

AMFI Newsletter



Kyoto buses will run on HVO [more](#)

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

The AMFI releases four electronic newsletters each year.

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The AMFI Newsletter is available online at: www.iea-amf.org

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GENERAL INTEREST

Thailand: CO₂ based tax under preparation

Although the Thai Cabinet has approved the new scheme, as shown below [1], for vehicle excise tax to be based on tailpipe CO₂ emission since 19 December 2012 with implementation date of 1 January 2016 [2], not many details and public discussions have been conducted until the recent Director-General Meeting of ASEAN Member Countries on Automobile Taxation in Chiangmai during 20-21 November 2014 [3]. The meeting was well attended by representatives from ASEAN member countries, as well as related Thai stakeholders since Thai excise tax reform was also discussed. This new scheme has replaced the current excise tax structure, which is based on engine size, by giving tax incentives to those vehicles with low tailpipe CO₂ emission in order to increase fuel efficiency in the transportation sector and improve air quality on Thai roads. At the end of the meeting, the representative countries agreed that 'The future design of excise tax or special commercial tax on automobiles should reflect the environmental concerns such as fuel efficiency and/or the reduction of CO₂ emissions.'

Comparison of Current Structure VS New Structure

Categories Of Vehicle	Tax Structure in Present				Tax Structure in Future			
	Engine Capacity (Horse Power)	Tax Rate (%)			CO ₂	Tax Rate (%)		
		E10	E20	E85		E10/E20	E85/NGV	Hybrid
Passenger Vehicles -Passenger Vehicles and, Vans less than 10 seats	≤2,000 CC	30	25	22*	≤100 g/km	} 30*	} 25	10
	2,001-2,500 CC	35	30	27	101-150g/km			20
	2,501-3,000 CC	40	35	32	151-200 g/km	35	30	25
	>3,000 CC	50	50	50	>200 g/km	40	35	30
	(เกิน 220 HP)				>3,000 CC	50	50	50
PPV / DC /Space Cab/Pick Up	≤3,250 CC	20/12/- /3,18			≤200 g/km	25*/12/5/3,18		
	>3,250 CC	50			>200 g/km	30/15/7/5,18		
Eco Car (Benzine/Diesel) / E85	1,300/1,400 CC	17			≤100 g/km	14*/12		
Electric Vehicle /Fuel Cell/ Hybrid	≤ 3,000 CC	10			>3,000 CC	**		
	>3,000 CC	50				50		
NGV-OEM	≤ 3,000 CC	20			>3,000 CC	**		
	>3,000 CC	50				50		

Remarks * : Assign safety standard for Active Safety (ABS+ESC) for Passenger Vehicles and, Vans less than 10 seats must obtain CO₂ ≤150 g/km / PPV must obtain CO₂ ≤200 g/km / Eco Car must obtain CO₂ ≤100 g/km 4

** Depend on CO₂ emission

* less than 1,780 CC but not over 2,000 CC

Sources

[1] <http://transportandclimatechange.org/wp-content/uploads/2015/01/Thailands-Automotive-Excise-Tax-Reform.pdf>

[2] http://www.mcot.net/site/content?id=50d14a42150ba07e070000e2#.VPiVd_mUeSo

[3] <http://transportandclimatechange.org/news-events/towards-co2-based-vehicle-taxation-in-asean-countries/>

EU: Amending the Renewable Energy Directive

A draft law to cap the production of traditional biofuels and accelerate the shift to alternative sources, such as seaweed and waste, was approved by the Environment Committee on February 24th 2015. The main changes to the Renewable Energy Directive include:

Cap first-generation biofuels: Current legislation requires EU member states to ensure that renewable energy accounts for at least 10% of energy consumption in transport by 2020. But in the draft law approved today, the members of the European Parliament say that first-generation biofuels should not exceed 6% of the final energy consumption in transport by 2020.

Boost advanced biofuels: Advanced biofuels, sourced from seaweed or certain types of waste, should account for at least 1.25% of energy consumption in transport by 2020, MEPs say.

