October 2015, issue no. 3/2015

AMFI Newsletter

First DME Truck Registered in Japan

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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GENERAL INTEREST

US: Comments on RFS Proposal

July 27 was the final day members of the public can weigh in on the U.S. EPA's recently released renewable fuel standard (RFS) proposal. As the comment period comes to a close, supporters of the biofuel industry are actively making their voices heard. According to information posted to Regulations.gov, approximately 47,634 comments had been filed on the proposal as of 11:59 p.m. July 26.

In its comments to the EPA, the Renewable Fuels Association urged the agency to implement the RFS as Congress intended, and to abandon its proposal to substantially slash the amount of biofuels that are to be blended with gasoline.

The American National Biodiesel Board called on the EPA to strengthen its proposal for biodiesel volumes under the RFS. NBB cited compelling benefits of increased biodiesel production and significant additional capacity for growth in the industry.

Nearly two dozen top executives from the advanced and cellulosic biofuels industry sent a letter to President Obama regarding the RFS volume requirement proposal, emphasizing that the RFS proposal represents a broken promise that is negatively impacting investments and partnerships in advanced biofuels, is sending projects and jobs overseas, and is at odds with the president's initiatives to combat climate change.

The EPA is expected to release a final version of its rule by Nov. 30.

Sources:
http://www.biomassmagazine.com/articles/12230/biofuel-industry-voices-support-for-rfs-as-comment-period-ends
http://biodiesel.org/news/news-display/2015/07/28/national-biodiesel-board-submits-rfs-comments
http://www.biomassmagazine.com/articles/12415/advanced-biofuel-industry-rfs-proposal-is-damaging-industry

US: Ten Years RFS

August 6, 2015 marks 10 years since the Energy Policy Act of 2005 containing the original Renewable Fuel Standard (RFS) was signed into law. The RFS set America on a path toward ethanol to be blended with gasoline. The Renewable Fuels Association has compiled a report examining the impact of the RFS on the economy, job creation, agriculture, the environment, fuel prices, petroleum import dependence and food prices. According to RFA's analysis, since 2005:

- The number of corn ethanol plants has more than doubled.
- Annual ethanol and co-product production has more than tripled.
- Ethanol-related jobs have more than doubled.
- Total U.S. cropland has not increased, the United States is producing 3 billion bushels of corn more than in it was in 2005.
- The US is producing nearly 25 bushels per acre more today due to higher yields.
- Corn prices have nearly doubled their average price.
- The values of crops and livestock have both increased by about 60%.

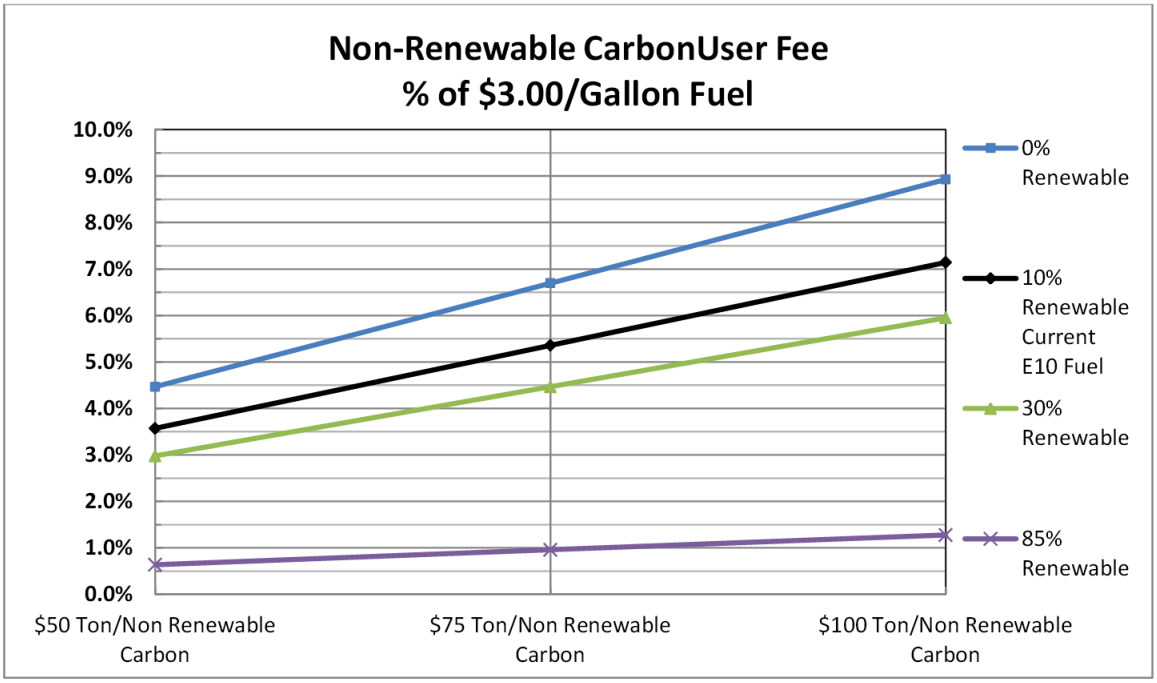
- The U.S. still imports more than 40% of its crude oil; imports from OPEC have been cut in half. Imports of finished gasoline have virtually disappeared.
- World food prices have advanced at an annual average rate of 2%, in line with, or lower than, long-term historical trends.

Source: *http://www.ethanolrfa.org/news/entry/celebrating-a-decade-of-success-the-rfs-turns-10/#sthash.RQRtakdb.dpuf*

Non-Renewable Carbon User Fee

To accomplish reducing Climate Change caused by Green House Gases, Advanced Biofuels USA introduced a new idea for capturing externalities of non-renewable fuels and for funding needed research – a Non-Renewable Carbon Fuel User Fee - at the Congressional Renewable Energy and Energy Efficiency EXPO + Forum on July 9th:

- The Advanced Biofuels USA proposal uses lower priced renewable fuels to drive the consumer market. When the true costs of fuel become apparent, consumers will demand higher renewable portions of fuels for transportation, power and heat.
- The fee, which is based on current scientific estimates of Climate Change effects and mitigation costs, applies to only the non-renewable portion of liquid and gas used for transportation and stationary source combustion.
- The fee, between $50 and $100/ton of non-renewable carbon, translates into only 3.5% to 7% increases in current transportation fuel prices; or, less than the volatility we commonly experience in gasoline prices.



