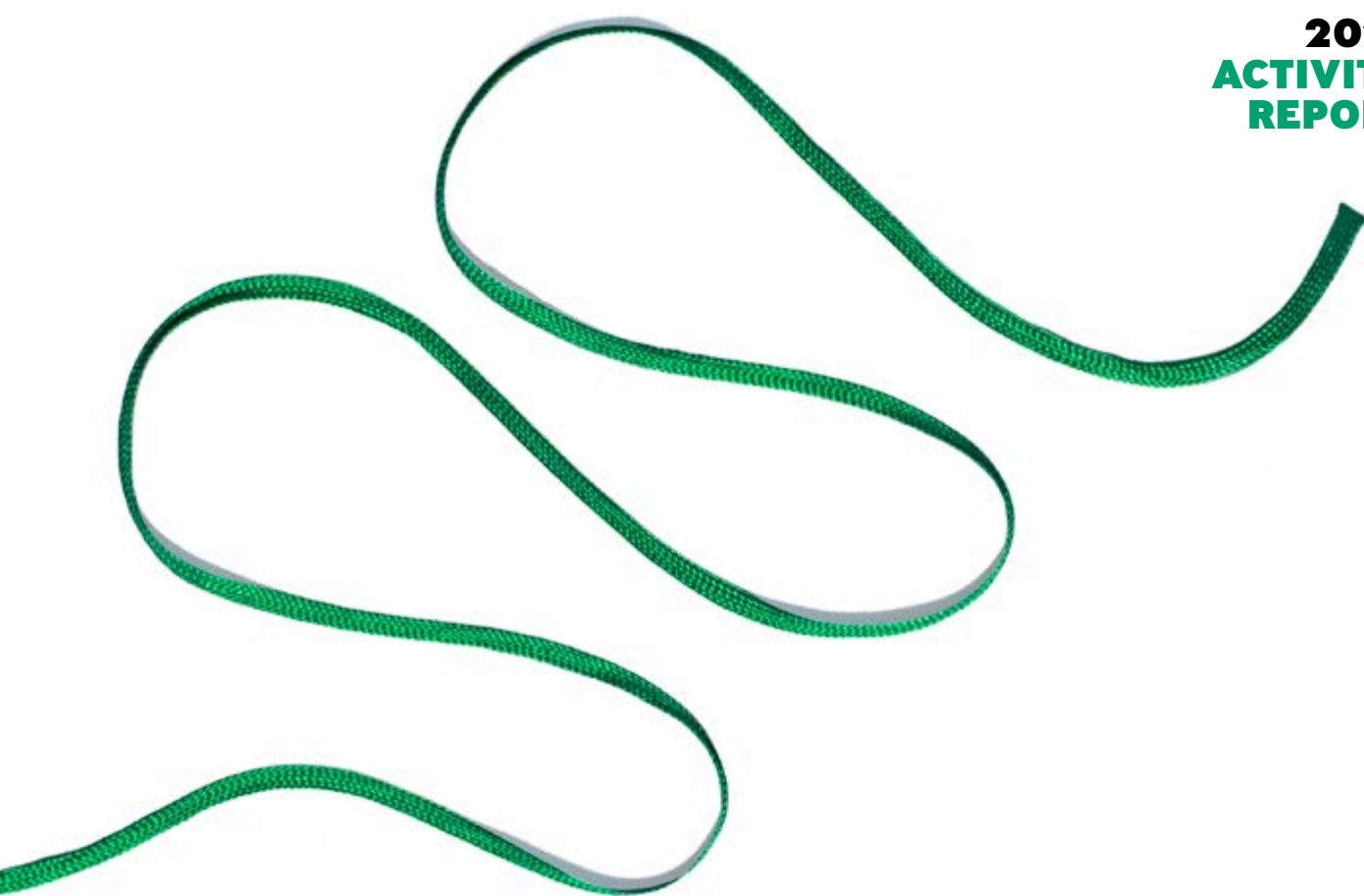


THE GREEN THREAD

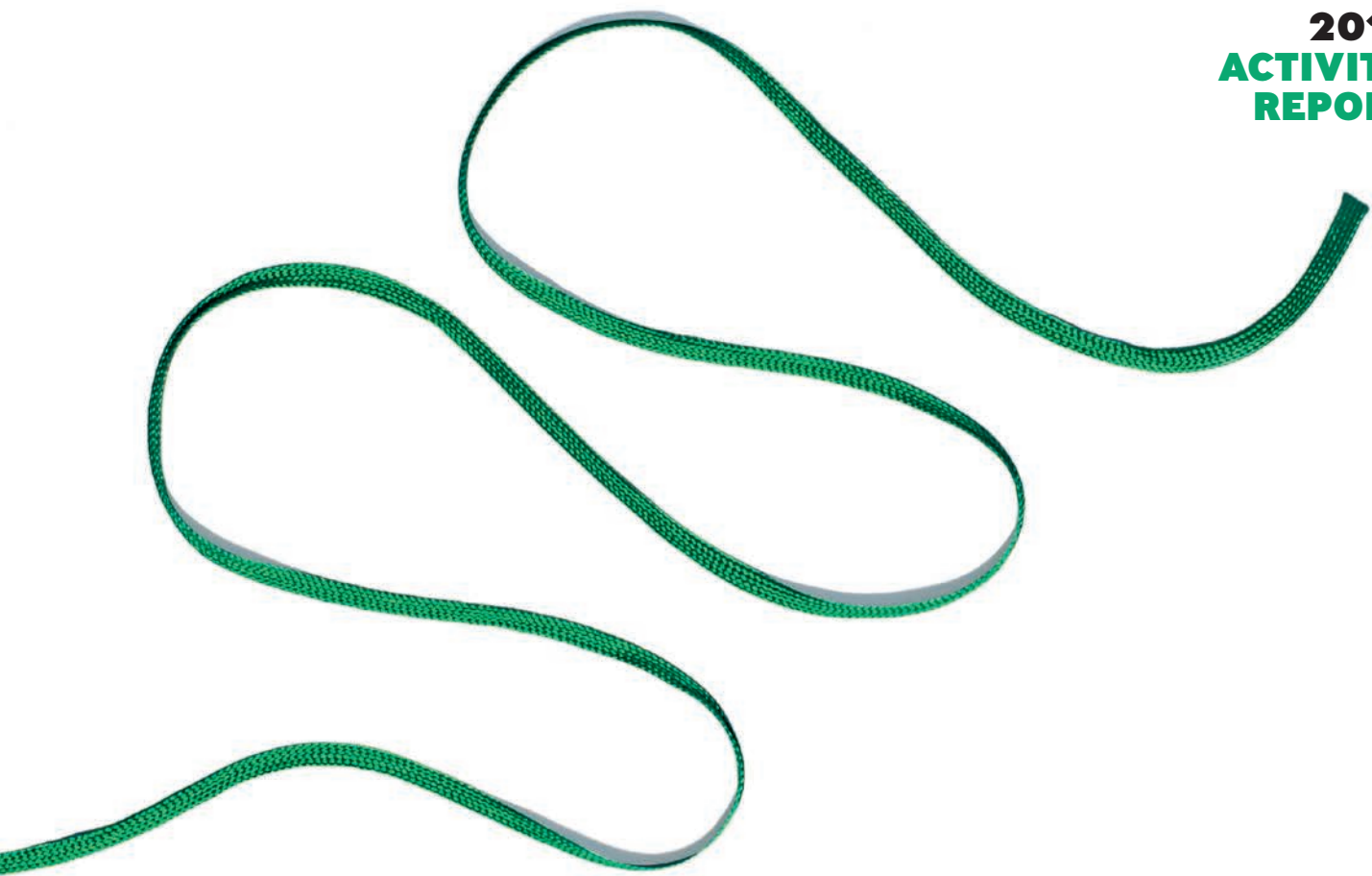
**2019
ACTIVITY
REPORT**



EUROPEAN INVESTMENT BANK

THE GREEN THREAD

**2019
ACTIVITY
REPORT**



European Investment Bank Activity Report 2019

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HOW TO READ THE REPORT – THE GREEN THREAD

Wherever you are, there you will find the weather. So too with this report, because climate is **THE GREEN THREAD** that runs through the European Investment Bank's work in 2019, specifically **ACTION TO FIGHT CLIMATE CHANGE**. Climate action has long been a significant factor in the Bank's work. In 2019, we responded to an unprecedented emergency with **NEW AMBITIONS FOR CLIMATE INVESTMENT** over the coming decade and a **NEW ENERGY LENDING POLICY**.

To keep global warming to the 1.5° Celsius rise targeted by the Paris Agreement, carbon emissions must be under 580 gigatonnes. For all of us. Forever. At the present rate, we'll hit that figure by 2032. But, with increased investment, it's not inevitable. The investment need is, however, enormous. In Europe, estimated investment in energy systems, for example, will need to double in the next decade to €400 billion.

That's where the European Investment Bank is key. A public bank, the EU bank invests in everything from long-term infrastructure to innovative battery projects, and it **STEPS INTO SECTORS WHERE INVESTMENT IS TOO SLOW**, such as home energy-efficiency renovations. In a new feature of this report, key experts at the European Investment Bank lay out what they believe the climate crisis means for us, what **NEW TYPES OF FINANCING** we'll be developing to reach our targets, and what kinds of **PROJECTS WE'LL BE BACKING**.

The projects in this report cover every area of economic development – infrastructure, innovation, small and medium-sized enterprises. To illustrate the depth of our current climate action and our commitment to future investment, we have written about each of these areas, with a focus on climate. **CLIMATE INFRASTRUCTURE, CLIMATE INNOVATION, AND CLIMATE ACTION FOR SMES**. Globally. For example, you'll read about a Romanian artificial intelligence device to cut food waste in the same story as a project that boosts yields for Peruvian coffee farmers. Because we work across the globe to find **SOLUTIONS FOR THE CLIMATE CRISIS** that threatens us all, wherever we are.

This report tells stories of ingenuity and commitment, job creation and prosperity. Woven together with **THE GREEN THREAD OF SUSTAINABLE EIB CLIMATE INVESTMENT**, they illustrate the opportunity climate action presents for all of us to safeguard our world for future generations and to build a prosperous, clean economy.

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THE BANK THAT GETS THINGS DONE

I write about the achievements of the European Investment Bank during the last year at a time when every week – every hour – is crucial. As the EU bank pits its expertise and financing power against COVID-19, we are also mindful of a critical decade ahead in the fight against climate change. Though there are many who doubt whether coronavirus and climate change can be addressed simultaneously, we are confident that this is an absolute necessity. The immediate battle to return our economies to health must also lay the foundations of a sustainable future.

In 2019, the Bank invested in Europe’s competitiveness, in new technologies and innovation that will secure our quality of life for coming generations — and increase our prosperity. The growing proportion of our work aimed at tackling global warming proves that climate action is a business opportunity, as well as an existential necessity. The new threat of COVID-19 makes this report even more timely. We signed several deals last year that demonstrate our engagement in the fight against disease — a commitment that has become still stronger with our central role in Europe’s coordinated coronavirus response.

We laid down an ambitious marker last year. **We promise to dedicate 50% of our financing to climate action and environmental sustainability as of 2025. Everything we do will be fully aligned with the Paris Agreement.** After all, it would make no sense to invest 50% in climate and the environment, while using the other 50% to finance projects that harm the environment.

