IEA BIOENERGY T39
BIOFUEL NEWS

Issue 66
December 2024

Upcoming Events

Nordic Pellets Conference
28 - 29 Jan, 2025
Stockholm, Sweden

In this issue

Biofuels production and development in Canada

IEA Bioenergy
Technology Collaboration Programme

IEA BIOENERGY TCP TASK 39
IEA Bioenergy is a Technology Collaboration Programme (TCP) set up in 1978 by the International Energy Agency (IEA) with the aim of improving cooperation and information exchange between countries that have national programmes in bioenergy research, development and deployment. Twenty five countries plus the European Commission currently participate in IEA Bioenergy.

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SWEDISH BIOENERGY ASSOCIATION
While Tomas Ekbom is Task Leader for IEA Bioenergy TCP Task 39, he also works for the Swedish Bioenergy Association (Svebio). Svebio is a non-profit bioenergy organisation. Svebio promotes renewable energy, entrepreneurship and a free market economy.

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Online & E-magazine

BC-SMART Low Carbon Fuels Consortium
Newsletter

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ONE SMALL STEP FOR MAN - ONE GIANT LEAP FOR MANKIND

I was two years old when Neil Armstrong took the first steps on the Moon on 20 July, 1969. Seven years before this, JFK gave a passionate speech at Rice University in Texas about why the United States should accept the challenge of landing a person before the end of the decade on an unknown celestial body and return him safely to Earth. Not because it would be easy but because it was hard to send a 3,000 tonnes heavy and 110 meter rocket to the sky.

It is in this context we can think about the climate challenge. It is not easy but it is hard. Instead of giving in, we should embrace it fully. The Apollo space program involved some 400,000 people at 20,000 companies and universities and the cost in today's terms is $100 billion. It approximately corresponds to the European pulp industry, both in employees and companies and in annual total revenues.

In 1962, the United States set a goal of going to the Moon. Yet, it took less than a decade to reach. Now 62 years later, the EU have a goal of becoming climate-neutral by 2055. If anyone wonders why we should allocate time, resources and money to this challenge, we should answer that we choose this Earth. There is no planet B.

"We choose the Earth in this decade not because it is easy, but because it is hard. Because that goal will serve to organize the best of our energies and skills. Because that challenge is one that we are willing to accept, one we are unwilling to postpone".

The level of carbon dioxide in the atmosphere was 325 ppm when Neil walked on the Moon and is now a staggering 100 ppm more – the highest in 800,000 years. The rate of increase is extreme.

Biofuels are key to global fossil-free transport, and we have come a long way. Cars ran on pure biofuels as early as the 1920s. First modern train on 100% biodiesel came in 2007. First commercial intercontinental plane on biojet flew in 2008 and the first plane with passengers in 2010. First modern ocean-going ship on pure biofuel came in 2022. First large-scale oil refinery (3 million tonnes annual capacity) previously on crude oil, now entirely on bioproducts started in 2024. The time for change is now! The explanation is simple: technological and economic development. What is needed now, however, is support to accelerate it even further.

This gives us peace of mind that humans have and can overcome great difficulties and that development benefits us over time. You also contribute with your choices to how we preserve the Earth and protect our nature. Let's do this together, for us and for our children. Merry Christmas and a Happy New Year!

"We choose the Earth in this decade not because it is easy, but because it is hard. Because that goal will serve to organize the best of our energies and skills. Because that challenge is one that we are willing to accept, one we are unwilling to postpone"

Tomas Ekbom,
Task Leader IEA Bioenergy TCP T39

Issue 66

Task 39 Information

Task 39 has now held ten Business meetings in total with last meeting in São Paulo during October 2024 coinciding with the BBEST 2024 conference for some 400 people and a study visit. Material is available on our website with projects, reports, publications, and a calendar with events. In November there were three Task 39 webinars with latest on "Lowering Hinders for Maritime Biofuels – Identifying means to increase the use of biofuels in the marine sector" where 195 people participated.

Latest reports by Task 39 include "Biofuels in Emerging Markets of Africa and Asia - An overview of costs and greenhouse gas savings" by Glaucia Mendes Souza et al. The report details the potential of biofuel blending mandates in emerging markets with a cost-effective strategy to reduce the greenhouse gas emissions. A projection indicates that blending mandates of 25% (or more in some of these countries) of low-carbon, conventional biofuels can lead to reductions of 10% to 15% in the carbon footprint of liquid fuels blends in these countries. In total, these reductions amount to 262 million tonnes of CO2e per year.

Earlier report was "Progress in the commercialization of drop-in biofuels and co-processing to produce low-CI transport fuels" by Jack Saddler et al with key message of a basket of measures will be required to meet the net zero target, including new technologies, improved operations, sustainable aviation fuels, carbon offsets, etc.

This was preceded by "Update on drop-in biofuel and coprocessing commercialization" by Jack Saddler et al with key message that while (green) electric vehicles are expected to contribute significantly to carbon reductions in road transportation, other strategies, such as the use of drop-in biofuels or e-fuels will be required for the hard-to-electrify sectors such as aviation and shipping. In December there will be four more projects published which will conclude the current triennium. These are available at the IEA Bioenergy website.

Task 39 continues to actively organize and participate in other webinars and conferences with the goal of sharing the networks insights on how decarbonization of the transport sector can contribute to a "green economic recovery".

As of 2024 fifteen countries participates in Task 39: Austria, Belgium, Brazil, Canada, China, Denmark, European Commission, Germany, Ireland, Japan, The Netherlands, New Zealand, South Korea, Sweden, and the USA. In addition, US Grains Council participates as a Limited Sponsor. Task 39 welcomes interest from other countries to participate in the Task group.

With the collaboration among these countries, Task 39 is set to deliver cooperative research projects to address and assess policy, markets, and sustainable biofuel implementation issues. T39 welcomes international contact from industry and academia and authority to our group to work on common ground for further use and commercialization of biofuels to replace fossil fuels.

The outlook for the new task triennium 2025-2027 looks very promising. The Task 39 member group will increase to an all-time-high with 17 countries and possibly as many as 19 which gives Brazil as the new Task leader a flying start.

Programme of work

The mission of Task 39 is to facilitate and advance development and deployment of sustainable, lower carbon intensity biofuels to decarbonize the transport sector. Our method is to assist member countries transport biofuels stakeholders in their efforts to develop and deploy sustainable, lower carbon intensive biofuels through a coordinated focus on technology, commercialization, sustainability, policy, markets, and implementation.

The task leads and coordinates activities in three main program areas:

Technology and Commercialization (T-projects)

Technical/commercial aspects of producing and using low carbon intensity (CI) liquid and gaseous biofuels for transport, including both "conventional" and "advanced" biofuels.

Sustainability (P-projects)

Sustainability and carbon intensity metrics are playing an ever-increasing role in the policies used to develop and use biofuels. Biofuels sustainability/LCA assessment will stay a priority for the Task.

Policy (P-projects)

Policy analysis, the "right" policies (such as LCFSs) significantly influence the rate and extent of development, deployment, and use of biofuels (e.g., bioethanol, biodiesel, renewable diesel, drop-in biofuels, etc).

T39-T1
Ongoing progress in the commercialization of SAF/biojet fuel

T39-T2
Progress in the commercialization of drop-in biofuels and co-processing to produce low-CI transport fuels

T39-T3
"Extend assessment of decarbonisation of the marine transport sector and evaluate the commercial production and use of biofuels"

T39-T4
Assessment of demonstration plants and commercialisation progress

T39-T6
Inter-Task project 'Synergies of green hydrogen and bio-based value chains deployment'

T39-P1
Implementation Agendas compare-and-contrast report of each member country's biofuels policies that have been/are being used to develop, deploy and expand biofuels production and use

T39-P2
Assessment of the Sustainability of Biofuels Pathways, Including Social and Environmental Aspects of Sustainability — A Case Study of Industrial Exhaust Gas-Bioethanol in China and Brazil

T39-P3
Improvement opportunities for policies and certification schemes promoting sustainable biofuels with low GHG emissions. Part 2: Robustness of GHG emission certification and verification – a case study of selected biofuel value chains and policies

T39-P4
Biofuel's production and use status in "emerging" economies.

Task 39 members

Task 39 has 15 member countries participating as listed per below. Each country is represented by a National Team Leader (NTL) and additional representatives as well as ExCo members. Furthermore, external experts may be involved as well. In addition, US Grains Council participates as a Limited Sponsor making the total number of members to 16.

