



# Delivering growth and the green transition

A SYNERGY INFO PACK  
BY CORDIS

Research and  
Innovation



# Editorial

The European Green Deal is the EU's commitment to lead the way on climate action and to shape a green transition that benefits citizens and industries. It's a commitment to reduce net greenhouse gas emissions by at least 55 % by 2030, and to become the world's first climate-neutral continent.

While the Green Deal provides a blueprint for how to transform our economy and societies, a wide range of EU funding programmes foster the implementation of projects that drive this change.

Whether it be **making transport sustainable for all, leading the green industrial revolution, cleaning our energy system, working with nature to protect our planet and health or boosting global climate action**, each of the 35 EU-funded projects highlighted in this Synergy Info Pack is contributing towards achieving the objectives of the [European Green Deal](#). They are drawn from a selection of funding programmes which mutually support and amplify one another, including Horizon Europe, Horizon 2020, LIFE, the Connecting Europe Facility, the European Maritime, Aquaculture and Fisheries Fund (and its predecessor EMFF), the EU Renewable Energy Financing Mechanism (RENEWFM), and the Innovation Fund.

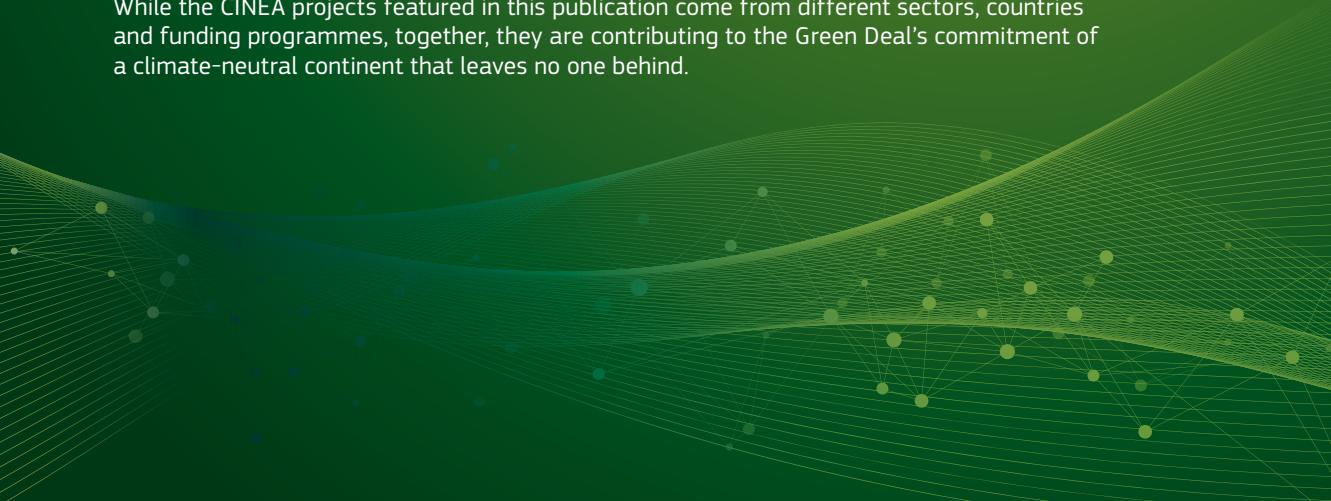
In these pages you will read, for instance, how projects are building a network of high-speed vehicle charging stations across Europe, powering the transition to electric mobility. You will also learn how the maritime sector is leveraging new technologies, including innovative wind propulsion systems and bio-LNG, as a means of curbing the sector's growing carbon footprint.

We also showcase how the EU is behind today's green industrial revolution. Here you can discover how a new generation of organic, plant-derived bio-stimulants is reducing the agricultural sector's reliance on irrigation, fertiliser and pesticides – all while increasing yields. Furthermore, you will see how researchers are leveraging technology to prevent urban flooding, reinvigorate waterways and predict rising sea levels.

This publication also covers key topics such as clean energy, carbon capture and storage, and nature-based solutions, and provides concrete examples of how EU-funded projects are advancing each of them. We close the publication by showcasing how the EU is supporting local climate action and helping to ensure that the transition to a green future is just and inclusive.

All the projects featured in the Synergy Info Pack are managed by CINEA, the European Climate, Infrastructure and Environment Executive Agency. Established by the European Commission, CINEA contributes to the European Green Deal by implementing parts of EU funding programmes in the fields of transport, energy, climate action, environment, and maritime fisheries and aquaculture.

While the CINEA projects featured in this publication come from different sectors, countries and funding programmes, together, they are contributing to the Green Deal's commitment of a climate-neutral continent that leaves no one behind.



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## Chapter 1

# Making transport sustainable for all

Mobility is about much more than moving people and delivering goods. As a sector, it's an economic powerhouse. As the backbone of European businesses and global supply chains, our transport systems contribute around 5 % to the EU GDP. It also employs over 10 million people across Europe.

But these numbers come at a price.

Transport is currently responsible for around a quarter of the EU's total greenhouse gas emissions. Achieving climate neutrality means making some big changes to how we move people and freight. But just how big are we talking about?

According to the EU Sustainable and Smart Mobility Strategy, achieving our Green Deal ambitions will require a 90 % reduction in transport emissions by 2050 (compared to 1990 levels), significantly reimagining how people and goods are moved across Europe.

That's a tall order, but one that is more than feasible thanks to the wide range of initiatives working to substantially reduce – if not completely eliminate – mobility's carbon footprint.

## Giving electric mobility a much-needed charge

In order to reduce road-related emissions, the European Commission will require that all new cars and vans sold in the EU be zero-tailpipe emission by 2035. However, this mandate's success is predicated on there being a comprehensive charging infrastructure in place.

In this chapter, you'll see how a range of projects are already installing a network of high-speed charging stations across Europe. Many of these, which will be located along major European highways and near key transport hubs such as airports, will allow drivers to recharge a battery in less than 30 minutes.

## Old solutions to new problems

New technologies can help curb maritime emissions, maybe even bring them down to near net zero. One of those is WINNEW's wind propulsion system that, when installed onto a commercial ship, can reduce both fuel consumption and CO<sub>2</sub> emissions by 45 %. The CHEK project tells us that its wind energy-based ship designs could reduce maritime's greenhouse gas emissions by a staggering 99 %.

While each spotlighted project may be working within a different sector and using different technologies, they all share a commitment to helping Europe's transport sector play its part in moving the European Green Deal forward.