This is just as true of the coronavirus crisis. Every economic shock accelerates long-term structural shifts. Delivering on our increased climate and environmental sustainability ambitions is the best way for the European Investment Bank to help the economy recover from the pandemic. For example, the energy transition can contribute to the recovery by creating more jobs, new and fast-growing industries, more competitiveness and less energy dependence.

Last year we approved our new energy lending policy. This includes a commitment to end investment in conventional fossil fuel projects from the end of 2021. The European Investment Bank is the first international financial institution to make such a pledge. This is a striking example of European leadership on the climate front.

As the EU bank, the European Investment Bank acts as the financial arm of EU policy. In the great European climate action project now under way, we are in close partnership with the European Commission and all Member State governments. **The work highlighted in this report demonstrates the expertise that makes us a key pillar of the European Green Deal** announced by the Commission in January 2020.

Unique reach

Climate action does not mean overlooking other areas of our work. This report demonstrates that, to be effective, climate action must operate within the spheres of cohesion, innovation, SMEs and infrastructure. If it fails to do so, quite simply it fails. Climate action, for example, also means job creation. Our Investment Report 2019-2020 forecasts that green energy specifically will create around 500 000 jobs in Europe over the coming decades.

The cohesion work that has been a central focus of the Bank since 1958 takes on a new dimension with our expanded climate ambitions. Throughout 2019, our experts supported the formulation of

FOREWORD BY THE PRESIDENT



“ We promise to dedicate 50% of our financing to climate action and environmental sustainability as of 2025. Everything we do will be fully aligned with the Paris Agreement. ”

the Commission’s Just Transition Mechanism, which will facilitate the move to cleaner energy in regions and industries based on fossil fuels. Our unique position at the nexus of EU institutions, national governments and Europe’s cities and regions makes this a key mission for the EIB in the coming years.

In the same way, our development work has a focus on climate resilience and adaptation, because these save or safeguard lives – and because they build economic prosperity. **Climate change is global, so we must step up our investments globally. Here we have the tools, too.** Our experts marry experience in recognising true innovation with ground-level development work – we have 50 offices around the world and active operations in 43 fragile states. Over the last 10 years, those countries – the world’s least developed – have received over €5.5 billion from more than 100 EIB operations.

Commitment and accomplishment

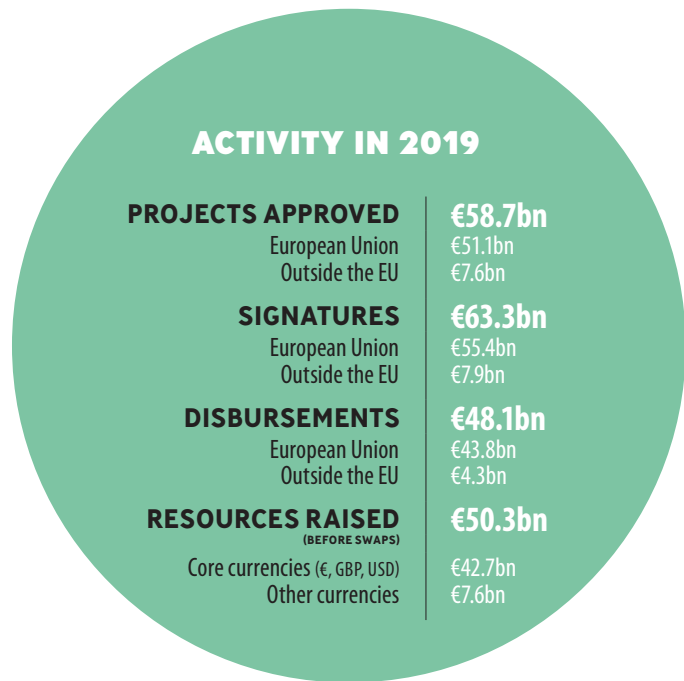
With our new climate commitment and energy lending policy, it might be easy to focus only on the future and to forget what we have accomplished. Before climate became our central focus and before the COVID-19 emergency, the European Investment Bank was given the mammoth task of supporting the investment of half a trillion euros into the EU economy over five years, as part of the Juncker Plan. In 2020, we are comfortably on course to hit that €500 billion headline target. Most importantly, we already know that this great programme has had a structural impact on the European economy, boosting jobs and growth for decades to come.

It is our job to support the European project and sustainably invest in Europe’s future. This is what we did in 2019 and this is what we shall continue to deliver.

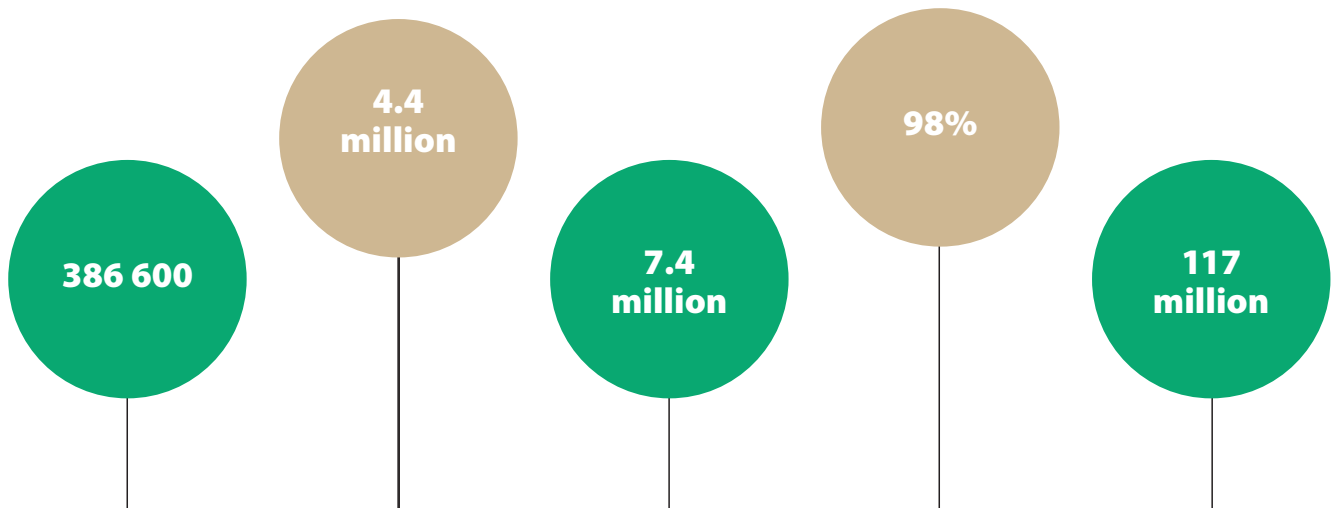
Werner Hoyer

2019 HIGHLIGHTS

European Investment Bank



EIB Group impact



Number of SMEs/mid-caps supported by the EIB Group

Number of jobs sustained in SMEs/mid-caps (EIB Group)

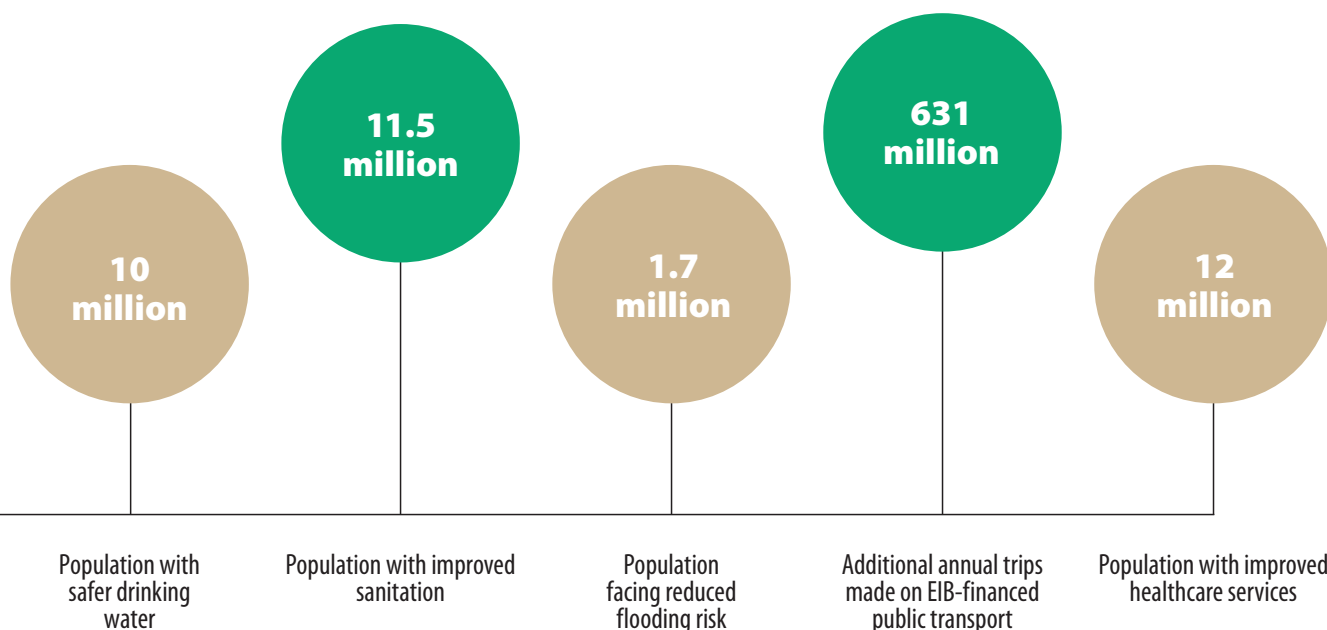
Households that can be powered by additional electricity generation capacity

