified with spark plugs, and the compression ratio is lower than for original diesel engines. Two fuel tanks are placed underneath the converted truck, which can store around 700 litres of LNG. *Sources: Rolande LNG news, 15 April 2010 (www.rolandelng.nl) and brochure (www.rolandelng.nl).*

There are also other activities involving LBG in the Netherlands, such as BER BV (Bioethanol Rotterdam), which is working with liquefied biogas plans in the country. *Source: BER NV (www.ber-rotterdam.com).*

Biogas is carbon efficient

The study by Lund University analysed a specific biogas plant, Söderåsens. Biomethane from this plant produces 95% less greenhouse gas emissions (GHG) than gasoline, and with further improvements up to 120% less GHG emissions (better than climate neutral). The standard figures used today indicate that biogas produces 80% lower emissions than gasoline. According to the authors, the plant studied is fairly representative of an average biogas plant that processing waste and manure.

The study considered direct effects, such as use of energy and emissions from the production of biogas, upgrading to vehicle gas, transport of substrate and digestate and storage and handling of digestate. Indirect effects were also included, such as reduced methane leaching from conventional storage of manure,

replacement of mineral fertilisers with digestate etc. The calculated energy balance for production and distribution of vehicle gas from Söderåsens biogas plant is 5.5 (ethanol from wheat around 2-3), and the GHG emissions 16 g/kWh CO_2-ekv, which is around 95% lower compared to gasoline. Ethanol from wheat and RME reduce the emissions by some 80% and 65%, respectively. The result is mainly affected by the methane leakage from the upgrading plant, reduced emissions of N_2O when digestate replaces mineral fertilisers and the assumptions made of how the electricity used in the system was produced. Regarding eutrophication, the emissions are calculated at 6 g/kWh NO_3-ekv. *Source: Lund University News, 17 February 2010 (www.lu.se).*

Country reports on biogas production

Country reports have been developed within the GasHighWay project regarding the current status of biogas production as well as identification of legal and other important conditions for biogas upgrading potential. The reports also inform on market trends and biogas/biomethane production forecast. Reports are available for Austria, the Czech Republic, Estonia, Finland, Germany, Italy and Poland. *Source: GasHighWay Project, 24 February 2010 (www.gashighway.net).*

ALCOHOLS, (BIO)GASOLINE

Measurement technologies for ethanol-fuelled vehicles

The IEA Advanced Motor Fuels programme (AMF) has recently published a study on methodology for measuring and calculating emissions from vehicles fuelled by ethanol. The study's first section contains a literature survey on methodologies, regulations, instrumentation and measurement procedures. The second section addresses measurement of ethanol calibration gases of different concentrations and oxygen content. A third section is devoted to ethanol-fuelled vehicle tests.

When alcohols are used as blending components in gasoline, uncombusted alcohols from the fuel are emitted in the exhaust in various amounts. There is therefore a risk that the FID reading is overestimated, leading to estimates of “hydrocarbon” emissions from flexible-fuelled vehicles to be higher than they really are. To enable a valid comparison of hydrocarbon emissions from gasoline- and flexible-fuelled vehicles, the hydrocarbons and alcohols should be detected separately. The emissions from alcohol-fuelled vehicles are treated very differently in different countries and under different regulations. The US has specifications applying only to alcohol-fuelled vehicles, such as FID oven temperature, establishment of response factors, sampling procedures for alcohols and aldehydes etc. This is also taken into account when calculating the total emissions, where the emissions of alcohols and aldehydes are included separately. Under the European regulations all “hydrocarbons” (in this case extended to include alcohols which are not, per definition, a hydrocarbon) are measured with the FID. There are, however, different densities for hydrocarbons depending on the type of fuel used in the testing. Under the Brazilian regulations, the vehicle manufacturer has the possibility of sampling alcohols separately in the same way as with the US regulations.

