

A wide-angle photograph of a two-lane asphalt road curving through a lush green forest. The road is marked with yellow double lines and white dashed center lines. White guardrails line the edges. Several yellow diamond-shaped warning signs are placed along the curves. The sky is a clear, pale blue.

below50 Insights Report

A circular logo containing the text "below50" in a bold, sans-serif font. The word "below" is in teal and "50" is in black.

below50

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Foreword

by Dr. Jennifer Holmgren

It has been just over two years since the momentous day in December 2015, when the gavel sounded and we reached a Global Climate Agreement at COP21.

Since then, the impacts of our warming planet are becoming increasingly obvious with new weather categories being defined, as well as extended drought periods and severe weather events becoming the norm.

Just as Paris signaled that only a unified world and governments working together could tackle our climate crisis, below50 was formed to unify the private sector and accelerate the development and deployment of low-carbon transportation fuels. Importantly, below50 brings the entire supply chain together.

In bringing feedstock providers, fuel producers, and end users together with monitoring by respected NGOs, there is a clear commitment to work across the industrial white spaces that are so often the speed bumps to success. Created to achieve change on a global scale, but recognizing that there is still work to be done, below50 promotes all sustainable fuels that can achieve carbon reductions (of 50% or more) thereby accelerating scale up and market penetration. The global community of below50 has one goal: developing a carbon smart future.

LanzaTech is proud to be part of below50 and this call to action. I am thrilled that the group understands that we must take sensible steps to decarbonizing our transportation fuel sector while dreaming of reducing emissions further and someday transitioning this group to below70 and beyond.

As this report shows, below50 is about action and not about words; it's about walking the walk together to create a low-carbon future. The time for talk is long over, the time to act is now.

Small steps to great things!



I am thrilled that the group understands that we must take sensible steps to decarbonizing our transportation fuel sector

Dr. Jennifer Holmgren

②

Introduction

below50 is a project that aims to grow the global demand for the world's most sustainable fuels.

Any company who produces, uses or invests in fuels with at least 50% lower emissions than conventional fossil fuels can apply to join.

② Introduction



20 Companies

Between 2016 and 2017 participation in below50 grew by 60%

below50

Three below50 hubs

established in North America, South America and Australia



Seven roadshow events

Ensured visibility of the below50 vision at multiple global industry, sustainability and policy events

Over 1,500 jobs created (direct and indirect)



More than 100 million liters of below50 fuels were procured between 2016 and 2017

below50 companies have an annual production capacity of over 100 million liters of below50 fuels

② Introduction

2.1 AIM OF THIS REPORT

below50 is a project that aims to grow the global demand for the world's most sustainable fuels. Use this report as a resource to examine key insights on the status, challenges and progress of the low-carbon fuels sector from the perspective of below50 member companies. You'll also find plans and main activities of below50 for 2018.

below50 is a key outcome of WBCSD's [Low-Carbon Technology Partnerships initiative](#) (LCTPi), in which over 160 companies and 70 partners continue to work together to speed the transition to a net zero emissions economy. Taken together, the scope of the LCTPi working groups targets 65% of the emissions reductions needed for achieving the 2°C objective.

below50 represents an important element of the LCTPi work, providing companies and organizations working in transport and logistics with a platform to get involved with climate-action directly.

Any company who produces, uses or invests in fuels with at least 50% lower emissions than conventional fossil fuels can apply to join.

2.2 ABOUT BELOW50

The World Business Council for Sustainable Development (WBCSD) and SE4All established below50 as a global collaboration that brings together the entire value-chain for sustainable fuels – that is, fuels producing at least 50% less CO₂ emissions than conventional fossil fuels.

below50 is creating a critical mass of developers, users and investors through the below50 campaign. Together, they're growing the global market for the world's most sustainable fuels. **The ambition is to reduce CO₂ emissions by replacing 10% of global transportation fossil fuel use with low-carbon transport fuels by 2030** and 27% by 2050. This is equivalent to 2.1 Gt CO₂ avoided per year.

Working with member companies and global partners, below50 seeks to scale the demand for low-carbon fuels by:

- increasing the numbers of companies choosing these fuels
- creating inter-sectoral B2B opportunities across supply chains
- demonstrating that below50 fuels make good economic, social and environmental sense
- addressing legislative barriers to sourcing below50 fuels

2.3 TIMELINE

below50 was born in 2015 when companies came together around the Low-Carbon Transport Fuels workstream of the [Low-Carbon Technology Partnerships Initiative](#) (LCTPi).

HERE ARE THE VARIOUS PHASES IN THE EVOLUTION OF BELOW50:

2015 > 2016 > 2017 > 2018

Birth

- COP21 in Paris
- Low-Carbon Transport Fuels LCTPi

Establishment

- Work plan agreed
- Project identity created
- Core members convened

Strong foundations

- Hubs created
- Partnerships established
- Membership criteria solidified
- Recruitment procedures outlined
- Policy engagements put forward

Momentum & expansion

- More members
- Growing demand
- Expansion via hubs

③

Status of the industry

If we look at the transport sector's low-carbon fuel consumption during this period, it seems that we've made modest progress towards **below50's 2030 target: ensuring low-carbon transport fuel reaches 10% of global transport fuel use.**



③ Status of the industry

3.1 TRENDS

Global low-carbon fuel production continued to rise in 2016, increasing by 2.6% compared to 2015 levels. This amounts to a 28.6% increase on the 2010 baseline production levels.

