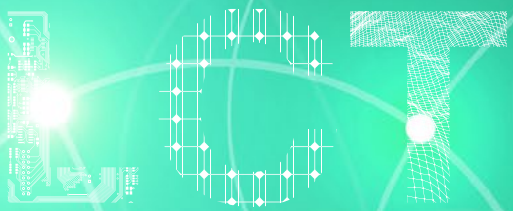
wbcsd

REscale

below50

Low Carbon Technology Partnerships initiative



# 2017

# Action for Impact

CEMENT

LOW-CARBON FREIGHT

ENERGY EFFICIENCY IN BUILDINGS

CLIMATE SMART AGRICULTURE

CHEMICALS

FORESTS AND FOREST PRODUCTS AS CARBON SINKS

# About WBCSD

The World Business Council for Sustainable Development (WBCSD) is a global, CEO-led organization of over 200 leading businesses 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.

**www.wbcsd.org** Follow us on Twitter and LinkedIn

# Acknowledgements

This report has been prepared for WBCSD by Helen Baker and Edward Brent from PwC. LCTPi working group leads – Delphine Garin, Mariana Heinrich, Yvonne Leung, Matthew Reddy, Tanya Strevens and Rasmus Valanko – provided information for each of the working group sections. Michael Martin designed the report and Juliet Taylor provided editorial support.

LCTPi has been generously supported with funding from We Mean Business (WMB), with particular support to REscale, below50 and CSA.

# Disclaimer

This report is released in the name of WBCSD. Like other reports, it is the result of collaborative efforts by WBCSD staff, experts and executives from member companies. Drafts were reviewed by a wide range of members, ensuring that the document broadly represents the majority view of WBCSD members. It does not mean, however, that every member company, PwC or WBCSD agrees with every word.

Please note that data published in this report reflect the status of LCTPi at the end of August 2017.

# Copyright


ISBN number: 978-2-940521-54-8

# Contents

# Foreword

**Peter Bakker**
President and CEO

We need continued and diverse leadership to drive momentum on action-oriented solutions.

The scientific consensus on climate change is clear, and the intensity of weather events throughout 2017 – including wildfires, heatwaves, hurricanes and floods – are making the gravity of the challenges we face ever clearer.

Just over one year ago, the Paris Agreement came into force, sending a strong signal that the transition to the low-carbon economy is inevitable. The Low Carbon Technology Partnerships initiative (LCTPi) is delivering the solutions that will enable governments to meet the Agreement's ambitious targets.

This report marks the next step in our concerted effort: from action to impact.

Over the course of 2017, LCTPi working groups have sharpened their focus and expanded their reach. 20 companies have joined - bringing the total to 185 - and work has sprung up in new geographies across the globe.

144 companies and NGOs from 25 different countries are removing barriers to scale renewable energy procurement under REscale. At the same time, below50 has doubled its membership and is launching regional hubs across three continents, connecting with local business.

LCTPi companies have also received external recognition. Innovate-UK will fund a GBP £1 million pilot project to demonstrate the Low-Carbon Freight's exciting findings on emissions reductions through route optimization and multi-modal asset sharing.

It's clear that since 2015, LCTPi has become the platform to shape industry best practice, align with the highest levels of climate ambition and make the case for action. 85% of companies involved acknowledge that LCTPi has supported their actions on climate change, with 42% saying it has strengthened their corporate climate commitments.

In 2018 and beyond, strong business leadership will continue to accelerate implementation of the Paris Agreement and ensure a just transition. We can only fulfil its ambitions and achieve the scale of transformation needed if we work together to keep moving in the right direction.

**María Mendiluce**
Managing Director

# Executive summary

LCTPi is a unique, action-oriented program that brings together companies and partners to accelerate the development and deployment of low-carbon technology solutions to stay below the 2°C ceiling.

LCTPi was launched at COP21 in Paris as CEOs publicly expressed support for LCTPi ambitions and mobilized their companies to implement inspiring sector-specific climate action plans.

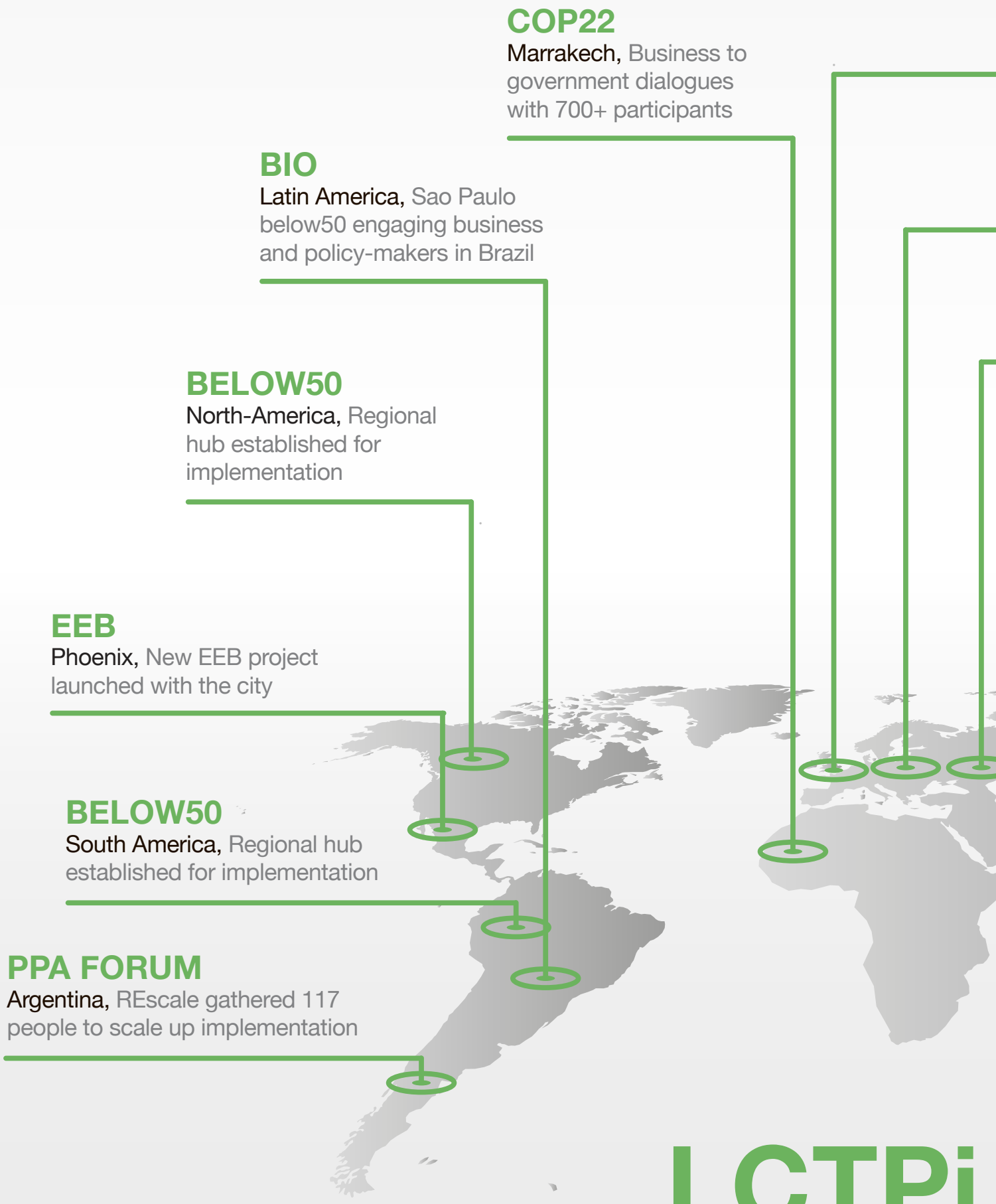
A PwC impact analysis conducted earlier in 2015 determined that LCTPi ambition in aggregate equates to 65% of the emissions reductions necessary for remaining on a 2°C pathway, while channeling USD $5-10 trillion toward low-carbon sectors. Such a large investment, as well as the jobs such an investment could create, would have a global impact. As such, LCTPi will be of particular benefit to developing markets and will contribute to delivering on many of the Sustainable Development Goals.

Now, two years since Paris, companies remain committed to urgent climate action, and LCTPi is continuing to inspire companies to take action. As of October 2017, 100 companies have made 113 public endorsements of LCTPi[1], a 10% increase in the level of endorsement since the last LCTPi Progress Report was published in November 2016. Since the start, more than 185 companies have been part of LCTPi.

The world needs more businesses to implement ambitious climate action programs. LCTPi is exploring ways to expand its reach through coalitions such as We Mean Business, company supply chains and targeted engagements around the world. This enables LCTPi to have impact beyond its members, spreading industry best practice to regions that are less involved in global discussions, and to companies who do not have access to the most advanced work on climate action for their sectors or value chains.

**Active LCTPi working groups include:**

- **REscale** – energy and technology companies working to accelerate the deployment of renewables and the transition to a low-carbon electricity system
- **below50** – companies with the vision to grow the global market for the world's most sustainable fuels and help achieve a carbon neutral transport sector
- **Low-carbon freight** – companies working together to investigate and select measures that companies can adopt to reduce emissions from road freight transport
- **Cement** – under the Cement Sustainability Initiative, companies from the cement industry are working to overcome the barriers the industry faces in delivering emissions reductions
- **Chemicals** – companies working together on options and pathway scenarios to deliver a low-carbon, sustainable chemical industry




# LCTPi

FROM AMBITION TO

## LOW CARBON FREIGHT

UK, £1m demo project launched

## LCTPi 7

Brussels, 250 sustainability professionals gathered

## EEB

Zurich, Paris and Bucharest,
New EEB projects launched with cities

## CEMENT

India, Pilot implementation exercises at plant level

## PPA FORUM

India, REscale gathered 157 people to scale up implementation

## REscale

China, Corporate sourcing of renewables campaign gathering 200 people

## CSA

ASEAN, CSA supporting 150,000 farmers for Sustainable Rice Landscapes

## BELOW50

Australia, Regional hub established for implementation

# IN 2017

GLOBAL IMPLEMENTATION

## Some headlines from this year's progress review:

**185**

**Companies in total**

20 new companies joined **LCTPi** this year, for a total of 185 since the start

**144**

**Different companies and NGOs from 25 different countries**

**REscale** expanded its work on corporate renewable energy power purchase agreements, with deep dives in India and Argentina, developing guidance for companies to overcome the current hurdles, and sharing best practices

**3**

**New regional hubs**

**below50** doubled membership and established the first regional hubs in North America, South America and Australia

32%

**Emissions reduction potential in scope for demo**

**Low-carbon freight** delivered a successful funding bid to Innovate-UK for a GBP £1 million demonstration project in the UK to test real world applicability of our modelling results

52

**Technical papers**

**The Cement Sustainability Initiative** and the European Cement Research Academy released a landmark set of 52 technical papers on well-known existing or breakthrough technologies for emissions reduction in the cement sector

150,000

**Farmers targeted for support in ASEAN**

New regional activity on **climate smart agriculture** in the ASEAN region has sparked a significant new collaboration focusing on the second most widely cultivated cereal in the world through a Sustainable Rice Landscapes initiative aiming to reduce emissions while maintaining or enhancing productivity

LCTPi's credibility has been strengthened with a robust monitoring framework for 2017.
Each working group has now agreed on a set of key performance indicators to track year-on-year progress.