- The fee will disappear as lower priced renewable fuels take over the market.

Source: *http://advancedbiofuelsusa.info/wp-content/uploads/2015/07/Carbon-User-Fee-Proposal-July-2105-Rev-3-2-JMI-final.pdf*

Thailand: Energy Efficiency Plan

In August 2015, the Thailand Energy Policy and Planning Office has successfully proposed a revised Energy Efficiency Plan (EEP: 2015-2036 [1]) to the National Energy Policy Council. The revised plan aims to reduce Energy Intensity by 30% by 2036 (based year 2010), equivalent to a reduction of energy usage by 51,700 ktoe, via three programs: compulsory (10,972 ktoe), voluntary (40,728) and complementary. Within the transportation sector, relevant measures are

- Vehicle excise tax based on CO2 tailpipe emission [2]
- Mandaten EcoSticker to be displayed on new vehicles after 1 October 2015 with database website [3] accessible in December 2015.
- Electric Vehicle (EV) expected to be in commercial market by 2018, with 1% annual growth rate to approximately 1.2 million EVs by 2036

Sources:
[1] http://www.eppo.go.th/encon/EEP2015/index.html
[2] http://transportandclimatechange.org/wp-content/uploads/2015/01/Thailands-Automotive-Excise-Tax-Reform.pdf
[3] http://www.car.go.th

Israel's Fuel Choices Initiative

Israel's main effort in addressing the global challenge of low carbon transport is the national program for alternative fuels in transportation (The Fuel Choices Initiative). The Initiative has been budgeted for ten years in order to create regulatory stability and an investment horizon for market stakeholders, and includes tools to strengthen scientific and applied research in the field, simplify bureaucracy, and strengthen entrepreneurship and industry. The Initiative is managed by a designated administration in the Prime Minister's Office.

Based in Israel, it has brought together a team of researchers, innovators and private sector collaborators all striving towards the same goal with different methods.

Source: *http://www.biofuelsdigest.com/bdigest/2015/09/10/an-alternative-path-to-alternative-fuels-the-digests-2015-8-slide-guide-to-israels-fuel-choices-initiative/*

UK: 3 New Advanced Biofuel Projects

The United Kingdom Department of Transport has awarded government funds to Celtic Renewables, Advanced Plasma Power and Nova Pangea to turn waste products into fuel.

Celtic Renewables will use the money to build a biofuel plant that be operational by December 2018, producing at least 1 million liters of biofuels annually. The £11 million award will allow the company to create Europe's first plant for acetone-butanol-ethanol in 50 years. The process uses bacterial fermentation to produce biofuels from carbohydrates such as starch and glucose. The process originally was developed in the United Kingdom in the early 20th century to produce acetone for explosives used in WWI. It was phased out in the 1960s because of competition from the petrochemical company.

Advanced Plasma Power and its partners National Grid, Progressive Energy and CNG Services, meanwhile, will use their £11 million award to develop and commercialize the technologies required to decarbonize the private sector. The Swindon plant, the first of its kind in the world, will take waste from local homes and businesses and convert it into compressed biomethane using its trademarked Gasplasma technology. Enough fuel will be produced to fuel 75 heavy goods vehicles.

The £3 million grant Nova Pangaea will receive will help the company to further expand its partnerships and route to commercialization for its thermochemical process to convert waste wood and forestry surplus into sugars.

Source: http://www.biomassmagazine.com/articles/12368/uk-department-of-transport-awards-advanced-biofuel-projects

US: Funding for Alternative Fuel Development

On 10 September the US Energy Department announced its aim to help reduce US reliance on gasoline, diesel and oil imports by making US$11 million available to support development of innovative alternative technologies.

The funding opportunity focuses on two areas:

- Medium and Heavy-Duty Vehicle Powertrain Electrification centers on research, development, and demonstration of electric-drive powertrain technologies for medium and heavy-duty vehicles that significantly reduce fuel consumption.
- Heavy Duty Vehicle Dual Fuel Fleet Demonstration aims to show the performance and reliability of commercially-available dual fuel heavy-duty vehicles equipped with engines capable of operation using a mixture of diesel fuel and gaseous fuels – natural gas, propane- or natural gas-derived fuels such as dimethyl ether – and the associated emissions control systems.

The Energy Department National Laboratories will analyze the data collected from these activities in order to identify technology barriers and inform future efforts.

Source: http://www.worldcement.com/the-americas/11092015/Energy-Department-Announces-11-million-for-alternative-fuel-development-530/

EPA's Notice of Violation to Volkswagen

US national and state air regulators, in a notice mailed to Volkswagen AG in September, accused the company of installing software in about half a million cars designed to pass federal emissions tests but release higher-than-acceptable levels in everyday driving situations.

In the violation notice, issued to the Car Company and subsidiaries Audi AG and Volkswagen Group of America Inc., U.S. EPA said the company built and installed these computer algorithms in approximately 482,000 diesel cars sold since 2008.

The software allowed VW cars to activate emission controls during emission tests but during normal use to release up to 40 times the permitted amount of nitrogen oxides, or NOx, which help generate nitrogen dioxide—low-hanging ozone that blankets cities—and minute particulate matter.

This air regulators action has its beginnings in an ICCT research project done in collaboration with West Virginia University during 2013 and 2014, which aimed to evaluate real-world operating emissions from light-duty diesel vehicles in the United States. The ICCT conducted in-use tests, using portable emissions modeling systems, on three vehicles: a VW Jetta, a VW Passat, and a BMW X5.

In the tests, conducted over five pre-defined routes categorized based on their predominant driving conditions (highway, urban/suburban, and rural-up/downhill driving), real-world nitrogen oxide (NOx) emissions from the Jetta exceeded the US-EPA Tier2-Bin5 (at full useful life) standard by 15 to 35

times. For the Passat, real-world NOx emissions were 5 to 20 times the standard. The BMW vehicle was generally at or below the standard, and only exceeded it during rural uphill operating conditions.

Excessive pollutant emissions during real-world driving is not something confined to the United States. ICCT research studies in Europe have repeatedly found large and growing gaps between real world emissions and the regulatory certification levels.