If we look at the transport sector's low-carbon fuel consumption during this period, it seems that we've made modest progress towards **below50's 2030 target: ensuring low-carbon transport fuel reaches 10% of global transport fuel use**. In 2016, approximately 0.2 EJ of low-carbon fuels were consumed in global transportation.

Despite the challenges of growing low-carbon fuel production to date, **future growth of transport biofuels is expected to accelerate even faster**.

It's important to keep in mind, however, that second generation biofuel production is still in its growing.

As of 2015, only 24 out of the 67 operating second generation biorefineries in the world were commercial, while 24 were in pilot phases and 19 were demonstration plants. This shows that **there's more work to be done to bring second generation biofuels to the necessary scale**.

Clearly, there's an appetite to grow this market.

Since COP22, membership in below50 has increased by 60%.

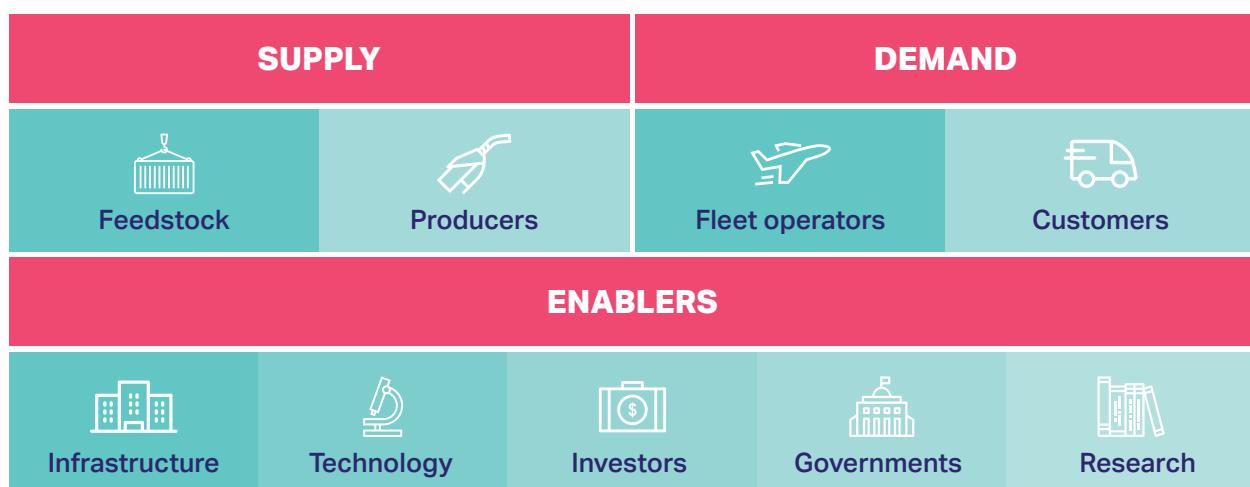
All below50 companies agree that their company's level of ambition for climate action is aligned with the **LCTPi working group's statement of ambition: to increase the proportion of global low-carbon fuel use to 10% by 2030, compared to its current level (about 3%)**.

below50 companies who purchase low-carbon fuels reported significant increases in the amount of below50 fuels consumed.

below50 fuel producers are also delivering on their commitments to increase low-carbon fuel supply. For example, **ICM, a new member for 2016/17, announced a large-scale biofuels plant to be completed by 2018, which will produce 5 million gallons of cellulosic ethanol per year**.

3.2 INDUSTRY INSIGHTS ALONG THE LOW-CARBON FUEL SUPPLY CHAIN

below50 is the only initiative that includes all stakeholders in the low-carbon fuels supply chain including organizations categorized as belonging to the supply, demand or enabler segments. Below are some insights surrounding the industry's evolution, stumbling blocks and progress across the three areas of the supply chain.



③ Status of the industry

Industry insights along the low-carbon fuel supply chain

by Bernardo Silva, Executive President of ABBI (The Brazilian Industrial Biotechnology Association)

We have witnessed a crucial year for advanced biofuels, industrial biotechnology and the Brazilian bioeconomy in 2017. Key legislation and regulations were passed at state and federal level, establishing solid bases for increased investments, modern biosafety protocols and long-term policies for decarbonizing the national transport matrix.

These achievements were possible due to unprecedented public-private collaboration and the political will to rebuild Brazil's biofuels industry.

The National Biofuels Policy (RenovaBio) topped this landmark year. Its record support was a sign of the overall understanding that Brazil must set a global example in demonstrating how biofuels provide a solution to climate change and the urgent need to decarbonize transportation. RenovaBio can drive Brazil to a new era of investments in biofuels and meet national climate commitments by 2030.

