



EU Missions to address climate change in cities and regions



CLIMATE ADAPTATION MISSION



CITIES MISSION

A PROJECTS INFO PACK BY CORDIS

*Research and
Innovation*

CONTENTS

3 Editorial	22 SCORE
4 Forewords	24 REACHOUT
7 Planning for the future	26 PEERS / Pathways2Resilience
8 CLIMABOROUGH	28 Metro metrics
10 UP2030	31 Redesigning cities for climate change
12 CLIMAAX	32 UPPER
14 DUET	34 REALLOCATE
16 Living with climate change	36 ASCEND
17 Supporting resilient communities	38 Let'sGOv
18 RESIST	40 UNaLab
20 HARMONIA	42 More on the Missions

EDITORIAL

In the face of unprecedented challenges posed by climate change, the European Union has embarked on an ambitious journey towards a sustainable and resilient future. The EU Missions on Adaptation to Climate Change and on Climate-Neutral and Smart Cities under Horizon Europe, the EU's key funding programme for research and innovation, represent significant pillars in this transformative endeavour. This brochure showcases 14 European-funded Mission projects that show the collaborative spirit, innovation and commitment required to address the pressing issues of climate change.

The EU Mission on Adaptation recognises the urgency to enhance Europe's resilience to the impacts of climate change. With a focus on understanding, preventing and mitigating these impacts, the Mission aims to harness the power of research and innovation. These projects featured here delve into diverse aspects of adaptation, ranging from using the most advanced IT solutions to assess and monitor climate risks and impacts to leveraging nature as an ally in building green and sustainable solutions to mitigate climate impacts, showcasing the breadth and depth of our collective response.

Equally pivotal is the EU Mission on Climate-Neutral and Smart Cities, which envisions a future where urban environments are at the forefront of sustainability and innovation. The projects highlighted in this brochure are pioneering solutions that integrate cutting-edge technologies, citizen

engagement and sustainable practices to foster climate-neutral and smart cities. From making sustainable and smart mobility a reality for all, to creating and accelerating Positive Clean Energy Districts, these initiatives illuminate the path towards a more sustainable and liveable urban future.

Research and innovation stand as the bedrock of these endeavours. The commitment to identifying forward-thinking solutions through collaborative research is a testament to Europe's dedication to becoming a global leader in sustainable development. The projects presented here not only contribute to scientific knowledge but also provide tangible, actionable solutions that can be implemented across the continent, in the regions and at local level.

The importance of research and innovation cannot be overstated in the context of climate change. They are the catalysts that propel us towards transformative change, offering the promise of a future where our regions and cities are smart and adaptive, and harmoniously coexist with the environment.

The European Union's commitment to these Missions reflects the understanding that addressing climate change requires a holistic and interdisciplinary approach. It is not just about mitigating the impacts but also about being prepared for the changes that are already under way.

Together, let us embark on this journey towards a climate-neutral and resilient future, driven by the power of research, innovation and a shared commitment to creating a better world for generations to come.

FOREWORD



Ambitious cities need inspiring and innovative projects that other cities and regions can learn from and that can be scaled up, to address climate change. I hope the 14 projects in this publication will inspire other cities and regions on their journey to achieving climate neutrality. The Cities Mission aims to not only deliver at least 100 climate-neutral and smart European cities by 2030 but also turn these cities into experimentation and innovation hubs to put all European cities in a position to become climate-neutral by 2050.

Patrick Child

Mission manager of the EU Mission on Climate-Neutral and Smart Cities

FOREWORD



In the realm of the Mission on Adaptation, early deliverables have ranged from innovative solutions to robust tools, all aimed at empowering regional and local actors to adapt proactively to a changing climate. I trust the diverse projects showcased herein ignite the ingenuity of regions and cities across Europe and beyond, guiding them on their journey towards climate resilience. We need such pioneering initiatives to serve as beacons of preparedness for climate change, to illuminate pathways for others to follow and scale.

Elina Bardram

Mission manager of the EU Mission on Adaptation to Climate Change

PLANNING FOR THE FUTURE



“We want to encourage behavioural change, and to find ways of deploying such projects more effectively.”

Matteo Satta, CLIMABOROUGH project coordinator



PROJECT ID CARD

Full name: Building Green and Climate Neutral City-Hubs

Project dates: 1 January 2023 – 31 December 2026

Coordinated by: National Association of Italian Municipalities in Italy

Funded under: Horizon Europe – EU Mission on Climate-Neutral and Smart Cities

CORDIS factsheet: cordis.europa.eu/project/id/101096464

Project website: climaborough.eu

Total budget: EUR 11 408 458

EU contribution: EUR 11 037 882

CLIMABOROUGH

Green urban innovation hubs as change catalysts

By creating urban innovation hubs on mobility and waste – and ensuring that best practices can be shared between cities – the EU-funded CLIMABOROUGH project aims to be a catalyst for positive change.

Cities are engines of innovation. This is where new ideas are often generated, and where concepts such as greener transport and more efficient waste recycling can be trialled.

However, integrating new concepts such as waste separation into coherent long-term urban planning, and sharing the best practices that evolve there, is not always easy. The [CLIMABOROUGH](#) project was launched in early 2023 to address this.

“Our idea was to bring together 14 cities from across Europe, to create local hubs around innovative pilot projects,” explains CLIMABOROUGH project coordinator Matteo Satta, from the [Association of Municipalities of Tuscany](#) (website in Italian) in Italy.

Angels of the city

A key aim is ensuring that cities are not left behind in the transition towards more sustainable modes of living. While some cities within the consortium are leaders in green mobility, for example, others have recognised a need to build up capacity and expertise.

Tenders for local pilot solutions for mobility, energy and waste, and circularity have closed, and the consortium is currently evaluating applications. About 25 solutions will then be approved and launched across the partner cities. The providers of those solutions, typically start-ups, will be involved in each innovation hub.

“We also have two key project partners that we call city angels,” notes Satta. “These specialists will work across the cities, to help make the pilot projects a reality.”

The second key element of the project will be connecting these local hubs at the European level. Two main hubs are envisaged: one focused on mobility and energy, the other on waste and circularity.

“The aim here is for cities to learn from each other,” adds Satta. “These hubs will help cities to connect the dots, and thus, to reduce the gap between the cities, the market and the citizens.”

Satta is also hopeful that once under way, the pilot projects will act as catalysts for further innovation. “We want to encourage behavioural change in things such as waste separation and use of public transport, and to find ways of deploying such projects more effectively,” he says.