It is a known fact that the FID has a low response to oxygenated compounds, such as alcohols. The FID response to ethanol is also very slow due to the adsorption of ethanol in the measurement system. This was further investigated in this study. Under the US regulations this discrepancy is adjusted through measurement, and establishment, of FID response factors for alcohols and aldehydes. These FID response factors are used in the test result calculations. No special adjustments are performed in this regard under the European regulations. The European Euro 5 emission standard will apply a different density in the calculations of hydrocarbons, when the test is performed on E85 fuel. The higher density will be used since the ethanol molecule also contains oxygen (besides carbon and hydrogen). This change in the calculation will lead automatically to an almost 50% increase in calculated “hydrocarbon” emissions. The combination of the higher FID reading (due to uncombusted alcohol from the fuel) and the higher density used for calculation will make it more difficult for ethanol-fuelled vehicles to comply with the Euro 5 emission standard, and yet more so when the low ambient temperature (Type 6) test is added for E85. *Source: Sandström-Dahl, C. Measurement technologies for emissions from ethanol fuelled vehicles, METEV. IEA-AMF Annex XXXVI, Report AVL MTC 9711. (www.iea-amf.vtt.fi).*

Virent and Shell start biogasoline production plant

Virent Energy Systems, Inc., (Virent®) and Shell announced the start of production at the world’s first demonstration plant converting plant sugars into gasoline and gasoline blend components. The demonstration plant is located at Virent’s facilities in Madison, Wisconsin USA. The demonstration plant has the capacity to produce up to 38,000 litres per year (10,000 gallons), which will be used for engine and fleet testing. The sugars can be sourced from non-food feedstocks such as corn stover, wheat straw and sugarcane pulp, in addition to conventional biofuel feedstocks such as wheat, corn and sugarcane. The demonstration plant is currently using beet sugar.

This new biofuel can be blended with gasoline in high concentrations for use in standard gasoline engines. This eliminates the need for specialised infrastructure, engine modifications, and blending equipment necessary for the use of gasoline containing more than 10% ethanol.

Virent's patented BioForming® platform technology uses catalysts to convert plant sugars into hydrocarbon molecules resembling those produced at a petroleum refinery. Traditionally, sugars have been fermented into ethanol and distilled. Virent's 'biogasoline' fuel molecules have higher energy content than ethanol and deliver better fuel economy. They can be blended seamlessly to make conventional gasoline or combined with gasoline containing ethanol. *Source: Shell Press Release, 23 March 2010. (www.shell.com).*

Virent's biogasoline demonstration. Photo with courtesy of Shell.

Biobutanol from algae

The US DOE Advanced Research Projects Agency-Energy has awarded a Technology Investment Agreement to DuPont for the development of a process to convert sugars produced by macroalgae into next-generation biofuels called isobutanol. Bio Architecture Lab (BAL) will be a subrecipient on the programme. Butamax™ Advanced Biofuels LLC, a joint venture between DuPont and BP, will be responsible for commercialisation of the resulting technology package. The macroalgae-to-isobutanol project will establish technology and intellectual property leadership in the use of macroalgae as a low cost, scalable and environmentally sustainable biomass for biofuel production. Efforts will focus on improving domestic macroalgae aquaculture, converting macroalgae to bio-available sugars, converting those sugars to isobutanol, and economic and environmental optimisation of the production process. The macroalgae aquafarming project will be conducted in Southern California.

Butamax™ has a multi-generational programme to introduce isobutanol from different feedstocks to the market. Initially, isobutanol will be produced from feedstocks such as corn, wheat, and sugarcane. Subsequently, isobutanol production can be based on cellulosic feedstocks and, eventually, advanced feedstocks such as macroalgae. *Source: DuPont News release, 3 March 2010 (vocuspr.vocus.com).*

St1's Refuel RE85 for cold climate

In Finland, VTT Technical Research Centre of Finland and St1, a Finnish energy company, have joined forces to optimise "E85" fuel for cold climate. Car importers, Ford, Volvo and Saab, are also participating in this work. The results confirm that high concentration alcohol fuels can be made to work well even in low temperatures by optimising the proportions of the fuel blend. The work is being carried out within the Finnish "TransEco" research programme.