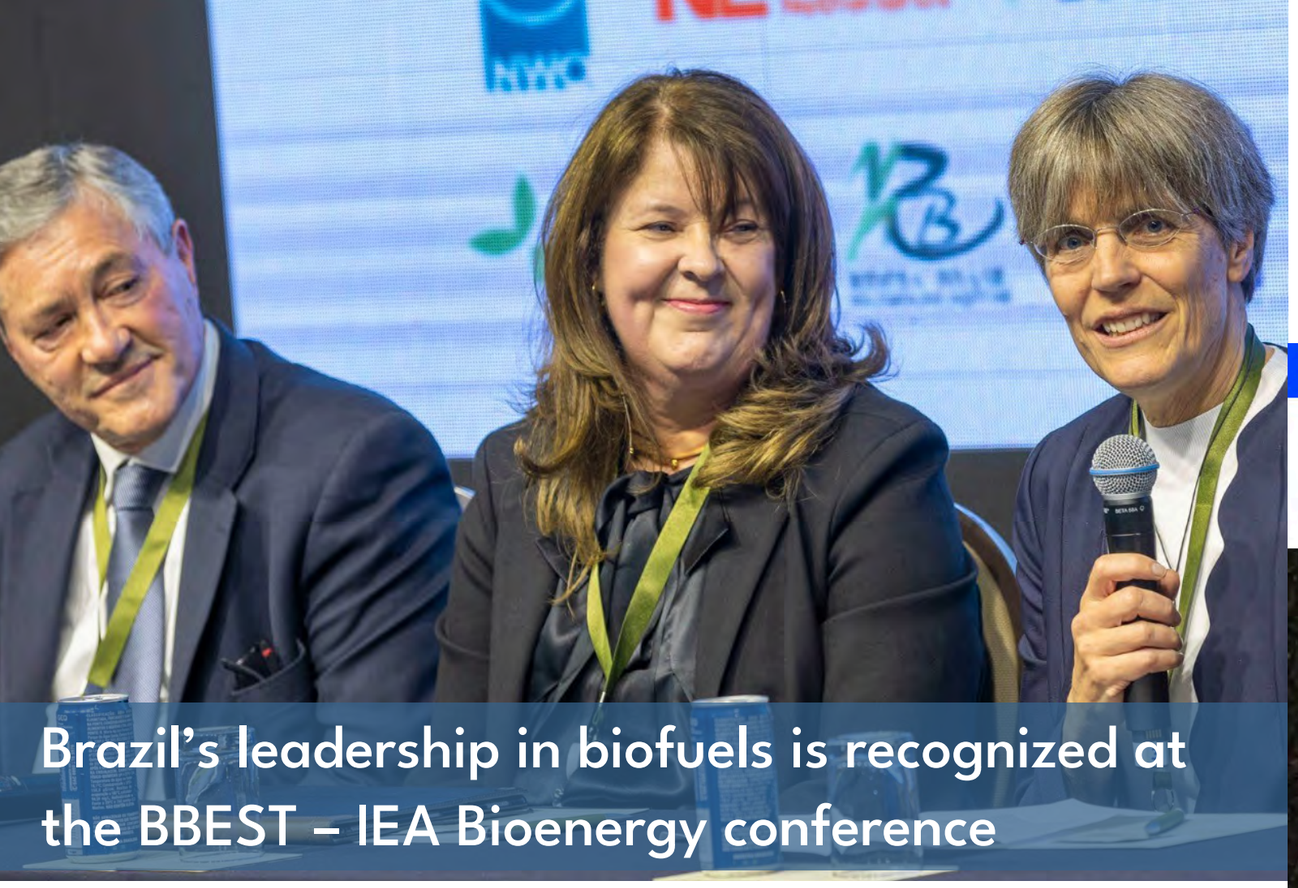
BBEST Conference study visit to Iracema Mill, Sao Paulo 25 October, 2024 Photo: Hannah Edgren.

Member Country	Task Representative	Organisation	ExCo Member
Austria	Andrea Sonnleitner (NTL) Dina Bacovsky	BEST BEST	Hannes Bauer
Belgium	Robert Malina	Hasselt University	Thibaut Masy
Brazil	Glaucia Mendes Souza (NTL) Rubens Maciel Filho Luiz A Horta Noguiera	BIOEN FAPESP BIOEN FAPESP BIOEN FAPESP	Marlon Arraes
Canada	Allison Simmonds (NTL) Hana Mohamadi Jack Saddler	UBC UBC NRC	Oshada Mendis
China	Fuli Li (NTL)	QIBEBT	Dou Kejun
Denmark	Sune Tjalfe Thomsen (NTL)	UCPH	Katharina Paarup Meyer
European Commission	Nicolae Scarlat (NTL) Marco Buffi	EC EC	Maria Georgidaou
Germany	Franziska Mueller-Langer (NTL) Nicolaus Dahmen	DBFZ KIT	Birger Kerckow
Ireland	Tom Walsh (NTL) David Bauner	Renetech Renetech	Luiz Gay-Tarazona
Japan	Yuta Shibahara (NTL)	NEDO	Takahisa Yano
New Zeeland	Paul Bennett (NTL)	Scion	Paul Bennett
South Korea	Kyungsu Na (NTL)	CNU	Jin-Suk Lee
Sweden	Tomas Ekbom (NTL Hannah Edgren	Svebio Svebio	Anna Malmström
The Netherlands	Paul Sinnige (NTL) José Muisers Stephan Janbroers	RVO RVO TNO	Kees Kwant
United States	Ling Tao (NTL)	NREL	Jim Spaeth

Current IEA Bioenergy Task 39 Limited sponsor(s)

Organisation	Task Representative	Alternative
U.S Grains Council	Linda Schmid	Mackenzie Boubin

BBEST Conference study visit to Iracema Mill, Sao Paulo 25 October, 2024.
Photo: Hannah Edgren



Brazil's leadership in biofuels is recognized at the BBEST – IEA Bioenergy conference

The BBEST – IEA Bioenergy Conference opened 20 October in São Paulo, bringing together researchers from dozens of countries. BBEST – IEA Bioenergy Conference Opens in São Paulo, highlights Brazil's role in global biofuel leadership.

São Paulo, October 23, 2024 — The BBEST – IEA Bioenergy Conference gathered researchers from around the world. Running until Thursday, October 24, the event underscored Brazil's pivotal role in promoting biofuels, especially as the country chairs the G20 this year. Brazil's leadership in global discussions on energy transition was praised by several speakers at the opening session.

"The last two years have been monumental with the launch of the Global Alliance for Biofuels, Brazil's G20 presidency prioritizing biofuels in the energy transition agenda, the Brazil + Sustainable Agenda, and the recent enactment of the Fuels of the Future law, which will ignite major investment in the biofuels sector," said Marlon Arraes Jardim Leal, Director of the Biofuels Department at the Ministry of Mines and Energy.

André Correa do Lago, Ambassador and Secretary for Climate, Energy, and Environment at the Ministry of Foreign Affairs, noted Brazil's strong international standing: "Brazil has the potential for sustainable biofuels, including Sustainable Aviation Fuel (SAF) and fuels for maritime shipping. However, the global development of this sector is urgently needed." He emphasized that the G20 must ensure inclusive processes for low-carbon economies, taking into account the social aspects of the energy transition.

Lais de Souza Garcia, Head of the Renewable Energy Division at the Ministry of Foreign Affairs, echoed this sentiment, stressing that bioenergy is a promising path for developing nations. "Biofuels offer more than just greenhouse gas reduction; they enable broader sustainable development, encompassing social and economic dimensions," she said.

Brazil is also advocating for international consensus on carbon accounting with consistent and science-based criteria. "This will be part of the discussions at the UN Climate Change Conference (COP 30) in Belém next year," she added.

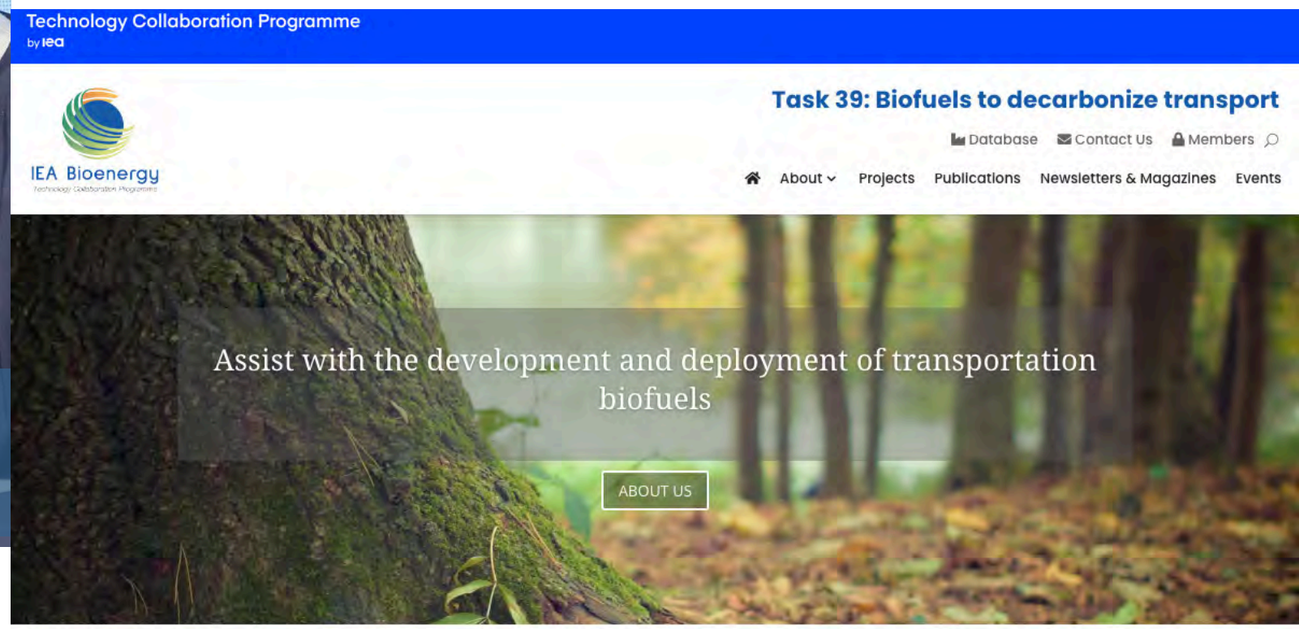
The conference also posed critical questions about the future. "How can bioenergy accelerate a sustainable future?" asked Glaucia Mendes Souza, Professor at the University of São Paulo (USP) and Co-chair of the Conference. Dina Bacovsky, Chair of the IEA Bioenergy Technological Collaboration Program, stressed the urgency of climate action, recalling how distant these challenges once seemed during the Rio 92 Summit but now require immediate attention.