# Companies engaged































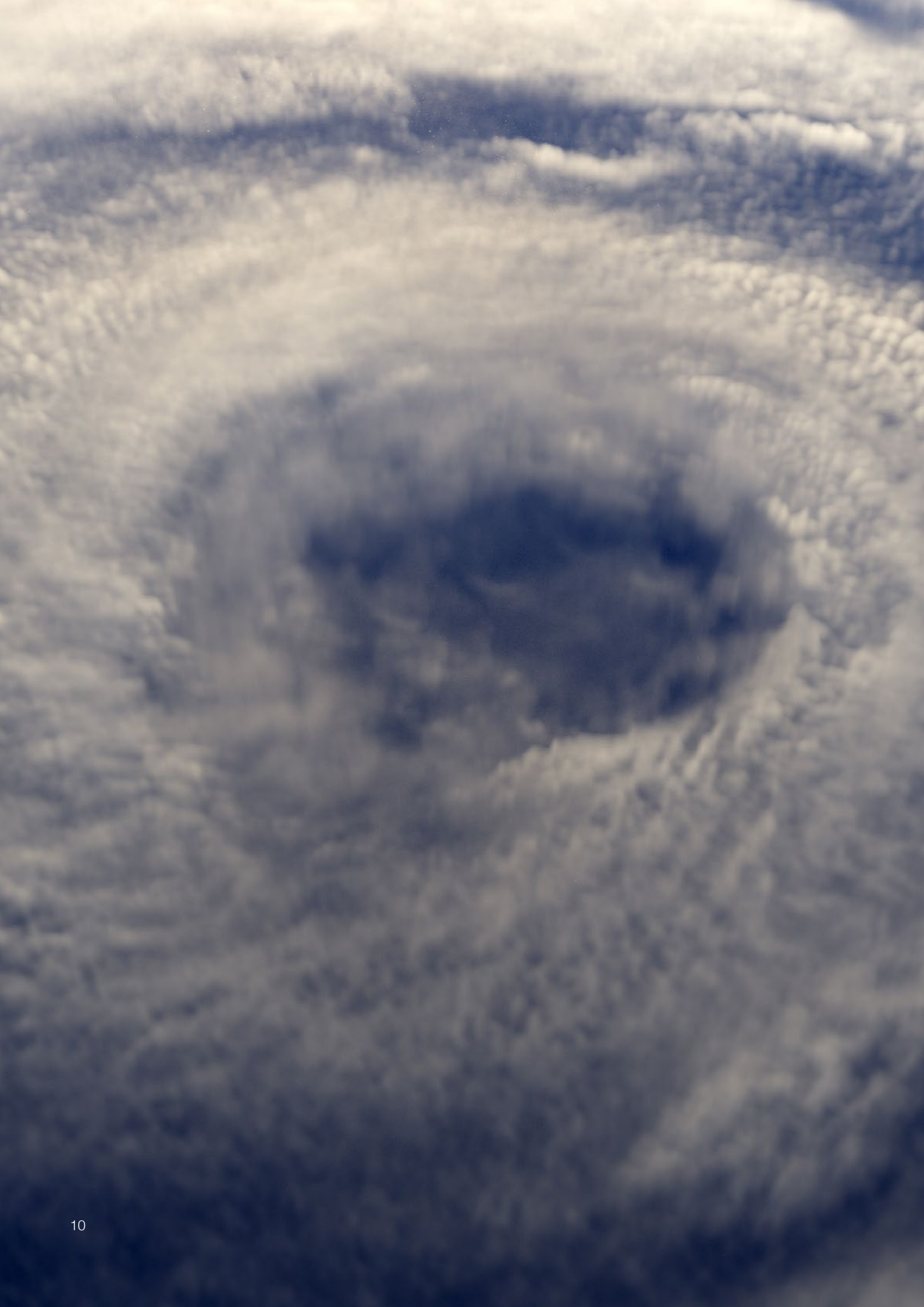









# in LCTPi in 2017



# Introduction

As the Intergovernmental Panel on Climate Change (IPCC) prepares its 2018 report on the impacts of a world that warms 1.5°C above pre-industrial levels, the scientific evidence for climate change continues to grow.

At the same time, we are living in turbulent times. The number of serious, climate-related weather events is increasing[1] and there is a significant shift taking place in the landscape of climate leadership. This context presents challenges but also provides opportunities for new and distributed leadership on climate action.

An increasing number of actors – from states, cities, the scientific community and business – as well as emergent national leaders – are doubling down on their commitments to work together, in order to find new and rewarding climate solutions in all countries of the world.

In this context, the Low Carbon Technology Partnerships initiative (LCTPi) is unprecedented in its potential for scale and impact for delivering a low-carbon world. It demonstrates that business remains committed to climate action. Companies believe that collaboration can help deliver climate action faster. They are also leveraging the LCTPi deliverables to expand climate action beyond their own footprints and are providing guidance and tools for companies in the broader market.

With a solid framework, proven methodology and clear agenda, LCTPi is a unique, action-oriented program that brings together companies and partners to accelerate the development and deployment of low-carbon technology solutions to stay below 2°C.

Working within and across sectors, LCTPi provides focused, value-adding opportunities for businesses to engage on “big lever” climate solutions to fill gaps in climate action and achieve major impact.

In 2016, LCTPi working groups began implementing action plans and started to make good on the promises made in Paris.

In 2017, work has sharpened, focusing on specific actions that will really help move the market in overcoming key barriers.

113

**Commitments**

10% increase since 2016 (103)

100

**Companies**

4% increase since 2016 (96)

20

**Companies joined**

Over 20 new companies joined LCTPi in 2017

Engagement with policymakers through a more structured approach has also been a hallmark of LCTPi in 2017. Examples include the policy-focused LCTPi 7 meeting in Brussels which took place in June, as well as the efforts individual working groups have made to engage with policymakers in specific countries.

For example, below50 is supporting a Brazilian incentive program that enables biofuel producers to issue emission reduction certificates.

Furthermore, REscale is providing concrete recommendations with our partner, WRI, to the Indian state of Maharashtra to remove barriers to the use of power purchase agreements (PPA) and also helping Argentinian companies navigate through the new mandatory renewable energy targets placed on commercial and industrial consumers.

This expanded work on engagement with policymakers further emphasizes that business-to-government policy dialogue will be critical for unlocking the potential of LCTPi solutions across markets.

## Potential

Analysis of the potential impact of LCTPi as a whole highlights that if the initiative's ambitions are met, they could cut emissions by around 25% from business-as-usual and get society 65% of the way to a 2°C emissions pathway. In addition, it could channel USD $5-10 trillion of investment toward low-carbon sectors of the economy and create vast numbers of jobs. The LCTPi also provides a platform for businesses to play a leading role in helping achieve the Sustainable Development Goals.

LCTPi ambitions target **65%** of emissions reductions needed for a 2°C pathway

LCTPi could support at least **25-45 million** person years of employment

LCTPi could channel at least **USD $ 5 - 10 trillion** of investment into the low carbon economy

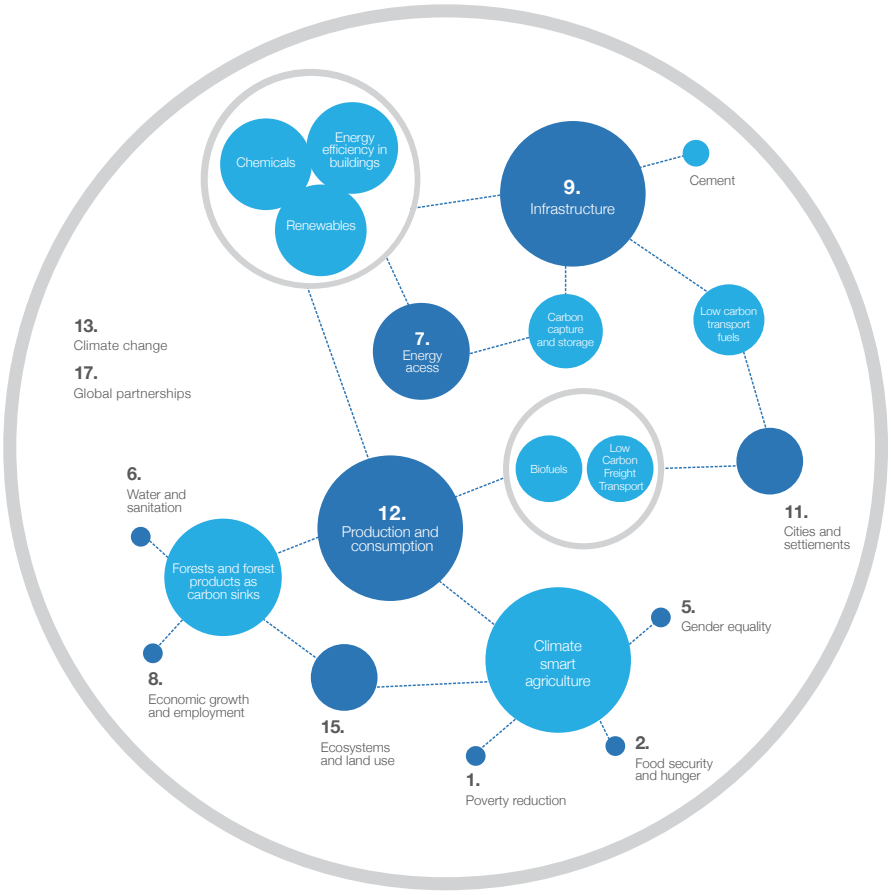


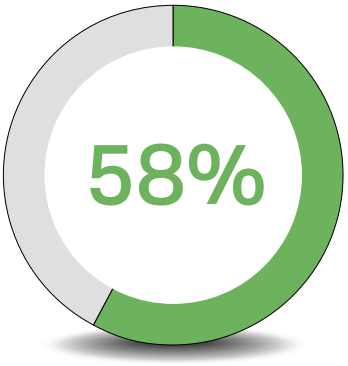

**Figure 1** - Links between LCTPi focus areas and the UN sustainable development areas. The width of the bubble is proportional to the number of links. Goals 13 and 17 are linked to all LCTPi focus areas.

LCTPi adds value to businesses who are serious about climate action

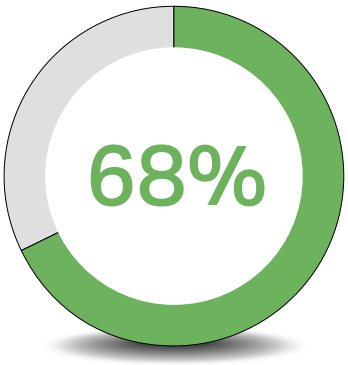

**Companies acknowledge that LCTPi has supported their company's action on climate change**

and 42% of these companies believe that LCTPi activities have strengthened their climate actions