Reduce indirect land use change: Using farmland to produce biofuel crops reduces the area available for food crops. This adds to pressure to free up more land, e.g. through deforestation, to grow more food - a process known as indirect land use change (ILUC). But deforestation in itself increases greenhouse gas emissions, which may cancel out part of the beneficial effects of using biofuels. Parliament called as long ago as 2008 for the ILUC factor to be taken into account in EU biofuels policy, which has a budget of €10 billion per year.

The draft law still requires approval by the Council of Ministers.

Source: European Parliament Press release - Environment – 24-02-2015; <http://www.europarl.europa.eu/news/de/news-room/content/20150223IPR24714/html/Environment-Committee-backs-switchover-to-advanced-biofuels>

Barriers to Advanced Biofuels in Europe

Technologies for the conversion of biomass are evolving rapidly, and their deployment on commercial scale is crucial for triggering an advanced biofuels industry. But the implementation of commercial scale projects is slowed down by factors that are not only directly connected with the global crisis.

The EBTP-SABS consortium carried out an assessment among representatives of different entities in EU and non-EU Countries. The data summarized represent the stance and the outlook of stakeholders that look at the perspectives of the advanced biofuels industry from the point of view of governments and governmental agencies, of the Academia and of the business community.

The responses show that technological barriers are being removed, or significantly mitigated; at the same time, new obstacles are jeopardizing the deployment of advanced biofuels industries. Respondents indicate two main weaknesses:

1. A frail biomass market that needs to strengthen value chains in the context of a growing competition between end-uses and relevant variability of prices.
2. The framework where uncertainty of EU strategies and trends couple with inconsistencies at national level and, more generally, with the lack of coherent strategies and action plans.

Both factors are deterring investors and the whole sector is facing a go-slow. On the other hand, non-technological barriers can benefit from coordinated actions. The aim of this report is to feed the debate on how to most effectively overcome hurdles.

Download draft report: <http://www.biofuelstp.eu/downloads/papers/report-on-barriers-to-biofuels-deployment-in-europe-draft.pdf>

GASEOUS FUELS AND LNG

Ford F-150 CNG Vehicle

Ford, America's truck leader, will offer the 2014 F-150 with the ability to run on compressed natural gas, making Ford the only US manufacturer with an available CNG/LPG-capable half-ton pickup.

The 2014 Ford F-150 with 3.7-liter V6 engine will be available with a factory-installed, gaseous-fuel prep package that includes hardened valves, valve seats, and pistons and rings so it can operate on either natural gas or gasoline through separate fuel systems.

When the 3.7-liter V6 F-150 is equipped with a CNG/LPG engine package, it is capable of achieving more than 750 miles on one tank of gas, depending on the tank size selected. The Ford F-150 averages 23 mpg on the highway.

"Businesses and fleet customers have been asking Ford to make F-150 available with CNG capability to take advantage of the fuel's low price and clean emissions," said Jon Coleman, Ford fleet sustainability and technology manager. "With the money saved using CNG, customers could start to see payback on their investment in as little as 24 to 36 months."

CNG/LPG engine prep from the factory costs approximately \$315 before the customer chooses a Ford Qualified Vehicle Modifier to supply fuel tanks, fuel lines and unique fuel injectors. Unfits run approximately \$7,500 to \$9,500 depending on fuel tank capacity.

CNG conversions can provide stability against fluctuating fuel prices as well as lower vehicle operating costs for fleet administrators. CNG sells for an average of \$2.11 per gallon of gasoline equivalent, and is as low as \$1 in some parts of the country, representing a significant savings over unleaded regular fuel. The national average for unleaded regular fuel is \$3.66 per gallon.

Source: <http://www.cngnow.com/news/post.aspx?id=882>

ALCOHOLS AND (BIO)GASOLINE

USDA Long-term Projections 2014

Ethanol production in the United States is based almost entirely on corn as the feedstock. Only small growth is projected for corn-based ethanol production over the next 10 years. This projection reflects declining overall gasoline consumption in the United States (which is mostly a 10-percent ethanol blend (E10)), infrastructural and other constraints on growth in the E15 (15-percent ethanol blend) market, and the small size of the E85 (85-percent ethanol blend) market. Nonetheless, a strong presence for ethanol in the sector continues, with about 35 percent of total corn use expected to go to ethanol production during the projection period.