Other notable participants in the opening session included: Raffaella Rossetto from the Campinas Agronomic Institute (IAC) and BIOEN program at FAPESP; Marisa Maia de Barros, Undersecretary of Energy and Mining for the State of São Paulo; Heitor Cantarella from the IAC; Edson Fernandes, Executive Secretary of Agriculture and Supply for São Paulo State; Carlos Graeff, representing FAPESP's Scientific Director; Rafael Vasconcelos Ribeiro from the Bioenergy Society (SBE); and Rogério Meneghetti, Superintendent of Renewable Energy at Itaipu Binacional.

Photo and text: IEA Bioenergy

Visit Task 39's website

www.task39.ieabioenergy.com



IEA Bioenergy TCP Task 39: Biofuels to Decarbonize Transport, is a group of international experts working to increase use of and to commercialize sustainable transportation biofuels. Bioenergy and biofuels are important components within a country's green energy portfolio. While there are numerous renewable energy options for heat and electricity generation, biofuels are currently the only means of displacing liquid fossil fuels such as gasoline, diesel, and aviation fuels.

MORE INFORMATION

JOIN OUR NEWSLETTER

News and Highlights

Issue 64: Biofuel production and development in New Zealand

Events

BBEST & IEA Bioenergy Conference 2024

21- 25 October, 2024

São Paulo, Brazil

Latest publications

Progress in Commercialization of Biojet/Sustainable Aviation Fuels (SAF): Technologies and policies

DECARBONIZING AVIATION WILL ONLY BE POSSIBLE WITH POLICIES IN SUPPORT OF BIOFUELS

Jack Saddler, co-author of an IEA Bioenergy study on the aviation sector, advocates for bio-based fuels as the most plausible path to net zero by 2050; governments will play a crucial role in reaching agreed targets; the professor is one of the panelists discussing biofuel advancements in transportation on October 23 at the BBEST – IEA Bioenergy Conference.

Photo: Pixabay

Jack Saddler, co-author of an IEA Bioenergy study on the aviation sector, advocates for bio-based fuels as the most plausible path to net zero by 2050; governments will play a crucial role in reaching agreed targets. The professor is one of the panelists who discussed biofuel advancements in transportation on October 23 at the BBEST – IEA Bioenergy Conference.

For the world to meet the total decarbonization targets for the aviation sector by 2050, governments—and society at large—will have to take part of the bill, and it won't be cheap. At current prices, sustainable aviation fuels (SAFs) which predominantly refer to biojet fuel, cost about two to five times more than its fossil fuel equivalent. Therefore, governments will play an important role as policies will become increasingly important in the aviation sector's race to net zero.

This is a summary of the analysis by Jack N. Saddler, former leader of IEA Bioenergy Task 39 on liquid biofuels. Saddler is also a professor of Bioenergy and Biofuels at the University of British Columbia in Vancouver, Canada and together with Susan van Dyk, he co-authored the latest IEA Bioenergy report on sustainable aviation fuels (SAF) which was published in January of this year.

Saddler visited Brazil to participate in the BBEST – IEA Bioenergy Conference on October 23 in São Paulo, where he joined a panel discussing the ongoing progress in adopting biofuels in transportation. The report he co-authored emphasizes that nearly 2-3% of global carbon equivalent emissions come from the aviation sector, which accounts for around 915 million tons of CO2e annually. Although neutralizing this volume of greenhouse gas emissions will not be easy, part of the answer lies in bio-based fuels—such as fuels derived from used cooking oil (UCO).

Photo: Jack Saddler

The IEA Bioenergy report highlights the importance of renewable aviation fuels, typically known by the acronym SAF. One should also note the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), a program by the International Civil Aviation Organization (ICAO), which set decarbonization goals for civil aviation by 2030, along with measurement criteria and other milestones.

According to Saddler, there are several ways to decarbonize aviation, including airplane design, engine efficiencies, improvements in ground transportation, air traffic control systems, etc. However, the use of SAF will have the biggest impact. The International Air Transport Association (IATA) believes that SAF has the potential to decrease up to 65% of aviation's greenhouse gas emissions (GHG)—a significant number. "We simply do not have viable alternatives to decarbonize the aviation sector at a larger scale," explains Saddler. "Although green electricity and green hydrogen technologies exist, technically and economically, they will be limited in their uptake. In both cases, their use for long-distance flights (e.g., trans-oceanic) is very unlikely".

Green electricity, which requires substantial on-board battery capacity, could potentially apply to short-distance flights. The use of hydrogen has several challenges. For long flight, almost two-thirds of the aircraft would need to be reserved for hydrogen fuel storage, plus keeping it in liquid form at extremely low temperature. "On the other hand, it is possible to fly today, with the technology we already have, on an aircraft using biojet fuel from Brazil to Europe," Saddler points out.

However, the challenge lies in the volume of biojet fuels needed to decarbonize the global aviation sector. A report by Aviation Consulting and Services (ICF), prepared for ATAG Waypoint 2050, and cited in the IEA Bioenergy study, estimates an annual need for 412 billion to 556 billion liters of SAF. The IATA Infrastructure Net Zero Roadmap forecasts a demand for 400 million tons of SAF annually by 2050. IATA estimates that this year's SAF production will not exceed 1.9 billion liters (1.5 million tons), or just 0.53% of aviation's fuel needs in 2024.

The IEA Bioenergy Task 39 study discusses several technologies. Of the feedstocks that can be converted into SAF, Saddler highlights the use of used cooking oil (UCO). "Ten years ago, collecting used cooking oil was a challenge as it was a low-value waste," he explains. But since its carbon footprint is low, it is an excellent option for transport fuels and demand for UCOs has increased. "In some cases, UCOs have become more expensive than virgin oils". This same low-carbon-lipid-feedstock can be used to produce biojet fuel, but also to make biodiesel or renewable diesel (also called HVO in Europe). Saddler points out that this ongoing competition between SAFs and bio/renewable diesel should be attractive to waste collectors and also agricultural producers as it increased the demand for their lipid products. "However, there is significant pressure on farmland for feedstocks such as palm oil, canola, soya, etc., and this is why it will be very difficult for governments to implement 100% SAF policies in the short term". In the medium-term other biofuel production technologies will need to come to market that are capable of using a much broader spectrum of biomass feedstocks.

Notwithstanding, in the last few years Saddler has seen significant progress as some airlines are already flying with 5% biofuel blends while others have shown that even 100% SAF can be used. He adds that, due to certain state policies, many countries have already committed to adopting a 10% SAF blend by 2030.

The good news is that SAF production and use is expected to expand. A survey by Argus Media, cited in the IEA Bioenergy report, mapped 142 plants announced worldwide with a combined capacity to produce 33 billion liters per year. Despite this excellent progress, Saddler, still considers the net-zero target for 2050 to be highly ambitious given the current landscape. "The 2030 target of a 10% SAF blend is rapidly approaching. I believe it's achievable if governments are committed to implementing public policies favorable to biojet fuels".

Full report is available **here**.

Text: IEA Bioenergy

BIOFUELS PRODUCTION AND DEVELOPMENT IN CANADA

By Allison Simmonds

Highlights

- Canada has a high use of transport fuels per capita. Decarbonization of transport is a key strategic priority as transport accounts for 22% of Canada's emissions, with on-road vehicles accounting for 85% of the total.
- Biofuels now represent around 5% of transport energy use in Canada. Demand for ethanol and bio-based diesels increased by 34% and 42% respectively between 2021 and 2023 due to supportive policies and are expected to continue to increase.
- The use of bioenergy is quite small in relation to Canada's domestic potential, and there is significant potential to expand the production of advanced biofuels. Advanced fuels facilities currently under construction include the world's largest hydrothermal liquefaction (HTL) facility (Arbios' Chuntoh Ghuna) and Enerkem's Varennes Carbon Recycling, one of the world's largest bio-methanol facilities.
- Canada has set targets of 40-45% reduction in GHG emissions by 2030 (benchmarked against 2005) and net zero emissions by 2050. The 2021 Canadian Net-Zero Emissions Accountability Act formalized this target and established a series of interim emissions reduction targets at 5-year milestones towards the 2050 goal. These targets are supported by numerous policies and programs related to bioenergy, including the Clean Fuel Regulations.
- In July 2022, the Government of Canada published the final Clean Fuel Regulations (CFR). Compliance credits are generated via pathways including supply and use of biofuels in domestic transportation, and credits are traded in a compliance market. The first carbon intensity (CI) reduction requirements took effect on July 1, 2023.
- Federal and provincial-level renewable fuels programs continue to support conventional biofuels production and use across Canada. Federal blending mandates require at least 5% of the volume of a primary supplier's pool of gasoline and 2% of its diesel pool be displaced by an equivalent volume of a liquid low-CI fuel. Provincial minimum blending mandates range from 5% to 15% in the gasoline pool and 2% to 5% in the diesel pool (volume basis).