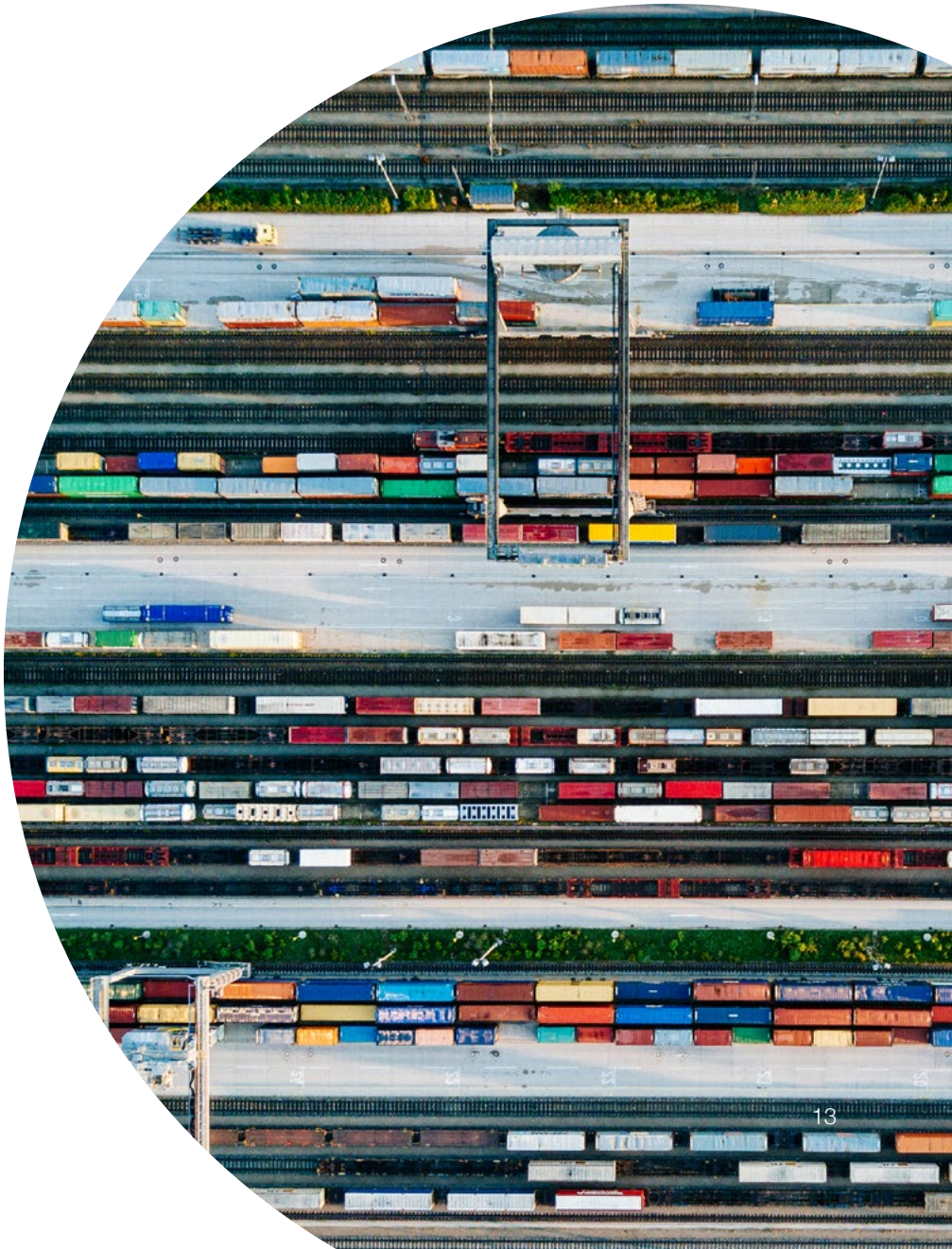

**LCTPi companies agree that engagement has increased their company's understanding of industry best practice on climate action**



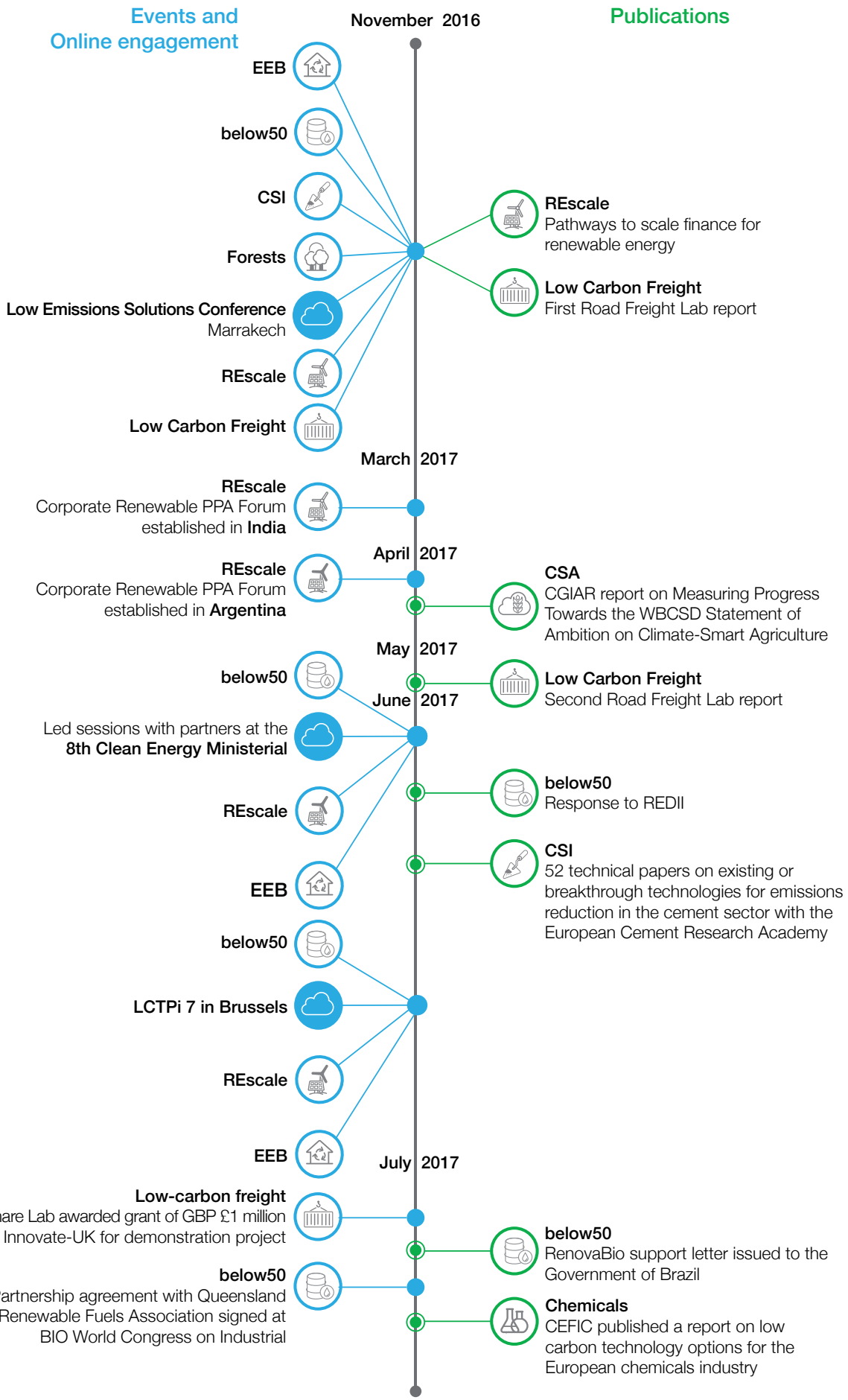

**Many agree that LCTPi supports a stronger internal business case for climate action**




**The majority of LCTPi companies believe that the program is helping to shape industry best practice for climate action**

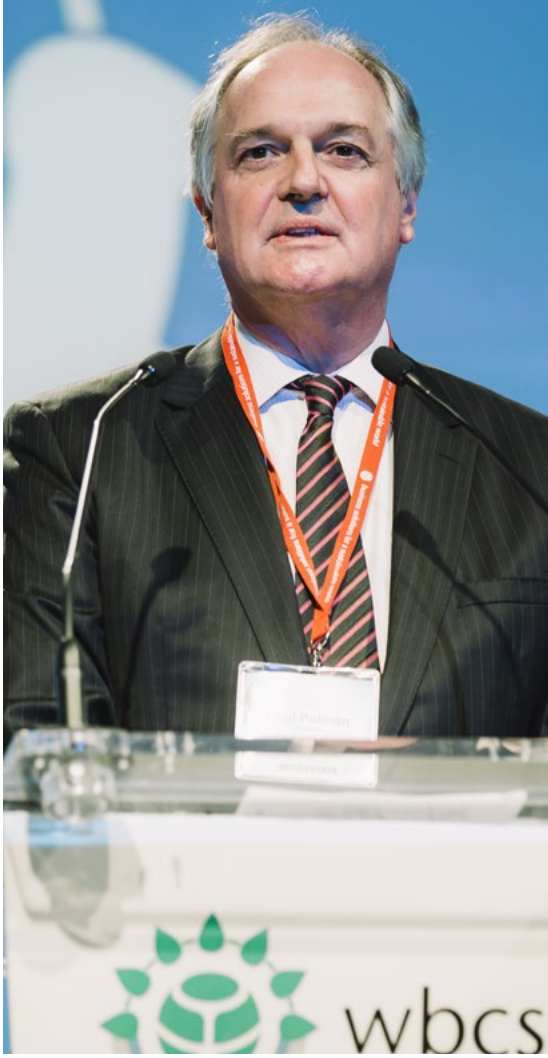


# LCTPi in 2017



# LCTPi events

In this reporting period, two milestone events provided the opportunity for LCTPi working groups to demonstrate progress and drive specific elements of their action plans forward.




## Low-Emissions Solutions Conference at COP22 in Marrakech

### November 2016

In the second week of COP22 – "the COP of action" – the first-ever Low-Emissions Solutions Conference (LESC) took place, putting WBCSD's innovative business solutions at the heart of COP22 and the global climate action agenda. The three-day gathering, with over 700 participants from business, government, cities, science and academia, offered an overview of key technologies and low-carbon systems to set common technological trajectories for a decarbonized economy as well as the transformations necessary in each sector.

In a keynote address, Paul Polman, Chairman of WBCSD and CEO of Unilever, focused on the role of business to accelerate the climate agenda, using LCTPi as a key example of how business is showing leadership on climate.

The consensus from the LESC was that greater use of modern technologies will help improve the feasibility and raise the level of ambition of NDCs for implementing the Paris Agreement.

During the course of the LESC, WBCSD was delighted to announce that five new global transport players had joined below50. Before the LESC – in the first week of COP22 - *EEB Amplify* was launched, aiming to scale up the Energy Efficiency in Buildings program from 10 cities to 50 by 2020.

## LCTPi 7

### Brussels, June 2017

During Sustainable Energy Week in Brussels, 250 sustainability professionals and policymakers from across the world gathered at the seventh global meeting of the Low Carbon Technology Partnerships initiative (LCTPi 7).

Hosted by the European Economic and Social Committee (EESC) at the heart of the European Union, the meeting marked a new point in WBCSD's LCTPi work, deepening the dialogue with policymakers ahead of COP23 in Bonn.

Key themes included innovation, the importance of climate leadership in a changing geopolitical landscape, as well as the need for businesses and government to collaboratively address the climate challenge.

LCTPi working groups used breakout sessions at LCTPi 7 to put their policy recommendations in front of policymakers and other stakeholders for the first time.

During the below50 session, WBCSD announced a new partnership with the We Mean Business Coalition (WMB) to expand the reach of below50 and engage more companies through the WMB Take Action Campaign.

Nigel Topping, CEO of We Mean Business said, "Working with WBCSD on below50 will be an excellent opportunity to get more companies involved in the low-carbon transition. We see this work as a key element in decarbonizing transport – which will be critical for addressing climate change. Companies are interested, and we see impressive potential for positive impact."

The Cement LCTPi working group also released a new in-depth technology review to support the cement sector in further mitigating its emissions.

*"LCTPi is unique because we're thinking big, we're turning ideas into action and we're working across the value chain."*

**Jean-Pierre Clamadieu**
CEO, Solvay, at LCTPi 7 meeting.

*"REscale has been an important collaborative hub for EDP as a forum where leading companies discuss and push priority actions to accelerate the deployment of renewables. In 2017, EDP signed the first Corporate PPA in Spain, helping our clients enhance competitiveness and guarantee environmental sustainability."*

**Rui Teixeira**
Executive Board Member
Energia de Portugal (EDP)

# REscale

## Ambition

Renewable energy is increasingly reliable and cost-competitive with conventional generation sources. Through the REscale LCTPi, leading companies representing the full renewable supply chain are working together on solutions to accelerate the deployment of renewables beyond average growth and transition to a low-carbon electricity system. The ambition is to scale up renewable deployment in line with the IEA 2˚C scenario - this equates to 3.5 TW deployed by 2025.

## State of play

In 2016, investment in the renewables sector and global installed renewable capacity continued to considerably exceed the comparable figures for fossil fuels. Investment in new renewable power capacity (including all hydropower) was around double the investment in fossil fuel capacity[2]. Global installed capacity reached 2.1 TW, a 9% increase from 2015 levels. This places the renewables industry firmly on track to meet the REscale LCTPi stated ambition for 2025. See figure 2.