“The race against climate change has put cities at the front line.”

Catalina Díaz, UP2030 deputy project coordinator



PROJECT ID CARD

Full name: Urban Planning and design ready for 2030

Project dates: 1 January 2023 – 31 December 2025

Coordinated by: Fraunhofer Society in Germany

Funded under: Horizon Europe – EU Mission on Climate-Neutral and Smart Cities

CORDIS factsheet: cordis.europa.eu/project/id/101096405

Project website: up2030-he.eu

Total budget: EUR 12 233 133

EU contribution: EUR 11 081 846

UP2030

Driving the sociotechnical transitions needed for net zero

The EU-funded UP2030 project aims to directly involve citizens in plans to decarbonise and transform Europe's cities, developing a method to upskill, upgrade and uptake the capacities of the entire city.

Cities will play a fundamental role in achieving the ambitious goal of climate neutrality by 2050 set out in the European Green Deal. While many individual urban decarbonisation projects are promising, a holistic approach will propel Europe's initiatives and ensure higher overall impacts – a whole greater than the sum of its parts.

In the [UP2030](#) project, researchers are taking a strategy-based approach to urban resilience, linking projects for sustainable urban transformation with supportive policy development and aims to bring the impact of local action to a national and global scale.

“The race against climate change has put cities at the front line when it comes to taking action to meet climate neutrality,” explains Catalina Díaz, urban strategist at the [Fraunhofer Institute for Industrial Engineering](#) in Stuttgart, Germany, and deputy project coordinator of the UP2030 project. “The ambitions are clear but the pathways to meet these climate targets are not yet laid out.”

A fivefold path to the future

The project will use a ‘SUPs methodology’: updating processes, policies and planning codes that hinder effective urban transformations; upskilling urban planning and design transformation pathways for partner cities; upgrading through a series of prototype urban enhancements; upscaling these solutions; and uptaking, in which the UP2030 team will offer the services developed in the project to the EU Mission on Climate-Neutral and Smart Cities.

The project will run pilots in 10 cities across Europe, while in Brazil, Rio de Janeiro will apply the methodology in an emerging economy. UP2030 pilots will go through an intensive co-creation process involving many parts of society, including citizens.

“We hope that by 2030 these cities will be experts in how to drive sociotechnical transitions, how to cope with climate change, and how to be efficient with the use of resources and the infrastructure that keeps cities moving,” says Díaz.

“I hope we see an improvement in climate literacy across all regions.”

Frederiek Sperna Weiland, CLIMAAX project coordinator



PROJECT ID CARD

Full name: CLIMAtE risk and vulnerability
Assessment framework and toolboX

Project dates: 1 January 2023 – 31 December 2026

Coordinated by: Deltares in the Netherlands

Funded under: Horizon Europe – EU Mission on Adaptation
to Climate Change

CORDIS factsheet: cordis.europa.eu/project/id/101093864

Project website: climaax.eu

Total budget: EUR 20 002 272

EU contribution: EUR 19 999 772

CLIMAAX

Better understanding climate risk at the regional level

The EU-funded CLIMAAX project emphasises how supporting cities and regions in carrying out accurate risk assessments is critical to building up Europe's resilience to climate change.

Risk assessments can help regions and countries to more effectively adapt to climate change. However, not all regions have the capacity or knowledge to carry out such plans, nor are they necessarily faced with the same threats.

“There is significant diversity in the ability of regions to carry out risk assessments,” notes [CLIMAAX](#) project coordinator Bart van den Hurk from [Deltares](#), an independent research centre in the Netherlands. “In addition, there might be underpopulated provinces that don't get much attention, but which nonetheless face significant climate impacts such as extreme flooding.”

Many European regions and communities have limited experience and resources to integrate available local and global data, models and concepts into a context-specific climate risk assessment. The CLIMAAX project was launched to address these issues.

A toolbox for climate resilience

The project, funded under the EU Mission on Adaptation to Climate Change, is built on three key elements.

The first is a framework for regional risk assessments, which can be applied anywhere. The framework provides a comparable approach that takes into account diverse conditions and challenges on the ground.

The second element is the project's free, open and pan-European toolbox, designed to enable regions to access European data sets and overlay these with their own local data. As with the risk assessment framework, the project team took inspiration from existing tools, and built upon these.

“The third element is funding,” says van den Hurk. “We recently opened up a call to regions to apply for funding. This will enable them to carry out their own regional risk assessments, using our tools.”

In parallel, five pilot regional risk assessments are already under way. These pioneering regions – funded directly by the project – will follow the CLIMAAX approach, and provide valuable feedback to both the project consortium and other regions.

“We have planned a webinar so that these five regions can share their experiences, and inspire others,” says [Frederiek Sperna Weiland](#), who will take over coordination of the project. In 2024, [a second Open Call](#) will make up to EUR 12 million available for at least 50 regions and communities to implement the CLIMAAX methodological framework.

The ultimate goal is that the CLIMAAX project will demonstrate the viability of a more uniform risk assessment model, and provide a blueprint for other regions across Europe. “I hope we see an improvement in climate literacy across all regions,” adds Sperna Weiland.

“We wanted to see if the Digital Twins concept could help us to predict policy outcomes.”

Lieven Raes, DUET project coordinator



PROJECT ID CARD

Full name: Digital Urban European Twins for smarter decision making

Project dates: 1 December 2019 – 30 November 2022

Coordinated by: Flemish Region in Belgium

Funded under: Horizon Europe – EU Mission on Climate-Neutral and Smart Cities

CORDIS factsheet: cordis.europa.eu/project/id/870697

Project website: digitalurbantwins.com

Total budget: EUR 4 516 957

EU contribution: EUR 3 965 032

DUET

Digital Twins enable smarter decision making

By running multiple simulation models through digital replicas of their cities, urban planners can assess the potential impact of decisions on issues such as mobility, pollution, energy and the built environment.

Digital Twins are computer models used by city officials to better manage resources, and to improve the lives of residents. The EU-funded [DUET](#) project sought to encourage more policymakers to make use of this innovation, through demonstrating the potential of the technology for making more informed decisions.

“A Digital Twin is a 3D digital replica of a system,” explains project coordinator Lieven Raes from the [Flemish Government](#) (website in Dutch) in Belgium. “The idea originated from the manufacturing sector, but a few years ago began to be applied at the scale of a city, with all its complexity and unpredictability.”