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# Enabling long-distance electric mobility

**Just as conventional vehicles won't run without petrol, your electric car won't get very far without a good charge.**

That's why the EUROP-E project is building a comprehensive network of ultra-fast charging stations across Europe. The planned network will feature interoperable chargers primarily located along key European highways. The charging stations installed will meet the recharging needs of vehicles capable of both fast and ultra-fast charging. Implemented by several leading electric vehicle manufacturers, the project is part of a pan-European network that will include 1 500 ultra-fast charging sites located in 13 European countries by 2026.

## **EUROP-E**

### **Project name**

European Ultra-Charge Roll Out Project – Electric (EUROP-E)

### **Funded under**

Connecting Europe Facility (CEF) – Transport

### **Coordinated by**

IONITY in Germany

### **Duration**

July 2017 – December 2024

### **Find out more**

[bit.ly/EUROP-E](http://bit.ly/EUROP-E)

# Charging Europe's electric mobility revolution

**Traversing Europe in an electric vehicle requires a comprehensive recharging infrastructure – which is exactly what this project intends to build.**

The High speed electric mobility across Europe project is installing 41 ultra-fast charging sites along four Core Network Corridors that criss-cross Denmark, Germany, Sweden and the United Kingdom. Each station is modular in nature, meaning it can be easily upgraded to accommodate more powerful electric vehicles. The ultra-fast charging stations will recharge a 400 km range battery in just 20 to 30 minutes – that's six to eight charging minutes for every 100 km driven!

## High speed electric mobility across Europe

### Project name

High speed electric mobility across Europe

### Funded under

Connecting Europe Facility (CEF) – Transport

### Coordinated by

Clever in Denmark

### Duration

July 2017 – December 2023

### Find out more

[bit.ly/HSEMAE](http://bit.ly/HSEMAE)



# The road to electric mobility starts with convenient charging stations

**Europe's lack of a comprehensive network of electric vehicle (EV) charging stations is a major roadblock to developing a robust EV market.**

The Netherlands is addressing this gap by building a network of electric vehicle charging points that will connect Amsterdam and Schiphol Airport to such places as Amstelland – Meerlanden, Haarlem – IJmond, Gooi and Vechstreek. The project is part of a larger effort to establish a network of emissions-free public transport services running between the airport and nearby cities.



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## **Zero emission public transport services for Schiphol Amsterdam Airport and along the core corridors**

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### **Project name**

Zero emission public transport services for Schiphol Amsterdam Airport and along the core corridors

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### **Funded under**

Connecting Europe Facility (CEF) – Transport

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### **Coordinated by**

Connexxion Openbaar Vervoer in the Netherlands

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### **Duration**

April 2018 – December 2023

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### **Find out more**

[bit.ly/ZeroEmissionPT](http://bit.ly/ZeroEmissionPT)



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## Sailing towards a blue economy

New wind propulsion technology looks to help the shipping industry significantly reduce its carbon footprint.

The shipping industry produces [14 % of the EU transport sector's greenhouse gas emissions](#). An innovative new wind propulsion system developed by the WINNEW project could help the industry reduce this figure. The project expects that installing its 363 m<sup>2</sup> wing sails onto commercial ships will result in a 45 % reduction in both fuel consumption and CO<sub>2</sub> emissions. Capable of being installed on both new and existing ships, the solution could help ships reduce their operating expenses by as much as 30 %. In the summer of 2023, the Oceanwings wing sails were installed and tested on Canopée, a ship transporting Ariane rocket parts between Europe and its spaceport in French Guiana. The combination of diesel propulsion and wind assistance on this vessel represents a big leap forward in the decarbonisation of industrial shipping – which led the project to win the ‘Ship of the Year Award’ for 2023.

### WINNEW

#### Project name

WINNEW

#### Funded under

European Maritime and Fisheries Fund (EMFF)

#### Coordinated by

AYRO in France

#### Duration

1 September 2021 – 30 November 2023

#### Find out more

[bit.ly/WINNEW](http://bit.ly/WINNEW)

# Anchors away to zero-emission shipping

**Using a combination of technologies, the CHEK project is developing vessels designed to substantially curtail shipping's carbon footprint.**

The project says its wind energy-optimised bulk carrier and hydrogen-powered cruise ship designs could reduce the sector's greenhouse gas emissions by a staggering 99 %. To ensure this technology is translated into action, the project also developed a future-proof vessel design platform. Engineers can use the platform to integrate the project's sustainable technologies into their own tanker, container ship, cargo ship and ferry designs.

## CHEK

### Project name

deCarbonising sHipping by Enabling Key technology symbiosis on real vessel concept designs

### Funded under

Horizon 2020 – Transport

### Coordinated by

University of Vaasa in Finland

### Duration

1 June 2021 – 31 May 2024

### Find out more

[projectchek.eu](http://projectchek.eu)



# Turning Europe's airports green

**While airports account for just a fraction of air industry emissions, OLGA shows that even small changes can have a big impact.**

The project is implementing a portfolio of emissions-lowering actions at several European airports. This includes everything from integrating sustainable aviation fuels – including advanced biofuels – into conventional jet fuel infrastructure, to developing energy-efficient buildings, using electric vehicles and optimising the flow of both passengers and freight. Collectively, these have the potential to reduce an airport's carbon footprint, cut noise pollution, improve air quality and protect local biodiversity.



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## OLGA

### Project name

hOListic & Green Airports

### Funded under

Horizon 2020 – Transport

### Coordinated by

Paris Airports in France

### Duration

1 October 2021 – 30 September 2026

### Find out more

[olga-project.eu](http://olga-project.eu)



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## Advancing the use of automated vehicles

**Self-driving vehicles have the potential to redefine sustainable transport. ULTIMO aims to steer their development from blueprint to highway.**

The project is deploying fleets of sustainable, cost-effective automated vehicles in three European cities, where they will be used for public transportation and logistics purposes. The vehicles are intended to be available on-demand, offer door-to-door services, and operate within a fully connected, multimodal transport system. Leveraging the work of prior demonstrator projects, ULTIMO is set to have a high technical and societal impact from day one, while also ensuring optimised costs and maximised safety.

### ULTIMO

#### Project name

Advancing Sustainable User-centric Mobility with Automated Vehicles

#### Funded under

Horizon Europe – Transport

#### Coordinated by

Regional Bus Ostbayern in Germany

#### Duration

1 October 2022 – 30 September 2026

#### Find out more

[ultimo-he.eu](http://ultimo-he.eu)

# Decarbonising transport with green hydrogen

**Green hydrogen promises to replace fossil fuels used by public transport. Delivering on this promise is H2Valcamonica.**

The project aims to implement a green hydrogen value chain in Valcamonica, Italy, that runs from production all the way to distribution. The solution will include an electrolyser for producing hydrogen, a compression system, and two storage systems, one for production and another for distribution. While the system will initially be used to provide green hydrogen to the rail sector, its target market includes the entire transport sector.