Source: *USDA Long-term Projections, February 2014*, <http://www.ers.usda.gov/media/1279439/oce141d.pdf>

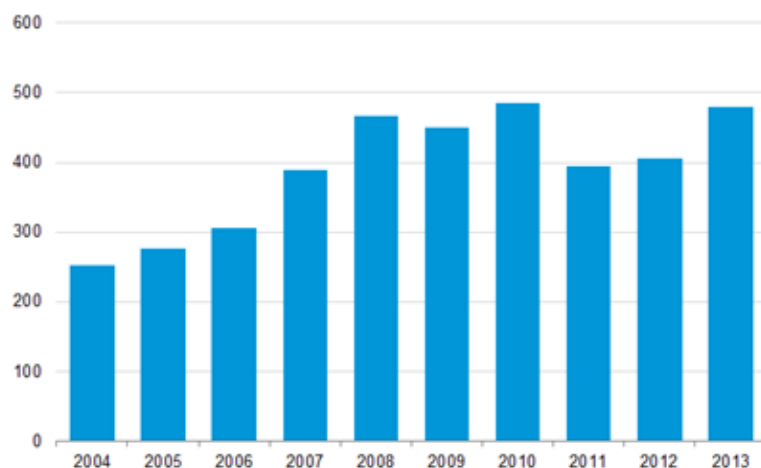
Brazil's Ethanol production in 2013


Brazil is the second largest producer and consumer of ethanol in the world after the United States. According to the ANP, in 2013, Brazil produced 479,000 bbl/d of ethanol, an 18% increase from the previous year. The government raised the ethanol blend requirement in gasoline back up to 25% in May 2013. It is now considering an increase to 27.5% as a measure to reduce gasoline imports.

In 2013, Brazil exported 50,000 bbl/d of ethanol, 81% of which was shipped to the United States,

South Korea, the Netherlands, and Japan. The United States imported 30,000 bbl/d of ethanol from Brazil in 2013 and 35,000 bbl/d in 2012, a significant increase from 12,000 bbl/d in 2011, as U.S. policy in 2012 lifted domestic tariffs on Brazilian sugarcane. Brazil also produces biodiesel but at smaller quantities. In 2013, the country produced 50,000 bbl/d of biodiesel. More than 80% of production was concentrated in the south central region of the country.

Brazilian ethanol production
thousand barrels per day



 Source: U.S. Energy Information Administration,
Agência Nacional do Petróleo, Gás Natural e Biocombustíveis

Source: <http://www.eia.gov/countries/cab.cfm?fips=BR&scr=email>

Raízen commences cellulosic biofuel production

Iogen Corporation (Canada), and Raízen (Brazil) announced they have begun production of cellulosic ethanol at the Costa Pinto sugar cane mill in Piracicaba, São Paulo, Brazil. Raízen broke ground on the \$US100 million “biomass-to-ethanol” expansion one year ago. The new facility will convert biomass such as sugar cane bagasse and straw into 40 000 m³ per year of cellulosic biofuel. It will also be the first large-scale commercial implementation of Iogen Energy’s cellulosic ethanol technology.

“Large scale commercialization in Brazil will open the door for global deployment of our technology” said Brian Foody CEO of Iogen Corporation. Continuous commercial production will commence with the upcoming 2015 harvest season,” “We plan to be producing up to 1 million m³ of cellulosic biofuel from bagasse and cane straw by 2024” said Pedro Mizutani, Raízen’s Executive Vice President. Raízen has already announced that, given a success at Costa Pinto, it intends to deploy Iogen Energy’s technology in seven more Raízen sugar cane mills.

Source: www.iogen.ca/media-resources/press_releases/2014_12_17_advanced_cellulosic_biofuel_milestone.pdf

BIODIESEL ESTERS

Indonesia plans to increase biofuel subsidies

Due to the Indonesian government’s plan to increase biofuel subsidies from IDR 1,500 per liter to IDR 4,000 (USD \$0.32) per liter palm oil futures climbed the most in 28 months. Amid the world’s current low crude palm oil (CPO) prices, Indonesian biofuel producers have it rough as production costs exceed market prices and therefore requested the government to raise biofuel subsidies to offset losses. If approved by Indonesian authorities then this move should result in higher palm oil demand.