Parallel steps were also taken in regulatory and fiscal sectors. For example, the state of São Paulo issued tax exemptions for cellulosic biofuel projects and new biosafety regulations were implemented to fasttrack the commercialization of safer, cleaner and more efficient biofuel technologies.

The first Biofuture Summit brought together more than 300 global stakeholders to Brazil to foster high-impact policies and actions that will drive the advanced bioeconomy, further strengthening the momentum created by RenovaBio for the expansion of the advanced low-carbon fuels.

Altogether, these achievements translate into the renewal of Brazil's commitment to be at the forefront of the advanced bioeconomy; they also offer very positive outlook for the confidence of the industry as well as the long-term future for biofuels in Brazil.



RenovaBio can drive Brazil to a new era of investments in biofuels and meet national climate commitments by 2030.

Bernardo Silva,
Executive President of ABBI
(The Brazilian Industrial Biotechnology Association)



③ Status of the industry

UPS' perspective on low-carbon fuel demand.

Contact: Crystal Lassiter, Senior Director, Global Sustainability and Environmental Affairs, UPS; Peter Harris, Director of Sustainability Europe, UPS

Demand for low-carbon fuels (LCF) and renewable diesel (RD) from fleet operators is rising.

In 2016, UPS used over 13 million gallons of pure RD

— almost a 2.5X increase from 2015. This is set to rise as global companies are increasingly seeing the opportunity to reduce emissions from their transport operations through the use of low-carbon fuels.

Renewable diesel production occurs at small scale "refineries" that convert vegetable oil and waste fats into a premium-quality fuel. Unfortunately, production from these refineries is limited - which presents a barrier to mass production and adoption.

Despite this, UPS is still optimistic that the technology applied to RD may also be

used in the future to produce a bio-crude from renewable feedstocks. If successful, "bio-crudes" could be processed in existing large-scale petroleum refineries to produce a wide variety of fuels with renewable content on a much larger scale. The only limit would be feedstock availability.

Fleet operators using LCF, and more specifically RD, have many advantages, one being that RD is an advanced generation biofuel that meets or exceeds petroleum diesel ATSM D975 standard. This means that **renewable diesel is a drop-in fuel that can be used in any vehicle that uses diesel fuel** and ensure it is covered under manufacturer warranties.

As a pure hydrocarbon, RD provides significant advantages over other types of alternative fuels since RD can be "dropped into" the existing supply chain and used without blending or special handling. Most importantly, RD offers superior cold weather performance and can be shipped on U.S. refined product

pipeline systems allowing for comingling with petroleum diesel at downstream terminals. This greatly simplifies the practical and logistical aspects of widespread use of this fuel.

RD is also a cleaner burning fuel. It's virtually free of sulfur, oxygen and aromatics, thus providing extremely high cetane ratings (a measure of the fuel's delay of ignition time) which allows for more efficient combustion especially during start cycles.

In addition to the benefits mentioned above, RD prices in the U.S. have been competitive with diesel. The EPA Renewable Fuel Standard (RFS) and California's Low-Carbon Fuel Standard (LCFS) programs support the economics of RD and other renewable fuels. There is much work yet to be done to scale up RD production but UPS is doing its part to help grow the demand for this fuel and to support the shift to similar technologies to produce low-carbon fuels.



Renewable diesel is a drop-in fuel that can be used in any vehicle that uses diesel fuel

Peter Harris,
Director of Sustainability Europe, UPS



③ Status of the industry



There is a shift emerging in the regulatory context.

Freya Burton,
Chief Sustainability &
People Officer, LanzaTech



How enablers such as LanzaTech see the LCF sector evolving, a perspective

by Freya Burton, Chief Sustainability & People Officer, LanzaTech

Brazil is a prime example of a country where new fuels policy is focused on technology neutrality and carbon reduction rather than on prescriptive inputs. This will benefit new LCF technologies that had previously been impeded because they took a different approach to traditional plant-based routes to get to market. This policy provides an incentive for investment because it creates more certainty in the market place.

At the micro level - this is where LanzaTech are market leaders, technologically speaking - advances in synthetic biology and deep learning have enabled fuel producers to use new tools to make fuels from a variety of different (nontraditional) feedstocks. This is a new trend in the sector that will unlock more potential fuel volumes.



④

High impact partnerships

In order to make below50 go global, we've worked closely on a number of high-impact partnerships. Their work is crucial to the success of the project.

High-impact partnerships have helped below50 become a global player in the low-carbon fuels sector.

④ High impact partnerships

Queensland Renewable Fuels Association (QRFA), host of below50 Australia, a perspective by Larissa Rose, Managing Director

Around the world, low-carbon fuel and renewable fuel associations have a duty of care to consistently include robust questions on their "call to action" agendas.

Some examples of such questions include: How can we better serve the low-carbon fuels industry? How can we broaden and support connectivity in the supply chain? And lastly, how can we grow demand and provide opportunities for investment pathways in global low-carbon fuel agendas to align with local and regional industry objectives?