## H2Valcamonica

### Project name

Green hydrogen for the decarbonisation of Valcamonica

### Funded under

Innovation Fund

### Coordinated by

A2A in Italy

### Duration

1 January 2022 – 30 June 2029

### Find out more

[bit.ly/H2Valcamonica](http://bit.ly/H2Valcamonica)



# A renewable fuel supply chain for the shipping industry

**Using existing technologies, FirstBio2Shipping is closing the bio-LNG supply chain.**

Leveraging the collective expertise of its partners, the project has made renewable liquefied natural gas (LNG) a reality. The process starts with a waste processing company supplying biogas, which is converted into high-quality bio-LNG, delivered to the marine industry as a 100 % drop-in fuel. With an annual bio-LNG production capacity of 2 445 tonnes, the solution is set to replace over 3 000 tonnes of heavy fuel oil and, in doing so, avoid 8 776 tonnes of CO<sub>2</sub> equivalent emitted per year.



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## FirstBio2Shipping

### Project name

First Bio-LNG to Marine Shipping

### Funded under

Innovation Fund

### Coordinated by

Attero in the Netherlands

### Duration

1 January 2022 – 31 December 2027

### Find out more

[bit.ly/FirstBio2Shipping](http://bit.ly/FirstBio2Shipping)

## Chapter 2

# Working with nature to protect our planet and health

Europe's lands and seas, and the biodiversity they host, provide a bounty of natural and economic wealth. Ensuring the sustainability of agriculture, fisheries, forestry and mineral extraction will provide all Europeans who depend on these resources with long-term security.

Nature is also a key resource in the fight against climate change. Europe's natural environment plays a central role in capturing and storing carbon, and in mitigating the impacts of natural disasters such as floods, droughts and heatwaves. This is why protecting and preserving nature is a core component of the European Green Deal.

The answers to challenges we face can often be found in nature, or supported by natural processes. These solutions are cost-effective and offer a range of environmental, social and economic benefits. The EU has the stated ambition of leveraging nature-based solutions to position Europe as a leader in building more sustainable societies.

## New challenges and new solutions

The expanding aquaculture industry is one of the emerging nature-led business models that offers economic and environmental benefits. With support from EU funding, the C-FAARER project is developing community-driven business models in the expanding aquaculture economy. Meanwhile, the KELP-EU project has helped design the EU's first sustainable seaweed biorefinery method – a technology that will accelerate Europe's nascent seaweed industry.

CINEA is also supporting projects to help scientists better understand climate change, providing decision makers with the evidence needed to deliver effective adaptation and mitigation strategies. The PROTECT project offers new models for projecting rising sea levels at both global and local scales, while in Germany, the LIFE MULTI PEAT project is working to prevent carbon leaking from wetlands, while also looking to revive their potential to act as carbon sinks.

## Health for land, people and planet

Agriculture stands to benefit too. The LIFE Plants for Plants project is using innovation to help farmers reduce their environmental footprint while also increasing yields. The project has developed a new generation of organic, plant-derived bio-stimulants that reduce the need for irrigation, fertilisers and pesticides.

By helping preserve and protect our precious natural resources today, each of the projects in this chapter is ensuring that nature will continue to sustain us in the future.



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## Jump-starting Europe's sustainable seaweed industry

**Kelp is good for you, and good for the environment.**

**The KELP-EU project worked to develop Europe's sustainable seaweed industry.**

At the heart of this effort was the development of a first-of-a-kind economically viable, sustainable, zero-waste biorefinery method to extract food ingredients, nutraceuticals and material ingredients, completely sourced from sustainably farmed seaweed. The project also developed a supply chain for sustainably farmed seaweed and high-quality seaweed products. The KELP-EU biorefinery model is set to be a world-leading example of a green seaweed processing facility, reaching gold-standard levels for sustainability, and environmental and energy management.

### **KELP-EU**

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**Project name**

KELP-EU

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**Funded under**

European Maritime and Fisheries Fund (EMFF)

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**Coordinated by**

Oceanium in the United Kingdom

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**Duration**

30 September 2021 – 30 December 2023

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**Find out more**

[bit.ly/KELP\\_EU](https://bit.ly/KELP_EU)



## Restoring the carbon sink potential of peatlands

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**Healthy peatlands are the largest terrestrial carbon store in the world. If they degrade, their stored carbon is released as greenhouse gas.**

By restoring degraded peatlands in Belgium, Germany, Ireland, the Netherlands and Poland, the project aims to revive their carbon sink function and reduce greenhouse gas emissions. The project is also testing paludiculture solutions, developing tools and collecting data and know-how that can be used to drive peatland policy and restore peatlands across Europe.

### LIFE MULTI PEAT

#### Project name

Multi-stakeholder Landscape and Technical Innovation leading to Peatland Ecosystem Restoration

#### Funded under

LIFE CLIMA (Climate Change Mitigation and Adaptation)

#### Coordinated by

NABU in Germany

#### Duration

1 October 2021 – 30 September 2026

#### Find out more

[bit.ly/MULTIPEAT](http://bit.ly/MULTIPEAT)

# New technology to prevent flooding damage

**Whenever it rains, Putten in the Netherlands sees its streets flood and its untreated sewage discharged into a nearby lake.**

With the support of the LIFE AERFIT project, the town is implementing a Fast High Volume Infiltration system. The technology can directly inject rainwater into a permeable layer or aquifer at a much faster rate than conventional injection, vastly improving the village's discharge capacity. As a consequence, Putten looks to have no water on its streets during peak precipitation levels of 36 mm per hour. If successful, the project intends to roll out the solution in at least 10 other European cities.

## LIFE AERFIT

### Project name

Adaptation to extreme rainfall; demonstration of FHVI to prevent damage by urban pluvial flooding

### Funded under

LIFE CLIMA (Climate Change Mitigation and Adaptation)

### Coordinated by

Putten Community in the Netherlands

### Duration

1 July 2016 – 30 June 2024

### Find out more

[bit.ly/AERFIT](http://bit.ly/AERFIT)



# Sustainable alternatives to fertilisers, and improved water management

**LIFE Plants for Plants provides farmers with a new generation of organic, plant-derived bio-stimulant called a standardised metabolites phytocomplex (SMP).**

The project developed and demonstrated three prototype SMPs, one aimed at water use efficiency, one for reducing phosphorus and another for increasing fungicide efficiency. During trials, crops treated with the new bio-stimulants needed 14 700 m<sup>3</sup> less water for irrigation, used 1 222 kg less phosphorus as fertiliser and required 7.5 kg less fungicide. The certified organic solutions also improved crop resilience to climate change and disease – resulting in increased yields.