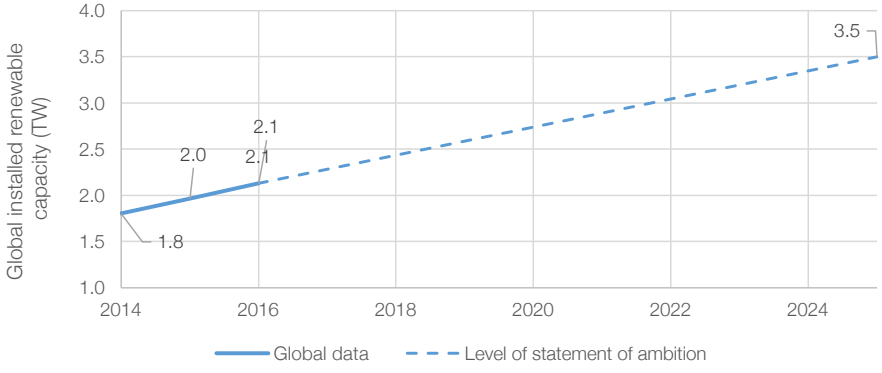



**Figure 2** - Growth in global installed renewable capacity[3]

35%

**Increase in REscale membership since 2016**

REscale continues to develop solutions to address the barriers to accelerated deployment of renewables.

There is, nonetheless, a considerable distance to travel, and momentum must be maintained. Total investment in renewables in 2016 was lower than that of 2015[4]. In part, this is a result of falling investment costs of renewable power plants, particularly wind and solar[5]. However, there is also evidence of market slowdown, especially in China, where the focus was more on integrating existing renewable infrastructure, and where some incentive structures - such as a feed-in tariff - expired[6].

REscale members continue to show leadership in creating an energy mix geared towards renewables. The ratio of renewable to non-renewable generation for compnies who are REscale members is consistently high and improving. While the global renewables industry has been making improvements with regards to this indicator, an increase in installed capacities is required[7].

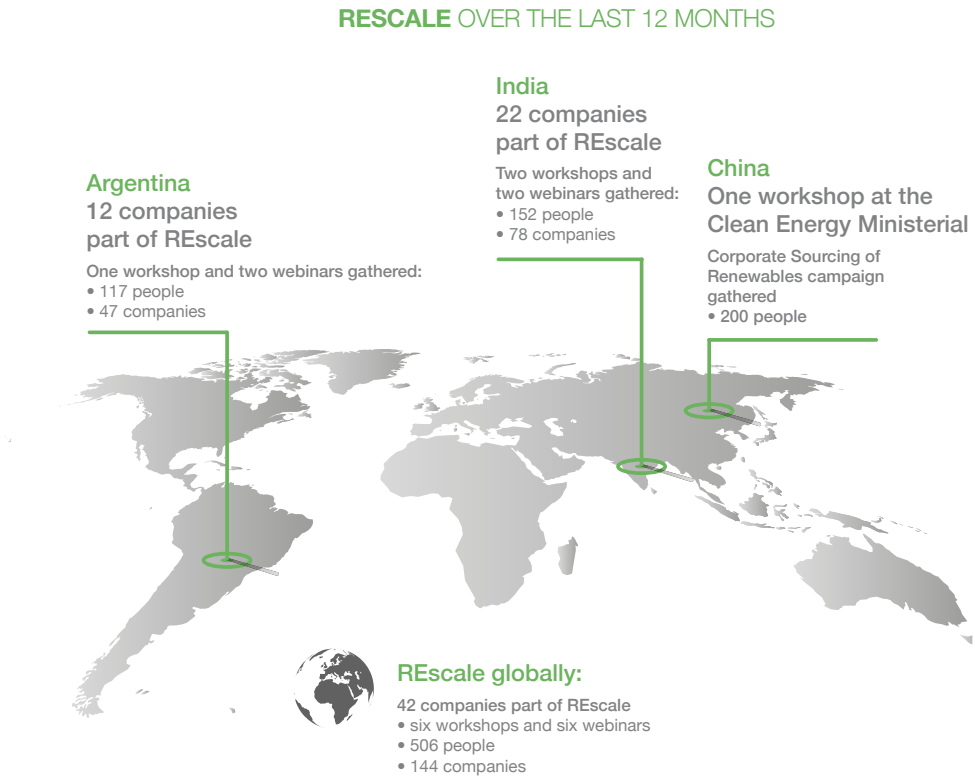



**Figure 3** - Regional engagement activities for REscale

## 2017 activity and impact

In 2017, REscale continued to focus its action on three workstreams: The Corporate Renewable Power Purchase Agreement (PPA) Forum, low-carbon microgrids and renewable finance and electricity market structures.

The overall program is reaching maturity and is receiving more awareness in the marketplace. This is the result of a successful strategy of targeting new regions, establishing wider collaborations and addressing specific topics with detailed guidance for market players.

The Corporate Renewable PPA Forum convenes electricity buyers, developers and utilities as well as financial and legal stakeholders to increase understanding and use of corporate renewable PPAs – globally.

In 2017, the Forum moved into new markets where PPAs aren't mature yet and where support is needed. India and Argentina were selected as countries where electricity buyers are demanding renewable energy, but where many of the traditional barriers to deployment (such as interest and currency risk in India) are still common.

The India Forum was established in March 2017 and has held two workshops with a combined attendance of over 100 people.

Since the Argentinian PPA Forum was set up in April 2017, it has held its first workshop with over 60 people. These workshops have made considerable progress in increasing awareness and understanding of PPAs and have increased participation in REscale. Through these workshops, 15 companies have joined (eight in India and seven in Argentina).

Alongside the regional PPA forums, the Corporate Renewable PPA Forum has partnered with different organizations to plan numerous global workshops and webinars focused on specific topics (multiple-buyer PPAs, new PPA structures across the globe and PPA accounting rules under IFRS). Reports on these topics are being developed to provide further detailed guidance to companies.

Activity across the other workstreams has followed a similar pattern to that of the Corporate Renewable PPA Forum.

The low-carbon microgrids workstream began a practical guide for commercial and industrial companies considering supplying their operations with renewable-based microgrids. The REscale LCTPi has also facilitated dialogue between the private sector, policymakers and regulators, to promote the evolution of electricity market rules to facilitate increasingly commercially viable participation of renewables.

By targeting new regions and focusing on key topics, REscale has experienced a significant uptake in engagement both in our regional meetings and in the use of our technical guidance -"Corporate Renewable Power Purchase Agreements – Scaling up globally"- downloaded over 3,800 times in 90 different countries. This has positioned REscale as a leader in the field, increasing calls for REscale's involvement at external events.

External events included the 2017 Clean Energy Ministerial (CEM8). REscale was involved alongside a range of partners (including IRENA, RE100, WRI, WWF, CRS, RMI and NREL). This effort led to a new community of practitioners in China.

Heightened profile for REscale has led to a 130% increase in the number of companies attending REscale workshops, providing a larger platform for REscale to achieve its ambition of scaling-up renewable deployment in line with the IEA 2°C scenario.

## Looking forward

There is significant potential to build on the early work of the Indian and Argentinian PPA Forums. There is a country-specific guide planned for India. This will outline the current barriers to PPAs and describe potential solutions. Law 27191 in Argentina has set mandatory renewable energy targets through to 2025 for all consumers. Here, REscale helps companies navigate the process of meeting the government targets, including the role of PPAs via a number of workshops.

The Corporate Renewable PPA Forum will also publish two reports addressing global barriers to PPA up-take:

- guidance on how to consider PPAs under the IFRS accounting standard; and
- an overview of PPA structures used across the globe to help companies implement projects in new markets faster

Beyond PPAs, REscale will raise awareness of the benefits that renewables based microgrids can offer to commercial and industrial companies by publishing the above mentioned publication in November this year. The group will also look to investigate the level of ambition around renewables deployment aligned to a 1.5 degrees scenario. Finally, a program to enable renewable power use in electric mobility in India - REmobility - will be launched with funding support from WMB in November.

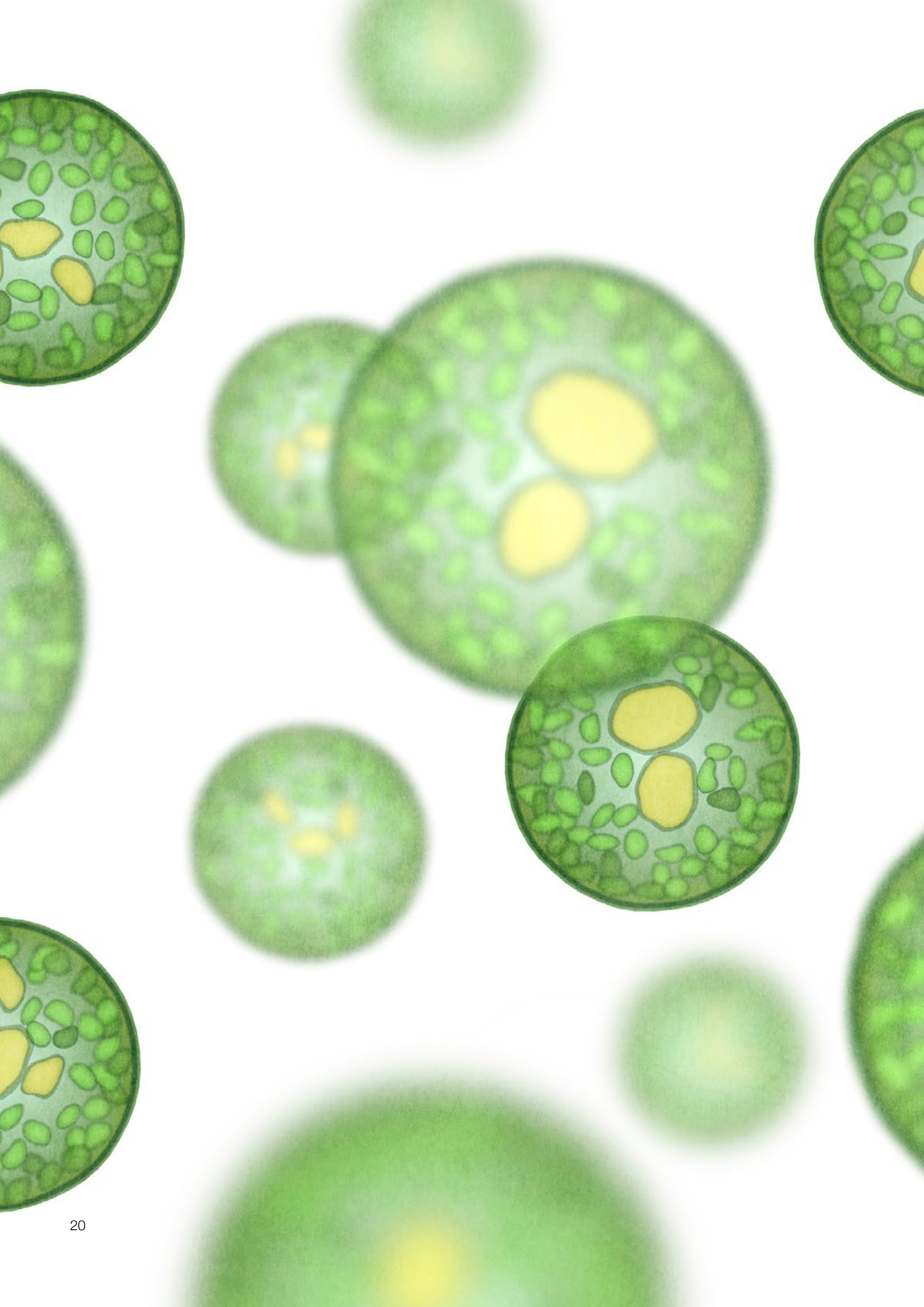
**Company engagement**
27 versus 20 in 2016

ABB
Acciona S.A.
AkzoNobel
BT
CPFL Energia
CLP Power Hong Kong Limited
DNV GL
DSM N.V.
Eaton
EDF
EDP
Enel
Eskom
Heineken
Innogy
LafargeHolcim
Nestlé S.A.
Novartis
NRG Energy
Philips
Schneider Electric
Solvay
State Grid Corporation of China
Unilever

**Supported by:**
EY
Norton Rose Fulbright
PWC

**Partners**
8 versus 5 in 2016

Clean Energy Ministerial (CEM)
Climate Bonds Initiative (CBI)
International Energy Agency (IEA)
International Finance Corporation (IFC)
International Renewable Energy Agency (IRENA)
RE100
We Mean Business
World Resource Institute (WRI)



# below50

## Ambition

below50 is a global collaboration that brings together the entire value-chain for sustainable fuels – that is, fuels that produce at least 50% less $CO_2$ emissions than conventional fossil fuels. below50 aims to create a critical mass of players (developers, users and investors) through the below50 campaign to grow the global market for the world's most sustainable fuels.