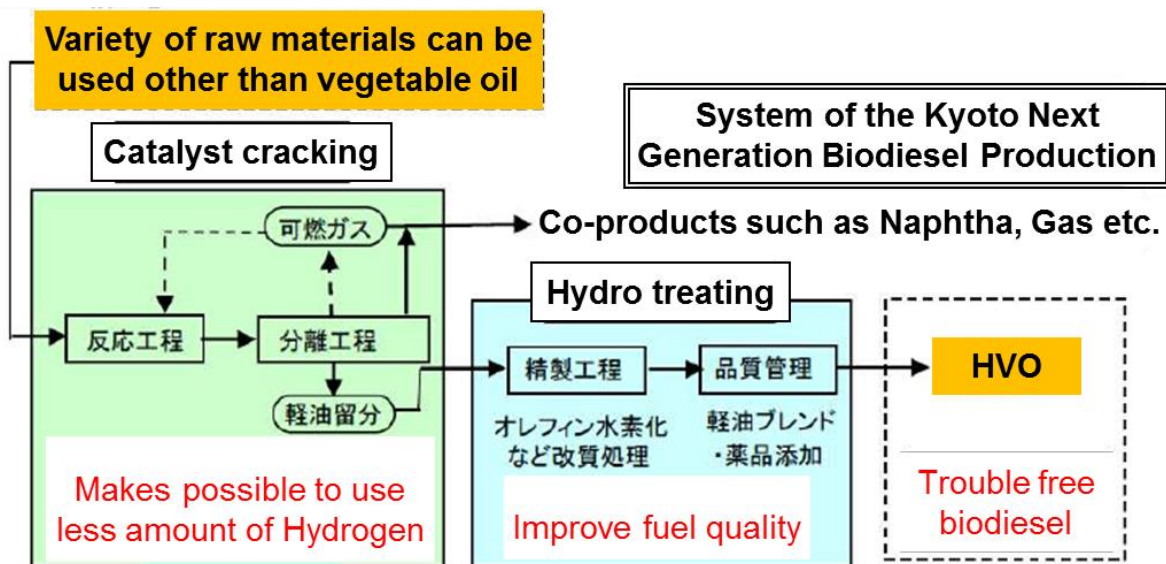
Although having been approved by the Indonesian parliament, the government's proposal to raise biofuel subsidies to IDR 4,000 per liter still requires approval from the parliament's budget committee. Currently, there are 11 Indonesian palm oil companies that produce a total of 5.2 million tons of palm oil-derived biodiesel. As two or three more Indonesian companies are expected to commence biofuel production in 2015, total production may hit 7 million tons this year. However, as CPO prices have lost about a quarter in value from their peak in March 2014, these companies may be forced to temporarily stop biofuel deliveries.

Source/ read more: www.indonesia-investments.com/news/todays-headlines/palm-oil-update-indonesia-subsidies-for-biofuel-to-lift-cpo-prices/item5284

Japan: Kyoto goes for Next Generation Biodiesel

Kyoto city as a host city for COP3 held in December, 1997, is famous for its biodiesel (waste cooking oil based) application to its city public transportation buses and municipal waste collection vehicles. So far Kyoto city has used B20 for the buses (95 units) and B100 for the garbage collection vehicles (170 units) with self-manufactured 1st generation biodiesel (FAME). However, it has found difficulty in using the same fuel up on the introduction of new vehicles that comply with latest Japanese emission regulation (post-new long term emission regulation) as they are equipped with DPF system.

In order to continue to use biodiesel even with vehicles of latest technology, Advanced Scientific Technology Management Research Institute of Kyoto (ASTEM) started development and evaluation program of next generation biodiesel, so called Hydro-treated Vegetable Oil (HVO) in 2012 under the fiscal support of Ministry of the Environment, Government of Japan. The technology applied in Kyoto is unique because the catalyst cracking process is first employed before the hydro-treating process. Owing to this cracking and oxygen removal process, less hydrogen with low pressure enables to produce HVO compared to conventional or common HVO manufacturing process. Thus low cost production of HVO with relatively small scale and simple facility is expected.