The test results for the ethanol fuel developed for northern climatic conditions confirm that the fuel functions well even in low temperatures up to -25 °C below freezing point. St1's Refuel RE85 contains up to 85% ethanol, which the company manufactures from biowaste. This biofuel is currently available at seven St1 distribution stations in the Helsinki region.

One aspect of the discussion concerns flexifuel cars. A car bought today should be able to run on the biofuels of the future. In ordinary gasoline-run cars, the gasoline can only be supplemented with ethanol in limited amounts: 5 vol-% according to current European standards. From next year this will rise to a maximum 10%, which only represents 6% of total energy, however. When EU targets alone require 10% renewable energy in transport by the year 2020, clearly there is a need for alternatives. In flexifuel car models, the proportion of ethanol in fuel can be as high as 85%. In practice, however, the flexifuel model is no more expensive than an ordinary gasoline car. Legislative reforms are under preparation in Finland which will see taxation of fuels adjusted in favour of environmentally friendlier choices. The aim is to incentivise choices and consumption that are energy-efficient and reduce CO_2 emissions. According to a preliminary proposal, waste-based biofuels with low CO_2 emissions would receive special treatment by the tax regime. *Source: TransEco Research Programme, Press release 20 April 2010 (www.motiva.fi).*

BIODIESEL ESTERS

German biodiesel dropped in 2009

In Germany, UFOP analysed the national consumption of biofuels based on the official statistics published by Federal Office of Economics and Export Control – BAFA. Consumption of neat biodiesel (B100) and neat vegetable oil fuel declined in 2009. Compared to 2008, sales of B100 dropped 78% from almost 1.1 million to 0.24 million metric tons. However, consumption of biodiesel as blending component increased. The

overall sales of biodiesel dropped from 2.7 to 2.5 million tons, and neat vegetable oil fuel from 0.4 to 0.1 million tons. In 2007, sales of biodiesel and neat vegetable oil were 4.0 million metric tons. *Source: UFOP News, 26.3.2010 (www.ufop.de).*

SYNTHETIC AND RENEWABLE DIESEL

Neste Oil to trial 100% biofuel

Neste Oil has begun trials for cars in Finland of Neste Green 100 diesel (NExBTL) produced from 100% renewable raw materials and free of any fossil oil components. The trial will include private individuals and Neste Oil employees. Test drivers from outside the company will trial Neste Green 100 diesel from mid-May to Midsummer, while test drivers recruited from the company's employees have begun today and will continue after Midsummer. Drivers will fill up at selected Neste Oil service stations in Greater Helsinki. The majority of Neste Oil stations in Finland already offer Neste Green diesel, which contains a minimum of 10% renewable diesel blended with conventional diesel fuel.

Neste Oil is looking forward to the results of the trial with interest. Previous trials have shown that Neste Oil's renewable diesel offers significant advantages compared to conventional biodiesel. The fuel's greenhouse gas emissions over its entire life cycle are 40-80% lower than those of fossil diesel, and its tailpipe emissions are also lower. *Source: Neste Oil Corporation, Press Release, 26 April 2010 (www.nesteoil.com).*

OTHER FUELS AND VEHICLES

Shell: 40% of vehicles electric by 2050

Shell's CEO said in the Wall Street Journal ECO:nomics show that by 2050 40% of vehicles will be electric cars. *Source: Royal Dutch Shell Plc News, 4 March 2010 (royaldutchshellplc.com).*

Fuel cell vehicle issues

Representative from General Motors pointed out that while pure battery electric propulsion is very efficient for smaller, low-speed and short-range urban vehicles, hydrogen fuel cells are better suited for other applications, e.g. larger vehicles at highway speeds. Many automobile manufacturers have announced that their intention to commercialise fuel cell vehicles in 2015 in the regions that have hydrogen stations. *Source: A Briefing in the US Senate, Solving the Market's Dilemmas-Energy Infrastructure for Fuel Cell Electric Vehicles, 5 March 2010 (hydrogenassociation.org).*