... of the additional electricity comes from renewables

Clients with improved mobile services

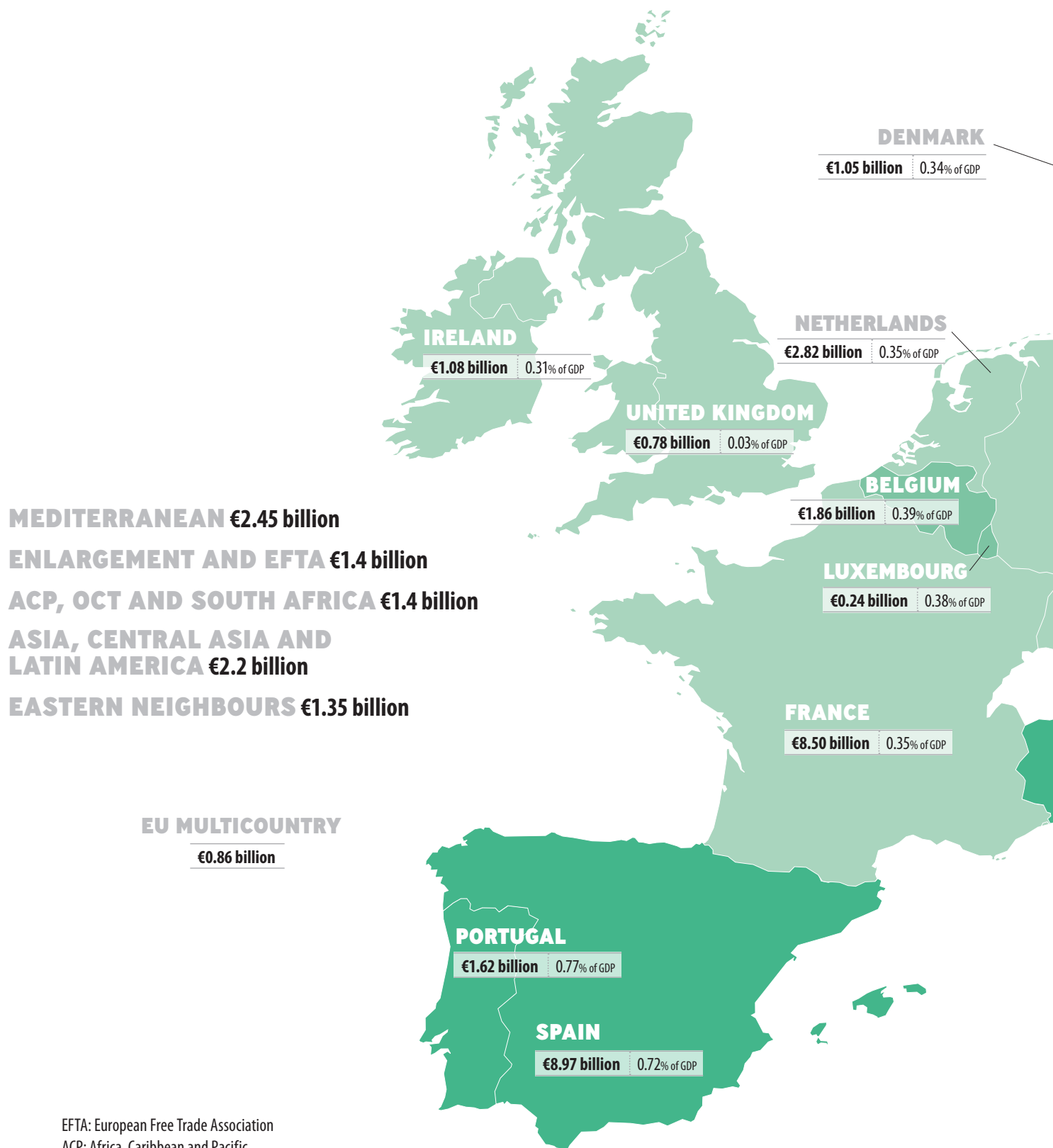
European Investment Fund

The European Investment Fund (EIF), part of the EIB Group, specialises in risk finance to support micro, small and medium-sized enterprises and stimulates growth and innovation across Europe. It provides financing and expertise for sound, sustainable investment and guarantee operations. EIF shareholders include the EIB, the European Commission, public and private banks and financial institutions.



Figures are expected outcomes of new financed operations signed in 2019 for the first time. All figures are unaudited and provisional.

THE EIB GROUP IN YOUR COUNTRY

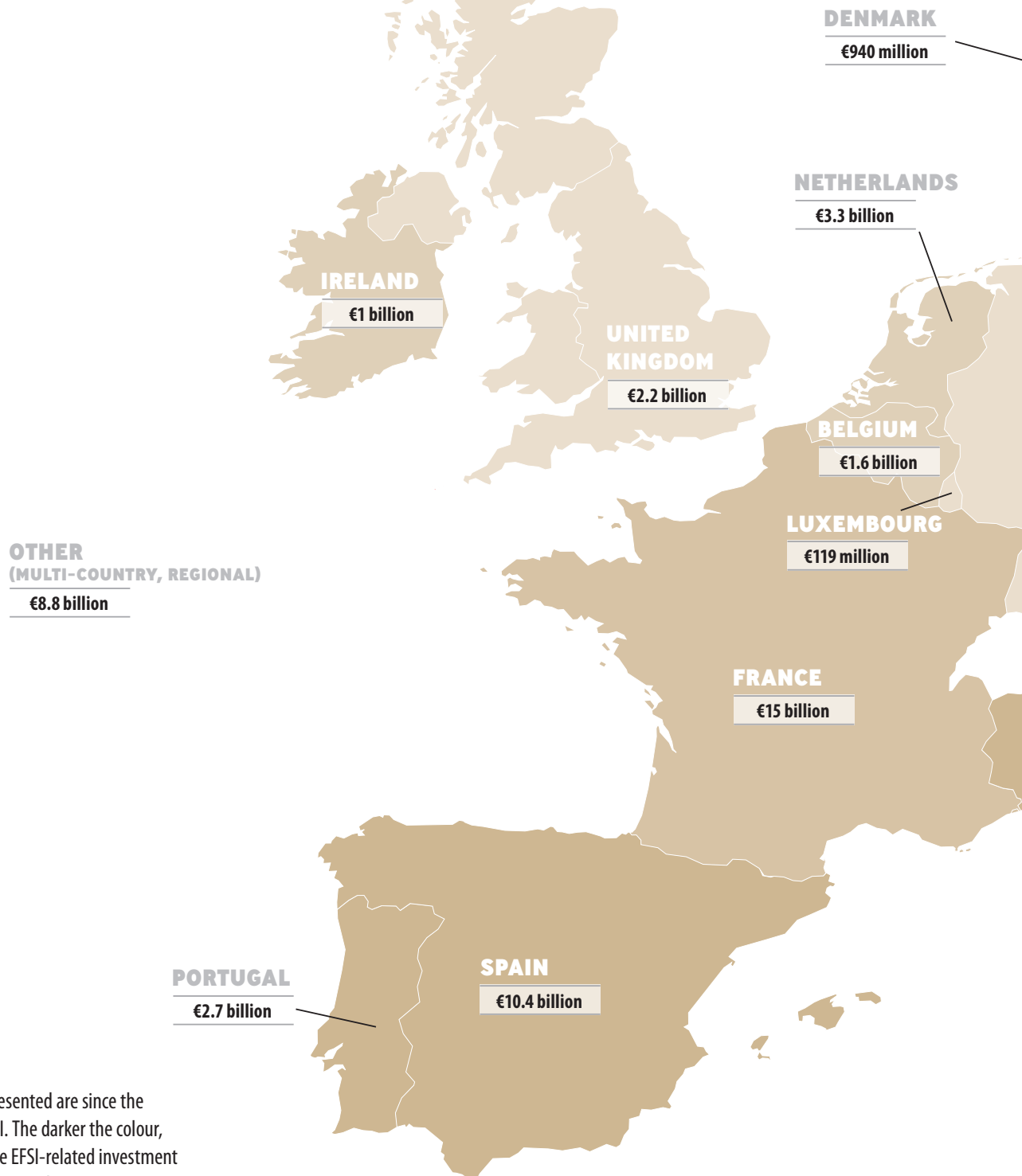


EFTA: European Free Trade Association
 ACP: Africa, Caribbean and Pacific
 OCT: Overseas Countries and Territories
 Darker colours signify higher investment as a percentage of GDP



TOTAL EFSI APPROVALS

TO 31 DECEMBER 2019



All figures presented are since the launch of EFSI. The darker the colour, the higher the EFSI-related investment mobilised compared to GDP (based on approvals).



The European Fund for Strategic Investments (EFSI) is an initiative launched jointly by the EIB Group and the European Commission to help overcome the investment gap in the EU. With a guarantee from the EU budget, EFSI aims to unlock additional investment of at least €500 billion by 2020. As at 31 December 2019, the additional investment stood at €458 billion.

> €1 TRILLION FOR < 1.5°C

In 2019, the European Investment Bank laid out its climate and environmental ambitions for the next decade. Here's our roadmap to meet the climate challenge.

To avoid many more big climate challenges, we need to decarbonise quickly. The next decade will be critical.

Under the Paris Agreement, nearly all governments across the world agreed to keep global warming below 2°C and to fight to limit it to 1.5°C. To reach these goals, we must emit less than 580 gigatonnes of carbon dioxide. At the current rate of about 37 gigatonnes per year, we will have passed this limit by 2032.

Picking up where the private sector left off

The private sector has not been shouldering the costs of stopping climate change. This is why the public sector is taking more action, increasing investment and encouraging people and companies to change their habits. In Europe, investment in energy systems, for example, needs to almost double over the next decade – reaching up to €400 billion per year.

Public banks can invest in long-term infrastructure projects and in the innovation required for the transition to a sustainable future. We can, for example, make investments in a large-scale battery that charges on windy or sunny days and discharges even when there's no sun or wind. Public banks can help sectors where investment is slow, such as making homes more energy efficient.

What the European Investment Bank will do

31% of our financing supported climate action in 2019. We will increase our backing for the climate and sustainability to 50% by 2025 – that's about €30 billion per year. But that will not be enough. Most of the new money to help the climate will have to come from the private sector. The European Investment Bank attracts financing from the private sector for each project. Our stamp of approval encourages other investors, especially private banks, to see that the project is sound.

We aim to mobilise more than €1 trillion to fight climate change and help the environment by 2030.

By the end of 2020, all our financing will be aligned with the Paris Agreement. Our financing will be consistent with a pathway to low emissions and climate-resilient development. In industries where reducing emissions is difficult, we will support projects that help companies shift to a low-carbon model. We will also ensure that all projects manage the future risks of climate change.

OUR CLIMATE ROADMAP AND ENERGY LENDING POLICY

Our new energy policy

By the end of 2021, we will stop supporting conventional fossil fuel projects, such as oil and natural gas production or traditional gas networks.

We will focus on:

- energy efficiency, such as building and home renovation, better road lighting and green transport
- energy supplies that don't cause emissions, which will help Europe achieve its target of getting at least 32% of all energy from renewable sources
- electricity grids that connect new sources of low-carbon energy
- innovation in energy production, storage and use

An inclusive transition

The regions that are most dependent on fossil fuels need more support. Green energy projects will create hundreds of thousands of jobs, but we must pay special attention to regions where coal mines and other carbon-intensive industries employ large numbers of people and support the economy. We must foster training for new careers and give our backing to projects that attract new industries to these areas.

A climate-friendly energy policy can help society. In the European Union, 11% of the population is unable to heat their homes affordably. Millions of people struggle to pay their gas and electricity bills or heat their homes adequately. Older women suffer the most because they have lower incomes and spend more time at home. If we improve the energy efficiency of housing across the continent, this will cut emissions, lower energy bills and make lives better.

Similarly, clean urban transport projects provide affordable transport, but also improve the air and society's health. Investments in climate-friendly farming in regions that don't have a lot of water will reduce the risks of land becoming deserts and jobs moving away.

Sustainable development

We must support climate projects that help the world meet the Sustainable Development Goals.

Investing in the fight against climate change can enhance people's incomes, improve their living conditions and make sure they have enough food and water. We can also lower the need to displace homes because of new hazards such as violent weather and flooding. We can reduce the number of people who are exposed to climate risks and vulnerable to poverty by between 62 million and 457 million worldwide.

We will invest in climate change mitigation projects that have a big impact on people. Small-scale, off-grid renewable energy, such as solar-kit homes in rural Africa, brings electricity to people who have never been connected to power lines. Climate change adaptation projects make bridges and roads stronger, so that they don't wash away during storms and people can still travel to markets or the doctor or work.