Toyota Motor Corporation, in cooperation with Hino Motors Ltd., provided vehicles for evaluation. During on-road vehicle/fuel evaluation under the actual operating condition for city public transportation and municipal waste collection, B30 with HVO was used by the bus and B100 with HVO was used by the garbage collection vehicle. After 3 months of evaluation, no difference in vehicle performance and maintenance conditions were observed compared to fossil diesel fuel, and clear advantage to FAME was confirmed in terms of extended engine oil drain interval.

Based on the result of 3 years development and evaluation program, Kyoto city is now planning to introduce next generation biodiesel production facility by 2018, and use HVO for its city public transportation buses and municipal waste collection vehicles operation.

Source: Advanced Scientific Technology Management Research Institute of Kyoto (ASTEM)

RENEWABLE DIESEL / JET

HVO patent infringement settled

Neste Oil Corporation of Finland and Renewable Energy Group (Iowa, USA) have entered into a Agreement whereby the parties have settled Neste Oil's US patent infringement lawsuits against REG and REG's Singapore patent infringement lawsuits against Neste Oil and REG has licensed certain Neste Oil technology and IPRs for use at REG Geismar.

"We are happy that our patent dispute with respect to renewable diesel has been satisfactorily resolved through constructive discussions with another respected biofuel producer," says Lars Peter Lindfors, Senior Vice President, Technology at Neste Oil.

"We are happy to have reached a resolution with Neste Oil. This agreement resolves our dispute with Neste Oil regarding Neste Oil's patents by REG Geismar. Through these discussions, we discovered useful Neste Oil intellectual property that through this license we will now be able to use to enhance operational flexibility for REG Geismar," said Eric Bowen, REG Vice President.

The settlement reflects the parties' conclusion that continued pursuit of the US and Singapore patent infringement lawsuits was counterproductive and the parties' desire for a mutually agreeable resolution.

Source: www.nesteoil.com/default.asp?path=1;41;540;1259;1260;22862;24814

Co-operation on sustainable fuel for aviation

Airbus Group has signed a Memorandum of Understanding with Emerging Fuels Technology, Inc.(EFT) to promote EFT in the commercialization of technologies to produce sustainable fuels for aviation.

Aviation fuels made from biomass, municipal solid waste, natural gas, and other non-fossil feedstock have the potential to significantly reduce CO₂ emissions on a lifecycle basis compared to conventional fuels.

EFT's proprietary Advanced Fixed Bed Fischer-Tropsch reactor and catalyst system can convert synthesis gas into transportation fuels such as renewable diesel and sustainable jet fuel. EFT offers Reference Designs of its GTL technology which includes its patented reactor/catalyst system in nominal 250 Barrel per Day modules complete with related support equipment and modular upgrade packages from 250 BPD to 10,000 BPD.

Airbus Group is a driving force in a global effort to establish a sustainable fuel supply roadmap through an ambitious program connecting farmers, refiners and airlines to form regional sustainable aviation fuel value chains. This effort seeks to establish local value chains on every continent to support airlines' ability to refuel aircraft throughout the region. Programs have been established in Australia, Brazil, China, the Middle East, Romania and Spain.

In Europe, Airbus Group and other stakeholders are progressing in their work with the European Commission to develop the European Advanced Biofuels Flightpath initiative – a European roadmap for the implementation of sustainable aviation fuels there.

Airbus Group's 2014 launch of a sustainable aviation fuels roadmap has led to collaborative projects with airline partners. It has also led to approval of 50 percent blends of biomass – to – liquid (BTL) and hydro-processed esters and fatty acids (HEFA) fuels on commercial flights. Through May 2014, more than 1,500 commercial flights have been flown with alternative fuels worldwide.

Source:

http://emergingfuels.com/wp-content/uploads/2014/12/Airbus_Group_and_Emerging_Fuels_Technology_sign_MOU.pdf

Ethanol-powered airplane

The Ipanema agricultural airplane, powered by ethanol (hydrated alcohol) – EMB 202A, celebrated its 10th anniversary. The Ipanema was the first airplane produced in series, in the world, to leave the factory already certified to fly with this type of fuel and it is still the only one.