3D for smarter cities

The focus of the DUET project was to show how 3D representations of urban environments can help in the development of [smart cities](#) (website in Dutch). “We wanted to see if the Digital Twins concept could help us to predict policy outcomes,” says Raes.

By combining simulation models, the project team was able to assess how a particular policy decision – the pedestrianisation of a road perhaps – might impact a range of factors such as mobility, pollution and the overall built environment. The concept was trialled in Flanders in Belgium, Pilsen in Czechia and Athens in Greece.

DUET’s success supports the delivery of the EU’s plan for [100 climate-neutral and smart cities by 2030](#). Raes believes that the roll-out of Digital Twins will make it easier for city managers to react quickly to real-time events, and ensure long-term policy decisions are more effective and trusted.

Launched in 2019, DUET received a prize for [Best Enabling Tech](#) at the Smart City Expo World Congress in Barcelona, Spain two years later. The award helped to raise the project’s profile, and created further interest in Digital Twins. The project team is now working on a book on the concept, with publication planned in 2024.

Living with climate change

Climate change affects regions, sectors of the economy and members of society in many ways, and EU regions and cities are facing different climate risks and have various levels of preparedness.

Despite all continuing efforts to reduce emissions of greenhouse gases, our climate is already warmer and will continue to warm until we achieve carbon neutrality. Therefore, we need to be better prepared to cope with the many effects of climate change, adapting our way of living.

The EU Mission on Adaptation to Climate Change is supporting at least 150 European regions and communities in becoming climate-resilient by 2030. Below are Mission actions undertaken against just some of the key risks.

Extreme heat

The frequency and intensity of heatwaves is increasing in Europe, with over 60000 killed in 2023 alone. In Zagreb, Croatia, over 1500 trees planted by authorities will help cool the city streets and provide many other benefits.



Drought

Farmers in Europe face drier conditions than in the past, with substantial production losses projected for most areas. In the Canary Islands, research is under way to quantify the limits of vulnerable aquifers, helping islanders manage their water resources.



Water scarcity

Residential and industrial demand for water is expected to increase across Europe, even as rainfall decreases. In the Berlin-Brandenburg region, authorities are preparing for an expected 40 % drop in surface water flow by 2040.



Flooding

Coastal flood damage in Europe is projected to increase tenfold by the end of the 21st century. In the Netherlands, floating houses are one way that flood risk is being integrated into urban planning.



Wildfire

Once rare in parts of Europe, forest fires have become more frequent and destructive. A forest management platform piloted in Croatia and Slovakia uses mesh networks and autonomous air and ground vehicles to prevent fires.



SUPPORTING RESILIENT COMMUNITIES



“Our goal is to help these stakeholders build resilience against the impacts of climate change.”

Vilija Balionyte-Merle, RESIST project coordinator



PROJECT ID CARD

Full name: Regions for climate change resilience through Innovation, Science and Technology

Project dates: 1 January 2023 – 31 December 2027

Coordinated by: SINTEF in Norway

Funded under: Horizon Europe – EU Mission on Adaptation to Climate Change

CORDIS factsheet: cordis.europa.eu/project/id/101093968

Project website: resist-project.eu

Total budget: EUR 26 682 827

EU contribution: EUR 24 949 990

RESIST

Accelerating the delivery of climate adaptation solutions

Each city faces its own unique climate risks. By pairing regions across Europe, the EU-funded RESIST project aims to share practices and solutions for building resilience against climate change impacts.

From flooding in Spain to wildfires in Greece and scorching heatwaves across much of Europe, the impacts of climate change are here. “Compared to a decade ago, these events are becoming more severe and frequent, while geopolitical and economic crises have left governments with far fewer resources to cope with the situation,” says Vilija Balionyte-Merle, a researcher at the independent Norwegian research institute [SINTEF](#).

According to Balionyte-Merle, different European regions and cities have different climate risks and levels of preparedness – meaning there is no one-size-fits-all solution to the challenge. This is why the [RESIST](#) project, funded under the EU Adaptation Mission, is focused on providing climate change solutions geared towards specific regions, cities and local authorities.

“Our goal is to help these stakeholders build resilience against the impacts of climate change,” adds Balionyte-Merle, who acts as project coordinator for RESIST. The project is engaging with [12 European regions](#), each with its own unique socio-economic profile, that are facing climate-related challenges such as floods, droughts, heatwaves, wildfires and soil erosion.

Multistranded approach

The project follows the ‘[quintuple helix](#)’ innovation model, which emphasises the role of interactions between academia, business, government, citizens and the environment. “This ensures we will deliver scalable solutions that are based on real challenges and needs,” explains Catarina Azevedo, operational project manager at Portuguese R&D consultancy [INOVA](#), one of the project’s key partners.

The project is confident that this approach will result in over 100 new and innovative climate adaptation solutions being developed during the project. The innovations, which will be developed with the support of the project’s research and industry partners, will be tested in four leading EU regions: southwest Finland, central Denmark, Catalonia and central Portugal.

The knowledge and adaptation pathways tested in these leading regions will then be transferred to eight twinned regions through mutual-learning activities and immersive digital twins.

“Adapting to climate change means taking action to prepare for and adjust to both its ongoing effects and the predicted impacts of the future,” concludes Balionyte-Merle. “The RESIST project will ensure that some of Europe’s most vulnerable regions are equipped to do exactly that.”

“The platform will address multi-hazard risk factors and streamline the process of preparing for, and responding to climate change-related events.”

R. M. Cristina Musacchio, HARMONIA project manager



PROJECT ID CARD

Full name: Development of a Support System for Improved Resilience and Sustainable Urban areas to cope with Climate Change and Extreme Events based on GEOSS and Advanced Modelling Tools

Project dates: 1 June 2021 – 31 January 2025

Coordinated by: Politecnico di Milano in Italy

Funded under: Horizon Europe – EU Mission on Adaptation to Climate Change

CORDIS factsheet: cordis.europa.eu/project/id/101003517

Project website: harmonia-project.eu

Total budget: EUR 4 999 803

EU contribution: EUR 4 999 794

HARMONIA

Tapping satellite data to quantify climate change in urban areas

A new artificial intelligence-based platform built by the EU-funded HARMONIA project will scour urban areas for risk patterns associated with the negative health impacts of climate change, helping to make cities healthier, safer places.

Climate change will have profound impacts on cities, including raising urban air temperatures and influencing air pollution. Combating these effects will require strong policy commitments, underpinned by accurate data.