Toyota have joined the German-based Clean Energy Partnership (CEP), which includes the BMW Group, Berliner Verkehrsbetriebe BVG, Daimler, Ford, GM/Opel, Hamburger Hochbahn, Linde, Shell, StatoilHydro, TOTAL, Vattenfall Europe and Volkswagen. Toyota will contribute with five of its zero-emissions FCHV-adv hydrogen fuel cell vehicles to the programme in Germany by 2011. The Toyota FCHV-adv was on show at Geneva, demonstrating the improved driving range of more than 500 miles and very cold weather operation. *Source: Toyota press release 6 March 2010 (www.toyotagb-press.co.uk).*

Honda points out that the most important approach in the near term for cutting CO_2 emissions lies in expanding the use of hybrid electric vehicles, and Honda is also developing a battery electric commuter car. However, Honda believes that fuel cell vehicles are the ultimate solution in reducing CO_2 emissions. The Honda FCX Clarity is a fully functional vehicle, and Honda has recently developed a very compact solar hydrogen station suitable for use in the home. *Source: Honda News, 3 February 2010 (www.hondanews.eu).*

MISCELLANEOUS

Ban of diesel taxis and buses in Madrid

A regulation is under preparation in Madrid that will prevent the purchase of new taxis and urban buses running on diesel. This decision was taken because diesel models emit too much NO_2. Madrid is the first European city that acting against diesel technology for environmental reasons. The municipality will not enforce the purchase of special technology, but will establish a control not only in terms of CO_2 but also regarding the NO_2 emissions. This news is in line with a recent announcement to the effect that out of the 60 new buses already ordered for 2010, 80% will be CNG vehicles. The rest will be diesel simply because of the lack of CNG versions in certain specific. *Source: NGVA Europe, 1 March 2010 (www.ngvaeurope.eu).*

CARB: LEV III proposal

The California ARB has published the long expected proposal for the next tier of emission requirements for light-duty vehicles, known as LEV III. The proposed LEV III standards, applicable through model years 2014-2022, target a fleet average SULEV emission level. The regulation would introduce increasingly tighter fleet average emission limits, eventually reaching 0.030 g/mi NMOG+NO_x, equivalent to the SULEV certification bin (and to the EPA Tier 2 Bin 2). The proposal also considers a voluntary particle number emission standard – the first in North America – that manufacturers could choose instead of the PM mass emission limit. *Source: CARB discussion paper, 8 February 2010 (www.arb.ca.gov).*

High NO_x emissions from Euro V trucks

The Netherlands has given a note to European Council (Environment) on implementation of Euro V/Euro VI emission regulations. The note is based on a study by TNO showing that in urban driving conditions, actual NO_x emissions from Euro V trucks are three times higher than previously estimated and only marginally better than those from Euro III trucks, even though the type-approval limit value is 60% lower. These new findings are in line with the results of similar research conducted recently in Sweden. The higher NO_x emissions in slower driving conditions are at least partly due to calibration of the engine for high fuel economy with SCR systems. However, SCR systems are ineffective in reducing NO_x emissions under low exhaust gas temperatures. One option is that the European Commission negotiate an agreement with the industry on modifying the calibration software of existing and new Euro V vehicles. The use of a portable measurement system (PEMS) may largely reduce the differences between actual emissions and type-approval emissions. *Sources: Note to the EU from the Netherlands, 8 March 2010 (register.consilium.europa.eu). Report from TNO (www.vrom.nl).*

IEA & IEA/AMF News

From the Executive Committee

The 39th IEA/AMF Executive Committee meeting will be held in Ottawa, Canada on 12-14 May 2010. The progress of Annexes will be reported in the 39th ExCo Meeting.