The first delivery of the ethanol-powered airplane took place in March 2005. From then on, Embraer also began to offer ethanol conversion kits to the owners of airplanes powered by AvGas. Up to 2014, there were 269 aircraft sold, as well as 205 conversion kits, totaling 474 aircraft powered by alcohol.

The model is more economical: on average, the owner of an ethanol-powered airplane spends 25% less on fuel. Furthermore, the fuel provides 7% more power, improving the aircraft's performance on takeoff, climbing, speed, and maximum altitude.

The airplane is used mainly to spray agrochemicals, thus avoiding losses from machinery rolling over the crops and making the operation more flexible. It also can be used to spread seeds, for basic firefighting, stocking rivers, and combating larvae and disease-bearing insects or animals.

Source: www.embraer.com/en-US/ImprensaEventos/Press-releases/noticias/Pages/Embraer-celebra-dez-anos-do-Ipanema-movido-a-etanol.aspx

OTHER FUELS AND VEHICLES

EV Charging Network in California

Pacific Gas and Electric Company (PG&E) has asked California state regulators for approval to build out a 25,000 electric vehicle (EV) network throughout Central and Northern California. If approved, PG&E said this program will be the largest deployment of Electric Charging stations in the country.

The chargers would be located at commercial and public locations, including multi-family dwellings, retail centers and business parking lots. Approximately 10 percent of the chargers would be installed



Photo Credit: PG&E

to support disadvantaged communities. PG&E would also provide tools and educational materials for site hosts and customers to learn about the benefits of EVs.

"Our proposed build-out of EV charging infrastructure aims to accelerate customer adoption of clean, quiet, and efficient plug-in vehicles by reducing lingering "range anxiety". It reflects our commitment to helping the state of California meet its critical clean air and greenhouse gas emissions reduction goals by promoting cleaner transportation," said Tony Earley, chairman, president, and CEO of PG&E Corporation.

More than 60,000 plug-in electric vehicles are currently registered in PG&E's service area, which represents more than a fifth of all EVs in the U.S. The Governor's Office has called for 1.5 million zero-emission vehicles in California by 2025 to help meet the state's ambitious goal of reducing greenhouse gas emissions 80 percent below 1990 levels by 2050. To support that plan, industry models suggest that PG&E's service area will need about 100,000 Level 2 chargers in public locations by 2020.

All of the 25,000 stations PG&E proposes to build would have Level 2 chargers, which provide up to 25 miles of range for every hour of charging. To support travel between metropolitan areas, PG&E would also *install at key locations* 100 DC fast chargers, which can recharge an EV's battery in only 30 minutes.

Source: http://domesticfuel.com/2015/02/13/pge-proposes-largest-cali-ev-charging-network/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+DomesticFuel+%28Domestic+Fuel%29

IEA & IEA-AMF NEWS

Current AMF Annexes / Projects

Annex 28: Information Service & AMF Website (AMFI)

Annex 35 Subtask 2: Particulate Measurements: Ethanol and Butanol in DISI Engines

Annex 42: Toxicity of Exhaust Gases and Particles from IC-Engines

Annex 43: Performance Evaluation of Passenger Car, Fuel, and Powerplant Options

Annex 44: Alcohol fuels including methanol, by CATARC, China

Annex 45: Hydro-treated vegetable oil, by Germany and Denmark

Annex 46: Alcohol Application in CI Engines, by DTU

Annex 47: Reconsideration of DME Fuel Specifications for Vehicles

Annex 48: Value Proposition Study on Natural Gas Pathways for Road Vehicles

Annex 49: COMVEC – Fuel and Technology Alternatives for Commercial Vehicles

Annex 50: Fuel and Technology Alternatives in Non-Road Engines

Annex 51: Methane Emission Control

NEW: Annex 52: Fuels for Efficiency

Check www.iea-amf.org for more details!