INTRODUCTION

Canada is the world's second-largest country, with a total land area of 8.97 million km², more than twice as large as the European Union[1]. With a population of 41.3 million[2], Canada has a low population density of 4.6 people per square kilometer. Consequently, Canada has high transportation fuel use per capita, more than double the median per capita use in other IEA Bioenergy member countries[3]. Given that transport accounts for 22% of Canada's annual GHG emissions[4], the decarbonization of transport is a high priority for Canada to meet its emissions reductions goals.

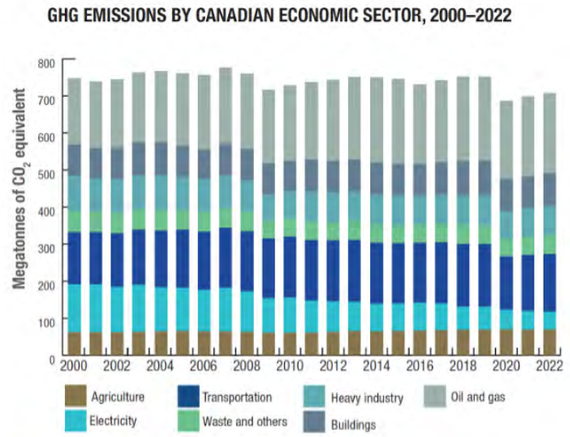


Figure 1: GHG emissions by Canadian economic sector, 2000-2022. Source: Natural Resources Canada Energy Factbook 2024-2025.

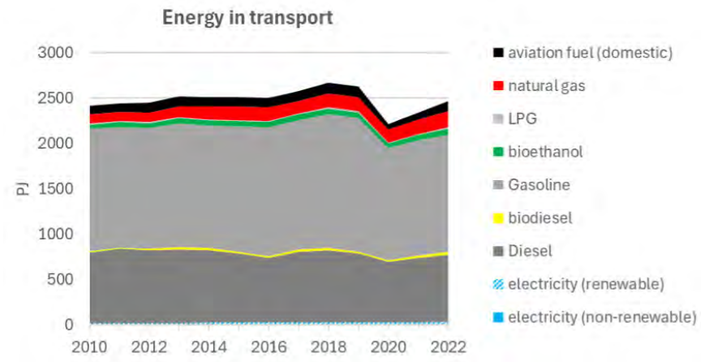
USE OF TRANSPORT BIOFUELS IN CANADA

Figure 2 shows an overview of the energy used in transport in Canada, split out by fuel/energy carrier. Gasoline (including ethanol blends) is the dominant fuel at 55% of transport energy, while diesel fuels (including biodiesel) – which are mostly used for heavy duty transport - represent 31%. Natural gas is also used as a transport fuel and makes up around 7% of transport energy. Aviation fuel for domestic flights represents around 5%.

Biofuels currently make up 4.2% of Canada's transport energy use. Between 2021 and 2023, use of low-carbon transportation fuels in Canada increased significantly. Demand for ethanol increased 34%, while demand for bio-based diesels increased by 42%. Compared to 2010, bioethanol has increased from 40 to 70 PJ; on average, bioethanol now represents 5.2% by energy of gasoline. Bio-based diesels (biodiesel and hydrogenation-derived renewable diesel (HDRD)) also saw an important growth between 2010 and 2022, growing from 9 to 33 PJ; on average, bio-based diesel represents 4.3% by energy of diesel consumption. HDRD is expected to become the dominant biofuel in the diesel pool in the coming years.

Electricity (which, in Canada, is 75% renewable) makes up 1.3% of Canada's total transport energy use. This is mostly in rail – the use of electricity in road vehicles was still limited in 2022 (at 0.2% of total transport energy use)[3], although its use as a transportation fuel increased by more than 100% between 2021 and 2023[5]. The use of electricity in road vehicles can be expected to grow in the coming years because of the recently announced zero-emission mandate (100% of car sales to be zero-emission by 2035).

These dramatic increases in demand for low-carbon fuels are attributed to new supportive policies, including the Federal Clean Fuel Regulations (discussed further below) and Quebec's provincial renewable fuel policy, as well as increasingly stringent policies in other provinces[5].



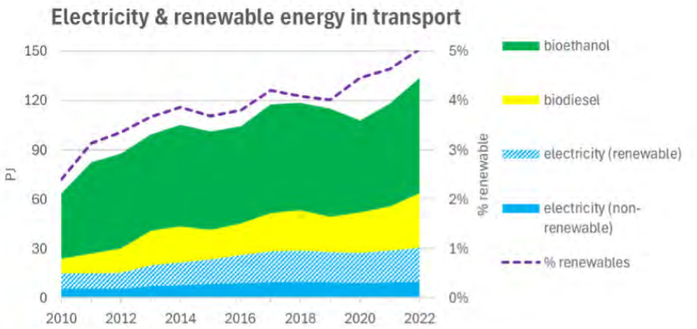
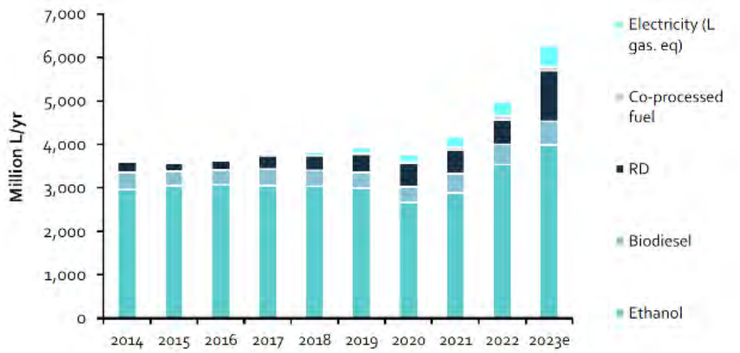


Figure 1: GHG emissions by Canadian economic sector, 2000-2022. Source: Natural Resources Canada Energy Factbook 2024-2025.



In 2023, Canada produced 1.7 billion litres of fuel ethanol and 500 million litres of bio-based diesel (biodiesel and renewable diesel). However, domestic production only accounted for 43% and 46% of domestic demand for ethanol and bio-based diesel, respectively[4]. The balance was imported, primarily from the United States[6], with whom Canada shares the world's longest land border.

Figure 4: Consumption of low-carbon transport fuels in Canada (2014-2023). Source: Navius Biofuels in Canada Report, 2024[5].

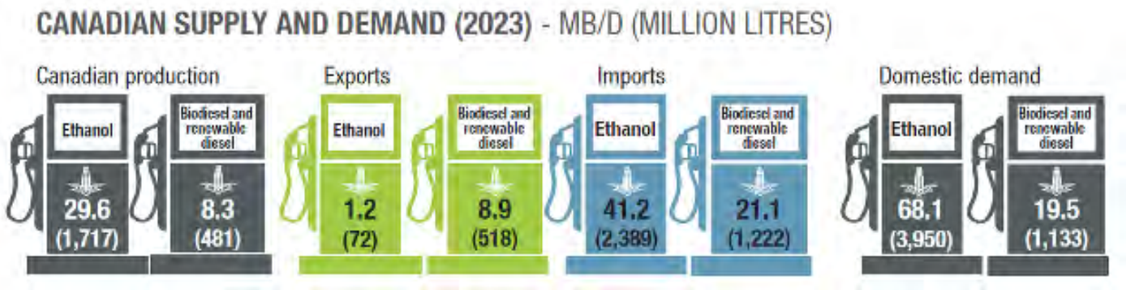


Figure 5: Canadian Supply of and Demand for Biofuels, 2023. Source: Natural Resources Canada Energy Factbook 2024-2025.

Policy Framework

Since 2016, Canada has set increasingly ambitious climate targets (see Figure 6), including a 40-45% reduction below a 2005 baseline by 2030 and achieving net zero by 2050. Additionally, the Net Zero Emissions Accountability Act formalizes the 2050 target in Canadian law.

These targets are supported by a suite of policies and investments, such as the Canada Growth Fund, a CAD$15 billion public investment vehicle launched in 2022 to support of clean energy and clean technology, and the Federal Budget 2024 commitment to retool the Clean Fuels Fund to deliver funding faster, and extend the Fund for an additional four years, until 2029-30.

The main policy instrument behind the evolution of renewable transport fuels in Canada is the Clean Fuels Regulations (CFR), which require primary liquid fossil fuel suppliers (i.e., producers and importers) to gradually reduce the CI of the gasoline and diesel that they produce and sell for use in Canada and are discussed further below. In addition to carbon intensity requirements, the CFR specify a minimum volumetric low-carbon fuel content in the produced or imported gasoline (5%) and diesel (2%).