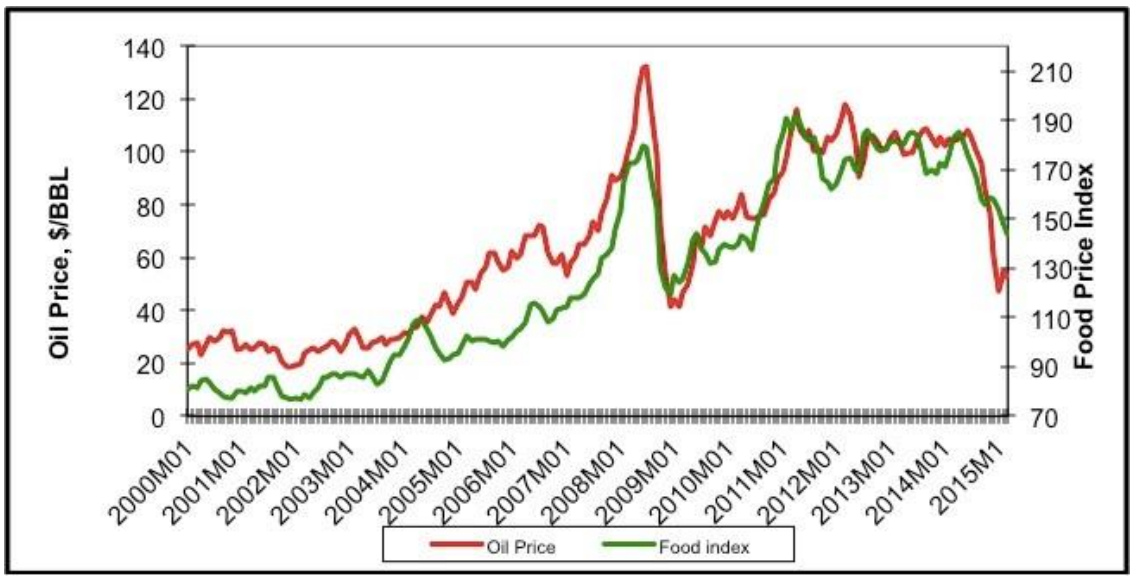
Sources:
http://www.scientificamerican.com/article/volkswagen-uses-software-to-fool-epa-pollution-tests/
http://www.theicct.org/news/epas-notice-violation-clean-air-act-volkswagen-press-statement

ALCOHOLS AND (BIO)GASOLINE

Ethanol not causing Food Price Rises

The UN FAO has released data showing that global food prices have experienced the steepest monthly drop since 2008, casting doubt upon concerns about the impact of ethanol production in food price increases. The recent decline in food prices has coincided with a period of record ethanol production expansion, reaching a high of 94 billion litres in 2014 from 83.5 billion litres in 2012, a 10% increase over this period. This contrast clearly demonstrates that increased ethanol production has not driven up food prices.

The undeniable relationship between oil price and food price is outlined in the chart below. The recent collapse of global crude oil prices has been followed by the collapse in the global food price index showing how reliant food prices are on the price of oil.



The Global Renewable Fuels Alliance (GRFA) has for several years argued that the price of oil and energy inputs are the single most influential drivers of food and commodity prices. A number of international institutions including the World Bank, International Energy Agency (IEA) and United Nations Food and Agriculture Organization (UN FAO) have also recognized the strong relationship between oil prices and food prices.

A 2013 World Bank publication, Long-Term Drivers of Food Prices, concluded that almost two thirds of food price increases are caused by rising oil prices. The report states that between 1997-2012 the

price of crude oil caused maize and wheat prices to increase by 52 percent and 64 percent, respectively. The report also found that biofuels had a negligible impact on food prices during this period.

In a recent publication, the UN FAO concluded that increased biofuels demand has helped the agriculture sector by increasing agricultural productivity and output which has "ensured that the global supply of crops available for non-biofuel uses has continued to grow over the long term."

In a speech this past January at the Global Forum for Food and agriculture the UN FAO Director-General Jose Graziano da Silva recognized biofuels as a key part of the global agriculture complex with social, agricultural and environmental benefits and outlined the potential for agriculture to accommodate mutually supportive food and biofuel production.

Source: http://www.ethanolrfa.org/news/entry/un-data-shows-that-ethanol-is-not-causing-food-price-rises/#sthash.FqEI6LbT.dpuf

Growing US Ethanol Exports

This marketing year's U.S. ethanol exports are expected to be the second largest on record as ethanol export promotion efforts ramp up by the U.S. Grains Council. While 2015 exports to Canada - are down 26%, all other major markets have shown increases due to strong demand and U.S. ethanol supplies that are competitively priced. Brazil and the Philippines, have grown 71% and 44%. Other markets seeing significant growth include Korea, Mexico, the EU and Tunisia. While this success is a good starting point, there is much work to be done to keep ethanol exports growing. The Council has plans to promote U.S. ethanol as a clean-burning source of fuel to buyers and end-users around the globe.

Source: *http://www.grains.org/news/20150820/increases-shown-ethanol-exports-promotion-work-ramps*

Brazilian president officially opens cellulosic ethanol plant

Brazilian President Dilma Rousseff launched Iogen Energy's cellulosic ethanol technology at the official opening of Raízen's newly expanded Costa Pinto sugar cane mill in Piracicaba, São Paulo, Brazil on July 22. In attendance were several hundred enthusiastic observers including Brazilian Minister of Mines and Energy Eduardo Braga, the Governor of São Paulo State Geraldo Alckmin, Raízen Chairman Rubens Ometto, Raízen CEO Vasco Dias, Canadian Consul General to São Paulo Stéphane LaRue, and Iogen CEO Brian Foody.

Iogen, a leading developer of cellulosic biofuel technology, and Raízen, one of the world's largest producers of sugarcane ethanol, completed construction of the $105 million advanced biofuel facility on time and on budget in December 2014. The facility converts biomass such as sugar cane bagasse and straw into advanced, second generation cellulosic biofuel. It is the first large-scale commercial implementation of Iogen Energy's cellulosic ethanol technology, which the company developed and has extensively proven in its Ottawa, Canada demonstration facility.