Answers and goals for the **Queensland Renewable Fuels Association (QRFA)** have been definitive: through the power of strategic partnerships. Taking the lead in July 2017, QRFA partnered with WBCSD to create below50 Australia, which supports the global and domestic objectives of transitioning to a low-carbon fuel economy.

QRFA is a member-based industry organization focused on growing the renewable fuels sector by facilitating end-to-end collaboration for investment, innovation, policy development and education. By growing the demand and offtake purchases for renewable fuels from the transportation intensive industries of agriculture, aviation, construction, mining, road freight and shipping, **we as the below50 Australia regional hub, see opportunities for achieving low-carbon targets within this sector.**

Our strategic partnership with below50 was built around our understanding of how significant promotion and advocacy are in driving uptake of low-carbon fuels on the demand side of the supply chain. below50 and its global network of active corporate members showcase the role that our national corporations and businesses can play in leading Australia on renewable fuels.

For QRFA, our partnership as the host of below50 Australia means we can provide exclusive membership opportunities for businesses and local stakeholders to connect with the wider below50 global community, while providing a linkage for global activities to engage in our country.

Our ambitions are to become the mechanism that pulls together the gaps between the supply-chain. **By building stronger partnerships that cultivate and support change, and by aligning unique collaborations, we see new opportunities to rapidly scale-up the production, use and export of below50 fuels.**

We value our strategic partnership and the capacity it has for building a stronger global network. Our focus this year is to develop specific industry roundtables, working groups and recruit corporate fuel buyers to commit to purchasing below50 fuels.



We, as the below50 Australia regional hub, see opportunities for achieving low-carbon targets within this sector

Larissa Rose,
Managing Director, Queensland
Renewable Fuels Association



④ High impact partnerships

4.1 ART FUELS FORUM, BELOW50 PARTNER IN EUROPE

The ART (Alternative, Renewable Transport) Fuels Forum is a project sponsored by the European Commission that brings together selected representatives of the European "ART" fuels production industry, the transport consumption industry, key international cooperation actors as well as EU policymakers and stakeholders. The purpose of the program is to facilitate discussion and elaboration of common issues on policy and market penetration barriers for these ART fuels.

The policy landscape for low-carbon fuels in Europe is complex. **below50 partnered with ART Fuels Forum because the project is extremely well-placed to drive initiatives and discussions aimed at more favorable policies.**

The Forum also contributes to enhancing and strengthening the understanding of the needs of the ART Fuels sector in view of improving appreciation of market uptake issues.

The ART Fuels Forum also provides technology insights and addresses deployment issues and works to improve international cooperation on low-carbon fuels and GHG emissions issues. In 2017, below50 was invited to the ART Fuels Forum Plenary

meeting which enabled the introduction of below50 to the wide ART Fuels Forum membership, opening the door to new connections and broadening the reach of below50 in Europe.

In 2018, below50 will participate at a Joint Conference on International Actions. The aim of the conference is to improve the contacts and dialogue between the International Actions and the EU Institutions. The key objective is to debate whether the current predictions for low-carbon fuels policies and existing policies match to enable the deployment of low-carbon fuels to reach commercial stage.

4.2 LOW-CARBON FUELS COALITION, CALIFORNIA

Renewable fuels markets in North America are geographically diverse and evolving to be more so. Federal policies in Canada and the U.S. are complemented by more ambitious state policies, like the California Low-Carbon Fuel Standard (LCFS). Policies like this incentivize the use of fuels as a function of their emissions reductions. Additional regions have and/or are developing LCFS, including British Columbia, Oregon, Washington and the Northeast states of the Regional Greenhouse Gas Initiative (RGGI).

These diverse sub-national actors have the potential to come together into a single carbon market to further empower the uptake of below50 fuels.

In order to understand and contribute to these developments, below50 has partnered with the Biotechnology Innovation Organization (BIO) and the California Low-Carbon Fuels Coalition (LCFC). BIO maintains state offices in all 50 states of the U.S. and frequently contributes to state policy development. The coalition played a crucial role in the development of the CA LCFS, making **California the most attractive market in the world for below50 fuels.** below50, BIO and the LCFC will be working together in 2018 to motivate and accelerate CA LCFS development in the aforementioned regions of North America so as to build on California's success.