Canada also has policies in place to reduce emissions for passenger cars and light trucks, whereby emissions performance must improve by 5% per year from 2017 to 2025 (except for light trucks between 2017 and 2021, which must improve by 3.5%

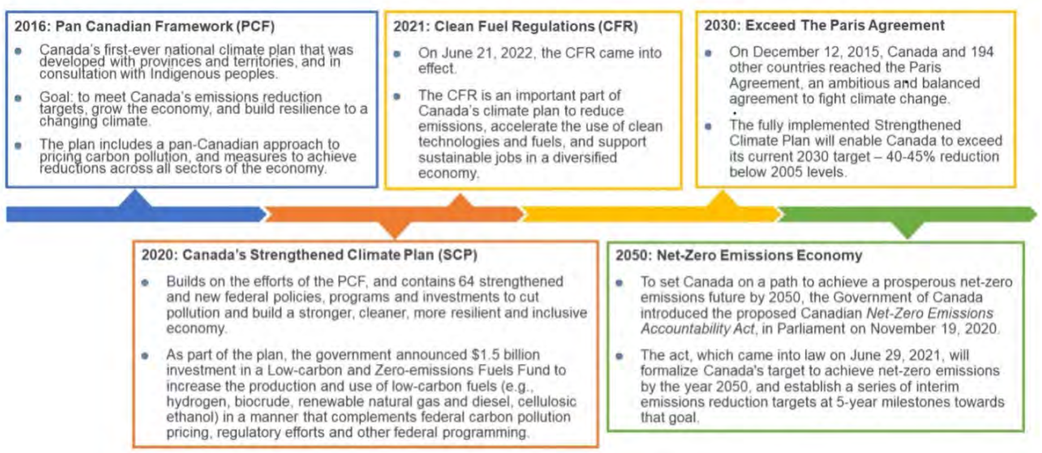


Figure 6: Timeline of Key Canadian Emissions Reduction and Transport Biofuels Policies

Provincial Policies

Canada is a confederation of ten provinces and three territories. Many provinces also have their own volume-based targets for renewable content in gasoline and diesel (see Figure 7); for example, Ontario and Quebec require a 10% renewable content in gasoline, which will be raised to 15% in 2030.

The province of British Columbia has had its own British Columbia Low Carbon Fuel Standard (BC LCFS) since 2010. The BC LCFS mandates a minimum 5% annual average renewable fuel content in gasoline and 4% renewable fuel content in diesel[7]. The BC LCFS also requires fuel suppliers to reduce the average CI of their fuels annually to achieve a 30% reduction by 2030.

Figure 7: Renewable and Low-Carbon Fuels Regulations in Canada

CLEAN FUEL REGULATIONS (CFR)

On June 21, 2022, national low-carbon fuel standard-type regulations, known as the Clean Fuel Regulations (CFR), came into effect in Canada. The CFR require producers and importers of gasoline and diesel (i.e., primary suppliers) to reduce the life cycle carbon intensity (CI) of gasoline and diesel used in Canada from 2016 CI levels (95 gCO2e/MJ for gasoline and 93 gCO2e/MJ for diesel). A life cycle approach accounts for emissions across all stages of fuel production and use, from extraction through processing, distribution, and end use. The CFR additionally specify minimum volumetric requirements for low-carbon-intensity fuel of 5% in gasoline and 2% in diesel.

CI reduction requirements for primary suppliers took effect as of July 1, 2023. The CFR are an important part of Canada's climate plan to reduce emissions, accelerate the use of clean technologies and fuels, and support sustainable jobs in a diversified economy[8].

Fuel	2023	2024	2025	2026	2027	2028	2029	2030 and beyond
Diesel	89.5	88	86.5	85	83.5	82	80.5	79
Gasoline	91.5	90	88.5	87	85.5	84	82.5	81

Table 1: Clean Fuel Regulations Carbon Intensity Limits for Different Fuel Classes (gCO2e/MJ). Source: Canada Gazette II, 2022.

Life-Cycle Assessment

The CFR take a performance-based approach, and award credits based on fuel CI. The Environment and Climate Change Canada (ECCC) Fuel LCA model, an Open-LCA software-based model developed and maintained by the Canadian government, is used to assess the CI of fuels under the CFR and determine compliance and credit creation. The Fuel LCA Model was first released in June 2022 and revised in January 2023 and June 2024, and will continue to be populated with additional pathways, data and updates. The models' database/datasets were collected from publicly available sources such as scientific articles, science and technology experts, consultants, California Energy and Environment Protection Agency, National Energy Board, National Inventory report, Statistics Canada, US Environment Protection Agency, US Energy Information Agency, International Energy Agency, etc.

Land Use Change and Biodiversity

The CFR does not use a numerical CI value to account for land use change impacts, but rather uses Land Use and Biodiversity (LUB) Criteria to ensure that only biofuels made from low-land-use-change-risk biomass feedstock will be eligible for CFR credit creation. The objective of the LUB criteria is to minimize negative environmental impacts from harvested or cultivated feedstock used in the production of low carbon intensity fuels[9].

CFR Compliance

To drive innovation at the lowest cost, the CFR establish a credit market whereby the annual carbon intensity reduction requirements can be met by creating credits through three categories of actions, as shown in Figure 8. Regulated parties (producers and importers of gasoline and diesel) must create or buy credits to comply with the national reduction requirements. Parties with extra credits can bank them, for use in later years, or sell them.

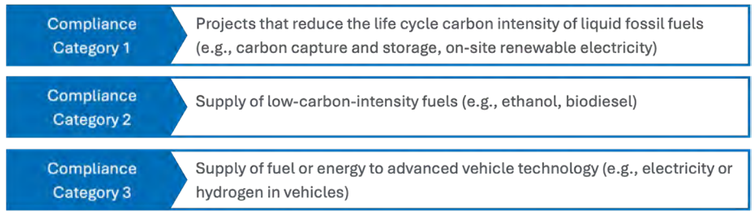


Figure 8: Compliance categories for CFR credit creation

Year 1 Credit Market Report

The first CFR Credit Market Report was published in June 2024, containing data on the first year of program operations. The report included the early credit creation from June 21, 2022, through June 30, 2023, as well as the first period of CI reduction compliance from July 1, 2023, through June 30, 2024.

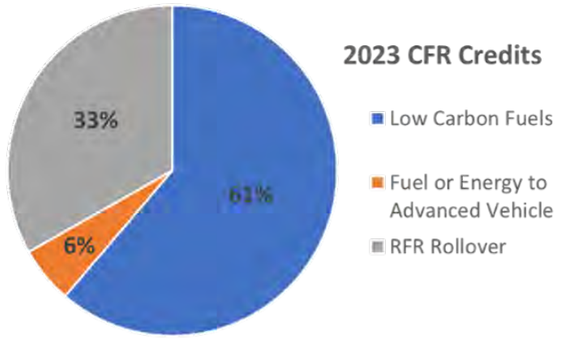


Figure 9: Credits created under the CFR in 2023. RFR means Renewable Fuel Regulations, the previous volumetric regulations replaced by the CFR. Source: Clean Fuel Regulations credit market report, June 2024.

In the first year of the program, most transferred compliance credits were created via Compliance Category 2, the supply of low-carbon fuels. However, data are incomplete as credits transferred through a Compliance Credit Mechanism and contributions made to a Registered Emissions Reduction Funding Program were not available.

The average price (excluding special cases) of compliance credits was CAD$127.30/t CO2e in 2023 (CAD$141.80/t CO2e in 2022). More than 500 million litres of low-carbon fuels were supplied for credit creation under the CFR in 2023, with a weighted average carbon intensity of 61 gCO2e/MJ (HHV).

CFR credit market reports will be published annually.

CFR Compliance Periods	Number of transfers of Compliance Credits with a price[1]	Compliance Credits transferred with a price ($t CO_2e$)	Average Credit price (CAD$)[2]	Minimum Credit price (CAD$)	Maximum Credit price (CAD$)
2022	77	1,222,594	141.80	9.77	300.00
2023	163	1,780,206	127.30	6.75	300.00
Total	**240**	**3,002,800**	**133.20**	**6.75**	**300.00**

Table 2: CFR Compliance credit price and transfers for Canada (compliance periods 2022 and 2023. Source: Clean Fuel Regulations credit market report, June 2024.

BIOFUELS PRODUCTION FACILITIES

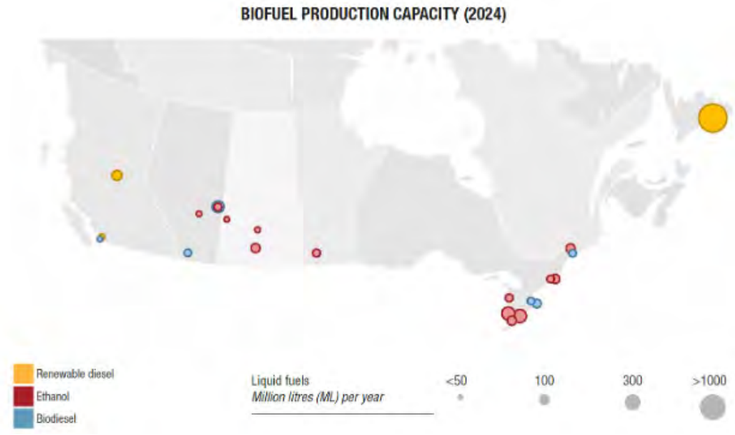


Figure 10: Biofuels Production Facilities in Canada in 2024. Source: Natural Resources Canada Energy Factbook 2024-2025.