Source: http://www.biomassmagazine.com/articles/12226/brazilian-president-officially-opens-cellulosic-ethanol-plant

Alpena Biorefinery temporarily closed

American Products Inc. temporarily closed its Alpena Biorefinery in Alpena, Michigan. API operated the Alpena plant together with the site's integrated waste water treatment facility.

Low prices for ethanol, the Michigan plant's small size and a limited feedstock supply prompted API to

temporarily suspend ethanol production at the Alpena Biorefinery. The company continues to operate its integrated wastewater facility on the Alpena site.

Georgia-based API said it is reviewing the Alpena Biorefinery and exploring options for restarting it. It also is evaluating technologies for higher-margin products that can, post-lab and post–pilot testing, be demonstrated at the Alpena plant before the launch of commercial production, the company said. API developed the Alpena plant adjacent to its decorative panels plant to demonstrate its pre-commercial GreenPower cellulosic technology and broke ground on the plant in spring 2011. API began commissioning a year later.

Source: http://www.ethanolproducer.com/articles/12559/api-announces-temporary-closure-of-alpena-biorefinery

Indian Oil plans Synthetic Ethanol Production

Indian Oil Corp. Ltd., the nation's biggest refiner, plans to spend US $2.4 billion to build a plant for producing synthetic ethanol. The company is studying the project to produce 1 mio. tonnes of ethanol annually for blending with gasoline. The refiner will partner with Dallas-based Celanese Corp. for the ethanol project, which will use petroleum coke as feedstock from Indian Oil's two refineries in the region, Mitra said.

India is facing a supply shortage of the biofuel, hindering plans to achieve mandatory 5 % blending. In December, the Union government allowed ethanol production from non-food feedstock including petrochemicals to improve availability. Indian Oil, which also runs the biggest network of fuel stations in the country, bought about 186 000 m3 of ethanol for blending through the year to 31 March. In India, ethanol is primarily produced from molasses, a byproduct of sugar-making. Molasses output depends on the sugarcane crop, which varies each year.

Source: *www.bloomberg.com/news/articles/2015-08-28/indian-oil-plans-2-4-billion-spend-to-make-ethanol-for-blending*

Cooking with Ethanol in Nigeria

Green Energy´s technology should make it economically feasible to convert waste-based biomass into cellulosic ethanol using a combination of thermal, chemical and biochemical techniques. The feedstock is primarily sawdust. The yield of cellulose ethanol is more than 200 litres per tonne of fibre. Currently, the company offers 3 package sizes of gel fuel - 0.75 litres, 3 litres and 5 litres. Green Energy also reports promising results in pilot tests with water hyacinth, which has higher cellulose content. The technology was developed and is registered with the Nigeria Patent Registry in the name of SME Funds.

Source: http://gebiofuels.com/

Isobutanol-Blended Gasoline sold in Texas

Gevo, Inc. has announced that Express Lube in Texas, is the first U.S. service station to sell gasoline blended with Gevo's renewable isobutanol at the pump. This is anticipated to be the first of many retail locations to offer Gevo's product as the company rolls out its isobutanol to the marina, outdoor equipment and off-road gasoline markets.

According to Express Lube owner Adam Sheffield, he decided to sell isobutanol-blended gasoline because its moisture resistance and capacity to reduce engine corrosion. As a result of this improved performance, Express Lube has been selling its fuel at over a 50 percent premium in comparison to local E10 gasoline blends (10 percent ethanol).

Gevo's isobutanol is blended with gasoline to help meet renewable fuel and clean air standards, and after several years of work and testing, has successfully obtained registration with the U.S. EPA as a fuel additive. Recently, the National Marine Manufacturers Association officially endorsed isobutanol as a drop-in fuel for marine and recreational boat engines.

Source: http://ir.gevo.com/phoenix.zhtml?c=238618&p=irol-newsArticle

Methanol from Natural Gas

In the US, industrial natural gas consumption has grown steadily since 2009 as relatively low natural gas prices have supported use of natural gas as a feedstock for the production of bulk chemicals. Industrial facilities, including methanol plants and ammonia- or urea-based fertilizer plants, consumed an average of 21.0 billion cubic feet per day (Bcf/d) of natural gas in 2014, a 24% increase from 2009. Several new industrial facilities began service this year, with additional projects scheduled to come online through 2018.

The US Energy Information Administration (EIA) forecasts that new projects will drive growth in industrial natural gas demand through the end of 2016. In 2016, three methanol plants are expected to come online in the Gulf of Mexico area, with a combined capacity of almost 0.4 Bcf/d. Northwest Innovation Works, a multinational company, is planning two methanol facilities for 2018 in Washington and Oregon. The company plans to export methanol produced in the United States to China.

Methanol plants worldwide can produce about 100 million metric tons (almost 33 billion gallons or 90 billion liters), and each day more than 100,000 tons is used as a chemical feedstock or as a transportation fuel, according to the Methanol Institute.

Industry expansion depends on passing a law forcing automakers to produce cars that run on methanol, and approval by the U.S. Environmental Protection Agency to use it as a transportation fuel, better lobbying of lawmakers on Capitol Hill is needed. Methanol may make inroads as a fuel for heavy-duty trucks. There are very few barriers right now to introducing the technology. One hurdle is a lack of infrastructure to produce and deliver methanol to fueling stations.

Source: http://www.eia.gov/todayinenergy/archive.cfm?my=May2015
http://www.bloomberg.com/news/articles/2014-03-18/methanol-as-fuel-substitute-gets-chilly-u-s-reception

Biomethanol from Waste

Enerkem Inc., a waste-to-biofuels and chemicals producer, has raised C$152.6 million and has initiated the production of biomethanol from non-recyclable household garbage at the Enerkem Alberta Biofuels full-scale facility in Edmonton, Canada. The funding will be used for the product expansion of the Edmonton facility and the company's global growth.

Source: http://www.biomassmagazine.com/articles/12370/enerkem-raises-150-million-for-alberta-waste-to-biofuel-project

BIODIESEL ESTERS

News on Algae

Researchers at the Scottish Association for Marine Science have unlocked a treasure chest of "super-algae" that could provide a previously untapped source of oil. Using a newly devised technique, scientists examined micro-algae strains in the Culture Collection of Algae and Protozoa (CCAP), an

internationally important algal store based at SAMS in Oban, to find out which ocean-based strains had the highest oil content.