Next ExCo Meetings

ExCo 50: week of 26-30 October 2015 in Jerusalem, Israel

PUBLICATIONS

- **Debbie Rosenblatt, Christine Morgan, Steve McConnell, Jukka Nuottimäki: Particulate Measurements: Ethanol and Isobutanol in Direct Injection Spark Ignited Engines. A report from the IEA Advanced Motor Fuels Implementing Agreement.** This report summarizes particulate data from two different GDI engines and three different GDI vehicles tested in four separate facilities in three countries. These engines and vehicles were tested under different operating modes, driving conditions, and at different ambient test conditions to assess the impacts of alcohol fuel blends and varying fuel blend levels on particulate emissions.
Link: http://iea-amf.org/app/webroot/files/file/Annex%20Reports/AMF_Annex_35-2.pdf
- **Benjamin Stengel, Johan Hardang Vium: Synthesis, Characterization, and Use of Hydro-Treated Oils and Fats for Engine Operation. A report from the IEA Advanced Motor Fuels Implementing Agreement.** This research project investigated the sustainability of different biofuels and their impacts on performance and emissions of modern EURO-6 passenger car diesel engines. An adapted ECU setting could improve fuel efficiency in biofuel operation without exceeding emission limits.
Link: http://iea-amf.org/app/webroot/files/file/Annex%20Reports/AMF_Annex_45.pdf
- **A. Groysman: Corrosion in Systems for Storage and Transportation of Petroleum Products and Biofuels. Identification, Monitoring and Solutions.** This book treats corrosion as it occurs and affects processes in real-world situations, and thus points the way to practical solutions. Topics described include the conditions in which petroleum products are corrosive to metals; corrosion mechanisms of petroleum products; which parts of storage tanks containing crude oils and petroleum products undergo corrosion; dependence of corrosion in tanks on type of petroleum products; aggressiveness of petroleum products to polymeric material; how microorganisms take part in corrosion of tanks and pipes containing petroleum products; which corrosion monitoring methods are used in systems for storage and transportation of petroleum products; what corrosion control measures should be chosen; how to choose coatings for inner and outer surfaces of tanks containing petroleum products; and how different additives (oxygenates, aromatic solvents) to petroleum products and biofuels influence metallic and polymeric materials.
Published by Springer
- **Multi-Year Program Plan of the USDoE Bioenergy Technologies Office (MYPP).** The MYPP sets forth the goals and structure of the Bioenergy Technologies Office. It identifies the research, development, demonstration, and deployment activities the Office will focus on over the next five years and outlines why these activities are important to meeting the energy and sustainability challenges facing the nation. This MYPP is intended for use as an operational guide to help the Office manage and coordinate its activities, as well as a resource to help communicate its mission and goals to stakeholders and the public.
Link: www.energy.gov/eere/bioenergy/downloads/bioenergy-technologies-office-multi-year-program-plan-november-2014-updat-0 and www.energy.gov/sites/prod/files/2014/11/f19/mypp_beto_november_2014.pdf
- **Joern Huenteler, Laura Diaz Anadon, Henry Lee, Nidhi Santen: Commercializing Second-Generation Biofuels, Scaling Up Sustainable Supply Chains and the Role of Public Policy Rapporteur's report.** The promise, prospects and public policy trade-offs related to the greater use and production of second-generation biofuels were addressed in an executive session convened by the John F. Kennedy School of Government at Harvard

University on November 13th and 14th, 2014. The session attracted more than 25 of the world's leading experts from the fields of policy, science, and business for an intensive two day session. The agenda consisted of three sessions focused on (i) the sustainability of cellulosic supply chains, (ii) government policy options to attract investment and (iii) government policy options to ensure that environmental objectives are met. The discussions were off-the-record, with each participant present in his or her own capacity, rather than representing an organization. This report is a summary of the main points and issues raised over the two days.