Canada's biofuel production capacity has grown modestly over the last decade. In 2024, there were 22 commercial-scale facilities producing transport biofuels in Canada (see Figure 6). Two of the facilities had dedicated renewable diesel production, with a third expected to come online by 2025. Ethanol production in Canada has remained relatively constant at around 1,700 ML/y. Canada produced around 500 ML/y of bio-based diesel in 2023; this number is expected to increase significantly in 2024 and 2025 with more than 2 BL/y of renewable diesel nameplate capacity coming online. Two refineries, Tidewater and Parkland, are also co-processing renewable fuels at growing volumes.

Feedstocks

To date, all liquid transport biofuels produced and used in Canada at commercially relevant volumes have been produced from lipid or cereal feedstocks. In 2023, more than 85% of ethanol used in Canada was made from corn grain, with another 10% made from wheat. In order of importance, feedstocks for bio-based diesels used in Canada in 2023 include: yellow grease, soy oil, canola oil, and tallow[5]. There are also several commercial demonstration and first-of-a-kind commercial advanced biofuels facilities under construction or in the commissioning phase in Canada that intend to produce liquid biofuels from lignocellulosic feedstocks, discussed below.

Renewable Diesel Facilities

Tidewater Renewables became the first producer of renewable diesel at a stand-alone facility in Canada in October 2023, with the start-up of its HDRD Complex in Prince George, British Columbia. The facility has a nameplate production capacity of 3000 bbl/d (175 ML/y)[10].

Braya Renewable Fuels owns a refinery in Newfoundland and Labrador that has been repurposed to produce renewable fuels for heavy road transport and aviation sectors. The facility commenced commercial operations in February 2024 with an anticipated initial production capacity of 18,000 bbl/d (1 BL/y) of renewable diesel, with future plans to expand the production capacity and add sustainable aviation fuel production and explore green hydrogen[11].

Imperial Oil Ltd. plans to construct Canada's largest renewable diesel production plant at its Strathcona refinery near Edmonton, Alberta. The facility will have a nameplate production capacity of 20,000 bbl/d (1 BL/y) and will use low-carbon hydrogen produced using carbon capture and storage (CCS) technology provided by Air Products[12].

Co-Processing

Co-processing represents a significant opportunity for future large-scale production of biofuels in Canada. Both the federal Clean Fuel Regulations (CFR) and the provincial British Columbia Low Carbon Fuel Standard (BC LCFS) encourage Canadian oil refineries to consider co-processing as an economically attractive compliance pathway. Canada has 14 refineries with a total capacity of approximately 1.9 million barrels per day (Mbbl/d), as of 2023[4].

Two Canadian refineries, both located in British Columbia, have developed biofuels co-processing capacity.

Parkland Fuel Corp. is expanding the volume of canola and tallow feedstock co-processed at BC's Parkland Refining refinery in North Burnaby. In 2022, the Burnaby Refinery co-processed 111 million litres of bio-feedstocks[13].

Tidewater Renewables Ltd. owns Prince George Refinery in British Columbia that hosts a 45.99 million gallons per year renewable diesel complex that also has co-processing capability. With co-processing the facility's total capacity is 47.55 million gallons of low-carbon fuels per year[14].

ADVANCED BIOFUELS

While Canada has significant production of crop-based biofuels, farmland only makes up around 6% of Canada's landmass (62,000,000 ha)[15]. Forest land makes up roughly 37% of Canada's land area (360,000,000 ha)[16]. Given its abundant woody biomass resources, Canada's use of bioenergy is quite small in relation to its domestic potential. Significant expansion is possible in connection to forest industries (or related to forest management and wildfire mitigation activities), including production of advanced biofuels.

Several operating facilities currently produce liquid biofuels from woody biomass, most notably the Bioénergie AE Côte-Nord facility in Port-Cartier, Quebec. The facility, which produces bio-oil using Ensyn fast pyrolysis technology, has a nameplate capacity of 40 ML/y. Several other advanced liquid biofuels facilities targeting transportation applications are also in development in Canada:

Scheduled to come online in late 2024, Arbios Biotech's Chuntoh Ghuna facility in Prince George, British Columbia, will be the world's largest operating hydrothermal liquefaction facility. Utilizing innovative next-generation Cat-HTR™ technology platform, the facility converts forest residues and waste biomass into high-value, sustainable bio-based products. These products can be further refined to produce renewable transportation fuels with a low carbon footprint.

Photo credit: Allison Simmonds

CONCLUSIONS

Biofuels are expected to play a role in reducing transportation sector emissions and helping Canada achieve its goal of net-zero emissions by 2050. Legislation, funding and informed policy changes have supported the development and deployment of transportation biofuels to date, and policy-driven demand for biofuels is expected to continue to increase. The Canadian Net-Zero Emissions Accountability Act establishes legally binding targets that hold the government accountable, and the Clean Fuel Regulations further support the emissions reductions targets by incentivizing producers and importers of gasoline and diesel to comply with national reduction requirements.

While Canadian biofuel production has grown modestly over the past few years, new facilities coming online will increase production capacity. Canada may be able to realize the potential of some of its natural resources, through the production of advanced biofuels from abundant woody biomass, and infrastructure resources through opportunities such as co-processing.

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Biofuels in Emerging Markets of Africa and Asia

A Task 39 publication by Jean Felipe Leal Silva, Heitor Cantarella, Luis Augusto Horta Nogueira, Raffaella Rossetto, Rubens Maciel Filho, Glaucia Mendes Souza

Photo: Pixabay

Executive summary

This policy brief highlights the critical potential of biofuels in reducing greenhouse gas (GHG) emissions in the transportation sector. A previous report by Task 39 of the IEA Bioenergy TCP discussed the potential of biofuels in emerging markets of Latin America, and this report expands the study to countries of Africa and Asia: The People's Republic of China (hereafter China), Ethiopia, India, Indonesia, Malaysia, South Africa, and Thailand. Emerging markets are countries experiencing fast social and economic development, and their contribution to global GHG emissions is expected to rise fast. If this selected group of emerging markets were to have the same per capita CO2 emissions in the transportation sector as OECD countries, global emissions of this sector would increase by 102%. This policy brief discusses three aspects of biofuel use in these countries as a tool to curb GHG emissions: 1) the potential GHG savings of sustainably produced biofuels; 2) the impact of biofuel on the final cost at the fuel pump; and 3) the capacity of biofuel production considering land use demand.

A life cycle assessment of biofuels reveals substantial reductions in GHG emissions for biofuels produced in Africa and Asia — up to 78% for biodiesel and 81% for ethanol compared to conventional fuels. These values are similar to those previously reported for biofuels produced in Latin America (up to 79% for ethanol and up to 84% for biodiesel). Notably, sugarcane ethanol in South Africa achieves an impressive 87% GHG emission reduction because of the high emission intensity of fossil fuels used in the South African market (which uses synthetic fuels produced via coal gasification and Fischer-Tropsch synthesis). To leverage these GHG benefits, replacing fossil fuels with biofuels is advised, particularly in circumstances and applications where electrification is difficult or only a longer-term option. To make sure that GHG savings are not partly or fully counteracted by direct or indirect land use change effects, countries should create and enforce policies to avoid that any agricultural activity, including bioenergy crops, are expanded into high carbon stock areas. Shifting from fossil to biofuels is challenging as well; however, implementing flex-fuel technology to allow users to seamlessly shift from fossil to biofuels is a reliable alternative to ease the energy transition in least developed countries where the installation of charging infrastructure for battery electric vehicles might be challenging. Biofuels are economically feasible in most countries except China and Malaysia. Despite this, they could still find a place through strategic imports (trade agreements) or subsidy policies related to biofuel blending mandates. India, Indonesia, and South Africa emerge as key beneficiaries, given the low carbon intensity of their biofuels and sulfur-related concerns mostly for diesel in Indonesia. While land demand is generally low compared to total country area, potential pressures for land use in China and Malaysia (for ethanol) could be addressed through international par nerships with countries that have better land availability for energy crop production, such as Brazil and the United States.

Key recommendations include restricting coal use, particularly in South Africa's synthetic fuel production and coal-based ammonia production and stimulating international biofuel trade as an alternative to fossil fuels. Country-specific comparisons of biofuel and electric vehicles should be considered, emphasizing the importance of biofuels in markets with high carbon intensity electricity. Lastly, the creation of policy schemes, akin to the Renewable Fuel Standard in the United States and the RenovaBio program in Brazil, is proposed to incentivize and reward low carbon intensity biofuel production, crucial for sustained expansion and fossil fuel displacement. This comprehensive report aims to guide policymakers in shaping effective strategies for a sustainable and greener transportation future for emerging markets.

Read the report here.