The screening revealed two marine strains, Nannochloropis oceanica and Chlorella vulgaris, which had a dry-weight oil content of more than 50 percent. This makes them ideal sources of biofuel for vehicles and aircraft.

The results of the screening, part of the BioMara project, have been published in Nature's online journal Scientific Reports and are likely to help bring forward research into algae as a source of biodiesel and other biofuels by a number of years. SAMS scientists have demonstrated that Nannochloropsis, for example, is very efficient at converting nutrients, so it has the perfect combination of high levels of oil and high productivity.

Micro-algae synthesis high levels of oil, carbohydrates and proteins from sunlight but only a few species are currently grown commercially for health foods, such as Omega-3 oils and pro-Vitamin A. In addition to strains for making biofuel, the report also signposts those which could be used as sources of food, Omega-3 oils, or aquaculture feed.

The BioMara project receives support from the European Regional Development Fund through the INTERREG IVA Programme, Highlands and Islands Enterprise, Crown Estate, Northern Ireland Executive, Scottish Government and Irish Government, also with National Capability funding from NERC.

Source: http://www.biomassmagazine.com/articles/12331/scientists-reveal-algal-oil-potential-as-fuel-for-the-future

Algae Photobioreactors

Whether through open ponds, raceways or closed photo-bioreactors (PBR), growing algae is both a science and an art. Just as there are numerous ways to grow algae, its uses are exponentially varied: high-end nutraceuticals, cosmetics, pharma ingredients, fine chemicals, food ingredients, proteins for livestock and aquaculture, and biofuels. In the biofuels category alone, some companies focus on lipids to manufacture biodiesel and renewable diesel, others target sugars to ferment into ethanol, and still others concentrate on general biomass production to produce bio-oil or green crude.

The full article provides details on the PBR systems of Algae Systems, Algenol and Heliae Development.

Source: *www.biodieselmagazine.com/articles/456920/state-of-the-art-algae-photobioreactors*

GASEOUS FUELS AND LNG

Bio-LPG Production Facility

Neste's EUR 60 million renewable product refinery in Rotterdam will start production of Bio LPG in the end of 2016. SHV Energy will market and sell Bio LPG to be produced at Neste's Rotterdam refinery.

Bio LPG will enable users of existing fossil fuels to reduce their carbon footprint without any modifications to existing gas applications technology. Bio LPG can be used within a full range of existing LPG applications, from transport and commercial heating to retail leisure cylinders.

The new facility will have a production capacity of 40,000 tonnes per year of Bio LPG for the European market. SHV Energy will supply 160,000 tonnes over four years.

The new fuel is already being recognized by policy makers as an effective method of reducing greenhouse gas emissions and meeting sustainability targets. The UK Department for Transport has issued Renewable Transport Fuel Certificates (RTFCs) for Bio LPG under their Renewable Transport Fuel Obligation (RTFO) accreditation, and SHV Energy is working with customers and policy makers in France, Germany, the Benelux countries, Scandinavia, and Ireland on similar schemes.

Source: *https://www.neste.com/en/neste-breaks-ground-worlds-first-bio-lpg-facility-rotterdam*

Biogas Production in Canada

Earlier this year, Orgaworld Surrey Ltd. began construction on a processing facility to convert kitchen and yard waste from the city of Surrey, British Columbia, into renewable natural gas to fuel the city's waste-collection trucks.

This project is considered one of P3 Canada's flagship projects. The Canadian government approved Surrey's application to the P3 Canada Fund, awarding the project a contribution up to 25 percent, or a maximum of $16.9 million, of the capital cost of the future biofuel facility. In total, the project is expected to cost 65 million in Canadian dollars ($45.9 million).

The facility is being constructed on city-owned property located in Port Kells adjacent to the Surrey transfer station in a grass building area about 14,323 square meters. The city collects waste from approximately 100,000 households, and based on recent studies, approximately 65 percent of its residential garbage is composed of organic waste that could be diverted to the Surrey biofuels processing facility. The facility will have the capacity of processing upward of 115,000 metric tons of organic waste per year into mainly two products. One is the biogas, which will be upgraded into natural gas quality. The second product is compost, which can be used as an organic fertilizer for agricultural reasons and various applications within the city.

Source: http://www.biomassmagazine.com/articles/12390/construction-underway-on-british-columbia-biomethane-project

Biogas from Seaweed in the UK

The Centre for Process Innovation has announced that it is leading a £2.78 million ($4.34 million) U.K.-based collaboration to help strengthen the U.K.'s position as a world leader in industrial biotechnology.

The three year project—SeaGas'—is working on producing biomethane from seaweed through anaerobic digestion (AD). The project launched in July 2015 and aims to develop a process that uses seaweed for the generation of sustainable energy by AD. Traditionally, as well as agricultural and food wastes, AD processes use food crops such as maize and beet. However, farmed seaweed could be used as an alternative feedstock for the AD process, thereby limiting the use of prime agricultural land that can be used for growing food crops.

A novel storage system will be developed—to support a 12-month AD operation—to counter seaweed availability and variability. The project will facilitate uptake by AD end users and initiate the building of a viable supply chain for farming and storage of seaweed.

Source: http://www.biomassmagazine.com/articles/12298/cpi-to-produce-biogas-from-seaweed-using-anaerobic-digestion

RENEWABLE DIESEL / JET

UPS Drives on Renewable Diesel

UPS has announced agreements for up to 46 million gallons of renewable fuels over the next three years, constituting a 15-fold increase over prior contracts and making UPS one of the largest users of renewable diesel in the world.

The agreements with three leading suppliers of renewable fuels, secure access to an advanced renewable diesel fuel in order to meet the company's objectives for alternative fuel utilization. Neste, Renewable Energy Group and Solazyme will supply renewable diesel to UPS to help facilitate the company's shift to move more than 12 percent of its purchased ground fuel from conventional diesel and gasoline fuel to alternative fuels by the end of 2017. UPS has previously announced a goal of driving one billion miles with alternative fuel and advanced technology vehicles by the end of 2017.

UPS has been using renewable fuels for more than a year in trucks operating in Texas and Louisiana. The new agreements pave the way for expanded use across the U.S. and potentially in parts of Europe.