In the [HARMONIA](#) project, researchers are developing integrated decision support tools for urban environments, tailored to the needs of European citizens and public stakeholders.

The project has already achieved excellent developments concerning multi-hazard and seasonal forecast models and quantification of the effects of climate change, which are valuable resources for decision makers.

“The combination of accurate information, spatial analysis and health insights enables end users to enhance resilience, mitigate risks and create sustainable and healthy urban environments,” says Julia Nerantzia Tzortzi, HARMONIA project coordinator and associate professor in the Department of Architecture, Built Environment and Construction Engineering at the [Politecnico di Milano](#) in Italy.

A holistic solution

HARMONIA will merge urban and climate data from the Global Earth Observation System of Systems (GEOSS), a series of integrated Earth Observation systems, with other local, regional and global data sets.

Using this data, the HARMONIA team will develop applications that support adaptation and mitigation measures of the Paris Agreement for urban environments, in a holistic solution known as the [Integrated Resilience Assessment Platform](#).

“The platform will address multi-hazard risk factors and streamline the process of preparing for, and responding to climate change-related events,” explains R. M. Cristina Musacchio, HARMONIA project manager, also at the Politecnico di Milano. “Sustainable urban development and the health of humans and ecosystems are top priorities.”

The HARMONIA team will develop innovative technologies such as terrestrial and satellite imaging for wide-area inspection, advanced artificial intelligence (AI) and new in situ sensors, to integrate their platform with GEOSS.

The Integrated Resilience Assessment Platform will specifically focus on risks in urban environments, using AI models to generate up-to-date information on land cover, building footprints and population distribution, and picking up risk patterns such as the urban heat island effect and flooding.

The system will provide decision support systems for urban resilience, help with urban planning and uncover links between air pollution, climate change and health risks. Machine learning will allow the platform to forecast risk factors related to chronic diseases, empowering policymakers.

“Rising sea levels, coastal erosion and extreme weather events have created an urgent need to increase the climate resilience of Europe’s coastal cities.”

Salem Gharbia, SCORE project coordinator



PROJECT ID CARD

Full name: Smart Control of the Climate Resilience
in European Coastal Cities

Project dates: 1 July 2021 – 30 June 2025

Coordinated by: Atlantic Technological University in Ireland

Funded under: Horizon Europe – EU Mission on Adaptation
to Climate Change

CORDIS factsheet: cordis.europa.eu/project/id/101003534

Project website: score-eu-project.eu

Total budget: EUR 9 980 831

EU contribution: EUR 9 980 831

SCORE

Future-proofing Europe's coastal cities against climate change

With a focus on co-creation, the EU-funded SCORE project helps coastal cities become more resilient to climate change, safeguarding their culture, heritage and economy for future generations.

Europe's coastal regions are not only some of the most biodiverse on Earth, many also have substantial human populations – not to mention being critical hubs for industry and other economic activity.

They're also particularly vulnerable to the impacts of climate change.

"Rising sea levels, coastal erosion and extreme weather events have created an urgent need to increase the climate resilience of Europe's coastal cities," says Salem Gharbia, head of the Department of Environmental Science at the [Atlantic Technological University](#) in Ireland.

With the support of the [SCORE](#) project, Gharbia is coordinating an effort to future-proof coastal cities by exploiting natural features and processes, aided by digital technologies such as digital twins, sensors and Earth Observation data, amongst others.

"The challenge is to match the nature-based solutions with the right available technology," remarks Gharbia. The project's [Coastal City Living Labs](#) play a critical role in this. Spread across 10 coastal cities, the labs look to co-design solutions that fit each city's individual climate-related challenges.

Climate and tourism

In Sligo, Ireland, an increase in storm surges and flooding has resulted in substantial erosion to the local sand dunes, washing away archaeological sites and closing heritage venues.

To address this challenge, the Living Lab is testing numerous hybrid nature-based solutions, including the creation of vegetated buffer zones within the dune systems. "In Sligo, like in many other coastal areas, climate change poses a direct threat to tourism, which is strongly tied to the area's economy," notes Gharbia.

These solutions are evaluated on a digital platform that provides feedback not just to the local lab, but to the entire network. In this way, centres learn from one another. "By the end of the project, we hope to have a validated, transferable, replicable and scalable framework that coastal communities around the world can easily adapt and implement as a means of becoming more climate-resilient," concludes Gharbia.

“City planners across Europe are facing increased pressure to find new ways to help make cities more climate-resilient.”

Ad Jeuken, REACHOUT project coordinator



PROJECT ID CARD

Full name: Resilience in Europe through activating city hubs reaching out to users with Triple-A climate adaptation tools

Project dates: 1 October 2021 – 31 March 2025

Coordinated by: Deltares in the Netherlands

Funded under: Horizon Europe – EU Mission on Adaptation to Climate Change

CORDIS factsheet: cordis.europa.eu/project/id/101036599

Project website: reachout-cities.eu

Total budget: EUR 4 998 860

EU contribution: EUR 4 998 860

REACHOUT

Co-creating a climate-resilient future for Europe's cities

The EU-funded REACHOUT project is helping local authorities, research organisations, city networks and policymakers deliver new solutions to make Europe's cities more climate-resilient.

While nearly all EU citizens will be impacted by climate change, more than two thirds of them live in cities and urban areas. "City planners across Europe are facing increased pressure to find new ways to help make cities more climate-resilient," says [Ad Jeuken](#), an expert advisor on climate change adaptation and water management at Dutch research centre [Deltares](#).

With the support of the EU-funded [REACHOUT](#) project, Deltares is coordinating an EU-wide consortium working to help urban areas integrate climate data and information into their municipal planning, following a co-creation ethos of close collaboration between those who make the tools and those who will use them.

"The project aims to further develop city-oriented climate services across Europe, especially services that provide urban areas with tailored information that can help them make decisions towards a climate-resilient future," adds Jeuken.

Analysis, Ambition, Action

In addition to hubs in major cities such as Milan, Athens and Amsterdam, the project also set up workspaces in such smaller cities as Lillestrøm (Norway), Cork (Ireland), Gdynia (Poland) and Logrono (Spain).

After assessing the needs of the cities in terms of climate data and information, project members can work on tools to support climate-resilient urban development and adaptation efforts.

Next, the cities apply the proposed tools, following what the project has termed its 'Triple-A' approach. "These services help cities: analyse hazard, exposure and vulnerability to climate change; formulate ambitions for climate-resilient urban development; and identify, evaluate and select adaptation actions for implementation," explains Jeuken.