We also need to give individuals the power to change. The EIB will continue investing in sectors that improve society, such as healthcare and education, and we will keep supporting women's entrepreneurship and giving more people access to loans to launch a new idea or expand a business.

THE GREEN THREAD

How the European Investment Bank is responding to policy developments in the climate crisis

I am particularly happy with the progress [the European Investment Bank] has made to strengthen its role as the EU climate bank. This will boost investment in European technologies and the solutions the world is looking for.

Ursula von der Leyen,
President of the European
Commission

To achieve the ambition set by the European Green Deal, there are significant investment needs. We will only be able to meet these investment needs if we mobilise both the public and private sectors. In this regard, the EIB will be a main partner, acting as a pool and magnifier of public investments and as an extra security for private investments.

Frans Timmermans, Vice-President
of the European Commission

Climate and environmental sustainability have long been a priority for the European Investment Bank, but in the face of the unprecedented climate crisis and the massive investment required for the transition to a carbon-neutral society we know that business-as-usual is not an option. That is why we have committed to scale up our climate and environment financing to support €1 trillion of investments for these objectives in the next decade. This makes the EIB central to the implementation of the European Green Deal. We are ready to live up to the challenge.

Emma Navarro, Vice-President responsible for climate action, EIB

The European Investment Bank has championed climate action already for quite some time. Climate lending accounted for 31% of the Group's total financing volume in 2019. The Climate Bank Roadmap is currently on the drawing board and work on this will help us refocus our efforts to boost climate lending still more. In the coming year, the Bank will strengthen its engagement in projects contributing to the decarbonisation of industries and transport, climate-related innovation and energy efficiency. To be impactful, the Bank needs to employ new, innovative ways of addressing market needs and achieving policy objectives.

Elina Kamenitzer, head of Division, Climate
Office, Operations, EIB



Climate-related investments will be increasingly important across all sectors and geographies in order to achieve the very challenging 2030 and 2050 objectives. In the last few years, we have already supported decarbonisation efforts by European utilities and fostered the deployment of renewables and the equipment and infrastructure that facilitate it, targeting all technologies and market structures. In the years to come, the European Investment Bank will need to increase its ambition and adapt its financing offer, in order to facilitate the transformation of a wide array of sectors, notably more energy-intensive ones. In addition, the Bank will need to play a key role in those market segments where new innovative technological and financial solutions need to be put in place, such as energy efficiency or renewables. To this end, we can build upon our strong expertise and be ready to respond quickly to market needs and promoters' expectations that we assume the role as an incubator or anchor financier – as the case may be – able to catalyse other financing sources.

Birthe Bruhn-Leon, director, Iberia, Operations, EIB

I would like the term “climate lending” to be understood as sufficiently broad to cover financial instruments dedicated to various parts of the human environment, both natural and social. That means lending towards sustainable development, which of course would include protection of the natural environment, climate adaptation and mitigation – but also the development of education, healthcare and other elements of social infrastructure. This is of particular importance in less developed countries, which see obstacles to their sustainable development coming from various directions and are badly in need of a comprehensive financial toolbox, assisting them on many fronts.

Rafal Rybacki, head of division, EU Neighbouring Countries, East and Central Asia Public Sector, Operations, EIB

On the way to achieving our new targets on climate and environmental sustainability by 2025, we will have to engage more with our clients and key stakeholders to identify new opportunities. This will mean increasing what we do well and developing new projects and products where we have not been as strong. I would expect to see an increased focus on energy efficiency and adaptation, given the high investment needs in both sectors. New products, such as green loans and blended finance instruments to mobilise private investment, should also play a bigger role.

Martin Berg, head of unit, Environmental Funds and Climate Finance Policy, Operations, EIB

COLD FUSION? YOU'RE GETTING WARMER

Renewable energy sources may not be enough to replace fossil fuels and to meet long-term demand. We must look for other sources of energy. But what is fusion energy, how does it work, and is there such a thing as cold fusion?

You may have heard about cold fusion, the idea that atoms can be fused together without using any significant heat or other type of energy and yet producing a great deal of energy. This philosopher's stone has been the object of the quest of many a modern-day alchemist, so we shall leave it to them.

Hot fusion, however, is real. It's what happens inside the sun and other stars. Nuclei of atoms crash into each other at great speed, resulting in fusion and a great deal more energy released. Research and development into fusion energy is trying to create similar reactions here on Earth at over 100 million degrees Celsius.

The opposite of nuclear fission

Fusion energy, in a way, is the opposite of what we conventionally call nuclear energy – although fusion energy also deals with the nucleus of atoms. In current nuclear power plants, the energy comes from splitting the atom. Fusion, as the name suggests, produces energy not by breaking atoms apart, but by fusing them together.

The real difference comes from the kind of elements involved in these processes. What we know as nuclear energy requires elements with big, heavy atoms like uranium or plutonium that can be split into smaller atoms. However, uranium, plutonium, and their fission products are radioactive, which means that when they decay they emit ionising radiation, which in certain circumstances might be dangerous to humans.

Fusion energy instead is based on combining two lightweight atoms – usually hydrogen. When two hydrogen atoms fuse, they create helium. So not only does fusion energy rely on the most abundant element in the universe, the main danger of the by-product is nothing more than sounding ridiculous if you inhale it.

Try pushing two magnets together

How do you fuse two atoms? The challenge comes from the fact that the nucleus of an atom contains positively charged protons and neutral neutrons, as you will surely recall from your physics class. Therefore, the nucleus of an atom will always carry a positive charge. Trying to combine it with

INNOVATIVE ENERGY GENERATION

“ The scientific advances towards fusion energy are not likely to occur like the apple falling on Newton’s head. You need many more resources. ”

Istvan Szabo, EIB senior engineer in energy security

another one with a positive charge is like trying to push two magnets towards each other. They will resist. This is why fusion energy uses the lightest atoms possible. But it is still very hard.

Inside the sun, fusion occurs because the immense gravity draws atoms together, creating extreme density and enormous heat, which makes the atoms collide with each other at great speed. The force of gravity is much weaker on Earth, because of the relatively small size of this planet, and the temperature – despite global warming – is nowhere close to the heat of the sun. So how can we create similar conditions here for fusion to occur?

Hotter than the sun

The answer is fairly obvious. To make up for our lower gravity, you simply have to create a temperature hotter than the sun. Six to ten times hotter, up to 150 million degrees Celsius. Here on Earth this tremendous heat will create the conditions to allow the hydrogen atoms to bump into each other, resulting in fusion and generating even more energy. Sounds easy? There are quite a few details that need to be ironed out.

First issue: where could you create such a temperature, so that the heated substance wouldn’t destroy everything it touches? Again, the solution is simple: don’t allow it to come into contact with anything. To achieve this, Russian scientists in the middle of the 20th century developed the *tokamak*, a chamber the shape of a hollow doughnut, surrounded by powerful magnets.

Inside this chamber, the hydrogen gas is heated to an extremely high temperature and transformed into a plasma state. The plasma state is one of the four fundamental states of matter, in which the gaseous substance becomes ionised – because electrons orbiting the atomic nuclei are stripped away. The ionised matter is electrically conductive and therefore the magnetic fields can dominate the behaviour of the matter. That is where the magnets come in. Magnets can keep this electrically conductive substance from approaching the *tokamak*’s walls, hovering above it. Inside the plasma, the conditions are suitable for the atoms to bump into each other and to fuse, releasing energy.

The world’s largest experimental *tokamak* nuclear fusion reactor – called ITER – is under construction in France, to prove the feasibility of thermonuclear fusion as a large-scale and carbon-free source of energy. ITER is an international research and engineering megaproject involving the

European Union, China, India, Japan, South Korea, Russia and the US. If successful, the facility will turn 50 MW of power inserted into the system – to initially heat the plasma – into fusion power output of 500 MW.

A lot of doughnut

The ITER reactor will be huge:

- the ITER *tokamak* will be as heavy as three Eiffel Towers;
- the structure of the 1 000-tonne electromagnet in the centre of the machine must be strong enough to contain a force equivalent to twice the thrust of the Space Shuttle at take-off (60 meganewtons, or over 6 000 tonnes of force);
- there will be 18 D-shaped electromagnets around the doughnut-shaped *tokamak* chamber, each of them 17 metres high and 9 metres wide, weighing 310 tonnes, the approximate weight of a fully loaded Boeing 747-300 aeroplane.

But how could we get that enormous energy out of the doughnut and safely channel it into our homes as electricity? This is done via the main chamber wall and a region called the divertor, positioned at the bottom of the *tokamak*. The divertor controls the exhaust of heat, waste gas and impurities from the reactor and withstands the highest surface heat loads. The surface of the divertor is covered by tungsten, the metal with the highest melting point (3422°C).

In 2019, with the backing of the European Fund for Strategic Investments, the European Investment Bank signed a €250 million loan to the Italian research agency ENEA to help build the divertor and *tokamak* test facility. The plant will test various alternatives to exhaust the huge amount of heat flowing into the divertor component of a nuclear fusion reactor.

A glorified steam turbine

Researchers continue to look for alternatives, but as it stands now the whole process of transitioning the heat to electric power then becomes rather old-fashioned. The heat received by the plasma-facing wall and the divertor will be used to turn water into steam, which will drive a steam turbine. The turbine is connected to a generator that produces the electricity to be fed into a grid.

“The scientific advances towards fusion energy are not likely to occur like the apple falling on Newton’s head,” says Istvan Szabo, a senior engineer in the European Investment Bank’s energy security division. “You need many more resources.”

Szabo concedes it is possible that tomorrow someone will come up with a completely different solution to harness fusion energy, or a different answer to the need for sustainable energy to power us into the future. “There are other ideas to compress matter and fuse atoms. For example to use lasers or mechanical compression. And maybe someone will one day solve cold fusion,” Szabo says. “But testing these will all require immense resources. Thermonuclear fusion is furthest along the research and development phase. It offers the most hope.”

“ The plant will test various alternatives to exhaust the huge amount of heat flowing into the divertor component of a nuclear fusion reactor. ”

Investment to power energy

So we're getting warmer with the quest for fusion energy, but fusion power is just one of several innovative energy projects that the EIB is financing.

The EIB invested more than €30 million in junior and senior shares of the responsibility Access to Clean Power Fund. The fund is expected to finance companies offering pay-as-you-go solar lanterns and other off-grid solar power systems for homes and businesses, mostly in sub-Saharan Africa and Southeast Asia. These systems allow low-income families, for example, to run small refrigerators and other appliances. They can pay for the solar power system in small instalments, while the fund finances the provider for the upfront cost of purchasing the system.

Due to the high risk of the investments, the fund has several layers of shares. The most risky layer is the junior share level in which the EIB invested. The purchase of the junior shares thereby reduces the risk of the fund for other investors who buy senior shares. In this way, the EIB's involvement attracts significant private capital to the fund. Over the lifetime of the fund, clean power is expected to be provided to more than 150 million people.

The EIB also invested €50 million, under the European Commission-supported InnovFin, in an equity fund targeting innovations that could significantly reduce greenhouse gas emissions. Other investors in this fund, called the Breakthrough Energy Ventures Europe, include Bill Gates and a number of other ultra-high net worth individuals.

The connection between these varied projects: they're making the future more climate friendly.