Neste, headquartered in Espoo, Finland, is the world's largest producer of renewable diesel. Neste produces NEXBTL renewable diesel from a variety of feedstocks including more than half from waste and residues.

REG, headquartered in Ames, Iowa, produces renewable hydrocarbon diesel fuel from waste vegetable oils and animal fats at its Geismar, Louisiana, biorefinery as well as biodiesel at nine biorefining locations in the U.S.

Solazyme, headquartered in San Francisco, produces a blended fuel made from microalgae and other renewable feedstocks.

Source: http://www.biomassmagazine.com/articles/12241/ups-announces-agreements-with-three-renewable-fuels-suppliers

High Performance Renewable Diesel

Propel Fuels began offering Neste Oil's NExBTL renewable diesel Aug. 12 at 13 Southern California locations serving Los Angeles, Orange County, San Diego and the Inland Empire.

Marketed as Diesel HPR (High Performance Renewable), the fuel consists of 98.5 percent NExBTL renewable diesel. The company also launched commercial and bulk availability of Diesel HPR for business and government fleets statewide. Delivered in bulk to businesses and agencies, the fuel is bundled with the company's CleanDrive emissions accounting software, which allows fleets to quantify and report GHG reductions and air quality benefits.

Source: http://www.biomassmagazine.com/articles/12300/propel-brings-neste-renewable-diesel-to-southern-california

Renewable Jet Fuels Required to Reduce Aviation GHG Emissions

In a July 1 Federal Register notice, the U.S. Environmental Protection Agency (EPA) presented plans to control greenhouse gases (GHG) from aircraft. In August, in Washington, D.C., EPA held a hearing on its proposal. About 40 people attended, with 14 providing comments.

While EPA estimates that aircraft contribute 11 percent of the GHG emissions within the U.S.

transportation sector – 3 percent of total U.S. emissions – significant growth in the sector is expected. By 2035, aircraft emissions likely will increase by almost 50 percent. EPA's proposal would cover smaller aircraft such as the Cessna Citation CJ2+ up to the largest jet aircraft – the Airbus A380 and Boeing 747. (Military aircraft are excluded.)

Renewable fuels will play an expanding role in GHG reductions. Currently, cost and availability limit widespread use. Performance, however, is well documented, in commercial flights and in the Navy's Green Fleet program. Renewable fuel production is getting a hard push from many federal agencies, including the U.S. Department of Energy and the Federal Aviation Administration, which has a goal that the U.S. aviation sector use 1 billion gallons of renewable jet fuel by 2018.

New taxpayer-supported production facilities are under construction in Oregon and Nevada. The Oregon facility, built by Red Rock Biofuels, will use forest biomass as its feedstock, making up to 12 million gallons of liquid fuels, including jet fuel. Sierra BioFuels, in Nevada, will use municipal solid waste as a feedstock, making up to 10 million gallons of liquid fuel.

EPA's proposal is aligned with the International Civil Aviation Organization (ICAO), a United Nations subcommittee. ICAO wants an international carbon reduction standard in early 2016. ICAO, too, has the goal of stabilizing carbon emissions at 2020 levels. Importantly, ICAO's analyses show that even after the benefits from technological and operational measures, aviation CO2 emissions still increase with business growth. For this transportation sector, renewable fuels are critical.

Source: http://www.renewableenergyworld.com/articles/2015/08/aviation-and-greenhouse-gas-reductions-a-role-for-renewable-jet-fuels.html?cmpid=renewablebio0912015&eid=291070090&bid=1165500

OTHER FUELS AND VEHICLES

First DME Truck Registered in Japan

Isuzu Advanced Engineering Center (IAEC) received official government approval of their application to register an "Isuzu ELF", which was modified to operate on dimethyl ether (DME). This was the first DME truck registered in Japan, which took place on June 1, 2015. DME vehicles have excellent emissions characteristics without the need for a DPF, because of almost no exhaust PM (Particulate Matter). Moreover, NOx reduction hardware and a urea tank may be unnecessary for future regulation.

IAEC acquired ministerial authorization and has been carrying out road-tests on public roads for many years. Based on operating data obtained from this test program, IAEC worked with the Japan DME Association (JDA) to develop technical standards for DME vehicles and proposed these to the Ministry of Land, Infrastructure, Transport and Tourism (MLIT). Modified Vehicle Registration was finally obtained for the DME truck. This was the first registration of a DME modified vehicle and Type Certification of a DME vehicle made possible in Japan. Hence, it has been said that a new era has opened for DME vehicles in Japan.

Main Specifications:

Vehicle Name	Isuzu ELF
Fuel	Dimethyl ether (DME)
Maximum Load Capacity	3,500kg
Vehicle Gross Weight	7,990kg
Engine Displacement	5.193L
Fuel Tank Volume	135L × 2tanks
Exhaust Regulation	Post New Long Term (Japan)

Source: Japan DME Association (JDA), http://japan-dme.or.jp/

One Million Plug-in electrified vehicles

Plug-in electrified vehicles (PEVs) have transcended one million sales worldwide. Included in this count are highway-legal, light-duty all-electric cars and plug-in hybrids sold in markets around the globe. Plug-in cars started in negligible volumes last decade, but the mass-market began just less than five years ago. The first half million came in July 2014, and now one year and two months later another half million have been sold.

In December 2014 HybridCars.com reported 712,000 plug-in sales globally, and nearly 300,000 more sales have taken place over the past nine months.

As of August 2015 the count was 985,000 less Japanese sales numbers which were not reported yet, and as of mid-September, an estimated 1,004,000 PEVs have been sold consisting of 62 percent battery electric and 38 percent plug-in hybrids.

Source: http://www.hybridcars.com/one-million-global-plug-in-sales-milestone-reached/

Global Electric Vehicle Outlook 2015

The Global EV Outlook represents the collective effort of seven years of primary data gathering and analysis from the Electric Vehicle Initiative's 16 member governments. Overall, EV and charging infrastructure deployment has continued growing since the 2013 Global EV Outlook. Battery costs

have come down while energy density has climbed; vehicle electrification has gone multi-modal with 46,000 electric buses and 235 million electric two-wheelers deployed; and total EV spending by EVI governments equaled 16 billion USD between 2008-2014.