The various climate adaption tools, such as climate hazard mapping and models to estimate the extent and cost of flood damage, along with a guide to the co-creation process itself, will become part of the REACHOUT Triple-A Toolkit. Details can be found on the REACHOUT [website](#).

Jeuken says the focus on collaboration has already proved to benefit the participating cities. "This co-creation journey is what could be called front-end development with the cities and is central to the project's success, while at the back end we leave behind a tested package of services and examples for others to follow."

“The impact on European citizens is real, and local decision makers are starting to feel the obligation to act.”

Fernando Diaz Lopez, Pathways2Resilience project coordinator



PROJECT ID CARD

Full name: Co-developing pathways towards Climate resilient regions in Europe

Project dates: 1 January 2023 – 31 December 2027

Coordinated by: Climate-KIC Holding in the Netherlands

Funded under: Horizon Europe – EU Mission on Adaptation to Climate Change

CORDIS factsheet: cordis.europa.eu/project/id/101093942

Project website: pathways2resilience.eu

Total budget: EUR 29 609 362

EU contribution: EUR 29 609 362

PEERS / Pathways2Resilience

Co-developing climate-resilient pathways across Europe

The impacts of climate change are growing, and adaptation efforts have failed to keep pace with these increasing risks. The EU-funded Pathways2Resilience project is putting communities at the centre of rapid and far-reaching climate security.

Extreme weather events such as widespread flooding, snowstorms, heatwaves and wildfires are already striking across Europe, with huge social and economic repercussions. Climate change is making these both more frequent and more intense.

“The impact on European citizens is real, and local decision makers are starting to feel the obligation to act,” says Fernando Diaz Lopez, [EIT Climate-KIC Transitions Hub](#) lead and [Pathways2Resilience](#) project coordinator.

The Pathways2Resilience project (previously known as PEERS) aims to help Europe’s regions and communities make progress towards their climate resilience goals. In the next four years, the project will distribute a total of EUR 21 million of funding to 100 regions through two rounds of calls for application.

Pathways2Resilience is one of the flagship projects under the EU Mission on Adaptation to Climate Change, which contributes to putting the EU’s adaptation strategy into practice by helping regions to accelerate their climate adaptation efforts.

The project will also develop a series of interconnected services (from capacity building to innovation finance labs) to support the beneficiaries, along with a further 50 regions that will join the project with their own funding.

From forest to coast

Through these activities, Pathways2Resilience will help decision makers take on climate knowledge and develop tailored adaptation plans. These regional adaptation strategies will incorporate nature-based solutions to address the impacts of climate change. Examples include planting trees, reintroducing native species and restoring critical coastal ecosystems such as mangroves and coral reefs.

Pathways2Resilience will also develop a self-assessment tool so that regions and communities can assess their position along the journey to climate resilience. Through a series of innovation groups and climate finance model labs, the project will provide a comprehensive range of knowledge and mechanisms that regional authorities need in order to effect change.

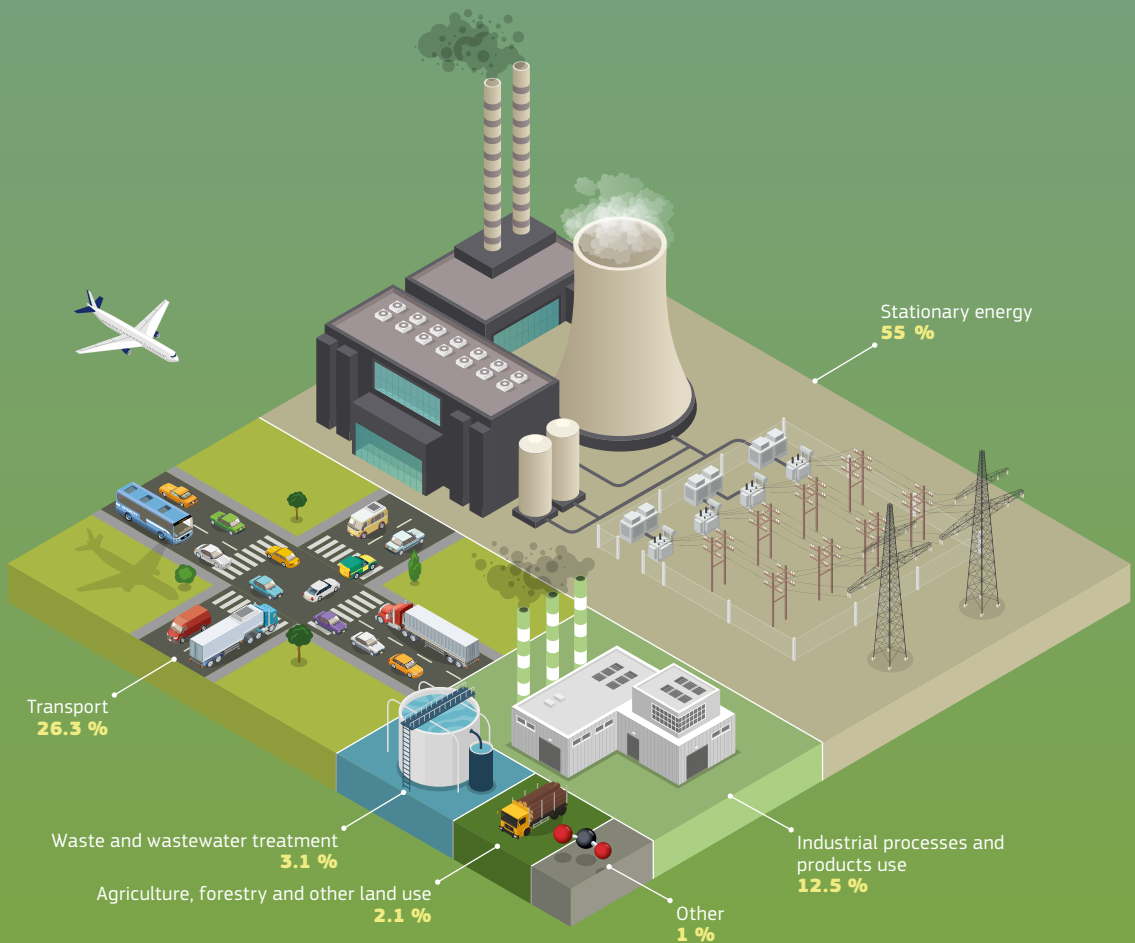
At the end of the project, Europe’s regions and communities will be equipped with a comprehensive strategy for transformative climate adaptation and will be ready to implement it to protect their citizens from future threats of climate change.