Link: <http://belfercenter.ksg.harvard.edu/files/commercializing-2ndgen-biofuels-web-final.pdf>

- **Christopher W. Tessum, Jason D. Hill, Julian D. Marshall: Life cycle air quality impacts of conventional and alternative light-duty transportation in the United States.** The authors find that powering vehicles with corn ethanol or with coal-based or "grid average" electricity increases monetized environmental health impacts by 80% or more relative to using conventional gasoline. Conversely, EVs powered by low-emitting electricity from natural gas, wind, water, or solar power reduce environmental health impacts by 50% or more. Consideration of potential climate change impacts alongside the human health outcomes described here further reinforces the environmental preferability of EVs powered by low-emitting electricity relative to gasoline vehicles.

Link: <http://www.pnas.org/content/111/52/18490.full.pdf+html>

- **Vicki Duscha, Mario Ragwitz, Barbara Breitschopf, Wolfgang Schade, Rainer Walz, Matthias Pfaff, Erika de Visser, Gustav Resch, Carsten Nathani, Paul Zagamé, Arnaud Fougeyrollas, Baptiste Boitier: Employment and growth effects of sustainable energies in the European Union.** The Commission Communication "Renewable Energy: a major player in the European energy market" (EC 2012) clearly states the objectives for European energy policy: combating climate change, limiting the EU's vulnerability to imported hydrocarbons, and promoting growth and jobs. The Energy Roadmap 2050 (EC 2011) reaffirms the strong role of renewable energy sources on the way to a low carbon European energy sector by 2050. In order to promote the objective discussion of the growth and employment effects of an enhanced deployment of renewable energy sources (RES), a scientific basis is needed on the gross as well as the net effects. This Publication of final report of the EmployRES-II project quantifies positive effects of renewables. Researchers found out that further promotion of renewable energy will contribute significantly towards growth and employment, reduction of energy imports (in particular natural gas) and GHG emission savings.

Link: http://ec.europa.eu/energy/sites/ener/files/documents/EmployRES-II%20final%20report_0.pdf

- **European Environment Agency: Employment and growth effects of sustainable energies in the European Union.** This report EEA (Report No 5/2014) presents an overview and analysis of air quality in Europe from 2003 to 2012. The evaluation of the status and trends of air quality is based on ambient air measurements, in conjunction with anthropogenic emissions and their trends. It reviews progress towards meeting the requirements of the air quality directives and gives an overview of policies and measures introduced at European level to improve air quality and minimize impacts. The latest findings and estimates of the effects of air pollution on health and its impacts on ecosystems are also reviewed. The analysis covers up to 38 European countries, including the 28 EU Member States, and member countries of the European Environment Agency (EEA-33).

Link: http://www.eea.europa.eu/publications/air-quality-in-europe-2014/at_download/file

EVENTS

NAFA 2015 Institute & Expo (US Fleet Management Association), 15-16 April 2015, Orlando, USA

Conference website: www.nafa.org

European Algae Biomass, 22 April 2015, Amsterdam, The Netherlands

Conference website: www.wplgroup.com/aci/conferences/eu-eal5.asp

Busworld Academy, 28-29 April 2015, India

More information:

http://www.flexmail.eu/dyn/tpl_attributes/user_documents/user_13121_documents/BW_Academy_India_Seminar_Program.pdf

Email to: academy@busworld.org

5th Alternative Fuels and Clean Vehicles Conference and Expo, 4-7 May 2015, Dallas, USA

Conference website: www.actexpo.com/

23rd European Biomass Conference and Exhibition, 1-4 June 2015, Messe Wien - Vienna – Austria

Conference website: www.eubce.com

15th EAEC European Automotive Congress, 8–10 June 2015, Győr, Hungary

Conference website: <http://eaec2015.org/>

5th European PEFC & H2 FORUM, 30 June 2015, Lucerne, Switzerland

Conference website: <http://www.efcf.com/index.php?id=1237>

9th Asian DME Conference, 16-18 October 2015, Wuzhen, R.P. China

Conference website: <http://ecovehicle.sjtu.edu.cn/english/introduction.htm>

IEA Bioenergy Conference 2015 - Realising the world's sustainable bioenergy potential, 27-28 October 2015, Berlin, Germany

Conference website: <http://ieabioenergy2015.org/>

ANGVA's 6th Biennial International Conference & Exhibition (ANGVA 2015), 4-6 November 2015, Chengdu, China

Conference website: <http://www.angva.org/?p=1091>

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