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## LIFE Plants for Plants

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### Project name

Boost conventional agricultures confidence: new organic biostimulants to reduce water, nutrients and pesticide demand

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### Funded under

LIFE (Nature and Biodiversity)

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### Coordinated by

Van Iperen International in the Netherlands

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### Duration

1 July 2019 – 31 May 2022

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### Find out more

[bit.ly/Plants4Plants](http://bit.ly/Plants4Plants)



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# Restoring the once vibrant Danube River basin

Like many European rivers, the Danube has become congested and ecologically degraded, largely as a result of human interventions such as dam-building.

Looking to reverse course and in line with the EU's [Restore Our Ocean and Waters Mission](#), DANUBE4all is focused on restoring the river's free-flowing status. Bringing together river stakeholders, policymakers and citizens, the project launched an unprecedented co-creation process. The end goal is to substantially boost the Danube River basin's ecological status, protect its biodiversity, reduce the risk of flooding and droughts, and reconnect this once vibrant river to the surrounding ecosystem.

## DANUBE4all

### Project name

Restoration of the Danube River Basin Waters for Ecosystems and People from Mountains to Coast

### Funded under

Horizon Europe – Climate

### Coordinated by

University of Natural Resources and Life Sciences, Vienna in Austria

### Duration

1 January 2023 – 31 December 2027

### Find out more

[danube4allproject.eu](http://danube4allproject.eu)

# Pinpointing our oceans' tipping point

**Climate change is pushing oceans towards thresholds that, once passed, could result in irreversible cascading impacts.**

The key to preventing such damage is to know what that tipping point is – which is exactly what the COMFORT project has worked on. The project looked at contributing factors such as warming, acidification, biological carbon production, and oxygen content. What it found offered little in the way of comfort, with some thresholds having already been crossed and others likely to be passed soon. The good news is that the project also proposed several mitigation strategies for reducing greenhouse gas emissions that could begin tipping our oceans in a better direction.

## COMFORT

### Project name

Our common future ocean in the Earth system – quantifying coupled cycles of carbon, oxygen, and nutrients for determining and achieving safe operating spaces with respect to tipping points

### Funded under

Horizon 2020 – Climate

### Coordinated by

University of Bergen in Norway

### Duration

1 September 2019 – 31 August 2023

### Find out more

[comfort.w.uib.no](http://comfort.w.uib.no)



# New models for projecting rising sea levels

The exact timing and rate at which sea level rises will happen is unknown, making it difficult for coastal regions to act.

But this could soon change, thanks in part to new models developed by the PROTECT project that link rising sea levels with melting polar ice. Using a combination of remote sensing and Earth observation data, the models have expanded the timescale of projections from a couple of decades to the next few centuries. The models can also be used to predict sea level rise at both the global and local scales.



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## PROTECT

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### Project name

PROjecting sea-level rise: from ice sheets to local implications

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### Funded under

Horizon 2020 – Climate

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### Coordinated by

National Centre for Scientific Research (CNRS) in France

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### Duration

1 September 2020 – 28 February 2025

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### Find out more

[protect-sl.eu](http://protect-sl.eu)

# Community-driven ocean farming

**Restoring our oceans and waters by 2030 requires the cooperation of all stakeholders – including ocean farmers.**

That is why the C-FAARER project is developing sustainable business models geared towards helping ocean farmers in the Atlantic and Arctic Sea basins implement best practices in regenerative aquaculture. The project is working with local communities to co-create economically feasible, site-specific solutions. It also looks to support local skill development and capacity building and to establish synergies between key decision makers and farmers, suppliers and buyers. The end goal is to create a sustainable, community-driven aquaculture value chain.

## C-FAARER

### Project name

Community-driven Farming for the Atlantic and Arctic Sea basins through REGeneRative aquaculture

### Funded under

Horizon Europe – Climate

### Coordinated by

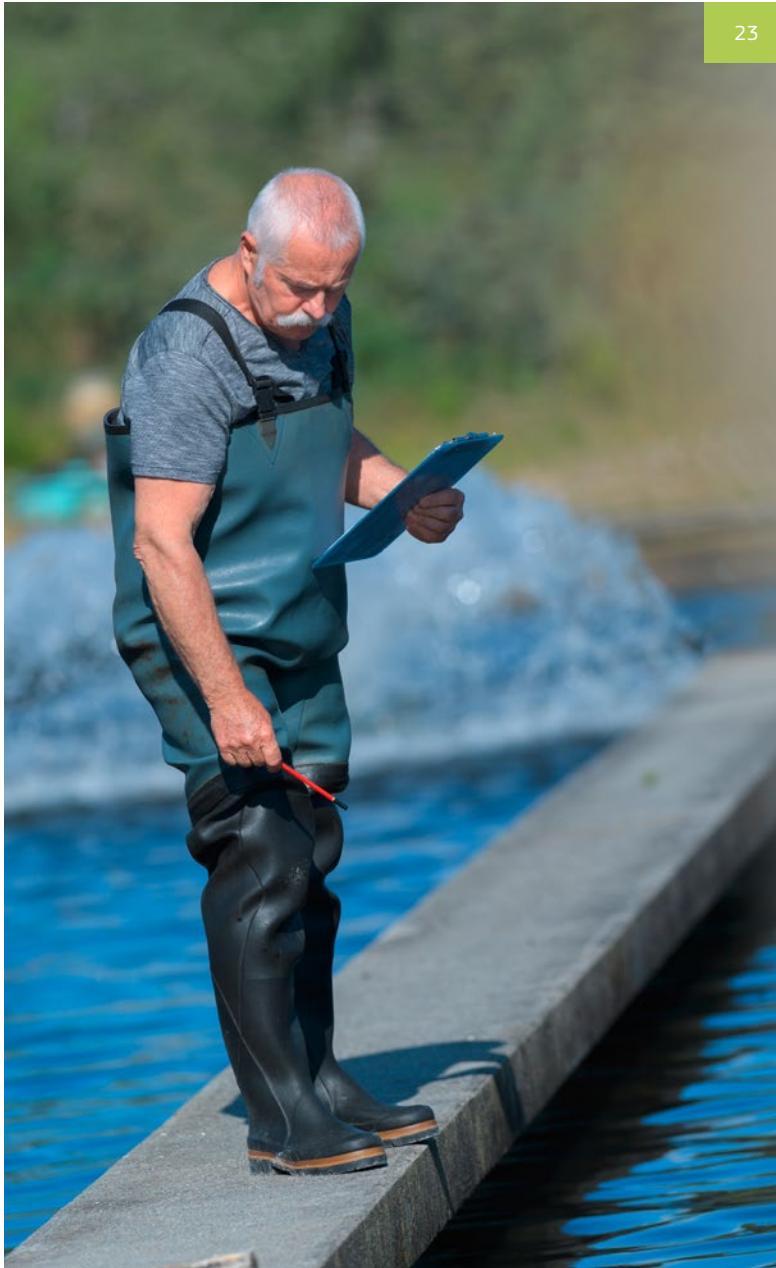
Trinity College Dublin in Ireland

### Duration

1 June 2023 – 31 May 2025

### Find out more

[c-faarer.eu](http://c-faarer.eu)