Metro metrics

Cities take up only 4 % of the EU's land area, but are home to 75 % of EU citizens, and generate 70 % of CO₂ emissions. Thus cities have the potential to be in the vanguard of efforts to deliver on the European Green Deal, helping the EU to reduce climate emissions by 55 % by 2030 and become climate-neutral by 2050.

Greenhouse gas emissions are generated by a range of sectors, some more significant than others. Transitioning to smart and carbon-neutral cities will mean addressing a diversity of challenges and opportunities in decarbonisation, deploying a range of technologies, strategies and governance tools.

Greenhouse gas emissions from cities by sector



Source: Self-reported data from 105 Mission Cities, processed by the Joint Research Centre. See the following Disclaimer for more details.

Disclaimer

Emission figures provided by cities for the 'Metro metrics' infographic went through a quality control procedure, however some limitations have to be taken into account: i) the data was self-reported by cities and was not externally verified; ii) the emission breakdown reflects what cities were aware of and could report at the stage of the EOI; iii) emission figures and their breakdown are not directly comparable across cities, as the inventory methodologies and the degree of completeness of the reported inventories vary (different sectors/gases included); iv) emission figures are not always recent (reporting years ranging from 2003 to 2020).

Details to note for point iii): Not all cities' inventories display a comprehensive coverage of all sectors, with emissions from waste/wastewater reported by 74 % of cities, IPPU by 56 % of cities and AFOLU by 53 % of cities, i.e. the share of these sectors is likely somewhat underestimated. In addition to CO₂, CH₄ is accounted for by 65 % of inventories, while F-gases are reflected in less than a quarter of inventories.

REDESIGNING CITIES FOR CLIMATE CHANGE



“Our hope is to show how sustainable services and measures can put citizens at the heart of the mobility system.”

Mircea Steriu, UPPER project coordinator



PROJECT ID CARD

Full name: Unleashing the potential of public transport in Europe

Project dates: 1 January 2023 – 31 December 2026

Coordinated by: International Association of Public Transport in Belgium

Funded under: Horizon Europe – EU Mission on Climate-Neutral and Smart Cities

CORDIS factsheet: cordis.europa.eu/project/id/101095904

Project website: upperprojecteu.eu

Total budget: EUR 23 575 522

EU contribution: EUR 19 993 346

UPPER

Unleashing the potential of sustainable public transport in Europe

The EU-funded UPPER project has embarked on an ambitious journey to reshape public transport in Europe, using innovative 'push-and-pull' measures to make sustainable mobility the preferred choice.

Moving people away from private motorised travel to public transport and sustainable mobility options requires improved travel information and services, tailored to diverse passenger needs.

Driven by the principle of 'Mobility as a Right', the [UPPER](#) project coordinator Mircea Steriu, from the [International Association of Public Transport](#) (UITP), emphasises the importance of understanding the link between customer satisfaction and public transport use when trying to shape better mobility options. "It's about making sure that people choose buses, metros or shared bicycles not just because they lack a private car, but because active travel is their first desired solution."

Addressing this, UPPER established Living Labs in 10 European cities, each experimenting with unique strategies to diminish private car usage and enhance sustainable travel. "Even high public transport use cities such as Budapest or Oslo face challenges and must consistently adapt to the needs of their citizens," Steriu notes.

Sustainability driven by innovation

Key to UPPER's strategy is aligning with each city's goal of achieving carbon neutrality by 2030. To take on the challenges faced even in cities with high public transport usage, the project's toolkit is built in close collaboration with these cities.

Achieving carbon neutrality will require more than just technological advancements: it implies a fundamental shift in travel habits and patterns. UPPER seeks to demonstrate that innovation is crucial for this shift to sustainable mobility. Steriu envisions a paradigm shift in how people navigate cities, requiring a comprehensive approach that combines innovation with a deep understanding of population needs.

Reflecting on the project's first year, Steriu describes it as a period focused on learning from past experiences and establishing essential stakeholder relationships. As the project moves forward, the implementation of new solutions will involve legislative changes, stakeholder consultations and plan revisions. "Our hope is to show how sustainable services and measures can put citizens at the heart of the mobility system," he says.

“There’s no easy fix, and top-down policies won’t succeed without citizen participation.”

Francesco Pilla, REALLOCATE project coordinator



PROJECT ID CARD

Full name: Rethinking the dEsign of streets And pubLic spaces to Leverage the mODal shift to Climate-friendly Active Transport Everywhere

Project dates: 1 May 2023 – 30 April 2027

Coordinated by: University College Dublin in Ireland

Funded under: Horizon Europe – EU Mission on Climate-Neutral and Smart Cities

CORDIS factsheet: cordis.europa.eu/project/id/101103924

Project website: reallocatemobility.eu

Total budget: EUR 12 690 025

EU contribution: EUR 11 998 600

REALLOCATE

All aboard the path to climate-neutral cities

Daily mobility has a significant impact on the environment. The EU-funded REALLOCATE project is transforming city streets into inclusive spaces where communities live and thrive.

“Ahead of 2030, there’s much work to be done in terms of new policies and interventions to reduce emissions,” says Francesco Pilla, professor of Smart and Sustainable Cities at University College Dublin’s [School of Architecture, Planning and Environmental Policy](#) in Ireland.

As project coordinator of [REALLOCATE](#), Pilla is leading an initiative that aims to reshape mobility across 10 cities by focusing on policy intervention, infrastructure enhancement and – most importantly – behavioural change.

“By reducing our reliance on personal vehicles, we can decrease their use, alleviate traffic congestion, and promote healthier and safer cities,” adds Pilla. “But a better road allocation towards sustainable options such as walking, cycling and public transportation is vital.”

Public collaboration

Plans include everything from creating superblocks and green corridors that prioritise safety for pedestrians and cyclists, to digital solutions such as simulating the impact of planned interventions. At the heart of the REALLOCATE project is the ambition of developing these changes collaboratively with both the policymakers and the public.

“There’s no easy fix, and top-down policies won’t succeed without citizen participation,” Pilla explains. “These solutions aren’t theoretical, but developed in partnership with local stakeholders and citizens.”