5G FOR FUTURE GENERATIONS

The fifth generation of mobile technology will bring gains in energy efficiency, which is good news for the first generations of people to care about climate change

If you have a working internet connection, you will have seen a barrage of headlines over the past year about the fifth generation of mobile communications. You may have been wondering: Do I really need to take a break from scrolling Instagram, listening to Spotify and mining Bitcoin on my 4G-connected devices to pay attention to all this?

If you care about climate, as the European Investment Bank does, the answer is yes. Which is why last year we signed a second €250 million loan backed by the European Fund for Strategic Investments with Ericsson for research and development on the company's systems for the next generation of mobile communications.

Reduced energy cost for networks

EIB experts classified 23% of that loan as climate action, based on the investments into the development of 5G energy efficiency features. A recent research paper demonstrates that, depending on whether the mobile station is in a low, medium or high data traffic area and its specific configuration, migrating all that traffic to a 5G network could bring about a 50% to 95% reduction in its energy consumption.

"Energy cost, together with the site rental cost, are the two largest operating expenses for these mobile network base stations, so this is a big deal for the operators," says Anders Bohlin, the EIB's lead economist in the digital infrastructure division. "So 5G provides operators with an economic incentive, as well as a climate incentive. That's important for them, since a lot of customers are giving their operators quite a bit of stick for all these deals encouraging you to switch phones every two years, which is not considered very sustainable. Operators are trying to improve on their environmental conscience."

Lower phone bills? Put that idea on hold

So will customers also see their phone bills decrease with 5G? Probably not, Bohlin predicts. Customers will simply get a faster, better service, and end up using more data.

That's because improved energy efficiency is not the only improvement 5G will bring over 4G. The International Telecommunication Union's performance requirements for next generation communications see a 10 to 100-fold improvement over 4G technology. For example, the number of devices that can connect to a network within a square kilometre should increase from 100 000 to one million. That translates to one device per square metre. Peak data speeds should increase to 20 Gigabytes per second.

So what will we be able to do with all this increased speed and efficiency?

Manuel Tarazona Cano, senior engineer in the digital infrastructure division of the European Investment Bank, says that, while virtual reality, augmented reality, the internet of things and connected cars are already possible, 5G's greater performance could finally unlock their true game-changing potential.

Tactile internet

One of the most promising new fields explored is the tactile internet, according to Tarazona. The tactile internet refers to the careful monitoring of minute movements of your body to allow you to control physical objects at a distance, while providing real-time sensory feedback.

"Think telesurgery, or robots controlled remotely by moving joysticks, pushing buttons, or even by your own gestures," Tarazona says. "We will be able to control objects remotely through our own movements and receive credible feedback mimicking physical contact with the object – but only if the mobile signal reaches that object and provides feedback to us in something close to real time."

The time that it takes for a wireless signal to travel through a network is called latency, and it is another parameter of 5G that will improve tenfold – to one millisecond.

Avoiding the interference from cat videos

Another feature of 5G, "network slicing," will enable networks to give priority to services requiring real-time reaction, while continuing to manage services that only require the standard response time, like watching YouTube videos. This feature would allow the network to identify telesurgery traffic, for example, and direct that traffic to a "slice" on a "fast track" path.

Tarazona says that the telecom industry and public entities are making a big effort to stimulate innovative services by putting in place fully fledged trial 5G networks for industry experts and application developers to explore their craziest, most creative ideas without being limited by current mobile technologies. This makes it likely there will be still more innovation to come.

Number of investments

Which is another reason why the European Investment Bank has been enthusiastic in financing 5G adoption.

In 2019, the Bank signed a €300 million tranche of a €450 million loan to Telefonica and a €275 million loan to Deutsche Telekom for rolling out 5G in Germany. We also signed a €300 million loan to KPN to develop 5G in the Netherlands, and a €90 million deal with the operator DNA for 5G in Finland.

An EIB study launched last year estimates the cost of rolling out 5G and fibre infrastructure across the continent at around €350 billion, with around a third of this figure potentially coming from already expected private funding. Europe is still investing less in telecoms and technology than other regions, with an annual investment volume in mobile networks estimated at around half that of the US on a per capita basis, so the EIB expects to remain active in this sector in the near future.

“ 5G provides operators with an economic incentive, as well as a climate incentive. ”

Anders Bohlin, EIB digital infrastructure lead economist

AN ELECTRIFYING RACE

Electric transport is developing faster than you might think

Q EV has two things in its blood: racing and innovation.

One of its founders was former Formula One driver Adrián Campos, and it still works on racing technology for competitions like Formula E, the electric version of Formula One. But the Barcelona-based company recently turned its attention to a less glamorous vehicle: the minibus. In particular, the diesel-spewing kind found in some of the developing world's biggest cities.

The idea is simple. QEV develops and provides the complete powertrain (the motor and other components that power and control the vehicle) and battery pack of an electric vehicle. Local bus manufacturers place their new minibus body on top.

"The people who build buses really build bodies on top of structures," says Miguel Valdecabres, QEV's chief executive. "We are providing them with a low-cost electric platform that allows them to continue what they are doing today: to put a body on top of a platform."

In the Philippines, QEV is working with a local partner, Global Electric Transport, on an electric vehicle to replace the country's iconic jeepney, the colourful minibus that forms the backbone of public transport. The government is phasing out the country's roughly 220 000 diesel jeepneys, which were originally built out of US military vehicles left over from World War II.

One of the world's most polluted urban centres, Manila isn't the only city in the developing world moving to electric. QEV also has an order for 150 bus platforms from Lima, Peru, and has its sights on Malaysia and Indonesia. **The European Investment Bank is supporting QEV with a €17 million investment.**

Valdecabres says the move toward electric vehicles is happening faster than people think. "It's not going to be a 10-year transformation," he says. "It's going to be a three-year revolution."

Electric incursion

Revolutions ebb and flow and electric transport is no exception. The industry faces big challenges, namely the high cost of electric vehicles, the lack of charging infrastructure and a limited range of models to tempt consumers. While sales of electric passenger cars are growing rapidly in Europe – sales rose 45% in 2019 – market penetration remains low.

"We started from nowhere, but we are at the point where sales are increasing at a rate close to 50% every year," says Stéphane Petti, EIB innovative transport specialist. "There is a clear pickup now."

One way to tip the car market toward electric is to encourage leasing companies to make the switch. Leasing accounts for some 15% of new car sales in Europe. For that reason, the European Investment Bank is supporting **ALD Automotive**, the largest car leasing firm in Europe, with a €250 million

investment to help pay for 15 000 new electric vehicles. ALD plans to increase its fleet of green vehicles from 118 000 in mid-2019 to 200 000 by the end of 2020.

For ALD, the move to green vehicles is risky. The business model of leasing companies is highly dependent on the resale or residual value of their cars after the leasing period, but the resale market for electric vehicles is young. "If I purchase a car at €40 000, how much am I going to sell it for? €25 000? €15 000?" Petti says. "If my estimate turns out to be wrong, I can go out of business quite fast."

Solving the electric puzzle

The electric car market has developed slowly in Europe, compared to other markets, such as China. That lack of development (along with the lack of available infrastructure) has limited the number of electric models available. "For many years, every automaker was doing a small pet project and nothing was picking up speed," says Aris Pofantis, lead engineer in the EIB's Innovation and Competitiveness department. Automakers have now realised that in order to meet the carbon dioxide emissions regulations the efforts in electrification need to increase substantially. "Even those carmakers that weren't so keen on electric are now starting to put a lot of money into it," Pofantis says.

“ Even those carmakers that weren't so keen on electric are now starting to put a lot of money into it. ”

Aris Pofantis, EIB Innovation and Competitiveness lead engineer

Petti expects 200 new car models to be released in the next two to three years. "This choice will further accelerate the take-up rate," he says.

The last part of the electric puzzle, the charging infrastructure, may be the most daunting. The number of charging stations in the European Union has surged, but Europe will still need to radically expand if electric vehicles really take hold.

The European Investment Bank has signed several projects over the past two years with companies such as **Allego, Greenway, BeCharge and Enel X** to support the deployment of this infrastructure with a total of €200 million. Meeting the EU ambition of one million charging stations by 2025 would require close to €10 billion of investment, Petti says. While €10 billion sounds like a huge amount, it's "very tiny" compared to the total cost of Europe's transport infrastructure investment, he says.

Mobility as a service

New shared transport services are popping up every day, and most of them are electric. Even the bike is getting an electric boost. Fazua, a small German company, has developed an electric powertrain for bicycles contained in a single compact unit that weighs only 3.3 kilos. It allows racing bikes to remain sleek, while increasing their mobility. The Bank signed a €12 million loan to Fazua in 2019.

With all the options available to them – shared bikes, scooters, cars, and even the pumped-up racing bike that are complementing public transport – younger generations are showing less interest in buying a car than their parents did. To them, a car is a service they pay for, not something they own. "It's more of a convenience and a practical matter of how do I get myself from A to B," says Aleksandar Mihajlovic, the EIB loan officer responsible for QEV. "The future is mobility as a service."

THE GREEN THREAD

The European Investment Bank is working on new financing ideas to meet the climate challenge

We need to come up with value propositions that go beyond straightforward funding. That means risk-taking, risk-sharing and strong advisory. To develop new, more flexible products, we have to listen to our clients and build on their suggestions. Close cooperation with other financiers – and in particular within the EIB Group with the European Investment Fund – will be key to achieving our ambitious targets.