The ambition is to reduce $CO_2$ emissions by replacing 10% of global transportation fossil fuel use with low-carbon transport fuels by 2030 and 27% by 2050, which is equivalent to 2.1 Gt $CO_2$ avoided per year.

## State of play

As an industry, low-carbon fuel is moving in the same direction as the below50 statement of ambition. Global biofuels production continued to rise in 2016, increasing by 2.6% compared to 2015 levels[8]. This amounts to a 28.6% increase on the 2010 baseline production levels[9]. Focusing in on the transport sector's share of biofuel consumption suggests that modest progress has been made towards the below50 target for 2030 low-carbon transport fuel use of 10 Exajoules (EJ)[10]. In 2016, approximately 0.2 EJ of biofuels were consumed in global transportation[11]. Despite the challenges of growing biofuel production to date, future growth of transport biofuels is expected to accelerate. While first generation biofuels have already demonstrated that there is a pathway for large-scale adoption of low-carbon fuels, second generation biofuel production is still in its infancy. As of 2015, out of the 67 operating second generation biorefineries in the world, only 24 were commercial, 24 were pilot and 19 were demonstration plants[12].

*"ICM is presently planning to build a large-scale biofuels plant next to our headquarters in Colwich, Kansas that will produce 70 million gallons of ethanol. This will be a combination of about 7 million gallons of cellulosic ethanol with the remainder corn ethanol. This plant will have our newest innovations in technology including gasification of waste wood to create electricity and steam for the plant. The [carbon intensities] of the fuels are expected to be very low, around 5-10 for the cellulosic and in the 50s for corn ethanol using California Air Resources Board (CARB) methodologies. ICM will be the majority owner, technology provider and operate the plant. We expect to break ground later this year with start-up anticipated at the end 2018. This plant will be state-of-the-art in ethanol production globally."*

**Steve Hartig**
Vice President of Technology Development at ICM[13].

*"Being part of LCTPi has provided LanzaTech with a platform to engage with and support like-minded companies across multiple sectors who see the opportunities that exist in promoting a low-carbon economy."*

**Freya Burton**
Chief Sustainability Officer
Lanzatech

A strong appetite to grow the market is reflected in the enthusiasm for and activity of the below50 campaign. Membership has increased by 60% since COP22.

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" and members operating on the demand side reported significant increases in volumes of below50 fuels consumed. below50 producers are also delivering on their commitments to low-carbon fuel supply. ICM, a new member for 2016/17, has announced a large-scale biofuels plant to be completed in 2018.

## 2017 activity and impact

In 2017, below50 continued to combat market and policy barriers to scaling up production and use of low-carbon fuels. Particular focus has been placed on improving the market-driven side, making the most of below50's unique global platform of stakeholders across the entire value chain of sustainable transport fuels.

below50 has initiated partnerships with the Brazilian Business Council for Sustainable Development (CEBDS), the Biotechnology Innovation Organization (BIO) and the Queensland Renewable Fuels Association (QRFA) to establish three new below50 hubs (for South America, North America and Australia respectively).

These hubs will allow below50 activity to be focused on overcoming region-specific barriers, recognizing the global differences in market maturity.

In Brazil, where challenges exist around a lack of biofuel to meet demand, below50 members (with the assistance of CEBDS) submitted a letter of support for the RenovaBio program to the Brazilian government. The RenovaBio program is designed to incentivize investment by enabling biofuels producers to issue certified emissions reductions certificates. Fuel retailers must then show that they have purchased a certain amount of these certificates each year. A decision by the Brazilian government on the future of the RenovaBio program is pending.

In July, below50 partnered with BIO to organize a below50 event at BIO World Congress on Industrial Biotechnology (#BIOWC17) in Montreal. Industry leaders, government officials and academic researchers met to share the latest advances across the spectrum of industrial biotechnology – including renewable chemicals, synthetic biology, food ingredients and advanced biofuels.

A highlight of the World Congress was signing the partnership agreement between QRFA and below50 for QRFA to host below50 Australia[14].

During the LCTPi7 meeting in Brussels, below50 policy recommendations were shared with European policy makers as an input to the European Renewable Energy Directive (REDII). below50 would like REDII to focus on second generation biofuels and recognize the importance of conventional biofuels with high GHG reduction potential in meeting decarbonization and renewables targets for the transport sector.

Introducing regional below50 hubs and diversifying the membership structure has allowed below50 to better reflect the marketplace. This has led to a significant uptake in engagement. The partnership with We Mean Business will further expand the reach and uptake of below50's work on sustainable fuels.

## Looking forward

Looking beyond 2017, the aim for below50 is to expand the number of regional hubs to directly address barriers in additional markets. Countries of immediate interest include China and the Philippines. below50 will also look to share insights gained in regional campaigns across the global platform, continuing to build the market drivers needed to replace 10% of global transportation fossil fuel use with low-carbon transport fuels by 2030.

A key part of our expansion to new markets is the planned work on policy. The global below50 initiative will collect best practice examples of policy from the most advanced markets, distil the lessons learned and present these to the policy makers who are creating an enabling policy framework for sustainable fuels.

below50 will also continue to facilitate new business opportunities between members and the regional markets, creating the market and partnerships needed to scale up below50 fuels with real projects and investment opportunities.

**Company engagement**
19 versus 12 in 2016

Audi
Carbon Recycling International
Clariant International AG
DSM N.V.
DuPont
Granbio
LanzaTech
Novozymes A/S
LNG Fund
United Airlines
SkyNRG
ArcelorMittal
Agrisoma
Goodfuels
GOL
ICM
Scania
UPM
UPS

**Partners**
17 versus 10 in 2016

Associação Brasileira de Biotecnologia Industrial (ABBI)
Center for Strategic Studies and Management (CGEE)
International Air Transport Association (IATA)
Sustainable Energy for All (SE4ALL)
Yale University
Arizona State University
Roundtable on Sustainable Biomaterials (RSB)
Low Carbon Fuels Coalition
Carbon War Room
Biofuels Digest (media partner)
International Energy Agency
BSR
Biofuture Platform
Biotechnology Industry Organisation (BIO)
Conselho Empresarial Brasileiro para o Desenvolvimento Sustentável (CEBDS)
Queensland Renewable Fuels Association (QRFA)
We Mean Business (WMB)

# Low-carbon freight

## Ambition

Low-Carbon Freight aims to demonstrate the potential for collaboration to help meet the science-based target of 48% reduction in absolute $CO_2$ emissions for the sector between 2010 and 2050.

The working group will do this by exploring the untapped and unmapped potential for emissions reductions through optimization and collaboration between companies on road freight transport.

## State of play

Road freight plays a vital role in the global economy and economic growth and road freight activity are typically closely correlated[15]. Road freight is also a significant and growing driver of global oil demand, meaning that it contributes to more than 35% of transport related $CO_2$ emissions and 7% of total energy-related emissions[16].

In 2017, the International Energy Agency (IEA) outlined scenarios exploring the future of emissions from road freight. Under the IEA reference scenario, $CO_2$ emissions are expected to grow from 2.2 Gt $CO_2$e in 2010 and 2.6 Gt $CO_2$e in 2015 to 4.8 Gt $CO_2$e by 2050. This is well aligned with International Transport Forum (ITF) projections which suggest the effect of any present policies on energy efficiency are far outweighed by the expected tripling in global demand for road freight[17].

The IEA also addresses the implications of a Modern Truck scenario, under which improvements to operations, logistics, energy efficiency and alternative fuel use could lead to reductions in emissions to 1.3 Gt $CO_2$e by 2050. This is broadly comparable with the low-carbon freight LCTPi's stated ambition for 2050.

*"The low-carbon freight LCTPi has been a very valuable group in understanding the challenges facing the freight sector and has enabled us as a service provider to think about ways in which big data can facilitate low-carbon initiatives."*

**Damien Smith**
CEO
Ecodesk

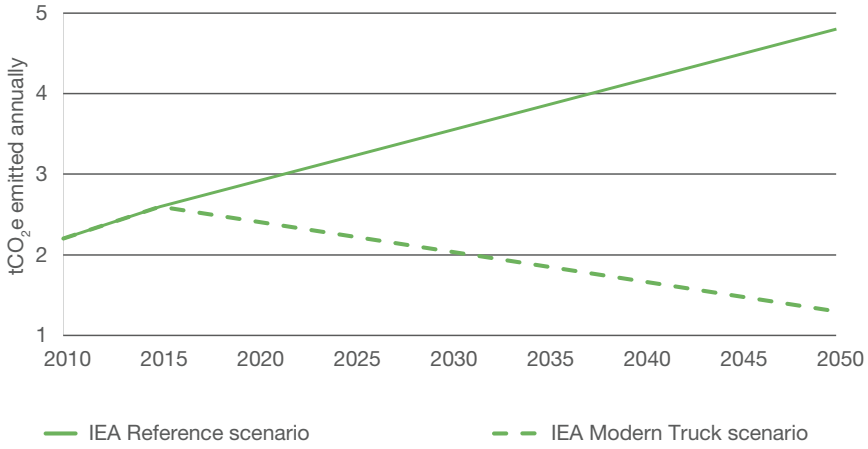



**Figure 4** - IEA scenarios for future $CO_2$ emissions from road freight.

Action along the lines of the IEA Modern Truck scenario is urgently needed and the activity of the low-carbon freight LCTPi has been critical in developing the narrative around possible pathways for emissions reduction.

## 2017 activity and impact

Prior to 2017, the Low-Carbon Freight LCTPi focused on outlining the theoretical potential of emissions reductions for road freight. This was brought together in the Road Freight Lab's first report "Demonstrating the GHG reduction potential of asset sharing, asset optimization and other measures," published in late 2016[18]. This report had six key outcomes relating to emissions reductions:

1. Using top-tier asset optimization tools could reduce energy use and emissions by on average 12.5%, and are still to be taken up by approximately 85% of fleet operators;

2. Modest asset-sharing models that can save 15% of cost are only being used by 20% of operators, while highly integrated vehicle and depot sharing can lead to a 20% savings and is yet to be taken up in the case of at least 85% of commercial vehicle miles;

3. The increasing prevalence of tight delivery windows, especially in the "last mile" context, is set to increase transport energy use and emissions if left unchecked; but relaxing delivery windows from 1hr to 5hrs could lead to savings of 25%;

4. Accelerated adoption of immediately available alternative fuels such as biogas and electric vehicles would lead to a 58% reduction in GHG emissions;

5. Widespread adoption of vehicle-centric efficiency measures would lead to a 32% reduction in fuel consumption;

6. Eco-driver training has been widely adopted in many markets and can save, on average, 7% GHG emissions by better fuel efficiency.

Since the publication of this report, the Low-Carbon Freight LCTPi has worked to disseminate its findings and build on its recommendations, developing the operational platform architecture and business models required to implement the first two emissions reductions opportunities outlined above.

As part of the work to improve understanding of the potential for emissions reductions, the Low-Carbon Freight LCTPi participated in a workshop on the future role of trucks for energy and the environment in collaboration with the IEA and European commission. The feedback from this workshop was used to inform the IEA's "The Future of Trucks" report.

WBCSD's work was also referenced in the ITF's 2017 Transport Outlook, drawing attention to practical solutions to road freight's growing emissions. The LCTPi road freight lab has since published a second report detailing business models and demonstration project designs focused on logistics optimization and asset sharing potential[19]. This follows the LCTPi companies' commitment to making these benefits publicly accessible and open source.