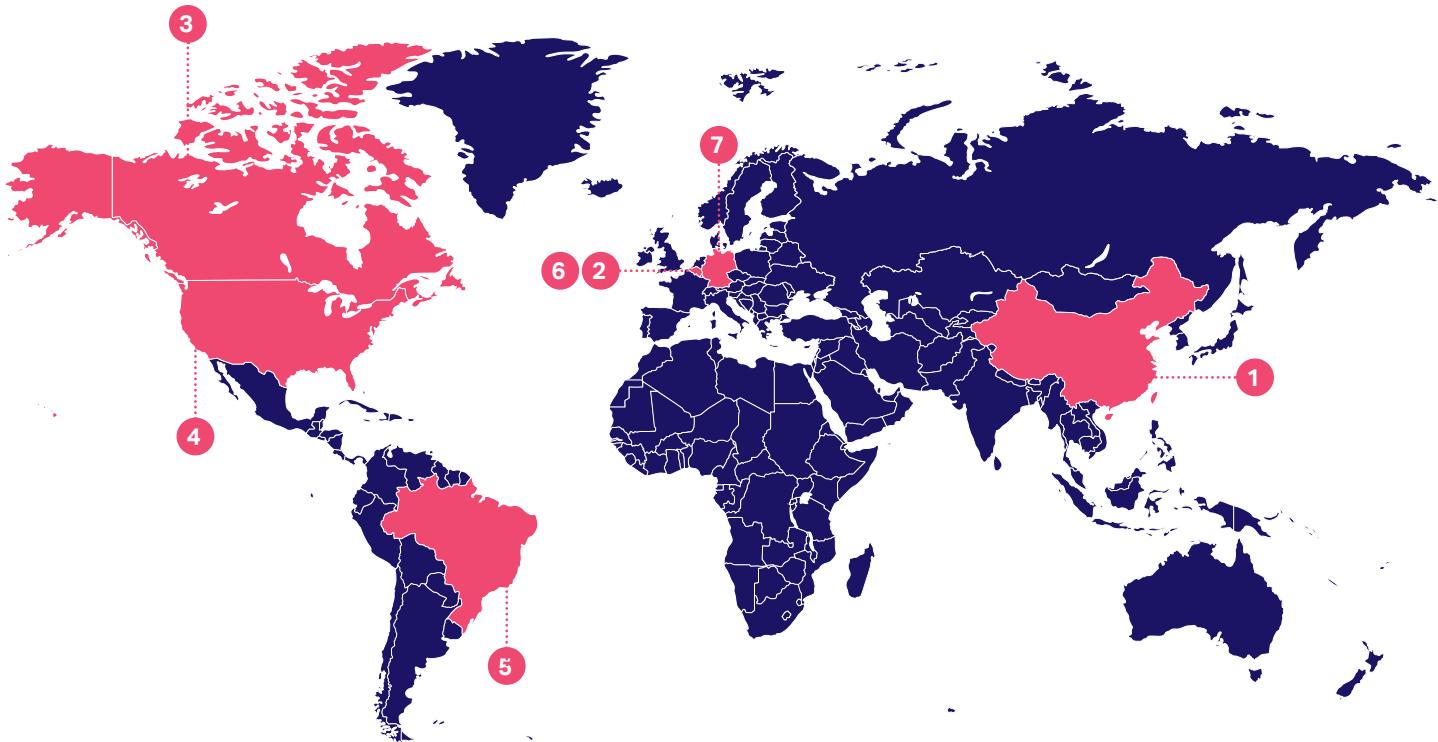
⑤

below50 roadshow

Improving understanding of low-carbon fuels and their contribution to decarbonizing the transport sector is a central part of the below50 work program. Throughout 2017, below50 was featured at global policy, sustainability and industry events to explain the approach and activities, attracting new members and partners along the way.

⑤ below50 roadshow

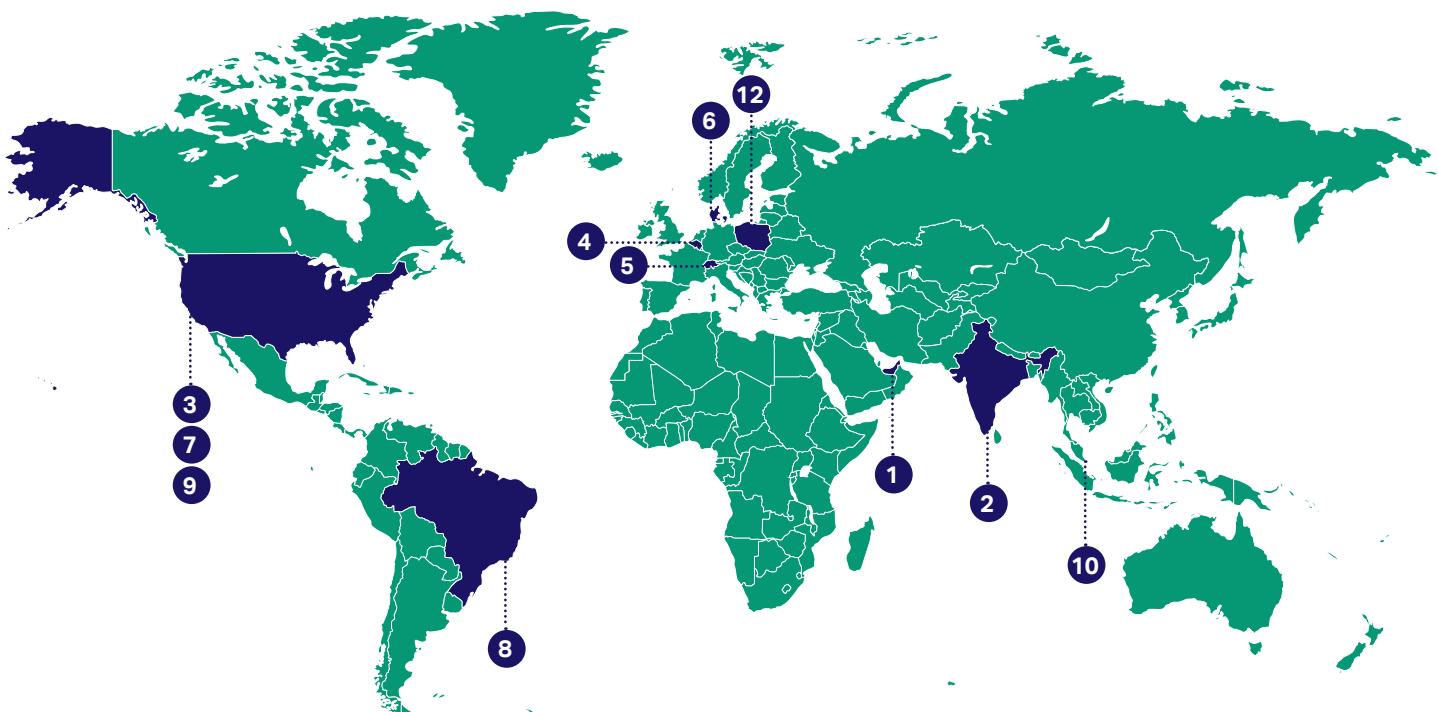
2017 ROADSHOW:



- ① Clean Energy Ministerial (CEM) 9, 6-8 June, Beijing, China
- ② Low Carbon Technology Partnership initiative, 19-20 June, Brussels, Belgium
- ③ BIO World Congress, 23-26 July, Montréal, Canada
- ④ ABLC Next, 16-18 October, San Francisco, United States of America
- ⑤ Biofuture Summit, 24-25 October, São Paolo, Brazil
- ⑥ ART Fuels Forum Plenary, 26-27 October, Brussels, Belgium
- ⑦ COP23, 6-17 November, Bonn, Germany

⑤ below50 roadshow

2018 ROADSHOW:



- 1 IRENA Gen Assembly 13-14 January, Abu Dhabi
- 2 International Conference on Sustainable Biofuel (Mission Innovation and Biofuture Platform), 26-27 February, New Delhi, India
- 3 ABLC, 28 February – 2 March, Washington DC
- 4 Joint Conference of International Actions, 10-11 April, Brussels, Belgium
- 5 WBCSD Liaison Delegate Meeting, 16-19 April, Montreux, Switzerland
- 6 CEM9, 22 - 25 May 2018, Copenhagen, Denmark
- 7 World Congress on Industrial Biotechnology, 16-19 July, Philadelphia, USA
- 8 BIO Latin America Conference, 4-5 September, São Paolo, Brazil
- 9 Global Climate Action Summit, 12-14 September, San Francisco, California, USA
- 10 WBCSD Council Member Meeting, 22-25 October, Singapore
- 11 ABLC Next, November (TBC)
- 12 COP24, 3-14 December, Katowice, Śląskie, Poland

Building on our efforts and on the progress made from below50's 2017 roadshow, our 2018 roadshow attempts to bring the conversation around low-carbon fuels into broader sustainability and mobility discussions.

⑥

Policy

below50 members collectively possess a wealth of experience and insights on low-carbon fuel policy. Here are key insights and what to explore for the future.

by Nour Amrani, Senior Manager, Public Affairs, Novozymes



⑥ Policy

6.1 CURRENT REDII STATUS

On 30 November (2016), the European Commission released its "Clean Energy Package," including a [proposed recast of the Renewable Energy Directive \(REDII\)](#) for the period to 2030.

The adoption of the REDII will be a major milestone. It should provide clarity on the role of low-carbon fuels in the EU energy mix for the next decade. So far, no other region has yet provided direction for investment in renewables within a similar timeframe.

The Commission proposed an EU wide obligation for "low-emissions fuels," including all alternative energy sources for transport – except for conventional biofuels, whose maximum contribution to road transport energy is gradually reduced from 7 to 3.8% by 2030. Within the "low-emission fuels" obligation of 6.8% by 2030, a sub-target is set for advanced biofuels made from Annex IX-A feedstocks, increasing gradually from 0.5% in 2021 to 3.6% by 2030.

The European Council and the European Parliament (EP) have adopted their respective positions on this proposal which will pave the way for negotiations towards a final text in 2018.

- On 18 December 2017, the Council adopted its position on the REDII. In the transport sector, the renewables target for 2030 is set at 14% for each member state, and there is a sub-target of 3% for "advanced biofuels," for which double-counting will be allowed. This advanced biofuel target has an intermediate binding milestone of 1% in 2025. The existing 7% cap on first-generation biofuels is maintained to provide certainty to investors. If a member state sets a lower cap, it will be rewarded with the option of lowering its overall target for renewables in transport.