The report of Annex XXXVI Measurement Technologies for Emissions from Ethanol Fuelled Vehicles "METEV" has been published and available on the website *(www.iea-amf.vtt.fi).*

The updated country report from Finland is available for the Members on the website.

IEA/AMF Annual Report 2009

The IEA/AMF Annual Report 2009 is published and available on the website *(www.iea-amf.vtt.fi).* The period 2008-2009 has been a good one for the IEA Implementing Agreement on Advanced Motor Fuels (AMF). In 2008, the AMF attracted three new member countries, Austria, the People's Republic of China and Thailand. The good drive continued in 2009 when Australia and Germany joined. Participation is now 16 countries from all over the world.

The past period (2005-2009) of AMF expired on 31st of August 2009. A new strategic plan for 2009-2014 and a summary of the 2005-2008 activities was submitted to the IEA in early 2009. The End-of-Term Report and the new Strategic Plan were presented to the End-Use Working Party (EUWP) on 31st of March 2009 and to the Committee on Energy Research and Technology (CERT) on 9th of June 2009. At its June meeting CERT approved the extension of AMF for the period from 1st of September 2009 to 31st of August 2014. Dr. Ralph McGill was highly instrumental in producing documentation required for the process. For the new term, the vision, mission and objectives of AMF have been re-formulated (see Annual Report).

Six running Annexes were carried over to the new phase. In 2009, as a part of the constant renewing process of the Agreement, two new Annexes, "Environmental Impact of Biodiesel Vehicles" and "Enhanced Emission Performance and Fuel Efficiency for HD Methane Engines", were started. Two ExCo meetings were held in 2009, one in Helsinki, Finland in May 2009 and one in Bangkok, Thailand in November 2009. Technical tours to energy and fuel related targets were included.

Renewable energy in transport received much attention in 2009. Hope was placed in biofuels as well as in electric vehicles. Biofuels can be implemented for the existing vehicle fleet, whereas for electricity the vehicle fleet must be renewed with fundamentally different vehicles. In 2008, crude oil peaked at some

39th ExCo Meeting

The 39th ExCo Meeting will be held on 12-14 May 2010 in Ottawa, Canada.

Annex XXXVI report

The report of Annex XXXVI Measurement Technologies for Emissions from Ethanol Fuelled Vehicles "METEV" is published and available on the website *(www.iea-amf.vtt.fi).*

IEA/AMF Annual Report 2009

The IEA/AMF Annual Report 2009 is published and available on the website *(www.iea-amf.vtt.fi).*

Country report – Finland

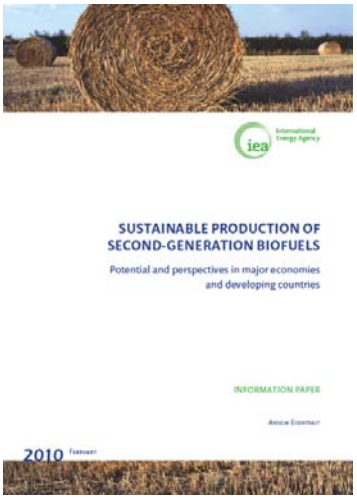
The updated country report from Finland is available for the Members

$150 per barrel. In the beginning of 2009, as a result of the economic recession, the crude price was at around $40 per barrel, but rose steadily through the year ending at some $80 per barrel. Large fluctuations in the oil price make life hard for those who are considering investments in alternative fuels. On the world level, the total share of alternative fuels in road transport is some 5%. Half of that is from fossil sources (mainly natural gas and LPG) and the other half is biofuels, very much dominated by ethanol.

In Europe, the Directive on the promotion of the use of energy from renewable sources (2009/28/EC) was finally approved in April 2009. The Directive calls for a 10 % share (mandatory) of renewable energy in transport in 2020. This renewable energy can be either biofuels or renewable green electricity. The Directive also defines sustainability criteria for biofuels, although it is obvious that more work is needed in this field. Indirect land use changes, among other things, are a hot topic.