Off the back of this second report, a successful funding bid was submitted to Innovate-UK, the United Kingdom's innovation agency, mandated to find and drive science and technology innovations. *FreightShare Lab* will now build a GBP £1 million demonstration project as described in the Road Freight Lab report. The project will run over 30 months and will start in late 2017. The demonstration project consortium is led by Route Monkey and members of the Low-Carbon Freight LCTPi will participate.

**Company engagement**
6 versus 5 in 2016

Michelin
Nestlé S.A.
Route Monkey
Total
UPS
Ecodesk

**Partners**
same as in 2016

International Transport Forum
Smart Freight Centre

## Looking forward

Beyond implementation of Low-Carbon Freight's first demonstration project, future efforts will be focused on speeding deployment of solutions developed by the Low-Carbon Freight LCTPi. This will center on creating demand for cleaner freight movements as well as continuing to spread the ideas tested in the demonstration project and opening up these emissions reductions solutions to the road freight industry.

A critical component in the group's plans is creating demand for clean freight. Of global freight movements, only a small portion are transported by the companies who own the goods. Instead, most companies rely on third party logistics providers. Through LCTPi company engagement, we have identified a gap in companies' transport procurement practices and guidelines. The Low-Carbon Freight LCTPi will work towards creating guidelines and a template for promoting cleaner transport options from their transport providers, through tenders and contracts.

# Cement

*"Challenges posed by climate change are huge, requiring a continuous and long-term approach for finding collective answers and definitive solutions. If you want to go faster and do your own part, you'd better go alone, if you want to go further and contribute to really address the issue you'd better go together."*

**Ricardo Lima**
CEO of InterCement

## Ambition

Cement is the essential "glue" in concrete. It reacts with water to bind aggregates (crushed stone and gravel) and sand. Concrete plays a vital part in our increasingly urbanized society, through many diverse applications and uses. It shapes the built environment around us, from schools, hospitals and housing, to roads, bridges, tunnels, runways, dams and sewage systems. Few people realize that concrete is, in fact, the most used man-made material in the world, with three tons used annually for each man, woman and child.

LCTPi cement aims to scale up $CO_2$ emission reductions of the worldwide cement sector in the range of 20 to 25% in 2030, compared to business as usual, based upon the WBCSD Cement Sustainability Initiative (CSI)'s best-in-class 2020 targets. This represents approximately one gigaton (1 Gt) of $CO_2$ emissions reduction (equivalent to Germany's $CO_2$ emissions in the full year of 2016).

## State of play

The CSI Getting the Numbers Right (GNR) database[20] remains the most comprehensive database of independently-verified energy and $CO_2$ emissions of any single industrial sector. Established in 2005, based on a reporting protocol developed specifically for the cement industry[21] with reference to the Greenhouse Gas (GHG) Protocol, this database gathers annual reporting from CSI member companies and cement manufacturers involved with the European and Latin American cement associations (CEMBUREAU and FICEM respectively).

**Company engagement**
20 versus 18 in 2016

Cementos Argos
CEMEX
Companhia Geral de Cal e Cimento S.A.
CRH plc
Dalmia (Bharat) Cement Limited
Grupo Cementos de Chihuahua, S.A.B. de C.V. (GCC)
HeidelbergCement AG
InterCement
LafargeHolcim
China National Building Material (CNBM) Group
China Resources Cement
Orient Cement
SCG Cement
Shree Cement Limited
Titan Cement Group
UltraTech Cement Limited
Votorantim Cimentos
West China Cement Limited
2 undisclosed companies

**Partners**
17 versus 2 in 2016

Agrupación de Fabricantes de Cemento de España (Oficemen)
Associação Brasileira de Cimento Portland (ABCP)
Association of Cementitious Material Producers (ACMP)
Cement Industry Federation (CIF)
Cement Manufacturers' Association (CMA)
Confederation of Indian Industry (CII)
European Bank for Reconstruction and Development (EBRD)
European Cement Association (CEMBUREAU)
European Cement Research Academy (ECRA)
Federación Interamericana del Cemento (FICEM)
International Energy Agency (IEA)
International Finance Corporation (IFC)
Japan Cement Association (JCA)
Mineral Products Association (MPA)
Portland Cement Association (PCA)
Sindicato Nacional da Indústria do Cimento (SNIC)
Turkish Cement Manufacturers' Association (TCMA)

The GNR database and $CO_2$ and Energy Accounting and Reporting Standard for the Cement Industry are key for delivering accurate, reliable and independently-verified information on cement production, fully in line with the requirements of the Paris Agreement.

The CSI and some of its communications partners are working on expanding the coverage of the database with a higher number of companies reporting, scaling up the impact of CSI. As such, it represents the best way of assessing the cement industry's progress towards LCTPi cement's targeted $CO_2$ reductions.

Since 1990, there has been a significant investment in more efficient kilns, higher fossil fuels substitution, increased use of biomass and improved clinker mineralogy. This has led to improvements in the emissions intensity of cement production. Projecting forward a 1990 emissions intensity to 2014 shows a 17% reduction in $CO_2$ emissions compared to business as usual and demonstrates the significant success of GNR reporting companies in leading the way on the LCTPi cement 2030 ambition.

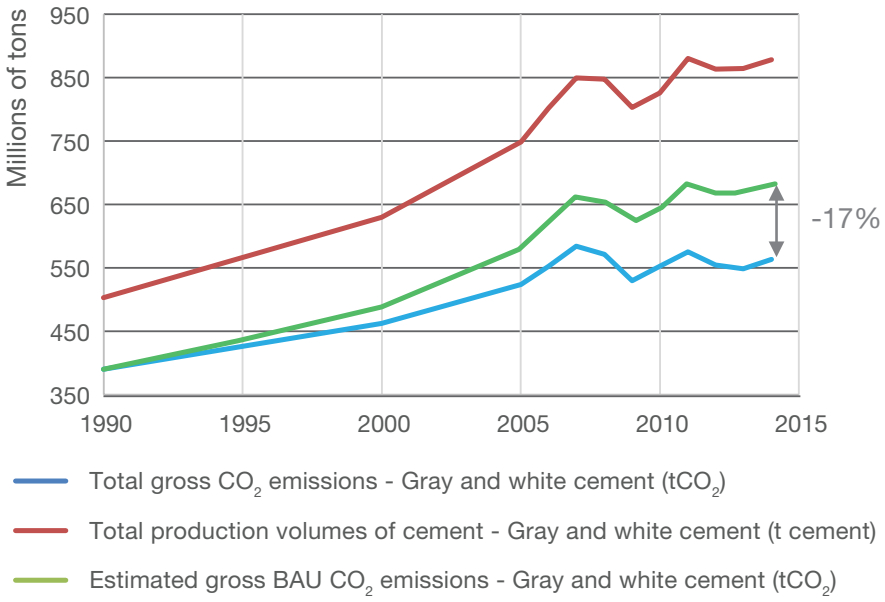



**Figure 5** - Evolution of $CO_2$ emissions and cement production

## 2017 activity and impact

With the ambition to scale up adoption of low-carbon solutions beyond CSI companies, in 2017 LCTPi cement and CSI focused their efforts on updating and enhancing the deployment of their climate tools. CSI is now updating the 2009 global cement technology roadmap[22], the very first sectoral roadmap developed by any industrial sector in cooperation with the International Energy Agency (IEA), paving the way for emissions reductions across the entire cement sector.

In 2016 and early 2017, CSI companies developed and published (during the LCTPi 7 meeting in Brussels, June 2017) 52 technical papers on existing as well as breakthrough technologies for the sector (in which the latest development and implementation status is reviewed). Seven additional summary papers were published describing state-of-the-art and anticipated technological developments, which can further enhance mitigation of $CO_2$ emissions in cement production.

The European Cement Research Academy (ECRA) developed and reviewed these technology papers (a continuation from the 2009 initial technical papers included in the first roadmap), drawing on expert knowledge of cement manufacturing. In addition, a robust stakeholder consultation process, involving experts from various cement companies, researchers and international organizations, have analyzed the outputs and ensured the analysis reflects the most up-to-date knowledge.

These new technology papers will be a major source of information for the global cement industry and beyond. They have already been considered by the IEA's modeling project: Energy Technology Perspective (ETP). They will become an important reference document for development of low-carbon technology roadmaps for the cement sector, at global as well as regional and national levels.

Key technological fields covered in these papers are: thermal energy efficiency, electric energy efficiency, use of alternative fuels, materials and biomass, reduction of clinker content in cement (clinker manufacturing is the most energy-intensive part of cement manufacturing), new binding materials, $CO_2$ capture and storage (CCS), and $CO_2$ use (CCU).

The report also includes an assessment of possible implementation, as well as the challenges and costs of these technologies in future scenarios for 2030 and 2050.

Beyond quantification of the potential of each technology in its support to mitigate $CO_2$ emissions from the sector, the roadmaps also identify major opportunities, barriers and measures facing the industry, as well as financial partners, policy makers and stakeholders that could overcome these barriers. The extensive collaboration with IEA, International Finance Corporation (IFC), ECRA, trade associations and cement producers in different parts of the world show how these partnerships could work efficiently. The trade associations act as CSI communication partners and facilitate open dialogues with cement producers around the world beyond CSI membership and support CSI actions.

CSI has also been developing regional roadmaps in India, Brazil and Latin America. CSI encourages and supports national and regional level discussion of similar roadmaps fitting each specific context and authorities' expectations. Some examples include the roadmap project in Egypt (led by EBRD) and Kazakhstan.

With funding support from the IFC, the Indian roadmap has undergone pilot implementation exercises at plant level and some resource efficiency studies were carried out in 2017. The process is expected to deliver a full report on impact analysis of the different measures undertaken in actual production environments by 2018. The Indian roadmap project is widely recognized as an important industry initiative and is quoted by high level ministers at international events and local meetings.

## Looking forward

Key outcomes of the updated global cement technology roadmap will be shared in Bonn during COP23 in November 2017 and during a high-level stakeholder event to be hosted by CSI CEOs and supported by IEA senior executives on 24 November 2017. The final publication will be published in the first quarter of 2018.

In addition, in 2018, the CSI and the LCTPi members will initiate a broader evaluation of the impacts and opportunities to reduce $CO_2$ emissions throughout the whole value chain of cement and concrete, including the potential avoided emissions by using concrete.

*"Our perspective is that acting sustainably will create long-term value and achieve the greatest success. Our commitment to reducing $CO_2$ emissions across the lifecycle of our products and services and addressing the risks and opportunities from climate change is core to our business. Working together through LCTPi, CRH is supporting global efforts to transition to a low carbon economy."*

**Albert Manifold**
Chief Executive of CRH plc

# Chemicals

## Ambition

Building a sustainable world where more than nine billion people can live well within the boundaries of the planet is a powerful mission. It means that society must reinvent most of the conveniences that we take for granted in everyday life. The chemicals industry has a big role to play in the transformation required to make the low-carbon economy a reality, being the industry of the industries.

Ahead of COP21 in Paris, the Chemicals LCTPi agreed an ambition for the sector to unlock an additional 1 gigaton of $CO_2e$ savings per year by 2030 through chemical products serving key sectors like buildings, automotive, packaging and food.

Aside from leveraging these additional GHG savings through the extended use of chemical products, members of the group are working on new technologies that can bring up to 0.4 Gt $CO_2e$ reduction per year for the industry's own emissions by 2030, on top of anticipated efficiency gains.

## State of play

This year in July, the European Chemical Industry Council (CEFIC) released a report on low-carbon energy and feedstock for the European chemical industry[23]. Delivered by DECHEMA, an expert network for chemical engineering and biotechnology in Germany, the report explores how the chemical industry can become carbon neutral by 2050.

This report marks a major milestone for the European chemical industry and underpins the narrative developed by the Chemicals LCTPi in 2015 and 2016.

**Company engagement**
Akzo Nobel
DSM
Evonik Industries AG
Mitsubishi Chemical
Solvay

Until now, there has been a scarcity of data and information to help chemical companies understand options and prepare to adopt carbon saving practices. Aside from giving the first-ever full overview of all available technologies for the main chemical production processes, this report describes what is needed to transform and refurbish the industrial base in Europe.