Source: http://www.iea.org/evi/Global-EV-Outlook-2015-Update_1page.pdf

Fuel Cell Technologies

The U.S. Department of Energy (DOE) is the lead federal agency for applied research and development (R&D) of cutting edge hydrogen and fuel cell technologies. DOE supports R&D that makes it cheaper and easier to produce, deliver, and store hydrogen, while also working to lower the costs of fuel cells and improve their durability and performance. Today, critical components—such as membrane electrode assemblies—are more reliable, while using one-fifth the platinum of earlier versions. DOE's efforts have reduced high-volume manufacturing costs for automotive fuel cells by more than 35% since 2008 and more than 80% since 2002, while doubling their durability. DOE has also validated more than 180 fuel cell electric vehicles on the road, logging more than 3.6 million miles.

The Fuel Cell Technologies Office addresses the full range of barriers facing the development and deployment of innovative hydrogen and fuel cell technologies with the ultimate goals of decreasing U.S. dependence on oil, reducing carbon emissions, and enabling clean, reliable power generation.

Source: http://energy.gov/eere/transportation/hydrogen-and-fuel-cells

IEA & IEA-AMF NEWS

Current AMF Annexes / Projects

Annex 28: Information Service & AMF Website (AMFI)

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
NEW: Final report available: *http://iea-amf.org/content/publications/project_reports*

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

Annex 52: Fuels for Efficiency

Next ExCo Meetings

ExCo 50: 26-29 October 2015 in Jerusalem, Israel

Annex Proposals

Currently, four topics are up for discussion and might be started as projects:

- Sustainable Bus Systems
- GDI Engines and Ethanol Fuels
- Real Driving Emissions and Fuel Consumption
- Methanol

PUBLICATIONS

- **IEA Bioenergy Task 37 Country Reports Summary 2014.** The publication contains a compilation of summaries of country reports from members of IEA Bioenergy Biogas Task. The country reports include information on the number of plants in operation, production data, how the biogas is utilized, the number of biogas upgrading plants, the number of vehicles using biomethane, the number of filling stations, details of financial support schemes in each country and some information on national biogas R,D&D projects.
  Link: *http://www.iea-biogas.net/country-reports.html*

- **ACEA Pocket Guide 2015 / 2016.** The ACEA Pocket Guide contains the most commonly sought after figures, tables and statistics pertaining to the European and global automobile industries. This new Pocket Guide paints a picture of a changing industry, one that is beginning to slowly recover from the shocks of the economic crisis of the late 2000s. Revised employment data shows that 12.1 million people now work directly or indirectly in the automotive sector, producing 17.2 million cars, vans, trucks and buses a year. A fleet of 288 million motor vehicles serves the population's mobility and transport needs across the EU. Sales of new motor vehicles were 14.4 million in 2014 in the EU, with European automobile trade experiencing a healthy trade surplus of €95.1 billion.
  Link: http://www.acea.be/uploads/publications/POCKET_GUIDE_2015-2016.pdf

- **Study on actual GHG data for diesel, petrol, kerosene and natural gas**. This study assessed actual GHG data for diesel, petrol, kerosene and natural gas. The lifecycle carbon intensity was assessed in a well-to-tank approach. The main finding of the study is that there is significant variation in lifecycle carbon intensity of all fossil fuels, and that highest carbon intensity values are observed in heavy crudes from regions with less stringent environmental legislation.
  Link: https://ec.europa.eu/energy/en/studies/study-actual-ghg-data-diesel-petrol-kerosene-and-natural-gas

- **USDA report "Biofuel Use in International Markets: The Importance of Trade".** Global biofuel production rose tremendously over 2001-13, led largely by rapid growth in the United States and the European Union (EU). Brazil, the second largest biofuel producer, doubled its production in that span. A favorable business and policy climate from 2001 to 2010 helped fuel the large increase in biofuel production. After 2011, U.S. consumption of biofuels was slowed by falling prices of traditional transportation fuels, a decrease in biofuel feedstock prices, and logistical and infrastructure challenges. The dropoff in U.S. biofuel use and an increase in biofuel demand from the EU and Brazil led to the United States becoming a net exporter of biofuels for the first time in 2010. In addition to the United States exporting ethanol, it concurrently imports ethanol to meet mandates for biofuels. With the EU imposing countervailing duties, recent U.S. biofuel exports have gone to Canada and other countries.

U.S. ethanol production and exports both remained strong in the face of falling gasoline prices in 2014. However, continuation of a strong export market is contingent on plant capacity and biofuel policies.
Link: *http://www.ers.usda.gov/media/1895316/eib144.pdf*

- **Delivering low carbon transport fuels post 2020.** How should EU policy support the transition to low carbon transport fuels post 2020? A new Institute for European Environment Policy led report argues that future policies should be differentiated to tailor support towards specific objectives and technologies that offer the greatest potential for a low carbon future. Despite this, the European Commission's 2030 framework for climate and energy policies rejected the continuation of existing targets aimed at supporting lower carbon transport fuels.
Link: www.ieep.eu/newsletter/summer-2015/delivering-low-carbon-transport-fuels-post-2020/

- **Renewable Energy Progress and Biofuels Sustainability 2014**. Detailed analysis of the progress in renewable energy in the European Member States and of the sustainability impacts of biofuels consumed in the EU transport sector. Within the report, Ecofys and partners analyzed the current and projected deployment of renewable energy as well as the implemented and planned policies per Member State. Elements like administrative burden, systems on guarantees of origin and grid integration of renewables are taken into account in the analysis. The analysis on sustainability impacts of biofuels consumed in the EU, includes an assessment of the international trade of biofuels and their feedstocks resulting in an understanding of the origin of feedstock used for EU consumed biofuels.
Link: https://ec.europa.eu/energy/sites/ener/files/documents/Final%20report%20-November%202014.pdf

- The **U.S. Energy Information Administration** has published the August edition of its **Short-Term Energy Outlook**, predicting that ethanol production will remain near current levels in 2015 and 2016. A similar prediction was made in the July STEO. Within the report, the EIA indicates that the U.S. EPA's proposed rule to set volume obligations for the 2014, 2015 and 2016 renewable fuels standard (RFS) was used to develop the current short-term outlook. According to the EIA, ethanol production averaged 935,000 barrels per day last year, and is expected to remain near current levels through next year.
Link: http://ethanolproducer.com/articles/12533/eia-predicts-ethanol-production-will-hold-steady-through-2016