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## Chapter 3

# Cleaning our energy system

Burning fuel for heat and energy currently accounts for three quarters of the EU's total greenhouse gas emissions, according to European Environment Agency figures. That's a significant challenge that needs to be tackled to achieve the goal of becoming the world's first climate-neutral continent.

The clean energy transition requires not only the development of an energy portfolio based largely on renewable sources such as wind and solar, and the integration of green hydrogen as an energy carrier. It means a wholesale shift in how energy is generated and used: higher efficiencies in building design, the reuse of waste heat, and an interconnected and digitalised EU energy grid that can accommodate new technologies and integrate new market players.

In this chapter, we show you how EU-funded projects are making this transition possible.

## Energy without the emissions

A key step is to reduce the amount of greenhouse gases generated for each unit of power delivered into the grid. In Finland, EU funding is set to deliver a 20 megawatt solar energy park that will reduce CO<sub>2</sub> emissions by approximately 1 540 tonnes per year. In the small German town of Geretsried, EAVORLOOP is demonstrating how geothermal technology could provide the EU with a scalable and secure source of renewable heat and power, while the CarbFix2 project in Iceland has developed an innovative method for capturing waste CO<sub>2</sub> from a geothermal plant, converting it into carbonate rock and storing it permanently underground.

A successful energy transition requires us to prioritise energy efficiency and improve the energy performance of buildings. By shifting the focus away from a single building and instead working to renovate an entire neighbourhood, the ZERO-PLUS project has reduced initial construction costs by at least 16 %.

## Secure and affordable energy for all

Another key aspect of the EU's energy transition is ensuring a secure and affordable energy supply for all. The Implementation of Baltic Synchronisation Project is leveraging smart grid technologies to help Baltic countries plug into the European network and disconnect from Russia and Belarus. Meanwhile, collective purchase schemes pioneered by CLEAR-X helped consumers shift to renewables, saving money and energy.

Addressing the length of the value chain, from the point at which energy enters the grid to its end use in homes, businesses and beyond, these projects exemplify the critical role EU funding plays in accelerating Europe's clean energy transition.



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## (Renewable) power to the people

**Consumers hold the key to the EU's energy transition. Helping them unlock this potential is CLEAR-X.**

The project facilitated consumer access to household renewables at an affordable price through the provision of trusted information, and nine collective purchase schemes to buy renewable energy and energy-efficient products (e.g. heat pumps or photovoltaic panels), in addition to advocating an improved regulatory framework. The campaigns reached 17 500 consumers, triggering an investment of almost EUR 8 million in renewable energy-sourced installations. This resulted in an additional 10.58 gigawatt hours of renewable energy generation, with 2.85 gigawatt hours of primary energy savings.

### CLEAR-X

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#### Project name

Consumers Leading the EU's Energy Ambition Response, Expansion

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#### Funded under

Horizon 2020 – Clean Energy Transition

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#### Coordinated by

BEUC in Belgium

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#### Duration

1 September 2021 – 29 February 2024

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#### Find out more

[clear-x.eu](http://clear-x.eu)

# Phasing out fossil fuels

**When it comes to decarbonising urban heating and cooling systems, there is no one-size-fits-all solution.**

Instead, every solution must be defined by local circumstances, which is why DecarbCityPipes 2050 is developing city-specific decarbonisation roadmaps. After analysing a city's size and heating and cooling needs, along with existing infrastructures and access to renewable energy sources, the project defines what solutions are needed, how they can be implemented and who should be involved. It also addresses how to best meet any legal and financial requirements. Guidance on developing local heating and cooling plans and transition roadmaps have been published to inspire other cities.

## DecarbCityPipes 2050

### Project name

Decarb City Pipes 2050 - Transition roadmaps to energy efficient, zero-carbon urban heating and cooling

### Funded under

Horizon 2020 – Clean Energy Transition

### Coordinated by

UIV Urban Innovation Vienna in Austria

### Duration

1 July 2020 – 31 December 2023

### Find out more

[decarbcitypipes2050.eu](http://decarbcitypipes2050.eu)



# Powering up community energy

**With a focus on community solar generation, this project is helping local and regional authorities achieve their sustainable energy plans.**

The LIFE LOOP project is working with local governments, citizens and stakeholders to develop clean community energy initiatives, while also identifying existing and new sources of funding. The project has a strong capacity building component which includes workshops, stakeholder meetings, matchmaking tools, an accreditation programme for municipalities and a resource library. The activities will be initially rolled out in three pilot communities, with additional implementation in five locations before being expanded across Europe.



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## LIFE LOOP

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### Project name

LIFE LOOP – Local Ownership Of Power

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### Funded under

LIFE CET (Clean Energy Transition)

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### Coordinated by

Energy Cities/Energie-Cites Association in France

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### Duration

1 October 2022 – 30 September 2025

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### Find out more

[energy-cities.eu/project/lifeloop](http://energy-cities.eu/project/lifeloop)

# Baltic states set to plug into the European grid

Estonia, Latvia and Lithuania are accelerating the integration of their electricity grids with the Continental European Network (CEN).

Helping to make this ambition a reality is the Implementation of Baltic Synchronisation Project. The project is delivering the technology needed to fully synchronise the Baltic states' electricity system with the CEN, allowing them to fully disconnect from Russia and Belarus. Highlights include building multiple 330 kilovolt internal lines and substations, installing synchronous condensers as well as batteries, and upgrading IT systems in Estonia, Latvia, Lithuania and Poland.