Improvement opportunities for policies and certification schemes promoting sustainable biofuels with low GHG emissions

A Task 39 publication by José Muisers, Aafke Jansen, Oscar Dijkstra (RVO) & Kiki Klerks (Guidehouse)

Photo: Pixabay

Executive Summary

Background and scope

- The SAF market is growing rapidly and, due to its inherent international character, it is subject to various (inter national policy frameworks related to sustainability claims, in particular the reduction of greenhouse gases (GHG).
- Biofuels policy frameworks exhibit a diversity of underlying rules and methodologies for calculating and accounting for GHG emissions and differ in the degree of stringency and robustness. Policies use verification/ certification for the implementation of these rules.
- This study aims to identify opportunities for policy makers to increase the robustness of GHG related verification/certification aspects in international biofuel supply chains, especially for SAF.
- The SAF related policy frameworks within scope (with underlying verifications /certification activities) are: California LCFS, EU RED, Brazilian RenovaBio, US IRA and ICAO-CORSIA. The focus is on the currently operational SAF supply chains of HEFA and AtJ (from feedstock sourcing up to aircraft refueling).

Methodology

- The project outcomes are a result of five (analytical) work packages (WPs): WP1 analyses the current (inter) national SAF policy frameworks; WP2 maps the different SAF supply chains; WP3 lists theoretical sensitivities and in WP4 these sensitivities are verified in practice; WP5 then scores the risk mitigation potential of the different policy frameworks.
- The following methodologies are used: conducting case studies, literature and desk research, workshops, stakeholder mapping and consultations, interviews and qualitative analysis.

Validated robustness sensitivites

1. Differences in data quality and transparency of supply chain data reduce visibility and traceability of GHG emissions and complicate data verification.
2. Differences in GHG targets and calculation methodologies increase complexity for the exchange of SAF between policy frameworks.
3. Labelling and classification of feedstock materials diverge in policies and could pose a risk since feedstock categorization is linked to GHG performance.
4. Different implementation of policies into verification/certification usage and requirements hinders mutual exchange.
5. Requirements for auditor competence vary, which can impact the quality of the auditing on certification/verification.
6. Potential misuse and double counting could occur with SAF trade.

Conclusion and recommendations

- The policy differences create a challenge for international SAF supply chains as feedstocks and SAF batches need to fulfill all the sustainability requirements set out in any policy where they may be used. Flexibility between policy frameworks isn't possible and double certification is costly.
- The policy differences, lack of transparency and traceability between countries, different certification/verification schemes and registries might create a risk regarding double counting of GHG savings. This could lead to higher reported total GHG savings than actually achieved in practice.
- An opportunity to increase the robustness of SAF policy frameworks is to ensure a level playing field and harmonized impl mentation rules to the greatest extent possible. Cover hard to harmonize discrepancies between frameworks in the short term by means of mutual agreements. For the long term, by means of complementary (regional) regulations.

Read the report here.

Development and Deployment of advanced biofuel demonstration facilities

A Task 39 publication by Andrea Sonnleitner, Dina Bacovsky

Executive summary

Decarbonizing the transport sector is critical for achieving global climate and energy targets due to its significant contribution to greenhouse gas emissions and reliance on fossil fuels. Biofuels, in particular advanced biofuels, play a particularly important role in decarbonizing transport and increasing the share of renewable energy in the transport sector by providing a low-carbon solution for both near-term and long-term challenges.

One of the tasks in the Technology Collaboration Programme IEA Bioenergy deals with Biofuels to Decarbonize Transport. Within this expert network a Database on facilities for the production of advanced liquid and gaseous biofuels for transport was established and has monitored the developments since 2009. This database comprises facilities which are producing advanced biofuels via the technologies Alcohol-to-Jet, E-Fuels Biomass Hybrids, Fast Pyrolysis, Fermentation, Gasification, Hydrothermal Liquefaction, Hydrotreatment and others. The latest update of the database was completed in November 2024. At this time the database comprised 258 active entries, related to the different technologies listed above. This report provides insights from the monitoring and data collection on advanced biofuel demonstration facilities throughout the years.

The main (and most advanced) technologies used for advanced biofuel production are fermentation to cellulosic ethanol, hydrotreatment of oils and fatty acids, gasification followed by FT-synthesis and fast pyrolysis. Of these technologies, hydrotreatment is the most commercialised one with many production facilities around the globe and the highest production capacities. Hydrotreatment facilities are also the main production facilities for sustainable aviation fuels.

Co-processing of fats, oils and lipids in existing refineries and retro-fitting of existing refineries for the processing of these feedstocks is gaining more importance. Another technology option which is increasing in number of (planned) facilities is the combination of e-fuel production and biomass use – so-called E-fuels biomass hybrid facilities.

Feedstock availability is a critical factor in the production of biofuels, as it determines both the scalability and sustainability of fuel production. While oil-based residues, such as used cooking oil and animal fats, are valuable for current biofuel technologies, their limited supply poses a significant challenge to meeting future demand. To address this, biomass residues, including agricultural waste, forestry by-products, and other organic materials, present a promising alternative, and their potential needs to be unlocked by the development, demonstration and commercialization of advanced biofuels production technologies.

Besides the availability, also the sustainability of dedicated crops, residues and wastes are an important factor. Many countries have implemented frameworks to safeguard biofuel sustainability. It is essential that those policy frameworks ensure robust GHG emission certification and verification.

The primary future markets for advanced biofuels are expected to be in long-distance transport sectors, such as aviation, maritime shipping, and heavy-duty road transport. The aviation industry, in particular, requires a strong focus on renewable fuels and biofuels as the sector continues to grow and has committed to reduce its carbon intensity.

Research and policy frameworks have been crucial in driving the development of demonstration plants for advanced biofuel technologies. These frameworks have influenced investment decisions and significantly impacted the success or failure of such initiatives.

The development of biofuels is accelerating in emerging economies, driven by increasing energy demand, abundant natural resources, and the need for sustainable development. These countries are focusing on biofuels as a means to address both energy security and climate change. To support this transition, governments are implementing various policies, including blending mandates and subsidies, to boost biofuel production. These efforts are aimed at promoting renewable energy sources while simultaneously creating new economic opportunities and reducing reliance on fossil fuels. As these policies gain traction, biofuel production is becoming a more significant component of their energy strategies.

Photo: Pixabay

Decarbonization targets require a significant increase in biofuel production to meet global climate goals. Recent years have seen a surge in announcements of new biofuel production facilities, particularly for HVO (Hydrotreated Vegetable Oils) and SAF (Sustainable Aviation Fuel); technologies critical for sectors like aviation, shipping, and heavy freight, where electrification is difficult. However, while some technologies, such as hydrotreatment, have reached commercial scale, others like cellulosic ethanol face slow progress and setbacks. Despite many announcements, the actual production capacity is not growing quickly enough to meet the ambitious targets set for 2030. This gap highlights the challenge of scaling up biofuel production to match the urgent demands of the energy transition.

Scaling up advanced biofuel production is a global challenge that requires addressing environmental, social, and economic sustainability. This process can be accelerated through international collaboration and knowledge exchange. Demonstrating and scaling up biofuel technologies is crucial to achieving the large production volumes needed to meet global decarbonization targets, especially in sectors that are hard to electrify, such as aviation, shipping, and heavy-duty transport. Without advancing these technologies and expanding production capacity, the full potential of biofuels to contribute to a sustainable energy future will remain untapped.

Read the report here.

In the News

Policy and Regulations

China's biodiesel producers seek new outlets as hefty EU tariffs bite

AUGUST 19, 2024

Chinese biodiesel producers are seeking new outlets in Asia for their exports and exploring producing other biofuels as supply to the European Union, their biggest buyer, dries up ahead of anti-dumping tariffs, biofuel executives and analysts said.

The EU will impose provisional anti-dumping duties of between 12.8% and 36.4% on Chinese biodiesel from Friday, hitting over 40 companies including leading producers Zhejiang Jiaao, Henan Junheng and Longyan Zhuoyue Group in an export business that was worth $2.3 billion last year.

Some larger producers are eyeing the marine fuel market in China and Singapore, the world's top marine fuel hub, as they seek to offset already falling biodiesel exports to the EU, biofuel executives said.

Read more here.

Business Aviation SAF Coalition Urges Consistency, Flexibility in USDA Rules for Biofuel Feedstocks

SEPTEMBER 2, 2024

A business aviation coalition has called on the Biden administration to follow the approach the government uses for existing biofuel programs when it develops rules to quantify and verify greenhouse gas emissions from various feedstocks for producing sustainable aviation fuel (SAF). Those rules will determine the level of Inflation Reduction Act tax incentives available to SAF producers.

The U.S. Department of Agriculture (USDA) is seeking comments as it tries to encourage the use of climate-friendly farming practices to develop SAF feedstocks. The Biden administration's SAF Grand Challenge aims to have the U.S. producing 3 billion gallons of SAF by 2030.

Read more here.

Indonesia uniting ASEAN against EUDR

OCTOBER 16, 2024

Indonesia is taking the initiative to unite ASEAN member countries against what it perceives as broader discriminatory global sustainability policies, but particularly the European Union's Deforestation Regulation (EUDR), even with the regulation's delay.

This development comes as ASEAN grapples with the potential economic impacts of such regulations on its key export commodities.