Zero-emission pilots

REALLOCATE’s deployment phase begins mid 2024. Interventions include [superblocks](#) in Barcelona and Budapest, artificial intelligence to increase road safety in Tampere, [Vision Zero](#) traffic safety measures around schools in Utrecht and Bologna, safe and green routes to schools in Gothenburg and Warsaw, regional commuter plans in Heidelberg, smart traffic controls to prioritise sustainable travel in Zagreb, and reduced pollution parking policies in Lyon. After a comprehensive assessment, the interventions will be ready for roll-out in a further 10 municipalities.

“Partnering with 10 different cascade cities means REALLOCATE will make a significant difference,” says Pilla. “We will assist them in building their skills and provide guides on how to replicate our tried-and-tested solutions.”

Through these collaborations, REALLOCATE is hoping to future-proof cities that prioritise safety, accessibility and sustainability for all.

“By the end of the project we’ll have significant achievements in several cities.”

Etienne Vignali, ASCEND project coordinator



PROJECT ID CARD

Full name: Accelerate poSitive Clean ENergy Districts

Project dates: 1 January 2023 – 31 December 2027

Coordinated by: Lyon Confluence in France

Funded under: Horizon Europe – EU Mission on Climate-Neutral and Smart Cities

CORDIS factsheet: cordis.europa.eu/project/id/101096571

Project website: ascend-project.eu

Total budget: EUR 24 662 744

EU contribution: EUR 19 986 990

ASCEND

Accelerating the delivery of Positive Clean Energy Districts

The EU-funded ASCEND project aims to build urban districts that produce more energy than they consume, to mitigate the effects of climate change and to offer citizens inclusive, resilient and smart communities.

The implementation of Positive Clean Energy Districts (PCEDs) is a crucial element needed to meet the EU's Climate-Neutral and Smart Cities Mission. Paving the way, the [ASCEND](#) project is accelerating the delivery of PCEDs in Lyon, France and Munich, Germany.

Project coordinator Etienne Vignali, from development planner [Lyon Confluence](#), explains: "Project ASCEND focuses on several key aspects: the environmental performance of buildings, the development of the local energy community, decarbonising mobility (for people and goods) and public spaces more favourable to pedestrians."

Work includes highly energy-efficient buildings, photovoltaic rooftop installations, district heating systems powered by biomass, and new underground parking favouring mobility services rather than individual cars.

The PCEDs are setting high standards for urban developments, ensuring new buildings adhere to advanced standards of energy efficiency, while existing buildings are brought up to par through renovation, says Vignali: "Developers and estate agents will have to meet our requirements and guidelines before they begin construction."

Coordinated efforts across Europe

The project collaborates with 'multiplier cities' including Porto, Alba Iulia, Budapest, Prague, Charleroi and Stockholm, where PCEDs will be rolled out on a smaller scale, with each city adapting the concept to its specific needs and governance structures.

Vignali adds: "It's not just Lyon and Munich: we built the proposal together, and are working in parallel, so that by the end of the project we'll have significant achievements in several cities at the same time."

The project explores challenges such as the need for rapid progress, rising construction costs, and most importantly, behavioural change. Overcoming these obstacles involves convincing local communities of the benefits of sustainable urban development. But with successful implementation, ASCEND is poised to play a significant role towards creating sustainable and energy-efficient communities across the whole of Europe by 2030.

“When you talk about energy and environment, all the sectors must be involved.”

Paola Papini, Let'sGOv project manager



PROJECT ID CARD

Full name: Accelerating cities' transition to net zero emissions by 2030

Project dates: 1 October 2021 – 30 September 2025

Coordinated by: Climate-KIC Holding in the Netherlands

Funded under: Horizon Europe – EU Mission on Climate-Neutral and Smart Cities

CORDIS factsheet: cordis.europa.eu/project/id/101036519

Project website: netzerocities.eu/italys-pilot-activity-letsgov-governing-the-transition-through-pilot-actions

Total budget: EUR 52 996 604

EU contribution: EUR 52 996 604

Let'sGOv

Nine trailblazing European cities building a path towards net zero

Part of the EU-funded NetZeroCities programme, Let'sGOv is embarking on an ambitious journey across nine Italian cities, aiming to enhance governance and facilitate the transition towards sustainability.

Europe aims to have 100 climate-neutral and smart cities by 2030, but in Italy, governance issues are hindering progress. The [Let'sGOv](#) project, in partnership with the [University of Bologna](#), [Politecnico di Torino](#) and the [Agency for Energy and Sustainable Development \(AESS\)](#) (website in Italian), aims to remove barriers such as working in silos, infrastructure deficiencies, lack of training and absence of standardised procedures.

The pilot scheme involves a network of nine major Italian cities: Bologna, Bergamo, Florence, Padova, Parma, Prato, Milan, Rome and Turin, each committed to transforming their approach to energy.

"We identified our needs through bench learning," Let'sGOv project manager Paola Papini explains, "and the primary requirement was collaboration and recognising our gaps. The next was better governance and intervention concerning energy."

Cluster approach

To achieve this, the initiative has been built around three clusters: Engagement, Data and Finance, each with its unique objectives. The Engagement Cluster aims to cut down energy system emissions by exploring enhanced governance models and forming energy alliances with diverse stakeholders.

Meanwhile, the Data Cluster's mission is to improve data-sharing governance, which is crucial for decision-making and monitoring progress. Finally, the Finance Cluster explores innovative financial strategies to speed up the energy transition.

These pilot activities are being trialled in all areas of local government, including electricity usage, waste disposal, transport and land use, so there is a comprehensive approach towards climate neutrality. "When you talk about energy and environment, all the sectors must be involved," notes Papini.

Crucial knowledge transfer

Learning from peers is another big component of Let'sGOv, and knowledge sharing between the cities is essential for creating effective, scalable solutions. The nine municipalities come together on a regular basis to ensure a holistic approach.

"We are all learning from each other and there's a lot of collaboration and information exchange around common problems and needs," says Papini. But it doesn't end with the nine Mission cities – 16 other urban areas from all around Italy are also getting involved. The project's ultimate goal is to provide all cities with transferable lessons, toolkits and methodologies that can guide them on their own energy transition journeys.

“These tools are critical in promoting awareness and overcoming implementation barriers related to nature-based solutions.”

Laura Wendling, UNaLab project coordinator



PROJECT ID CARD

Full name: Urban Nature Labs

Project dates: 1 June 2017 – 30 November 2022

Coordinated by: VTT Technical Research Centre in Finland

Funded under: Horizon Europe – EU Mission on Adaptation to Climate Change

CORDIS factsheet: cordis.europa.eu/project/id/730052

Project website: unalab.eu/en

Total budget: EUR 14 278 699

EU contribution: EUR 12 768 931

UNaLab

Integrating natural elements into cities for climate resilience

The EU-funded UNaLab project spearheaded a transformative approach to enhance the climate security of cities, defining new standards for urban resilience strategies across Europe and beyond.