- On 17 January 2018, the European Parliament voted on the REDII report. The **MEPs agreed on a 12% transport target for renewable energy by 2030, 10% of which will be met with advanced, waste-based biofuels and renewable electricity.** They capped the contribution of conventional biofuels at countries' 2017 consumption levels, but no higher than 7%. They also moved to end the use of palm oil in the production of biodiesel.

6.2 BELOW50 CONSORTIUM RESPONSE TO RED II

The [REDII](#) establishes an overall policy for the production and promotion of energy from renewable sources in the EU. **below50 welcomes the European Commission's proposal** to revise the REDII for the period 2021-2030 because it promotes using renewable transport fuels while incentivizing advanced biofuels. However, the level of the Directive's ambition is not commensurate with the size of the challenge. This is important because it hinders the EU's ability to use LCFs to meet its ambitious climate goals.

The proposal falls short of the EU ambition to reduce the climate impact of transport and increase the share of renewables in transport by 2030. The gradual phase out of all conventional biofuels as outlined in the Directive will likely lead to an *increase* of the share of fossil fuels in transport and associated GHG emissions.

Here's why:

By 2020, the aim is to have 10% renewables in transport, by 2030, the ambition is lowered to 6.8%. By the same token, the EU will need 15-17% alternative fuels in the transport sector to reach its climate ambition. This means that a *variety* of sustainable low carbon fuels - including sustainably produced conventional biofuels will be needed.



Policies to promote low carbon fuels must be enforceable and stable to be effective and ensure deployment

Nour Amrani,
Senior Manager, Public Affairs, Novozymes



⑥ Policy

So, **REDII should also recognize the role of conventional biofuels with high GHG reduction potential**, such as those made from food and feed crops. These can significantly help in meeting Europe's decarbonization and renewables targets for the transport sector.

All in all, European transport emissions urgently need to be reduced; we cannot afford to wait. To achieve low-emissions mobility in Europe, *all* sustainable low-carbon solutions should be called to the fore. The aim should not be to replace one good solution with another, but to ensure they all add up to ambitious reductions targets.

6.3 BELOW50 RECOMMENDATIONS ON THE REDII PROPOSAL

- Increase ambition for renewables in transport, providing clarity and stability for investors.
- The 10% target for using renewable energy in the transport sector in 2020 should be maintained post-2021 and progressively increased towards 2030 in line with the overall EU climate and energy targets to meet the Paris Agreement.
- The 2030 target should reflect the contribution that could be made by combining renewable electricity and low-carbon fuels.
- A stable, ambitious framework is needed to attract further investments in low-carbon fuel technologies in general and advanced biofuels technologies specifically.
- EU low-carbon fuel policy rollbacks and short-term

revisions over the past decade have stalled investments and should not be repeated going forward. There should be focus on GHG reductions combined with robust sustainability criteria.

- All fuels (including conventional biofuels) that meet sustainability and GHG reduction criteria must be allowed to contribute to targets, regardless of being in a technology and/or feedstock list. This is the best way forward to real GHG emissions reductions.
- The current RED already contains far-reaching sustainability criteria for low-carbon fuels, which can be strengthened further and adapted to all low-carbon fuels pathways.
- Full transparency and monitoring are required to ensure whether or not a feedstock is sustainable. Enforcement provisions on traceability and (pre-) market surveillance should be stronger. The policy should provide additional incentives for the uptake of innovative low-carbon fuel technologies such as advanced biofuels.
- Technologies that are not commercially available at scale, or that are not yet competitive with existing low-carbon fuel technologies or fossil fuels need additional care to encourage investment and scale up across Europe.
- A series of innovative and sustainable low-carbon fuel technologies have now reached the necessary Technology Readiness Level (TRL) for deployment and commercialization. This means they could reach economies of scale, provided the legislative environment is supportive.

- The proposal to include a dedicated sub-mandate for increasing the use of advanced biofuels is critical for establishing investor confidence and unleashing LCF's full potential.
- Other innovative technologies such as e-fuels and waste-based fossil fuels have also been recognized for the first time in the EC proposal. This is because of their potential contribution to EU energy and climate targets. This is an important step in broadening the scope of the low-carbon fuel pool.

Next steps

The European Commission, the European Parliament and the Council of Member States will start the "trilogue" negotiations to reach a political agreement on the REDII. The final text of the legislation should be a compromise between the different institutions' positions and is likely to be finalized by the end of 2018.

6.4 RENOVABIO

RenovaBio is Brazil's recently adopted national biofuels policy. It was sanctioned under Michel Temer's presidency in late 2018. The program addresses energy security, energy independence and sustainable development objectives. It mandates reducing the carbon intensity of fuels distributed nationally and rewards the innovation and efficiency of advanced biofuels. RenovaBio also aims to guarantee the expansion of biofuels production and use, based on market predictability and sustainability, in harmony with Brazilian international commitments and in line with market growth.

⑥ Policy

below50 members see RenovaBio as the model of a successful biofuel policy to encourage other nations to develop and adopt similar strategies. below50 members wrote a letter supporting the implementation of RenovaBio in July 2017. This letter outlined industrial, economic and emissions reduction benefits while highlighting the opportunity for Brazil to demonstrate its leadership on the bioeconomy. Peter Bakker, WBCSD President and CEO, signed the letter on behalf of below50 members. It was then delivered to President Temer's government through below50's partner in South America, CEBDS.