- **Renewables Information 2015** provides a comprehensive review of historical and current market trends in OECD countries, including 2014 preliminary data. It provides an overview of the development of renewables and waste in the world over the 1990 to 2013 period. The publication encompasses energy indicators, generating capacity, electricity and heat production from renewable and waste sources, as well as production and consumption of renewables and waste.
Link: http://www.iea.org/bookshop/668-Renewables_Information_2015

- **Assessment of sustainability standards for biojet fuel.** Current legislation in several countries demands airlines to comply with biofuel sustainability criteria used in road transport, most prominently the EU Renewable Energy Directive (RED) and the US Renewable Fuel Standard (RFS2). Ecofys has assessed the US and EU sustainability criteria to present a proposal for harmonising or mutually recognising differing international sustainability standards for biojet fuels. Their analysis shows a significant number of similarities although both standards use different calculation methodologies.
Link: http://www.ecofys.com/en/press/biojet-fuels-paving-the-way-towards-low-carbon-aviation

- **Towards Green Growth?** This report evaluates progress since the 2011 OECD Green Growth Strategy and highlights where there is broad scope to heighten the ambition and effectiveness

of green growth policy.
Link: http://www.oecd.org/greengrowth/48224574.pdf

- **European Union emission inventory report 1990–2013 under the UNECE Convention on Long-range Transboundary Air Pollution.** This document is the annual European Union emission inventory report to the United Nations Economic Commission for Europe Convention on Long-range Transboundary Air Pollution. The report is compiled by the European Environment Agency in cooperation with the EU Member States.
Link: http://www.eea.europa.eu/publications/lrtap-emission-inventory-report/at_download/file

- **NEC Directive status report 2014.** Reporting by Member States under Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants.
Link: http://www.eea.europa.eu/publications/nec-directive-status-report-2014/at_download/file

- "**IEA Technology Roadmap: Hydrogen and Fuel Cells**. Hydrogen is an energy carrier that partly offers the advantages of fossil fuels – flexibility and energy density – with potentially a low carbon footprint. As a storehouse of low-carbon energy, it offers a means to integrate high shares of variable renewable electricity into the energy system. But not only is hydrogen technology's economic success uncertain, its necessary components are less advanced than those of many other low-carbon technologies. Yet hydrogen holds promise for some of the key challenges facing emissions reduction in sectors such as transport, industry and buildings, as well as the electricity system. The report details the steps governments, industry and researchers need to take to foster and track deployment of hydrogen technology, if it is to be a significant energy carrier by 2050.
Link: http://www.iea.org/publications/freepublications/publication/TechnologyRoadmapHydrogenandFuelCells.pdf

- **Hydrogen and fuel cell technology in the energy and transport systems of the future** - energy innovation austria 2/2015. Hydrogen as a climate-neutral secondary energy storage medium and fuel cells as ultra-efficient energy converters are potentially important components in a sustainable, competitive and environmentally friendly energy supply system. There are numerous applications for hydrogen and fuel cell technologies: in transport, in stationary energy supply facilities, and in many other areas ranging from industry through trade to residential buildings. energy innovation austria 2/2015 Editor: bmvit und Klima- und Energiefonds
Link: http://www.nachhaltigwirtschaften.at/nw_pdf/eia/eia_152_en.pdf

- **Assessment of electric vehicle promotion in U.S. cities.** The assessment surveys actions being taken by governments and public utilities to facilitate electric vehicle deployment in metropolitan areas. The seven cities with the highest electric vehicle share in 2014—San Francisco, Atlanta, Los Angeles, San Diego, Seattle, Portland, and Riverside—had two to seven times the average U.S. electric vehicle share. The top metropolitan markets tended to be characterized by a combination of relatively progressive promotional activities, more extensive charging infrastructure per capita, greater consumer incentives, and a broader range of available models.
Link: http://us1.campaign-archive1.com/?u=d37167dbef1c508895ccc2723&id=c4c5f78ba8&e=c5a30c7f5c

EVENTS

Power - Refueling in biogas plants, 20 October 2015, Straubing, Germany
Conference website: http://www.carmen-ev.de/infothek/presse/pressemitteilungen/1693-strom-tanken-an-biogasanlagen

10th Conference on Gaseous-Fuel Powered Vehicles, 20-21 October, 2015, Stuttgart, Germany
Conference website: https://www.iav.com/termine/tagungen/10-tagung-gasfahrzeuge

National Advanced Biofuels Conference & Expo, 26-28 October 2015, Omaha, NE, USA
Conference website: http://advancedbiofuelsconference.com/ema/DisplayPage.aspx?pageId=Home

Progress in Biomethane Mobility, 27-28 October 2015, Schwabish Hall, Germany
Conference website: http://www.biomethane-mobility.com/en/

IEA Bioenergy Conference 2015, 27-29 October 2015, Berlin, Germany
Conference website: http://ieabioenergy2015.org/

"Policies and value-chains for large-scale deployment of alternative aviation fuels", 29 October, Berlin, Germany
Conference website: http://www.core-jetfuel.eu/default.aspx

World Ethanol & Biofuels 2015, 2-5 November 2015, Budapest, Hungary
Conference website: http://www.worldethanolandbiofuel.com/

ANGVA's 6th Biennial International Conference & Exhibition (ANGVA 2015), 4-6 November 2015, Chengdu, China
Conference website: http://www.angva.org/?p=1091

10th A3PS-Conference – "Eco-Mobility 2015", 9-10 November 2015, Vienna, Austria
Conference website: http://www.a3ps.at/site/de/termin/10th-a3ps-conference-eco-mobility-2015

Large-Scale Algal Cultivation, Harvesting and Downstream Processing, 9-13 November 2015, Mesa, USA
Conference website: http://atp3.org/education-and-training/

"Taking stock of EU transport policy - the 2011 White Paper: achievements and challenges", 12 November 2015, Brussels, Belgium
Event website: http://ec.europa.eu/transport/themes/strategies/events/2015-11-12-white-paper_en.htm

Fuels of the Future, 18-19 January 2016, Berlin, Germany
Conference website: http://www.fuels-of-the-future.com/

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CanmetENERGY, Niklas Ekstrom

People's Republic of China
CATARC, Donglian Tian

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Finland
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