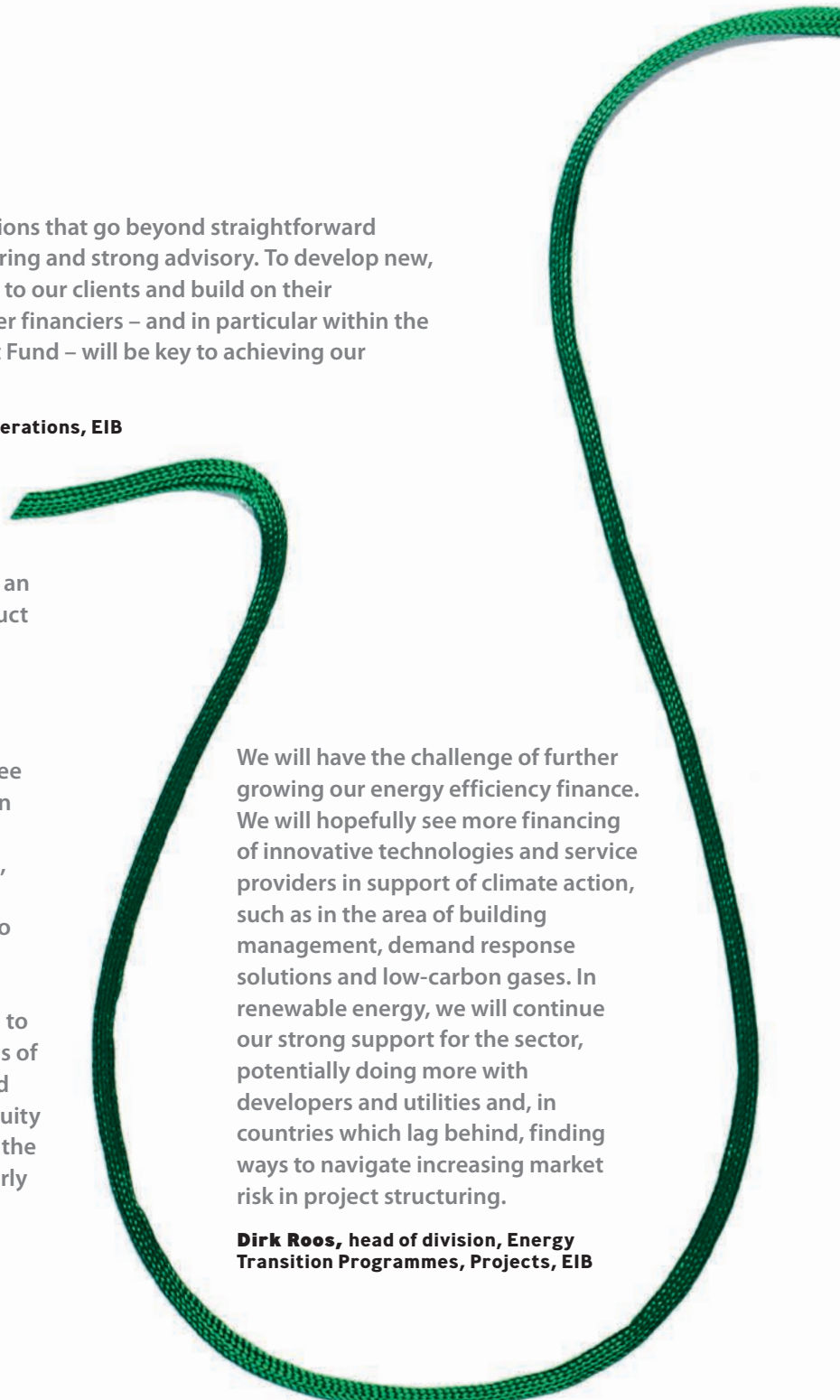
Heinz Olbers, director, Western Europe, Operations, EIB


We expect Advisory Services to play an increasing role in pipeline and product development in support of the EIB Group's climate and sustainability ambitions. While we will certainly continue to help prepare energy transition projects, we equally foresee more advisory focus on innovation in this area – not only as the circular economy moves from niche to norm, but also as new technologies and digital business models contribute to tackling the challenges of climate change. To back up these developments, we also see the need to support the emergence of new forms of partnership between the private and public sectors, harnessing the ingenuity of entrepreneurs, while recognising the public role in helping to shoulder early stage risk.

Simon Barnes, director, Advisory Services, EIB

We will have the challenge of further growing our energy efficiency finance. We will hopefully see more financing of innovative technologies and service providers in support of climate action, such as in the area of building management, demand response solutions and low-carbon gases. In renewable energy, we will continue our strong support for the sector, potentially doing more with developers and utilities and, in countries which lag behind, finding ways to navigate increasing market risk in project structuring.

Dirk Roos, head of division, Energy Transition Programmes, Projects, EIB





Advisory and technical assistance will be a key ingredient in the success of the EIB Group's climate ambitions, helping to identify market opportunities to either innovate or scale up our intervention. It will also be about helping our partners – banks and others – to better understand and apply greening investment opportunities, helping in turn their clients on the ground. In energy efficiency, for example, we all know that non-financial barriers are more important than financial ones – hence the need for more targeted technical assistance linked to identifying, preparing and aggregating projects for investment. This I see as our big opportunity for the future under the European Green Deal.

Frank Lee, head of European Investment Advisory Hub division, EIB

During 2019, the European Investment Bank significantly increased its lending activities in Latin America to enhance its support for European Union development aid and cooperation policies – with an increased focus on climate action. Signatures included a climate action framework loan with a regional development bank, a loan to a regional water company and a framework loan with a European-owned company to construct wind parks. Our operations in Latin America are in line with the priorities of the EU, which is climate action and environment, sustainable investments and, more recently, support for the efforts of countries that are hosting displaced people from Venezuela.

Kristin Lang, head of division, Latin America and Caribbean Public Sector Investment, Operations, EIB

Effectively acting on climate change requires a deep transformation in both production and consumption modes. A transformation that is only made possible by the development, scaling and uptake of low-carbon technologies and digital technologies. This is where the European Investment Bank can play a crucial role: by putting our efforts into de-risking projects to accelerate cutting-edge (that is, high-risk) innovation.

Laura Piovesan, director, Innovation and Competitiveness, Projects, EIB

GET USED TO IT

Even if we invest in innovative climate action, the impact of global warming will still be severe. Projects aimed at helping people and places in developing countries adapt to these dramatic effects are increasingly important.

Much climate action focuses on cutting carbon emissions. But some effects of climate change are already happening, with often disastrous consequences. Projects that adapt people and places to these climate impacts are vital to the fight against global warming. This climate change adaptation doesn't get as much media attention as electric cars, solar energy or wind farms, but it is just as important.

Adaptation involves infrastructure, such as stronger bridges to withstand floods, new offices that use less energy or better roads that don't wash away in storms. It can mean the simple addition of air conditioning in schools in Asia, or be as complicated as installing storm-drain systems throughout an African city. Adaptation ranges from agriculture and education, to healthcare and water supply, to countering desertification and coastal erosion.

Island states or vulnerable regions in Asia and Africa need special assistance adapting, because they will be hurt most by climate change. They already suffer from rising sea levels, wildfires and more devastating storms.

"Adaptation helps people avoid the worst impacts of climate change," says Nancy Saich, chief climate change expert at the European Investment Bank. "But this work is not easy, so we are working more with our clients to understand their vulnerability to climate change and how we can help them take measures to build up their climate resilience."

More technical help and more money

Across the globe, countries and cities are starting projects to prepare for the effects of climate change. Many of these projects need technical help and much more financing to succeed.

In **Laos**, flooded roads cause huge problems every year. Landslides and flooding in the country cause frequent road closures that can last several weeks, preventing people from getting food at the market or visiting the doctor, while children often can't attend school. The government is improving 1 400 kilometres of roads in rural areas to fight flooding and to repair damage from previous rains. The new roads will be stronger, use better materials and have improved drainage to reduce the number of road closures during bad rainstorms.

"Developing countries are vulnerable because repairs and designs are not always based on extreme weather predictions, and the construction standards may be low because of budget constraints," says Meryn Martens, a senior transport specialist at the European Investment Bank.

“ **Developing countries are vulnerable because repairs and designs are not always based on extreme weather predictions, and the construction standards may be low because of budget constraints.** ”

Meryn Martens, EIB senior transport specialist

The European Investment Bank signed a €20 million loan in 2018 and a €100 million loan in 2019 to help Laos build these new roads, better signs, footpaths, pedestrian crossings and lighting. The investment will help more than 1.6 million people. “This project will benefit communities across Laos,” says Kikeo Chanthaboury, vice minister of planning and investment for the country.

Hurricane adaptation

A similar adaptation project in the **Dominican Republic** is rebuilding roads and other infrastructure damaged by a hurricane in 2016 and flash floods in 2017. This project aims to build 1 100 affordable houses, 55 kilometres of roads and four kilometres of flood-prevention infrastructure. The project will also help communities integrate climate adaptation into municipal planning. The European Investment Bank signed a \$50 million loan for this project in July 2019, and the European Union provided a €20 million grant. Across the island in **Haiti**, the European Investment Bank approved a €25 million loan in April 2019 to rebuild roads and bridges destroyed by Hurricane Matthew. This project will also receive an EU grant.

Increased water shortages

Water is another important adaptation issue. **Lesotho**, for example, is experiencing extended droughts and increased water shortages because of climate change. Many people in this African country do not have access to safe water and often have to walk for hours just to reach drinking water. One project in the country’s lowlands, where about two-thirds of the population lives, is improving access to potable water and sanitation. The project will improve river intake systems, water treatment plants, transmission pipes and pumping stations. The European Investment Bank approved an €82 million loan in 2019 for this project.

The EIB also supports innovative investment funds that are tackling adaptation challenges. A new fund called CRAFT, the Climate Resilience and Adaptation Finance & Technology Transfer Facility, is developing new technologies and specialised services to help developing countries address droughts, bad weather, disease, wind and solar energy. The European Investment Bank invested \$30 million in CRAFT and also deployed €5 million via the Luxembourg-EIB Climate Finance Platform as risk capital that catalyses more money by drawing in private investors.

Adaptation is, in fact, a good example of how the European Investment Bank’s development work enables it to share European knowledge and innovation, while also advising on projects that are tailor-made for developing countries.

CLIMATE CHANGE IN THE CITY

Urban climate adaptation is the next step for European cities that need to protect themselves – and their citizens – against the inevitable effects of climate change. Here are some ideas about how to do it.

The risk of floods and other increasingly extreme weather events is a major headache for planners in historic cities, who can do little to change the dense, narrow streets of old centres. That's why Florence, whose centre is about as historic as they get, is putting into effect a plan to create areas around the Ema, a tributary of the city's biggest river, the Arno, that will sop up future floods like a sponge. When the river isn't in flood, these areas will be parks to be enjoyed by citizens.

It's a clever plan and it's something that more and more cities all over the world are going to be doing. **Cities are adapting to the consequences of climate change with nature-based solutions that also make the city more attractive and pleasant for residents.** The European Investment Bank has a long relationship with Florence, making many loans to the Tuscan city over the decades. Recently the Bank has responded to climate change by encouraging all kinds of borrowers to think about what the climate crisis means for them.

Florence and urban climate adaptation

Cities need to face up to the often disastrous impact of climate change as it already affects them – and as it's likely to continue doing in coming decades, even under the most favourable scenarios. **This adaptation to climate change is important in cities, because of the economic and social consequences of floods or extreme heatwaves on unprepared populations.**

Here's how the European Investment Bank worked with Florence in an advisory assignment completed in 2019 on the definition of its climate strategy and climate-resilient projects that could be financed by the Bank.

Through the **European Investment Advisory Hub**, a partnership between the Bank and the European Commission, we recruited a consultant to work with the Florence municipality to improve upon a planned flood protection scheme, so that it would also tackle additional climate change risks. The study aimed to create new Green-Blue infrastructure on the Ema river for a range of measures from reduced heat island effects to improved water quality and increased biodiversity. In short, the study developed a plan to improve the capacity of the area around the Ema outside the city centre to absorb rising water levels. This would lead to less damaging floods in the city centre.

With the study's help, Florence coordinated with two smaller municipalities on its borders and developed a project that utilises a park around the banks of the Ema for a **nature-based solution** to the problem. **Instead of building concrete tanks to collect flood water, they built hills and**

URBAN CLIMATE ADAPTATION

// **Florence developed a project that utilises a park around the banks of the Ema for a nature-based solution to the problem.** //

valleys in a park that can absorb the flood and, when there's no flooding, double as a place for recreation, including bike paths.

Adaptation in Athens

Athens is a good example of a city that has really made adaptation central to its resilience strategy.

The urban fabric of Athens is made up of dense constructions that cover 80% of the city's surface. So much asphalt and concrete retains heat during the extended heatwaves to which the city is increasingly exposed. These **urban heat islands** in the city centre can be more than 10°C warmer than the suburbs. But asphalt and concrete are not just a liability when the weather's hot. They also stop water seeping away into the ground during rainstorms. The result: frequent local flash floods.