The Directive on renewable energy was accompanied by an update (2009/30/EC) of the fuels quality Directive. Now the blending of 10% (vol.) of ethanol into gasoline and 7% (vol.) of conventional biodiesel (FAME) into diesel is allowed. The fuels quality Directive specifically states that the 7% limit does not apply to other biofuel components for diesel, such as pure diesel-like hydrocarbons made from biomass using the Fischer-Tropsch process or hydro-treated vegetable oil, thus, in a way, calling for the development of advanced biofuels.

PUBLICATIONS



- IEA/AMF: Annual Book 2009. *(virtual.vtt.fi).*
- IEA/AMF: Sandström-Dahl, C. Measurement technologies for emissions from ethanol fuelled vehicles, METEV. IEA-AMF Annex XXXVI, Report AVL MTC 9711. *(www.iea-amf.vtt.fi)*.
- IEA: Energy Technology Perspectives 2010 - a pre-sale with 10% price reduction. © 2010 OECD/IEA. *(www.iea.org)*.
- IEA: Resources to Reserves 2010 brochure – findings of the upcoming study. © 2010 OECD/IEA. *(www.iea.org)*.
- IEA: Sustainable Production of Second Generation Biofuels - Potential and perspectives in major economies and developing countries. February 2010. © 2010 OECD/IEA. *(www.iea.org)*.
- IEA Bioenergy: ExCo64 Workshop: Algae - The Future for Bioenergy? Summary and Conclusions. Report, ExCo 2010:02. *(www.ieabioenergy.com)*.
- IEA Bioenergy: Bioenergy - a sustainable and reliable energy source. A review of status and prospects. *(www.ieabioenergy.com)*.
- IEA Bioenergy: Algae - the Future for Bioenergy? Summary and conclusions of Workshop held in Belgium in October 2009. *(www.ieabioenergy.com)*.
- IEA Bioenergy: Task 39 Newsletter #24, April 2010. *(www.task39.org)*.
- IEA Bioenergy: Task 40 "Sustainable International Bioenergy trade". Newsletter. February 2010. *(www.bioenergytrade.org)*.
- IEA: New energy efficiency web pages. © 2010 OECD/IEA. *(www.iea.org)*.
- Global Trade and Environmental Impact Study of the EU Biofuels Mandate. Final Report, March 2010. Report has been prepared by IFPRI. *(trade.ec.europa.eu)*.
- GasHighWay: Biogas national reports. *(www.gashighway.net)*.
- Renewables Interactive Map. The Renewable Energy Policy Network, REN21, *(www.ren21.net)*.
- EU: sustainability criteria for biomass and biogas. European Commission, Press release, 25 February 2010 *(europa.eu)*.

IEA/AMF Delegates

Australia – Department of the Environment, Lesley Dowling

Austria – Austrian Federal Ministry for Transport, Andreas Dorda

Canada – Natural Resources Canada, Jean-Francois Gagné

People's Republic of China – CATARC, Maodong Fang

Denmark – DTU, Jesper Schramm

Finland – VTT, Nils-Olof Nylund

France – ADEME, Patrick Coroller

Germany – FNR, Birger Kerckow

Italy – Eni SpA, Fausto Alberici

Japan – NEDO, Kazunori Nagai

Japan – LEVO, Nobuichi Ueda

Spain – IDEA, Francisco José Domínguez Pérez

Sweden – Swedish Road Administration, Olle Hådell

Switzerland – SFOE, Sandra Hermle

Thailand – NSTDA, Paritud Bhandhubanyong

United Kingdom – Department for Transport, Chris Parkin

USA– DOE, Kevin Stork

Editor: VTT Technical Research Centre of Finland, P.O. Box 1000, FI-02044 VTT, Espoo. paivi.aakko@vtt.fi - P Aakko-Saksa