## Implementation of Baltic Synchronisation

### Project name

Implementation of Baltic Synchronisation Project

### Funded under

Connecting Europe Facility (CEF) – Energy

### Coordinated by

Polish, Estonian, Latvian and Lithuanian Transmission system operators PSE, Elering, AST and Litgrid

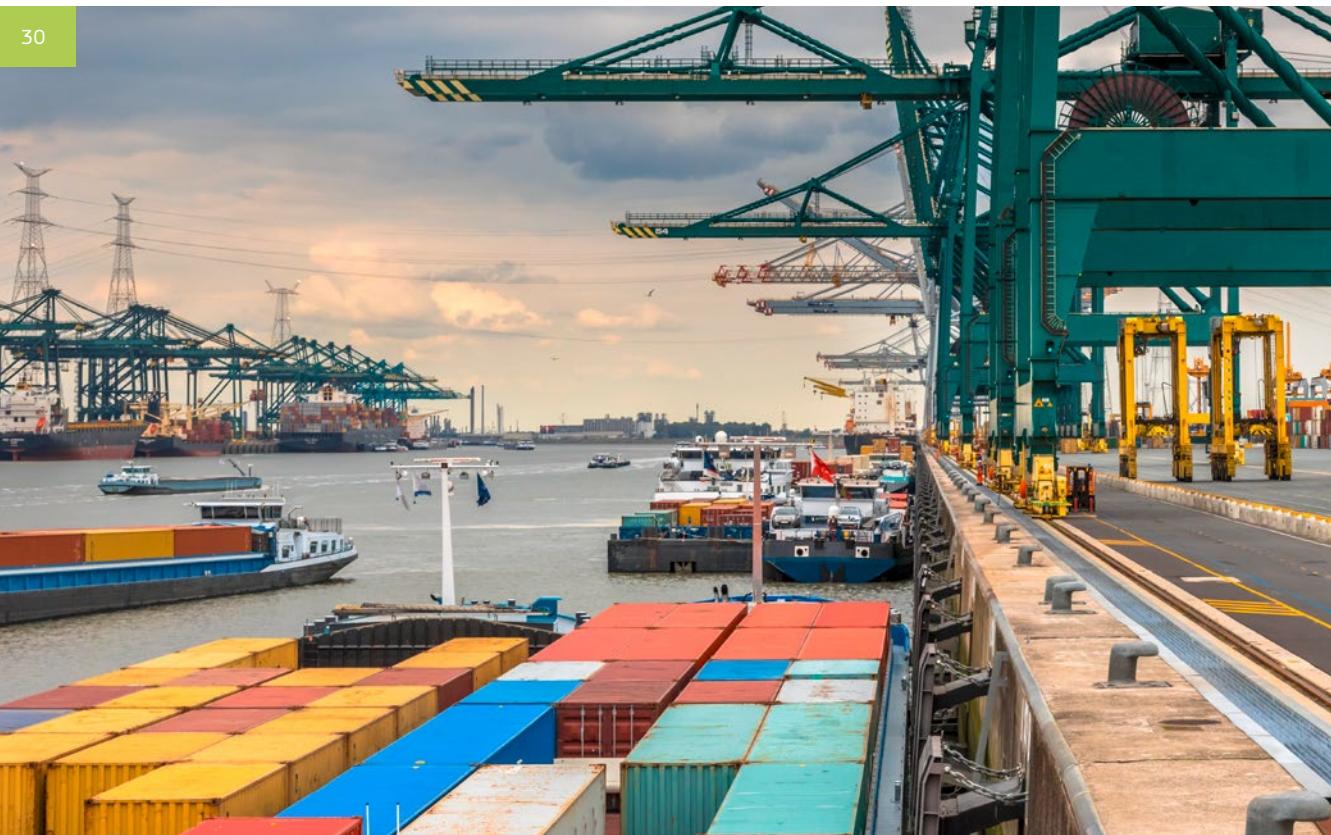
### Duration

November 2021 – December 2025

### Find out more

[bit.ly/BalticSynchronisation](https://bit.ly/BalticSynchronisation)





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## The Port of Antwerp implements carbon dioxide transport infrastructure

With a focus on CO<sub>2</sub> collection, storage and transport, the Antwerp@C CO<sub>2</sub> Export Hub aims to cut the Port of Antwerp's emissions by more than 50 %.

The project is developing a first-of-its-kind CO<sub>2</sub> network infrastructure that will allow for transporting CO<sub>2</sub> from the Port of Antwerp area to be permanently stored in the Norwegian continental shelf. The infrastructure to be developed will include a 22 km long pipeline for collecting captured CO<sub>2</sub> from emitters as well as an export terminal, where it will be stored, liquefied and loaded onto ships for transport to permanent geological storage. The project will have an initial annual capacity of 2.5 million tonnes of CO<sub>2</sub> per year, with the ability to expand to 10 million tonnes by 2030.

### Antwerp@C CO<sub>2</sub> Export Hub

#### Project name

Antwerp@C CO<sub>2</sub> Export Hub

#### Funded under

Connecting Europe Facility (CEF) – Energy

#### Coordinated by

Air Liquide Industries in Belgium

#### Duration

31 December 2022 – 29 June 2027

#### Find out more

[bit.ly/AntwerpCO2](http://bit.ly/AntwerpCO2)

# Making the Czech and Slovak distribution grids smarter

**ACON Smart Grids aims to create an efficient and sustainable electricity system at distribution level.**

The ACON project is adding new and upgraded infrastructure, such as lines and substations, to the two countries' distribution grids, along with intelligent management capabilities. It also facilitates the integration of renewable energy sources. The end result will be a more secure and better-connected electricity supply for users.

## ACON Smart Grids

### Project name

ACON Smart Grids

### Funded under

Connecting Europe Facility (CEF) – Energy

### Coordinated by

Západoslovenská distribučná in Slovakia and EG.D in Czechia

### Duration

December 2018 – December 2024

### Find out more

[acon-smartgrids.cz](http://acon-smartgrids.cz)



# Boosting Finland's solar power potential

**The Loukkaanaro project will see the construction of the largest solar photovoltaic park located in the northern part of Finland.**

The project will oversee the installation of a 20 megawatt ground-mounted solar energy park. The park will include nearly 30 000 solar panels installed across 25 hectares. Once complete, it will be the largest photovoltaic solar project ever constructed in northern Finland. Expected to start operating in 2026, the facility will reduce CO<sub>2</sub> emissions by approximately 1 540 tonnes per year. The park is one of eight to be built in Finland, which will have a combined capacity of about 280 megawatts.



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## Loukkaanaro

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### Project name

Loukkaanaro

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### Funded under

EU Renewable Energy Financing Mechanism (RENEWFM)

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### Coordinated by

Oulun Seudun Sähkö in Finland

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### Duration

1 March 2024 – 31 December 2040

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### Find out more

[bit.ly/LOUKKAANARO](https://bit.ly/LOUKKAANARO)



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## Turning CO<sub>2</sub> into stone

The key to achieving our climate ambitions is to stop emissions at the source – which is exactly what CarbFix2 intends to do.