The [UNaLab](#) project contributed to the development of smarter, more inclusive, more resilient and increasingly sustainable cities through the implementation of nature-based solutions.

“Our work highlighted a number of challenges faced by cities in the development and implementation of effective strategies to enhance water and climate resilience,” says Laura Wendling, project coordinator of UNaLab on behalf of the [VTT Technical Research Centre of Finland](#). “One major challenge lies in siloed knowledge or function within institutions.”

The key to addressing this challenge was for cities to collaborate more widely. “Co-creation is essential for enduring solutions addressing climate challenges that affect all aspects of our lives,” adds Wendling. “With this approach, we ensured the inclusion of diverse perspectives and knowledge, leading to tailored nature-based solutions and action plans for each local context.”

Selecting cities as living labs

In light of their readiness and commitment to co-create and implement nature-based solutions, three cities – Eindhoven in Netherlands, Tampere in Finland and Genoa in Italy – were selected for large-scale demonstrations.

“The three front-runner cities already had existing or planned related initiatives that UNaLab could enhance,” Wendling explains. In Tampere for instance, the municipality had recently established a new greenfield district surrounded by natural water bodies in the Vuores district. The UNaLab team took this opportunity to complement existing infrastructure with a retention pond, alluvial meadow and biofilter to treat storm water from residential blocks and streets.

For Wendling and the rest of the team, success lies in devising solutions that would allow other cities to follow suit and increase their own resilience. To that end, the project created tools and guidelines for planning, implementing and evaluating nature-based solutions.

These include the [Urban Living Lab Handbook](#), a [Co-creation Toolkit](#), [Municipal Governance Guidelines](#) and various resources for impact assessment and decision support. “These tools are critical in promoting awareness and overcoming implementation barriers related to nature-based solutions,” Wendling says.

More on the Missions

EU Missions are a new way to bring concrete solutions to some of our greatest challenges by 2030.

Guided by the [EU Adaptation Strategy](#) and supported by Horizon Europe, the **Mission on Adaptation to Climate Change** focuses on supporting EU regions, cities and local authorities in their efforts to build resilience against the impacts of climate change. The Mission's objective is to accompany at least 150 European regions and communities towards climate resilience by 2030.

The [Mission Adaptation Portal](#) offers a diverse array of resources for tackling adaptation to climate change. Its [Regional Adaptation Support Tool](#) tailors solutions for regional climate adaptation while a [Funding Guide](#) outlines various financial opportunities to support adaptation projects.

The **EU Mission on Climate-Neutral and Smart Cities** aims to accelerate the transition of European cities towards climate neutrality while fostering smart, sustainable and inclusive urban development. The Mission's objectives are to deliver at least 100 climate-neutral and smart European cities by 2030, and use the knowledge gained to put all European cities in a position to become climate-neutral by 2050.

The [Cities Mission platform](#), managed by the [NetZeroCities](#) project, includes hands-on support for cities, [pilot projects](#), a [Twinning Programme](#) and peer-to-peer exchanges.

The Mission's central feature is [Climate City Contracts](#) (CCCs) which each participating city is developing and implementing. These contain a Climate Neutrality Action Plan and a Climate Neutrality Investment Plan. If the CCC is reviewed positively by the Commission's [Joint Research Centre](#), the [European Investment Bank](#) and external financial experts, the city receives a [Mission Label](#), which is intended to facilitate access to other sources of funding and finance, in particular to private investment.

Both EU Missions demonstrate what the [European Green Deal](#) means at local level, showing how well-coordinated action starting in research and innovation can accelerate the necessary changes that lead to climate neutrality and produce tangible benefits such as clean air, safe streets and liveable and green spaces.

CORDIS Projects Info Pack

Available online: europa.eu/YtRhF7



Published

on behalf of the European Commission by CORDIS at the
Publications Office of the European Union
L-2985 Luxembourg
LUXEMBOURG

cordis@publications.europa.eu

Disclaimer

Online project information and links published in the current issue of the CORDIS Projects Info Pack are correct when the publication goes to press. The Publications Office cannot be held responsible for information which is out of date or websites that are no longer live. Neither the Publications Office nor any person acting on its behalf is responsible for the use that may be made of the information contained in this publication or for any errors that may remain in the texts, despite the care taken in preparing them.

The technologies presented in this publication may be covered by intellectual property rights.

This Projects Info Pack is a collaboration between CORDIS and the Directorate-General for Research and Innovation.



[@euscienceinnov](https://twitter.com/euscienceinnov)



[@EUScienceInnov](https://www.facebook.com/EUScienceInnov)



[@european-commission-joint-research-centre](https://www.linkedin.com/company/european-commission-joint-research-centre)

Print ISBN 978-92-78-43865-4 doi:10.2830/947472 ZZ-06-23-022-EN-C

HTML ISBN 978-92-78-43864-7 doi:10.2830/170715 ZZ-06-23-022-EN-Q

PDF ISBN 978-92-78-43863-0 doi:10.2830/68329 ZZ-06-23-022-EN-N

Luxembourg: Publications Office of the European Union, 2024

© European Union, 2024



The reuse policy of European Commission documents is implemented by Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39, ELI: <http://data.europa.eu/eli/dec/2011/833/oj>).

Unless otherwise noted, the reuse of this document is authorised under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>)

This means that reuse is allowed provided appropriate credit is given and any changes are indicated.

Cover photo: © European Union, 2024

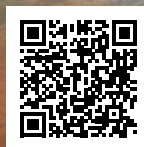
For any use or reproduction of elements that are not owned by the European Union, permission may need to be sought directly from the respective rightholders.

CORDIS RESULTS PACK ON THE NET-ZERO TRANSITION

The EU aims to become climate-neutral by 2050, in line with its commitment to global climate action under the Paris Agreement. This Results Pack focuses on 10 EU-funded projects that are helping to pave the way for a climate-neutral economy and society by developing state-of-the-art knowledge.



Check out the Pack here:
cordis.europa.eu/article/id/448410



Publications Office
of the European Union



Follow us on social media too!
facebook.com/EUresearchResults
x.com/CORDIS_EU
youtube.com/CORDISdotEU
instagram.com/eu_science