The report outlines technology options and pathway scenarios to deliver a low-carbon, yet competitive European chemical industry by 2050. The study focuses on the main chemical "building blocks" used in upstream large volume production processes (ammonia, methanol, ethylene, propylene, chlorine and the aromatics benzene, toluene and xylene), which represent about two-thirds of all GHG emissions of the chemical sector. Producing these chemical building blocks through new low-carbon processes is examined by considering further energy efficiency measures, the utilization of alternative carbon feedstock (for example, bio-based raw materials and $CO_2$) and electricity-based processes that will benefit from continued decarbonization of the power sector.

The report acknowledges significant challenges that lie ahead, and these challenges are the basis for continued collaborative action between chemical companies across the value chain. Insights from the report will be applicable in other regions of the world and should help to catalyze scaled up climate action in the sector globally.

## 2017 activity and impact

In late 2016, the majority of companies involved in the Chemicals LCTPi working group took part in workshops to validate the findings in the DECHEMA report. Many company experts served as reviewers of the draft report, helping to improve the quality and potential for application of the findings.

Beyond this, chemical companies in LCTPi have supported progress on a framework for companies to assess the impact of their entire product portfolio. The Portfolio Steering Assessment project is designed to help companies in a variety of sectors to steer their products onto a more low-carbon, sustainable pathway. The work recognizes that companies need a common framework to evaluate their product portfolios internally, so that they can understand the embedded risks and opportunities. This includes gaining a better understanding of climate risks and opportunities in the chemicals value chain.

Focusing on the chemicals sector, WBCSD member companies have come together in a pioneering collaboration with industry associations to produce an SDG Roadmap. This roadmap will look to articulate a common vison for how the chemicals sector has the potential to significantly contribute to the SDG agenda and to establish collective pathways to accelerate and optimize such contributions on the road to 2030.

## Looking forward

The member companies of the Chemicals LCTPi working group are aiming to develop new or revised terms of reference for their work together in the coming year. A wider variety of companies – from outside the chemical industry – will be invited to join the discussion. Building a stronger dialogue between the demand and supply sides of the chemicals value chain will provide increased impetus for the large-scale transformation that is required.

Further research in the sector will galvanize action. For example, the publication of a set of International Council of Chemical Associations (ICCA) case studies on avoided emissions in the chemicals industry is anticipated before the end of 2017. These will provide understanding of the technologies available to speed emissions reductions through the chemicals industry.

*"Kellogg made a commitment in 2015 to help increase the adoption of climate-smart agriculture practices for smallholder farmers. We are proud that, through partnerships and collaboration, we have helped improve the livelihoods of 15,000 smallholders in just two years."*

**Diane Holdorf**
Chief Sustainability Officer
Kellogg Company

# Climate smart agriculture

## Ambition

Combining the three pillars of climate smart agriculture (productivity, resilience and mitigation) the Climate Smart Agriculture (CSA) LCTPi is enhancing resilience and productivity for farmers to make 50% more food available globally and strengthen the resilience of farming communities, while reducing agricultural and land-use change emissions from agriculture by at least 50% by 2030 (3.7 Gt $CO_2e$ per year) and 65% by 2050.

## State of play

In 2017, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) analyzed progress made in meeting the CSA statement of ambition, covering data from 2010 – 2015 and assessed progress against the three CSA pillars.

The study indicated that food production is on track to meet demand for 50% more food by 2030, and companies are demonstrating some progress in reducing the carbon intensity of their operations. However, urgent action is needed to reduce direct agricultural emissions in order to meet the 2030 target.

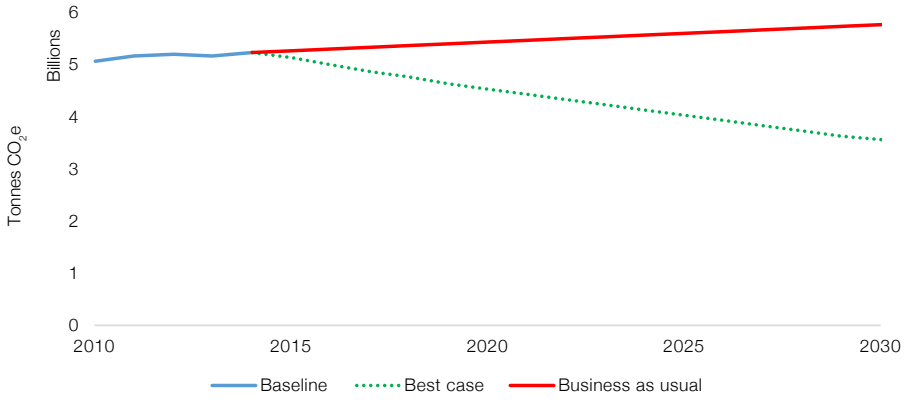



**Figure 6** - Targeted emissions reductions to 2030 and the current trajectory for agricultural emissions.

**Company engagement**
17 versus 24 in 2016

Agrium
Ambuja Cement
Barry Callebaut
Bunge
Diageo plc.
DuPont
ITC
Jain Irrigation
Kellogg Company
Monsanto Company
Olam International Ltd
PepsiCo, Inc.
PwC
Rabobank
Royal Friesland Campina
Syngenta
The Coca-Cola Company
Tyson Foods
Unilever
UPL Limited
Yara International ASA

**Partners**
Eight versus 15 in 2016

BSR
CDP
CGIAR
Global Alliance for Climate Smart Agriculture (GACSA)
North American Climate Smart Agriculture
Sustainable Food Lab
The World Bank Group
We Mean Business
Global Research Alliance

*"LCTPi can be a tremendous lever for joint actions through value chains and across industries, as it connects companies and stakeholders who have unified visions for a low-emission society."*

**Bernhard Stormyr**
Head of Sustainability Management
Yara International

Additionally, the report highlighted a general scarcity of available data, especially related to resilience where there is insufficient company or global data to monitor the resilience and welfare of agricultural communities and landscapes to climate change.

The publication of the CGIAR report has led to stronger commitment from companies. There is a shared understanding that progress is required across the areas of reporting, moving towards greater breadth and transparency, as well as investment in CSA, far above current public and private climate finance investments in land use of USD $6.8 billion a year.

## 2017 activity and impact

The ambitions of CSA can only be achieved with an improved enabling environment and effective partnerships. The CSA LCTPi's 2017 activities have focused on these aims.

In the ASEAN region, WBCSD is shaping a significant new collaboration around Sustainable Rice Landscapes with the intention of building a large scale transformative project with international funding.

Southeast Asian rice farmers are among the world's most vulnerable to the impacts of climate change because of increased variability in surface water flows, the threat of rising sea levels, salt water inundation and the frequency of extreme weather events.

The aim of this new project is to support 150,000 farmers in the region to increase their adoption of climate smart practices by 2020. The collaboration has brought together 25 WBCSD members, five research organizations and five donor agencies.

In 2017, WBCSD became the chair of the Global Alliance for Climate Smart Agriculture's (GACSA) Investment Action Group (IAG). This presents an ongoing opportunity for WBCSD to engage with the policy making, donor and research communities as it seeks to scale up private sector adoption of and investment in CSA.

The CSA LCTPi is also collaborating with the Global Agri-business Alliance (GAA). GAA helps the CSA LCTPi to engage a broader base of key agribusinesses around the world, and co-hosts engagement events. For example, GAA meetings have provided a platform to build business engagement in the ASEAN road test region.

The CSA LCTPi's successes have brought renewed funding support to the Action Plan 2020 from the We Mean Business coalition.

The group is also attracting new members. Rabobank is a new CSA co-chair for 2017 and has been leading on scaling up investment in CSA. The bank is developing financial solutions (specific products and/or credit facilities) that can be offered directly to their food and agriculture clients in order to support wide spread CSA implementation.

## Looking forward

Beyond 2017, the CSA LCTPi is looking to accelerate development of specific work programs across its regions of interest.

In 2018, the West Africa and ASEAN working groups will be looking to submit donor funding proposals for scaling up their activities. In all instances, the aim is that partnerships will be established and full-scale implementation will be underway by 2019. Further progress assessments are also planned for 2018 and 2020.

In the meantime, training workshops will be delivered to enhance companies' capacity for monitoring and evaluation. This will be combined with work to improve the metrics and to harmonize monitoring efforts with those of the International Centre for Tropical Agriculture and GACSA.

# Forests and forest products as carbon sinks

## Ambition

The Forest Solutions Group (FSG) at WBCSD is a global leadership platform for strategic collaboration among value chain partners in the forest products sector. In the run up to COP21 in Paris, the FSG joined LCTPi with the aim to increase the carbon stored in forests and forest products by six Gt $CO_2$ per year.

The group further articulated a statement of ambition for the sector: to bring the world's forests under sustainable management to stabilize forest cover by 2030 and restore forest cover to 1990 levels by 2050; meet the tripling global demand for forest products from sustainably managed forests by 2050; and fast-track development of the bio-economy through cross-sector and value chain collaboration.

The FSG proposed solutions across three priority action areas: sustainable forest management (SFM); forest products and the bio-economy; and ways to ensure resource efficiency and commercialize breakthrough technologies. These solutions for sustainable production and consumption reflect the need to increase yields and forest carbon stocks over the long-term.

## State of play

Since the Paris Agreement came into force, the roles of forest conservation, re-forestation, the bio-economy and sustainable forest management continue to be recognized as essential contributions to tackling the climate challenge.

As countries develop plans to implement their NDCs to climate action and negotiate the rules for roll out of the Paris Agreement, sub-national regions, businesses and individuals continue to support low-carbon solutions.

**Company engagement**
Eight versus seven in 2016

April
CMPC
International Paper
Mondi Group
SCG Packaging
Snurfit Kappa
Stora Enso
The Navigator Company

At the time of this report, 298 companies have made commitments to science-based targets[24]. After reducing carbon emissions as much as possible internally, organizations and businesses need to support low-carbon activity externally—typically by purchasing carbon offsets. This is made possible through market mechanisms such as the voluntary carbon markets, supported by robust standards and certification schemes for sustainably managed forests.

While there has been a slight downturn in the voluntary market in 2016 compared to 2015, respondents to a recent Forest Trends survey are optimistic that there will be increased opportunity for selling more offsets—especially if a future global carbon market allowed for the transfer of voluntary offsets[25].

Related to this, the Forest Solutions Group commitment to conservation of forest cover, reforestation and sustainable forest management has been underscored in 2017 by an increase in the percentage of certified forest in the group's collective portfolio from 88% in 2016 to 96% in 2017.

## 2017 activity and impact

FSG members report annually against a set of key performance indicators as set out in the FSG Membership Principles and Responsibilities.

Performance is linked to a range of relevant SDGs. Several of these are directly or indirectly linked to climate action. In 2017, the FSG member companies gathered 2016 data. See figure 7 for a comparison of the aggregated data collected in 2016 and 2017. The indicators presented here are those that link more directly to the LCTPi ambition statement for forests.

In 2016, work began to develop a forest products sector guide on the Natural Capital Protocol (NCP). The guide will provide companies in the forest products value chain with guidance on how to measure and value natural capital impacts and dependencies. This will help them manage their risks and opportunities, and enhance informed decision making.

The guide could have positive effects on company activities related to natural capital, including contributing to climate regulation through carbon sequestration in forests and forest products. This year, the FSG undertook a range of scoping and consultative sessions and developed implementation for the guide launching in early 2018.

Finally, in 2017 the FSG also undertook a strategic review of its priorities. This work will ensure that the group remains on the cutting edge of forest sector and value chain sustainability issues and is well-positioned for growth.

## Looking forward

Key activities for the FSG in 2018 will include the roll out of a revised FSG delivery strategy. Most likely this will focus on sustainable forest management and building out the bio-economy.