The project developed an innovative carbon storage method that can safely convert CO<sub>2</sub> into carbonate rock. Installed at a geothermal power plant, the technology has proven capable of capturing, injecting and mineralising 33 % of CO<sub>2</sub> emissions and 75 % of all hydrogen sulfide emissions. Leveraging this success, the project is now working to scale up its solution and add a carbon transport and storage hub so other countries can store their captured carbon in Iceland's rocks.

### CarbFix2

#### Project name

Upscaling and optimizing subsurface, in situ carbon mineralization as an economically viable industrial option

#### Funded under

Horizon 2020 – Energy

#### Coordinated by

Reykjavik Energy in Iceland

#### Duration

1 August 2017 – 31 January 2021

#### Find out more

[carbfix.com](http://carbfix.com)



# Emissions-free geothermal energy

**A large radiator buried four kilometres under Geretsried, Germany is providing the town with emissions-free heating.**

The EavorLoop operates using thermosiphon, a method of passive heat exchange based on natural convection. Fresh water circulates through the radiator, and heat is carried to the surface. As a result, it requires no pumps or aquifers. It's also not limited to Geretsried. Capable of being installed virtually anywhere, EavorLoop will provide the EU with a scalable and secure source of renewable heat and power.

## EAVORLOOP

### **Project name**

The EavorLoop first of its kind commercial scale implementation of an innovative closed-loop geothermal technology

### **Funded under**

Innovation Fund

### **Coordinated by**

Eavor Earth Heat Geretsried in Germany

### **Duration**

1 October 2022 – 31 December 2036

### **Find out more**

[bit.ly/EAVORLOOP](https://bit.ly/EAVORLOOP)

# Leveraging the power of decentralised units

**Decarbonising the electricity grid requires ensuring that there's enough renewable energy available to meet peak demand.**

Austria is transitioning towards 100 % renewable energy. This will require harmonising the supply and demand of energy across both time and location. The Green the Flex project set out to aggregate more than 2 500 decentralised units, including electric car charging stations, heat pumps, boilers and energy storage systems. By coordinating their activity, the project achieved an additional capacity of more than 6 megawatts, and a load balancing potential of 5 gigawatt hours.

## GtF

### Project name

Green the Flex: Achieving significant greenhouse gas emission reductions by intelligent electricity load shifting on the customer level

### Funded under

Innovation Fund

### Coordinated by

EVN in Austria

### Duration

1 January 2022 – 30 September 2028

### Find out more

[bit.ly/GreenTheFlex](https://bit.ly/GreenTheFlex)



# A road map to cost-effective near zero energy buildings

**Cost remains a major roadblock to the uptake of near zero energy buildings (nZEBs). ZERO-PLUS offers a solution by scaling up.**

To address this challenge, ZERO-PLUS shifted the focus away from a single home to building an entire nZEB settlement. This move allowed homeowners to reduce costs by creating economies of scale. Thus, they were able to implement such energy-efficient features as solar heating ventilation and air conditioning systems, rooftop power generation systems, and building energy management systems. The novel approach reduces initial construction costs by at least 16 % compared to conventional nZEBs, while also minimising life-cycle costs.



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## ZERO-PLUS

### Project name

Achieving near Zero and Positive Energy Settlements in Europe using Advanced Energy Technology

### Funded under

Horizon 2020 – Energy

### Coordinated by

University of Athens in Greece

### Duration

1 October 2015 – 31 December 2020

### Find out more

[bit.ly/ZERO-PLUS](http://bit.ly/ZERO-PLUS)



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## Turning wind into green hydrogen

Holland Hydrogen's planned electrolyser will produce green hydrogen using renewable electricity sourced from offshore wind farms.

The 400 megawatt electrolyser plant will be located in the Port of Rotterdam and will initially supply green hydrogen to a local refinery. The project will be carried out in two phases of 200 megawatt capacity each. Once operational, the installation will serve as a proof of concept for producing renewable hydrogen at an industrial scale. It is expected that the electrolyser will result in nearly 100 % relative greenhouse gas emission avoidance over its first 10 years of operation.

### HH

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#### Project name

Holland Hydrogen

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#### Funded under

Innovation Fund

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#### Coordinated by

Rotterdam Hydrogen Company in the Netherlands

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#### Duration

1 January 2023 – 30 June 2037

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#### Find out more

[bit.ly/HydrogenHolland](http://bit.ly/HydrogenHolland)

# A more efficient approach to carbon capture and storage

**Combining CO<sub>2</sub> capture with heat recovery, BECCS is making the carbon capture and storage process even more efficient.**

The project plans to install its world-class, full-scale bioenergy carbon capture and storage facility at an existing heat and power biomass plant in Stockholm. Once operational, it will capture and permanently store large quantities of CO<sub>2</sub> from forestry waste – ultimately removing carbon from the atmosphere. In fact, it is estimated that the project will remove around 8 million tonnes of CO<sub>2</sub> equivalent within its first 10 years of operation – placing BECCS at the vanguard of the rapidly developing net carbon removal market.

## BECCS Stockholm

### Project name

Bio-Energy Carbon Capture and Storage (BECCS) at the existing Combined Heat and Power-plant KVV8 at Värtaverket, Stockholm, Sweden

### Funded under

Innovation Fund

### Coordinated by

Stockholm Exergi in Sweden

### Duration

1 July 2021 – 30 September 2038

### Find out more

[stockholmexergi.se/en/bio-ccs](http://stockholmexergi.se/en/bio-ccs)



## Chapter 4

# Leading the green industrial revolution

Just as innovation defined the industrial revolution, so too will it define the green revolution.

Research, innovation and the deployment of market-ready solutions, supported through the EU, can help industry reduce its own carbon footprint – including hard-to-abate sectors such as heavy industry and power generation. Not only that, novel techniques and technologies will allow these industries to sustainably deliver the materials and services we need to achieve climate neutrality.

Driving this change is the EU's [European Industrial Strategy](#). This plan aims to encourage the development of affordable, clean technology solutions and enable sustainable new business models. The strategy looks to support Europe's transition to a green and digital economy, make EU industry more competitive globally, and enhance Europe's open strategic autonomy.

## Focusing on reusability and waste

To achieve this, the [Circular Economy Action Plan](#) targets product design and encourages sustainable consumption. It also looks to keep resources in the EU economy for as long as possible, and to prevent waste.