The city set out to solve these problems, which are the result of climate change. Athens is entering into a set of innovative climate adaptation projects financed by the **Natural Capital Finance Facility**, a programme run by the European Investment Bank in cooperation with the European Commission that focuses on nature conservation, biodiversity and adaptation to climate change through nature-based solutions. The project also includes advisory work from the European Investment Advisory Hub that was completed in 2019.

The Athens Natural Capital Finance Facility project is expected to create at least 25% more green areas and introduce several climate adaptation measures that include birdhouses and trees. Green corridors are very important for biodiversity, because they allow species and air masses to move.

They're also very pleasant for city residents.

PROJECT VOICES

THE GREEN THREAD

The European Investment Bank gets things done. What kinds of climate projects do our experts expect to be working on in the near future?

The transport sector is undergoing a period of profound change as it deals with the twin challenges of decarbonisation and digitisation. At the same time, we are addressing a decade of underinvestment in basic infrastructure. The European Investment Bank's role and opportunities in the sector will therefore be even more important in the next few years, and the Bank is well-placed to play a pivotal role in transforming transport. Our support will intensify for cleaner and safer transport, and this will involve new products and clients. At the same time, it will remain a priority to support the basic transport infrastructure necessary for the functioning of the new green economy. The next few years will be critical and challenging and we can look forward to the EIB playing a central role.

Gavin Dunnett, director, Mobility, Projects, EIB

We expect to finance more projects related to climate change adaptation that will complement the strong track record of the European Investment Bank in renewable energy projects in Africa, the Caribbean and Pacific, Asia, and Latin America. Developing countries are becoming more aware of the disastrous consequences of climate change for their people and their economies, and we see more demand for projects that build resilience – better use of water, resilient infrastructure for extreme weather conditions, crop adaptation, reforestation, economic diversification, and so on. The next challenge for these regions is to embed energy efficiency considerations and circular economy solutions into their plans for urban development and industrialisation.

Maria Shaw-Barragan, director, Global Partners, Operations, EIB

I cannot stress enough the importance of climate adaptation. Flood protection is a good example. Many of the Bank's beneficiaries live in coastal areas and are particularly vulnerable to the effects of climate change. Adaptation also means looking at water supply. By 2025, 800 million people will have to cope with water scarcity. We always consider how the availability of water resources will evolve over time and we adapt by diversifying the sources. Water is necessary to sustain life and economic development. The depletion of water resources has an impact on everything, not just water from the tap. Without water, industrial and agricultural production and business growth slow down, and social tensions arise. Society as a whole – not only those working in the water sector – has to think about water and its supply in the future.

Karine Measson, head of division, Water Management, Projects, EIB

Cities are increasingly getting their climate strategies in place, understanding their climate vulnerabilities, and so are more able to propose climate-oriented projects for financing. At the same time, we are seeing innovation through new kinds of projects (for example, integrating nature-based solutions into urban investment), new business models (such as companies providing circular economy services) and intermediaries which are more interested in structuring facilities that target climate action. The Green Deal puts a strong emphasis on renovation – in the urban context, we can expect to see greater emphasis on building renovation, for example in social and affordable housing. Circular economy and circular city initiatives are also ramping up and we think that this could increase recycling, brownfield regeneration and green buildings, which can contribute to climate action and environmental sustainability. Outside the EU, we are also seeing efforts by cities and city networks to focus on climate action planning, and we expect to see growth in investments contributing to urban climate action through sustainable mobility, urban resilience measures such as flood control or drought resistance, or energy efficient buildings.

Gerry Muscat, head of division, Urban Development, Projects, EIB

Climate change manifests itself predominantly through less or more precipitation over and above the normal seasonal variations, so the water sector is one of the most affected. The sector has always taken climate variances into account, but the hydrological dataset is now changing with longer dry spells and increased floods. There are already smarter solutions, such as sacrificing land for “room-for-the river” flood-peak shaving or treating wastewater for re-use in irrigation. With continued urbanisation and pressure on our environmental systems, water security can only be guaranteed by anticipating the changes in what is already the sector’s main design parameter: climate.

Thomas van Gilst, head of division, Water Security and Resilience, Projects, EIB

For corporates in Spain, we still see some potential for near-zero energy buildings and energy efficiency-related refurbishment investments by real estate investment trusts. We also identify some potential in financing photovoltaic installations by companies for their own electricity consumption (driven by a recent change in Spanish law). We could see more clean-fleet investments from bus operators or other companies operating vehicles. The financing instrument for these (mainly mid-cap) corporates will primarily consist of senior loans.

Martin Arnold, head of unit, Iberia Corporates, Operations, EIB

In Egypt, the Bank has a large portfolio of projects in sectors related to climate mitigation (water treatment, environmental abatement and transport). For the coming year, the Bank will increase and expand its presence in these sectors, notably transport. The country has high levels of pollution and is experiencing fast-growing demographic pressure – Egypt’s population will reach 100 million in 2020 and is projected to exceed 200 million by the end of the century. Public authorities are increasing actions to provide reliable and sustainable services that are efficient and carbon-free. The Bank’s technical and financial support in these areas is really appreciated.

Alfredo Abad, head of Cairo office, EIB

A PRESCRIPTION FOR CLIMATE ACTION

Good healthcare ideas often have trouble raising money to go beyond the early research. EIB investment tackles this problem.

Climate change can exacerbate the problems NGOs and scientists face trying to tackle major diseases. Take malaria. Warmer temperatures are increasing mosquito populations, so biotechnology companies are investing in new tools to prevent and treat malaria in Africa.

Each day in Africa, around 700 children die from malaria, one of the most lethal infectious diseases on the continent. Research and development in malaria is hampered by a €1.8 billion to €2.7 billion deficit in funding, mainly for scaling up products. This shortage is made worse by increased resistance to insecticides used on bed nets and to some of the most effective drug treatments.

“Extreme heat is directly related to several diseases, including cardiovascular and respiratory diseases and asthma,” says Felicitas Riedl, the EIB’s head of life sciences. “The rise in temperature is a consequence of climate change and the impact on the health of societies will increase. Concretely, climate change affects the social and environmental determinants of health – clean air, safe drinking water, sufficient food and secure shelter. Our projects try to address the impact of climate change.”

There are many promising projects from biotechnology and pharmaceutical companies researching vaccines and other biological approaches to the prevention of malaria. These early-stage projects often struggle to find financing. But they have received support from the EU Malaria Fund, a €240 million investment instrument involving the European Union, international organisations, corporations and civil society. The fund was created in 2014 by the KENUP Foundation, a global organisation promoting innovation in Europe.

The European Investment Bank signed in 2019 to invest €111 million in the EU Malaria Fund. “We want to fill a market gap and accelerate new solutions that are critically needed to fight malaria and protect global public health,” says Anna Lynch, an EIB healthcare expert.

The Bank is also supporting Gavi, a vaccine alliance that works to increase immunisation against 17 infectious diseases in poor countries. Each year, millions of children do not receive routine vaccines, leaving them vulnerable to disease. Gavi has vaccinated more than 760 million children since it was created 20 years ago. Its goal is to decrease the health impact of climate change by increasing the resilience of communities most at risk. It wants to immunise 300 million more children in the world’s poorest countries from 2021 to 2025, saving more than seven million lives.

Vaccination programmes in poor countries face many challenges, such as identifying people who have not been immunised, keeping the vaccines at the right temperature during transport, and ensuring that healthcare workers giving the vaccines are properly trained. All countries supported

by Gavi pay for part of the vaccines, based on their per capita income. The European Investment Bank is helping Gavi's vaccination programme with a \$200 million guarantee facility.

Keeping hospitals up and running

What does climate change have to do with hospitals? More than you think. On the one hand, hospitals treat patients with illnesses caused by climate change. Conversely, they contribute to climate change.

The climate crisis affects public health, as well as the way we deliver care. Hospitals need to withstand service disruptions and temporary evacuations caused by heatwaves, wildfires, drought and floods. All over the world, doctors and nurses have to anticipate and treat new illnesses.

Most healthcare facilities are not climate-friendly. They produce large quantities of medical waste and use up a lot of energy for ventilation, heating, cooling, lighting and machinery. Some hospitals are taking steps to reduce their climate footprint.

The clinical centre in Rijeka, a major hospital in Croatia, is scattered among 60 old buildings in three locations across the town, causing unnecessary ambulance trips through heavy congestion. The hospital serves 600 000 residents around Rijeka and hundreds of thousands of people on holiday.

In 2019, the hospital broke ground on a new, modern building that will bring all its activities together in a single location. The project will upgrade and build up-to-date service facilities, including a thermal power block, a kitchen and parking areas. The new building is expected to reduce electricity use by 40% and gas by 50%, and save 30% of water. Newborn babies will no longer be transferred between hospital services that are nine kilometres apart. Instead, they'll move comfortably from one room to the next. The hospital received a €50 million EIB loan and advice from the European Investment Advisory Hub in 2019.

Holistic investment approach

To improve our health, we usually think of balanced diets, new medicines and drugs. The quality of the world around us may not immediately spring to mind. Eiffel Essentiel, an investment fund in France, is helping businesses in renewable energy, sustainable agriculture – and healthcare.

With a lifespan of up to 15 years, the fund will provide long-term growth capital to innovative firms. Fabrice Dumonteil, Eiffel Investment Group's managing director, says that innovative companies pursuing ambitious industrial investment projects need time to grow and develop. The fund plans to support 20 firms. The first potential investments include **an agrifood company that specialises in treatments for specific illnesses.**

Eiffel Essentiel is raising €200 million to €250 million in an initial investment round, but the fund's target size is €400 million. The European Investment Bank is contributing €80 million under the European Fund for Strategic Investments.

“ Every two minutes a child dies from malaria. It is imperative that we disrupt the status quo. ”

Anna Lynch,
EIB healthcare expert

AN APPETITE FOR CLIMATE ACTION

Restaurants and farms find that artificial intelligence and investment funds can help them make the world more sustainable

There are many ways we can change the way we grow or prepare food to help the climate. Sometimes these changes require high-tech artificial intelligence technology in swanky restaurant kitchens. Other times they simply involve a new way to organise small coffee farms in the Amazon forests.

A fine example of the technological route to fighting climate change is a device called Winnow Vision, which uses machine vision and artificial intelligence to identify food being thrown away and then generate a report that restaurants can use to reduce waste.

The Winnow system takes photos of food as restaurants throw it away. Using these images, the machine trains itself to recognise what's being tossed out more accurately than humans.

“Commercial kitchens are wasting 20% to 25% of their volume,” says Kevin Duffy, Winnow's co-founder. “Winnow's artificial intelligence makes food-waste tracking so easy and accurate that it should become the standard in every commercial kitchen.”

Kitchens aren't the only places where food goes to waste. An estimated **one-third of the world's food is wasted**. According to the United Nations, the resources used to produce this wasted food is equal to 3.3 billion tonnes of carbon dioxide emissions.