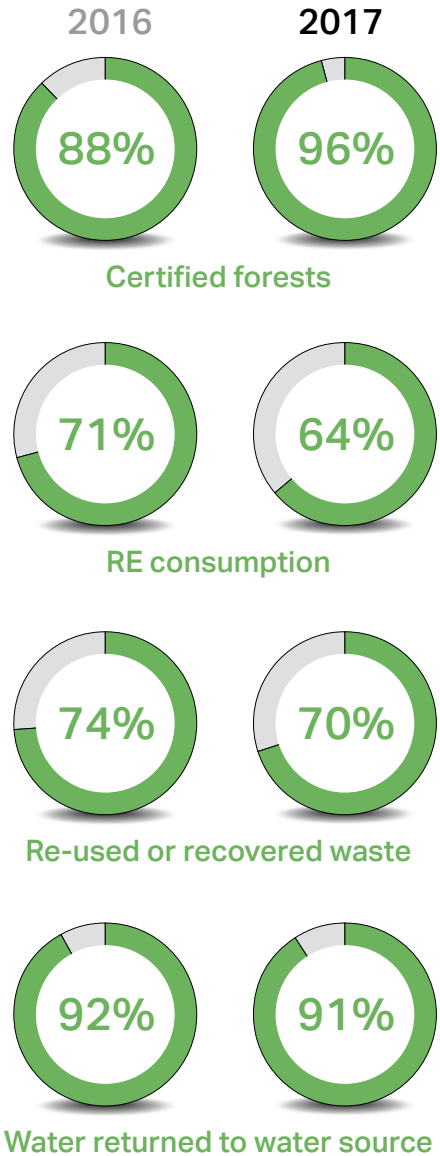



**Figure 7:** – FSG key indicators


K32

# Energy efficiency in buildings

*"Faced with the urgent need to change consumption and production patterns to slow global warming, the construction sector is at the forefront. It is both a commitment of the Group and my personal commitment to meet the challenges of climate change. It is our responsibility as a manufacturer to act in an exemplary way and to promote sustainable practices and materials across the construction sector to accelerate transition.*

*Inventing tomorrow's solutions requires integrating the environmental performance of each product very early. We realize our strategy through eco-innovation and life-cycle analysis, and we impose an internal carbon price on our investments and research projects."*

**Pierre-André de Chalendar**
CEO and Chairman of Saint-Gobain

## Ambition

By 2030, the Energy Efficiency in Buildings (EEB) LCTPi aims to reduce the projected energy use in buildings by 50%.

EEB aims to bring value chain stakeholders together in 50 local markets to enhance understanding and energy savings by overcoming market barriers and developing investment-ready, ambitious and sustainable local markets for energy-efficient buildings by 2020.

## State of play

The ambition of EEB is to revert the business-as-usual projected energy use to 130 EJ in 2030 (see figure 8). Swift action is needed to ensure that the global ambition for 2030 can be met, and EEB can help.

The key challenges are well-understood in this space: a growing population and rapid growth in purchasing power in emerging economies[29]. The technologies required to cope with these challenges already exist and incremental energy efficiency investments in buildings (including appliances and lighting) are happening.

The IEA reported investments of USD $118 billion in 2015, up 9% on 2014[30]. What is required, therefore, is global consensus and collaboration, adequate financing and adequate education/evidence. These areas are the focus of the EEB LCTPi.

11 WBCSD member companies have invested over USD $4 million across four years to demonstrate that their engagement framework can effectively increase market activity for energy efficient buildings – and promote sustainability and business opportunities.

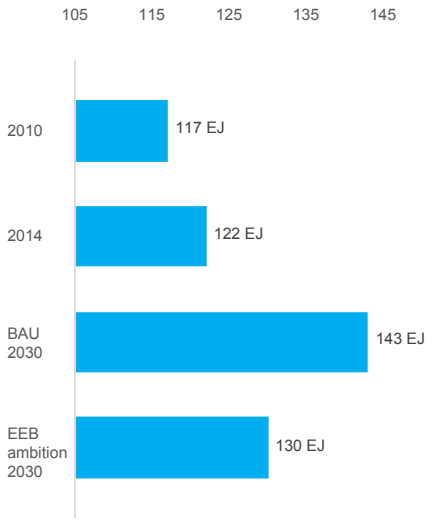



**Figure 8** - Projected energy use in buildings compared to EEB ambition for 2030[27 28]

*"Climate action in the construction sector requires joint targets and efforts, as well as mutual understanding of carbon saving mechanisms along the value chain - respecting each market's specific conditions. It is pivotal that local market leaders liaise on vibrant platforms to create their individually tailored roadmap towards a zero-carbon economy."*

**Michael Scharpf**
Head of sustainable construction
Lafarge Holcim

From 2014 to 2016, 10 cities have been engaged through this process resulting in six new EEB platforms in Houston, Warsaw, Jaipur, Jakarta, Shanghai and Rio de Janeiro. These platforms bring together local building sector stakeholders to overcome market barriers to energy efficiency in buildings.

## 2017 activity and impact

Based on the success of the 10 EEB pilot cities, WBCSD and partners launched EEB Amplify in November 2016 at COP22. This is a new phase of the project and will use the business-led approach captured in the Handbook on creating dynamic local markets for Energy Efficient Buildings (figure10), with the aim to expand to 50 cities by 2020.

In 2017, EEB Amplify partnered with Climate-KIC in Europe to work in three markets: Zurich, Paris and Bucharest. In the US, EEB Amplify partnered with the US Green Building Council (USGBC) and US Business Council for Sustainable Development (US BCSD). As a result of these partnerships, a new project started in Phoenix.

The EEB Amplify project has developed an Impact Framework to make sure the activities of the EEB Platforms deliver impact towards the goal of achieving 50% of reduction in global energy use by 2030.

EEB Amplify's city level approach to meet the intermediate objective of increasing market demand and activity around energy efficient buildings fits with this goal (figure 9).


**Figure 9** - EEB Amplify impact framework

Beyond EEB Amplify, we're promoting collaboration between national governments, local governments and the private sector to increase the efficiency of buildings.

In June, WBCSD and the World Resources Institute organized a ministerial roundtable on Leveraging City-Scale Building Efficiency Action at the Eighth Clean Energy Ministerial (CEM8) in Beijing. This roundtable centered on the importance of connecting and engaging governments and the private sector in building efficiency to achieve national energy and climate goals. It became a forum to share best practice and examples of leadership. One such example of best practice is the EEB Houston initiative, described to the right.

# Promoting, piloting and scaling up financing tools in Houston

The Energy Efficiency in Buildings Houston initiative (EEB Houston) was launched in 2014 to support the development of ambitious and practical strategies for reducing building energy consumption by 30% or more by 2030 in the Houston market (2010 baseline).

The EEB Houston Finance committee worked with the City of Houston to develop and implement a strategy to adopt and promote Commercial PACE (Property Assessed Clean Energy) financing in the region.

C-PACE facilitates financing for voluntary water conservation, energy efficiency, resiliency and distributed generation projects to eligible commercial, industrial, agricultural, non-profit and multifamily properties by utilizing the local property assessment mechanism to provide security and transferability for repayment of financing.

The committee members participated in outreach and engagement presentations to socialize the C-PACE concept among stakeholders including building owners, property managers, service providers and capital providers.

Through these efforts, the committee obtained over 50 stakeholder signatories for the City of Houston program letter of support and assisted with engaging program supporters to testify before City Council in support of the program. After the program was adopted in 2015, the committee developed a list of stakeholders for continued outreach and education to promote participation.

To date, one project has been completed through the Houston PACE program and over a dozen are in the pipeline.

Simon Property Group used C-PACE to finance over USD $2.2 million in energy and water saving retrofit investments at the 450,000 square feet Houston Premium Outlets that include: interior LED lighting, smart glass, heat reducing awning technology, replacement of hundreds of faucets and conservation updates to water features and irrigation technology.

Anticipated savings benefits include:

- six jobs created
- 896 tons of $CO_2$ reduced annually
- 9,402,000 gallons of water saved annually
- 1,720,958 kWh of energy saved annually

# Looking forward

During 2017, EEB companies analyzed the best options to expand existing EEB platforms to a new city-business collaboration model. In this model, action will be driven by local partners to generate infrastructure projects and revenues from energy efficiency opportunities.

These deep engagements with cities represent a clear pathway to achieve the EEB Amplify goals to reach 50 cities by 2020 and attain a 50% reduction in global buildings energy use by 2030.

**Company engagement**
9 versus 10 in 2016:

ARCADIS
ArcelorMittal S.A.
Dow
LafargeHolcim
Saint Gobain
Schneider Electric
Siemens AG
Skanska AB
United Technologies

**Partners**
Building Efficiency Accelerator (BEA)
Climate-KIC
Global Alliance for Buildings and construction
UN 10YFP
US Green Building Council


**Figure 10** - The EEB handbook on creating dynamic local markets for Energy Efficient Buildings

*"The LCTPi EEB has demonstrated the impactful role the business voice can play at local scale for effecting beneficial change. EEB "Amplify" goals to reach 50 cities by 2020 and attaining 50% reduction in global buildings energy use by 2030 are valued objectives, both for climate impact and business."*

**William Sisson**
Sr. Director Sustainability,
and co-chair of WBCSD EEB Amplify

# Outlook to 2018

2017 has demonstrated that business will remain committed to climate action.

Key considerations for the coming year include:

## Plan to review and increase ambition in 2018:

As national governments seek to increase their national emissions reduction targets in 2018, LCTPi working groups will continue to deliver the solutions. Working groups will review and aim to ratchet up their statements of ambition in this important year as well.

Company decisions to ratchet up will be informed by an analysis of how each working group is progressing against the 2°C scenario for their sector. While some sectors may need to speed up action to meet the 2°C pathway, others may consider how to move faster in a higher ambition scenario.

*"Business around the world must implement solutions and drive innovation - but now, we need to reach out to policymakers to scale up."*

**Peter Bakker**
WBCSD President and CEO,
at LCTPi 7 in June 2017

## Deeper engagement with policymakers, especially at the regional or national level:

There is an urgent need to improve the quality of the public policy debate for climate action. In 2018, LCTPi working groups will increasingly focus on dialogues between business and policymakers at regional and national levels.

As was highlighted at LCTPi 7 in Brussels, policymakers must work with business to achieve deep decarbonization in the global economy. A shared plan, developed by dialogue in 2018 will allow implementation of the Paris Agreement.

## Continue to expand company engagement:

LCTPi working groups remain open for new companies to join.

Membership has increased through 2017 but groups will need to maintain momentum and ensure action plans provide room for fresh perspectives from new joiners in 2018. As such, working groups are expanding into new territories as their work becomes increasingly focused and tailored to particular local circumstances.

Our experience from LCTPi shows that 2018 will be a pivotal moment in ensuring that businesses and other stakeholders, recommit to bold climate action.

Business is ready to share the LCTPi vision and collaborate with stakeholders to ensure that we scale up implementation in line with the needs defined by the Paris Agreement.

It is only by combining our different strengths that we can meet the climate change challenge.

# How to engage

## Join LCTPi and capitalize on the economic opportunities that innovative solutions and new partnerships will bring.

To join a working group, choose your contact from the group leaders below:

| | | |
|---|---|---|
| **REscale** | Mariana Heinrich | heinrich@wbcsd.org |
| **Energy Efficiency in Buildings** | Roland Hunziker | hunziker@wbcsd.org |
| **Cement** | Philippe Fonta | fonta@wbcsd.org |
| **below50** | Tanya Strevens | strevens@wbcsd.org |
| **Climate Smart Agriculture** | Matthew Reddy | reddy@wbcsd.org |
| **Forests and Forest Products** | Matthew Reddy | reddy@wbcsd.org |
| **Low-carbon Freight** | Tanya Strevens | strevens@wbcsd.org |
| **Chemicals** | Rasmus Valanko | valanko@wbcsd.org |

If you are interested in helping to establish a new LCTPi working group or want to learn more about the management of the LCTPi process please contact Rasmus Valanko, Director, Climate and Energy: valanko@wbcsd.org

For more information about LCTPi, please visit our website: http://lctpi.wbcsd.org/

## Endnotes

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