In Sweden, the HYBRIT project aims to revolutionise the European iron and steel industry, by replacing fossil-based technologies with climate-neutral alternatives. The project plans to replace the coal-based blast furnace technology with direct reduction based on fossil-free hydrogen. Refrigerants LIFE Cycle has developed an innovative installation capable of separating the refrigerant waste produced by air conditioning units, converting this waste into new coolants that can be reused.

And in Poland, the NorthSTOR+ project is building an energy stationary storage system that is larger than any battery currently on the market. The project has embraced the principles of circular design, sourcing over 90 % of the solution's components and equipment from Europe.

Projects such as these are helping to usher in an exciting new era for European industry – one that will see Europe at the vanguard of the green industrial revolution.

# Freezing out fluorinated greenhouse gases

**As temperatures continue to rise, more and more people are using air conditioning to stay cool. But doing so means an increase in emissions.**

With the goal of reducing hydrofluorocarbon emissions by 74 000 tonnes of CO<sub>2</sub> equivalent a year, Refrigerants LIFE Cycle developed an installation capable of separating refrigerant waste mixtures. Instead of being burned, the used refrigerants are converted into full-value refrigerants that, thanks to an innovative collection and storage system, can be reused for cooling purposes. Backed by a comprehensive awareness raising campaign, the project looks to have more than 450 companies transferring their refrigeration waste for processing.



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## Refrigerants LIFE Cycle

### Project name

The demonstrative installation for the separation of refrigerant waste mixtures

### Funded under

LIFE CLIMA (Climate Change Mitigation and Adaptation)

### Coordinated by

PROZON Foundation for Climate Protection in Poland

### Duration

1 July 2019 – 30 June 2024

### Find out more

[life-prozon.eu/en](http://life-prozon.eu/en)



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## Building a bigger battery

**Meeting the EU's 2030 decarbonisation targets will require an estimated 108 gigawatts of stationary battery storage – far more than what is currently available.**

But fear not, the Voltainer is here. Developed by NorthSTOR+, the stationary energy storage system is based on battery cells originally developed for automobiles. Not only is the product larger and more energy dense than anything currently available, it also offers superior performance, safety and cost-efficiency, not to mention being emissions-free. The NorthSTOR+ manufacturing facility will produce 6 gigawatt hour Voltainer units, which will see over 90 % of its components and equipment sourced from Europe.

### NorthSTOR+

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#### Project name

Industrialising Green Optimised Li-ion Battery Systems for ESS

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#### Funded under

Innovation Fund

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#### Coordinated by

Northvolt Systems in Sweden

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#### Duration

1 April 2022 – 31 December 2034

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#### Find out more

[bit.ly/NorthStorPlus](https://bit.ly/NorthStorPlus)

# Forging a low-carbon steel industry

**New technologies help the hard-to-abate iron and steel industries transition towards a fossil-free future.**

The project plans to replace the coal-based blast furnace technology with direct reduction based on fossil-free hydrogen. HYBRIT looks to produce 1.2 million tonnes of crude steel annually – representing a quarter of Sweden's overall production. The project is building a first-of-its-kind hydrogen production facility that will produce the sponge iron used in a new electric arc furnace. The resulting high-quality steel made using renewable energy has the potential to avoid emitting as much as 14.3 million tonnes of CO<sub>2</sub> equivalent within its first decade of operation.

## HYBRIT

### Project name

Hydrogen Breakthrough Ironmaking Technology

### Funded under

Innovation Fund

### Coordinated by

HYBRIT Development in Sweden

### Duration

1 April 2022 – 30 June 2037

### Find out more

[hybritdevelopment.se/en](http://hybritdevelopment.se/en)



## Chapter 5

# Boosting global climate action

They say, ‘think globally, act locally’, and when it comes to climate change, nothing could be more on the mark.

With the European Green Deal, the EU aims to become the globe’s first climate-neutral continent. Achieving this ambition will require many actions that will largely happen at the level of the Member State, local actors, or even households.

In addition to achieving climate neutrality, the Green Deal aims to ensure that the transition to a climate-neutral future is a just and inclusive one. That means ensuring workers in carbon-intensive sectors benefit from the transition to cleaner economies. It also means creating opportunities for everyone to take part in research and climate actions.

The good news is we don’t have to arrive at the climate challenge empty-handed. Thanks to EU-funded projects, we now have a treasure trove of tools at our disposal.

## Towards an inclusive and climate-neutral future

The mySMARTLife project is providing a number of strategies to make carrying out an energy-efficient home renovation easier. In addition to having created an online database of vetted providers, the project is using smart metering technology to help homeowners better manage their energy use.

The WINBLUE project is empowering women in the traditionally male-dominated blue economy. The project is working with local stakeholders to implement gender equality plan models, address unconscious biases, and provide the support women need to take on leadership roles via coaching programmes.

As the projects in this chapter make clear, when the EU thinks globally, acts locally and involves everyone, it puts Europe on track to becoming not only a climate-neutral continent, but an inclusive one too.

# Taking the complexity out of energy-efficient renovations

**Energy-efficient renovations are essential to achieving climate neutrality. Unfortunately, many homeowners are turned off by their complexity and high costs.**

To help, mySMARTLife worked with three cities to trial different strategies for making energy-efficient home renovations more attractive. For example, an online platform was developed to provide free information on retrofitting projects and linking homeowners to companies offering related services. The project also installed smart controls in condominium buildings to help residents better manage their energy use and retrofitted an office building with solar panels and wind turbines.



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## mySMARTLife

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### Project name

Smart Transition of EU cities towards a new concept of smart Life and Economy

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### Funded under

Horizon 2020 – Energy

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### Coordinated by

CARTIF in Spain

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### Duration

1 December 2016 – 30 September 2022

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### Find out more

[mysmartlife.eu](http://mysmartlife.eu)

# Empowering women in the blue economy

**Women are vastly under-represented in the blue economy. WINBLUE intends to change that, providing opportunities for all.**

The WINBLUE project is working with blue economy stakeholders to address the sector's gender equality challenges. Together, this community is designing and implementing gender equality plan models that address common gender biases and the unconscious rules that can prevent women from taking up decision-making positions. This work is supported by a coaching programme geared towards preparing women for leadership roles. All the project's work can be easily adopted by companies and organisations by replicating the good practices for gender equality identified in five blue economy sectors. These will help make the blue economy more inclusive.

## WINBLUE

### Project name

Empowering Women and Mainstreaming Gender Equality in the Blue Economy

### Funded under

European Maritime, Fisheries and Aquaculture Fund (EMFAF)

### Coordinated by

National Research Council in Italy

### Duration

30 April 2023 – 29 April 2025

### Find out more

[bit.ly/WINBLUE](https://bit.ly/WINBLUE)



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