At the 24th ASEAN Economic Community Council (AECC) Ministerial Meeting held in Vientiane, Laos, on October 7, Indonesia's Coordinating Minister for Economic Affairs, Airlangga Hartarto, made a case for ASEAN unity against the EUDR.

Read more here.

UFOP welcomes postponement of European Deforestation Directive

OCTOBER 7, 2024

The Union for the Promotion of Oil and Protein Crops (UFOP) has welcomed the postponement of the implementation of the European Deforestation Directive (EUDR) announced by Commission President Ursula von der Leyen.

The agricultural sector needs this time corridor in order to be able to adapt to the additional obligations to provide evidence, UFOP added.

Against this backdrop, the association has also welcomed the initiative of Federal Agriculture Minister Cem Özdemir, which has contributed to this success.

The UFOP said that agricultural businesses already have to submit an annual self-declaration as part of the biofuel certification process.

Read more here.

Canadian Business Aviation Association joins SAF campaign group

OCTOBER 23, 2024

CLIMBING. FAST. campaign partners have welcomed the Canadian Business Aviation Association (CBAA) as a formal member of the growing sustainability advocacy campaign focused on advancing the business aviation industry's commitment to reaching net-zero carbon emissions by 2050.

CLIMBING. FAST. is a multi-media advocacy initiative that educates policymakers and opinion leaders about business aviation's many societal benefits, including the industry's essential role in supporting jobs and economic activity, connecting communities, helping businesses succeed, providing humanitarian support and leading the way in aviation sustainability through innovation on the ground and in the air.

Read more here.

UK SAF Mandate signed into law, government launches Jet Zero Taskforce

NOVEMBER 25, 2024

The U.K.'s sustainable aviation fuel (SAF) mandate was signed into law on Nov. 18 and is set to come into force on Jan. 1, 2025. The government has also launched a new Jet Zero Taskforce to revamp efforts to make greener air travel a reality.

The U.K. first announced plans to implement a SAF mandate in mid-2021. The Department of Transport in 2023 opened a public comment period on a proposed SAF mandate. The government earlier this year confirmed plans to move forward with the mandate.

The now finalized SAF Mandate will require 2% SAF beginning in 2025, ramping up to 22% by 2040. Hydroprocessed esters and fatty acids will be allowed to contribute up to 100% of SAF demand in 2025 and 2026, decreasing to 71% in 2030 and 35% in 2040.

Read more here.

Industry developments

Bioethanol refineries produced more food than fuel, ePURE reveals

SEPTEMBER 9, 2024

EU ethanol biorefineries produced more food and animal feed than fuel in 2023, according to audited data by ePURE, the European renewable ethanol association.

ePURE members – representing 85% of EU installed capacity – and other European producers of renewable ethanol produced 6.5 million tonnes of food and feed co-products including high-protein animal feed and 5.08 million tonnes of renewable ethanol last year, according to the statistics.

Additional co-products included 1.46 million tonnes of captured biogenic CO2, another strategic domestic product that replaces fossil CO2 in beverage and greenhouse applications.

"Renewable ethanol biorefineries are a vital strategic asset for the EU," said ePURE director general David Carpintero.

Read more here.

Boeing: Southeast Asia Primed to Play Key Role in Growth of Sustainable Aviation Fuel Industry

SEPTEMBER 3, 2024

Southeast Asia's feedstocks can supply approximately 12% of global sustainable aviation fuel (SAF) demand to meet the commercial aviation industry's net-zero goal by 2050, according to a report(opens in a new tab) developed by Roundtable on Sustainable Biomaterials (RSB) and supported by Boeing

The sustainable feedstock assessment(opens in a new tab), encompassing 11 countries across Southeast Asia, found that the region's bio-based feedstock capacity can produce approximately 45.7 million metric tons of SAF per year by 2050.

"This research affirms Southeast Asia's diverse SAF feedstock availability and immense potential for helping meet global demand for SAF," said Sharmine Tan, Boeing's regional sustainability lead for Southeast Asia.

Read more here.

Brazil's Potencial to invest $109 million to turn biodiesel plant into world's largest

OCTOBER 18, 2024

Brazil's Grupo Potencial announced on Tuesday an investment of 600 million reais ($108.86 million) to increase biodiesel output at one of its plants, giving the facility the world's largest production capacity for soy oil-based biofuel.

The investment was announced amid efforts by Brazil's government to increase the footprint of biofuels in local markets. President Luiz Inacio Lula da Silva is slated to sign a bill known as Fuel of the Future into law on Tuesday to promote the gradual increase of biodiesel blend into diesel, among other actions.

Grupo Potencial said the plant, located in Parana state, will increase its annual biodiesel production capacity to 1.62 billion liters (428 million gallons) from 900 million liters (238 million gallons).

Read more here.

Power2X and Advario to develop world-scale e-SAF hub in the Port of Rotterdam

OCTOBER 24, 2024

In partnership, Power2X and Advario are developing a world-scale production and storage hub for sustainable aviation fuel (e-SAF) and synthetic, ultra-low carbon fuels in the Port of Rotterdam.

The Power2X production facility will have the capacity to produce over 250,000 tonnes/year of e-SAF, a non-fossil, synthetic fuel made from green hydrogen. It will be the largest e-SAF facility announced to-date, making sufficient ultra-low carbon fuel to fully power approximately 7,000 flights between Amsterdam and New York annually.

The facility will use imported green methanol produced from green hydrogen and biogenic carbon as feedstock as well as locally produced green hydrogen. Green methanol will be imported from locations where renewable energy and green hydrogen are abundant.

Read more here.

Germany leading biodiesel supplier to US

NOVEMBER 6, 2024

U.S. biodiesel imports have surged in recent months, with volumes doubling since 2022. The attractive pricing has particularly driven imports from the European Union, with Germany standing out as a major supplier. As the largest biodiesel producer in the EU, Germany plays a crucial role in meeting U.S. demand. This is reflected in U.S. import data, with German biodiesel shipments accounting for nearly 58% of total imports in February 2024. However, imports from Germany began to taper off as the year progressed, reported Biofuels International.

Despite the strong import numbers and increasing competition from renewable fuels, U.S. biodiesel production also rose by 5% year-over-year, reaching 5.6 million tonnes in 2023. As a result, biodiesel consumption in the U.S. hit its highest level since 2017.

Read more here.

DHL Express and Shell sign deal to drive sustainable air freight

NOVEMBER 25, 2024

DHL Express and Shell, one of the world's largest energy companies, have signed a deal to drive sustainable air freight at Brussels Airport.

The one-year deal includes the delivery of 25 kt of SAF into Brussels via pipeline to the airport. The SAF used is certified according to ISCC's voluntary certification system ISCC Plus and is expected to reduce GHG by 80 kt CO2e versus fossil jet-fuel.

It is produced in a fossil refinery by replacing fossil crude oil with renewable feedstocks (co-processed SAF) and will be used to offer DHL Express customers emission reduced air transportation services via DHL GoGreen Plus.

Read more here.


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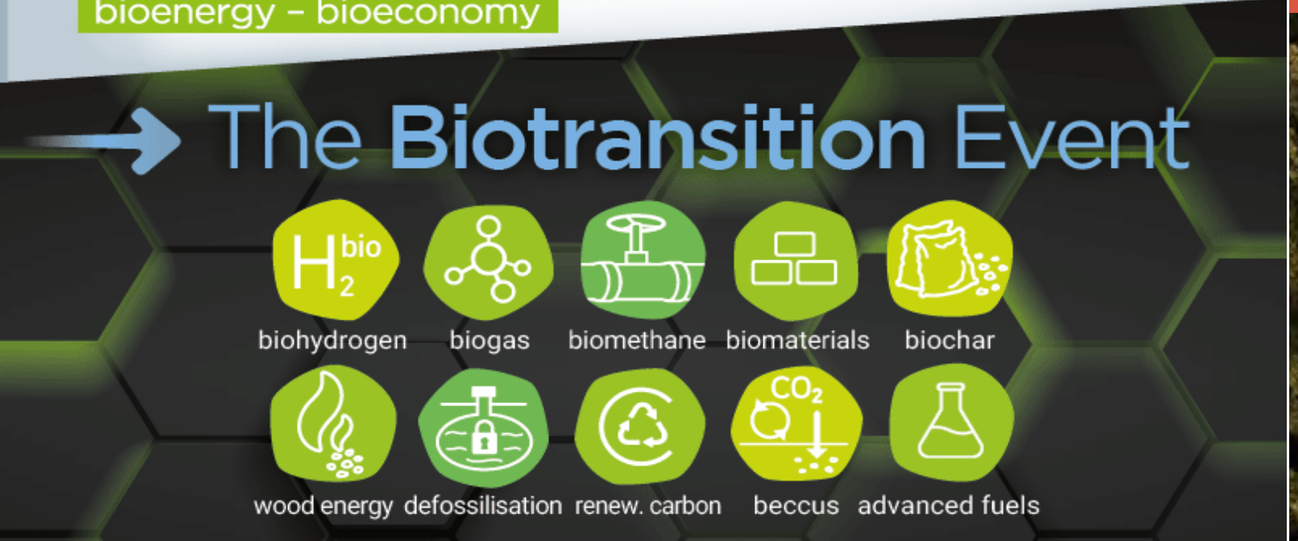
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