6.5 POLICY FRAMEWORK – A NEW INTERACTIVE TOOL FOR COMPANIES AND COUNTRIES

below50 members collectively possess a wealth of experience and insights on low-carbon fuel policy.

As such, we are proposing a policy tool that goes beyond arguing the merits and pitfalls of specific policies. Instead, it will take a broader evaluation of legislative developments for low-carbon fuels.

Through their advocacy activities in their respective regions, members have gained valuable insights into:

- i. what makes a good policy for low-carbon fuels
- ii. how good policies should be developed and implemented

In 2018, below50 will document our members' experiences with low-carbon fuels policies. Once documented, this information will help below50 members and representatives to

- ✓ communicate below50 experiences and policy development recommendations
- ✓ contribute to current and future policy discussions
- ✓ help to avoid repeating policy "errors" in the future i.e. allow for learning from mistakes

- ✓ provide policy-makers with a broad view of policy experience worldwide

This framework will address the following points and questions (for example):

- What makes a good policy?
- What are the fundamental steps for the development of a good policy?
- What are the success factors for policy implementation?
- What can be learned from specific policies applied in the past?
- (How) could this policy be applied elsewhere?
- Where has LCF policy failed and why?
- How should we avoid policy mistakes in the future?

This resource will bring value to policymakers and will inform discussions on broader strategy and corporate discussions to boost the low-carbon fuels industry – especially in countries where the low-carbon fuels sector is only just beginning.



7

Priorities for overcoming barriers to growing the demand for low-carbon fuels, a perspective

by Isabel Welten, Business Development Manager, GoodFuels

An increasing number of companies are including carbon emissions in their annual reporting. Generally, as a first step, companies start to measure and report the emissions; the second step is often to actually *reduce* the emissions.

It goes without saying that companies aim to start with carbon reductions via "low-hanging fruit," such as shifting from air freight to ocean freight where possible.

There is only a small number of companies who aim to immediately reduce emissions in every step of the supply chain, and since low-carbon fuels come with a premium, offtake is still limited.

Three key actions that below50 companies are addressing/should address to help grow the low-carbon fuels industry are as follows:

- Distinguish between carbon offsetting and the actual reduction of carbon emissions via low-carbon fuels. This difference should also be clearly communicated

to the consumer, as consumer awareness itself will trigger demand.

- Include the carbon costs to generate a real price, and subsequently companies should collectively translate the costs to the end-consumer.
- Since low-carbon fuels come with a premium, it would make sense to split the premium between the cargo owner (company) and the logistics provider (shipper/transport company).



An increasing number of companies are including carbon emissions in their annual reporting.

Isabel Welten,
Business Development Manager, GoodFuels



⑧

below50, looking ahead

Building on successes in 2017, below50 will continue to work through its various channels, projects and partnerships to contribute to decarbonization of the transport sector.

The broad objectives for below50 in 2018 are as follows;

- i. Increase awareness
- ii. Build critical mass
- iii. Grow the demand for low-carbon fuels
- iv. Achieve local implementation
- v. Overcome barriers (financial and policy)
- vi. Sectoral focus (aviation and shipping)

Overall, compared to 2017 which focused on policy engagements, roadshow events and establishing regional hubs around the world, in 2018 below50 is moving to a more deliverable-focused phase which includes development of the following products:

- LCF procurement guidelines
- Policy framework – an interactive tool
- Corporate program for sustainable aviation fuel

In the publication [Technology Roadmap: Delivering Sustainable Bioenergy](#), The IEA stresses the urgency of the need to ramp up the contribution of sustainable bioenergy across all sectors, notably in the transport sector where consumption is required to triple by 2030. below50 is tackling this issue head-on.

Stay tuned for important updates and developments coming out of below50 and the low-carbon fuels sector. Together, we're accelerating the transition to a sustainable world by decarbonizing transport.



ABOUT WBCSD

The World Business Council for Sustainable Development (WBCSD) is a global, CEO-led organization of over 200 leading businesses and partners working together to accelerate the transition to a sustainable world. WBCSD helps its member companies become more successful and sustainable by focusing on the maximum positive impact for shareholders, the environment and societies.

WBCSD member companies come from all business sectors and all major economies, representing combined revenues of more than USD \$8.5 trillion and 19 million employees. The WBCSD global network of almost 70 national business councils gives members unparalleled reach across the globe. WBCSD is uniquely positioned to work with member companies along and across value chains to deliver impactful business solutions to the most challenging sustainability issues.

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DISCLAIMER

This report is released in the name of WBCSD. Like other reports, it is the result of collaborative efforts by members of below50 (www.below50.org). Contributions were received from a wide range of members, ensuring that a variety of perspectives of below50 members is included. It does not mean, however, that every member company agrees with every word.

Please note that data published in this report reflects knowledge up to April 2018.

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