Winnow's first food-waste product was a manual tool called Waste Monitor. Daily reports by this tool can help kitchens make smarter decisions, saving up to half the food that might otherwise be wasted. The company, whose research offices are located in Cluj, Romania, says its second-generation product, Winnow Vision, integrates machine vision and artificial intelligence to save even more waste. Over time, Winnow Vision becomes smarter and eventually reaches full automation, giving kitchens pinpoint accuracy without any input from the kitchen staff.

“This is machine-learning technology,” says Maria Lundqvist, an economist at the European Investment Bank. “The more you use it, the more effective it becomes.”

To increase its staff and further develop its technology, Winnow signed a €7.5 million loan last year with the European Investment Bank.

ARTIFICIAL INTELLIGENCE IN THE KITCHEN

“ This is machine-learning technology. The more you use it, the more effective it becomes. ”

Maria Lundqvist, EIB economist

Investing in land protection

Food can have a big climate impact. So can the way we treat the land on which it is produced.

Large swathes of the Amazon forest have been destroyed and cleared for farm use. Peru is trying to reverse this trend through education and investment. The goal is to restore 3.2 million hectares of degraded land in the country.

About **30% of land is degraded worldwide**, according to the United Nations, and about 12 million hectares of productive land – an area roughly the size of Greece – is degraded every year. This is happening because humans are exploiting land and not investing enough in its protection.

One example of the positive changes in Peru is in Uctubamba, a northern province where hundreds of coffee farmers joined together to obtain loans and specialised advice that will help them restore degraded land and make it more productive. One cooperative in the area learned new ways to plant trees to shade the coffee plants, thus regulating the temperature of the plantations and increasing yields, while helping sustain the land.

The farmers are receiving assistance from **Ecotierra**, a Canadian company that designs agroforestry projects around the world. The European Investment Bank helped Ecotierra by investing in the **Land Degradation Neutrality Fund**, an investment vehicle created by the United Nations and run by the French investment manager Mirova to save damaged land around the world.

The European Investment Bank agreed in 2019 to invest up to \$45 million in the Land Degradation Neutrality Fund, while the Luxembourg government pledged €5 million. The fund has raised half of its \$300 million goal.

Martin Berg, head of environmental and climate finance policy at the European Investment Bank, says the investments from the EIB and Luxembourg played a big role in making the fund a success and attracting private investors. “It made this fund much more attractive to risk-averse investors,” he says.

GOOD BACTERIA AND STRETCHY MOZZARELLA

The farming sector faces a big demand for increased production. How to do that – and protect the environment?

Without crop protection, including pesticides, more than half the world's crops would be lost to insects, diseases and weeds. The EU directive on the sustainable use of pesticides promotes integrated pest management and favours alternative methods of pest control to minimise the synthetic pesticides and fertilisers needed to maintain agricultural productivity.

So farmers are always looking for efficient alternatives to regular pesticides. **CHR Hansen** has developed bio-pest control and bio-stimulant solutions that promote plants' natural defence mechanisms, reinforcing the root system and allowing crops to resist stress provoked by external factors, such as drought and pests. Treatment with products developed by the Danish company can increase crop yields by up to 10%. "We use good bacteria instead of chemicals," says Camilla Lercke, Hansen's head of media relations. "The result is that you reduce the chemical footprint of the agricultural ecosystem in the soil and the groundwater."

Bio-protective solutions for crops have been developed in the last five years. They have the potential to radically overhaul agriculture by reducing the need for chemicals. They can also cut food waste, which in turn saves greenhouse gas emissions created by agricultural production. For example, CHR Hansen introduces "good bacteria" into cultures that keep dairy products fresh longer, which could cut yogurt waste by 30%. With 70% of all salad being wasted, the company's bacteria extends salad shelf life by five days.

CHR Hansen has developed bio-solutions for sugar cane, corn and soybeans, as well as for the wine and beer industries. The company also produces feed supplements that use good bacteria, or probiotics, to promote animal health. "Like yogurt, it helps promote a more healthy intestinal tract," Lercke says. "Probiotics given to animals ensure a more natural functioning, reducing the need for antibiotics."

Innovation for big demand

Agriculture is under enormous pressure to produce more – and more healthy – food, while also reducing its impact on the environment. The world population is expected to reach 9.8 billion by 2050, and food production will need to rise by at least 30% to meet future needs. A delicate balance will have to be struck between preserving the last of the world's natural resources and making sufficient quality food available and affordable.

Agriculture is **innovating to meet those demands.** Advances in plant breeding, synthetic fertiliser and pesticides provided a framework for stable and reliable food production. The agriculture

“Farmers are becoming extremely digitalised.”

Antoine Pajot, EIB agriculture and rural development engineer

sector is now trying to replace part or all of these tools through synergies with existing natural systems, bio-based pest control and plant health promoters.

Agricultural researchers are also creating digital platforms that offer farmers the best prices for feed, fertiliser and equipment, turning farm emissions into clean biogas or producing mozzarella from grass-fed cows. The EIB signed a €120 million loan in 2019 to support CHR Hansen’s research and development. Amid all this innovation, companies are also working hard to make a business case for these new ventures.

The digital cooperative

Historically, in France and much of Western Europe, farmers sold what they produced to their local cooperative, which in turn sold them all their agricultural materials, such as fertiliser, seeds and pesticides. Sales representatives took farmers’ orders, and goods were delivered to the nearest grain silo, which was often equipped with distribution warehouses. These collection points were the centre of the local farming community.

Over the years, the cooperatives merged and got bigger. They eventually lost their agility, efficiency and responsiveness to farmers’ needs. A new generation of farmers, more digitally savvy and less loyal to the cooperative spirit, are looking for alternatives – and that alternative is often a digital marketplace.

“Farmers are becoming extremely digitalised,” says Antoine Pajot, an EIB agriculture and rural development engineer. “Today, they have a smartphone, and they want access to immediate prices. They want to buy at the best price at the best moment.”

One of the largest French cooperatives, **InVivo Group**, is responding to farmers’ needs with its own digital platform, which will allow them to buy products and materials online and effectively compare prices. This platform will be accessible to most of InVivo’s cooperative members. It’s a move to protect the cooperative’s market share against big tech companies like Alibaba and Amazon, which are slowly eating into the agriculture supply market in other parts of the world, and start-up digital platforms such as Agrileader or Agriconomie, which are already challenging the dominance of cooperatives.

The European Investment Bank is providing €37.5 million to fund InVivo’s €75 million project to create the digital platform, **Aladin.farm**, and farm management software, SMAG. A guarantee from

“ **It’s a constant preoccupation for every farmer to maintain or further increase their revenue through diversification.** ”

Sebastien Collot, EIB bioeconomy specialist

the European Fund for Strategic Investments is making the loan possible. Aladin’s advantage is that it already has a distribution network, with warehouses within a 10-kilometre radius of all the farms in the cooperative. Add its strong relationships with farmers as well as the advice it gives, and Aladin can provide tailored offerings to coop members. InVivo’s strategy, Pajot says, is to “accompany farmers in digitalisation, while maintaining their market share and proposing new digital services, such as blogs or advice.”

InVivo’s digital subsidiary, SMAG, offers cloud-based software called Agreo and Atland. They help farmers track data on crop growing, livestock breeding and wine production to meet regulatory and environmental standards. The SMAG project will enhance the software’s IT mobility and allow for data mining and exploitation to help farmers make more informed decisions.

InVivo’s projects are part of the Third Green Revolution, the use of cutting-edge technologies like artificial intelligence, robotics, block chain and high-performance computing to transform agriculture and radically improve its efficiency and sustainability. The revolution is particularly important for the European agricultural sector, one of the world’s leading food producers and a major employer.

Cutting emissions, growing revenue

European farmers are squeezed by fierce international competition on commodities. They need to adapt to climate change and, in Europe, lower direct subsidies. To compensate, they are augmenting their revenue with new, higher-margin products or side businesses completely unrelated to food production.

“It’s a constant preoccupation for every farmer, to maintain or further increase their revenue through diversification,” says Sebastien Collot, an EIB bioeconomy specialist. “There is a need to shift the current model based on commodities production to a more sustainable one.”

Biogas is one alternative source of revenue. Biogas plants take organic waste, such as manure, plant and food by-products and even sewage, and convert it into biofertiliser and biomethane gas for clean energy. Biomethane can be injected into the electrical grid or used on the farm to power or heat greenhouses for vegetables and fruit. Biogas plants contribute to decarbonisation and energy security, support agricultural income, promote regional and rural development and foster job creation. They also help farms offset their own emissions. In Europe, agriculture accounts for 9.58% of all greenhouse gas emissions related to human activity.

Biogas plants are expensive, however. The investment required may range between €2 million and €10 million, and most plants are owned by joint stock companies that involve several farms. The scale and type of investment makes it particularly risky for farmers. **“We’re talking about an investment that is close to, or more than, the value of their farm,” Collot says.** Biogas plants also need constant surveillance and have an embedded operational risk. “Biogas projects entail close day and night monitoring of the biological and chemical process.”

To help farmers embark on biogas or other climate initiatives, like installing solar panels, the European Investment Bank is investing in two credit facilities provided by Crédit Agricole of France: a €75 million programme aimed at farmers under the age of 41, and another €200 million programme to support climate and bioeconomy projects.

Stretchy mozzarella

The bucolic life of the Irish cow never had such a global reach.

The Irish dairy cooperative **Carbery**, which has more than 1 200 members, is Ireland's largest natural cheddar cheese manufacturer. With over 60% of the company's cheese exported to the United Kingdom, the shadow of Brexit made Carbery rethink its exposure. The company decided to broaden its portfolio of cheeses with a new line producing food-service mozzarella used for pizzas, targeting the Asian market. A €35 million loan from the EIB signed in 2019 supports this move.

"Mozzarella is one of the fastest growing cheese markets in the world," says Ray O'Connell, Carbery's group controller and treasurer. "We did a long evaluation of various options and mozzarella was a very good fit."

The Chinese like their mozzarella to stretch – at least 50 centimetres. They hold contests where "they stretch it and the victors share snaps on social media," O'Connell says. Carbery's mozzarella cheese is being developed with this stretch-factor in mind.

And with a view to sustainability. "Our farmers are very environmentally aware and are very focused on sustainability, from an ecological and financial perspective," says O'Connell. "Carbery is continually working with its farmer members to develop best practice methodologies to help further reduce carbon footprints."

“ **Our farmers are very environmentally aware.** ”

Ray O'Connell, group controller and treasurer, Carbery

SOCIAL VOICES

THE GREEN THREAD

As the economy gets green and clean, the European Investment Bank aims to make sure no one is left behind

In regions that will have to make a bigger step than most, we will support people and businesses with a targeted Just Transition Mechanism...To help us achieve this, the European Investment Bank will be a trusted partner.

Ursula von der Leyen, President of the European Commission

The climate is humanity's life support system. The Bank's climate action on oceans, water and bioeconomy, and on the development of our habitats in cities and regions, is aimed at preserving that life support system – and making the quality of all our lives better. These are, after all, the basics of life. To make cities more sustainable we plan to support green building developments and implement integrated climate action approaches in Europe and around the world. Looking at wider territorial development, we will pay particular attention to the regions that have so far been most dependent on fossil fuels for their jobs and economic activity. In the water sector, I expect strong focus on climate change adaptation, especially in the context of increased water scarcity as well as coastal protection. In the agricultural sector, we also see great potential in expanding support for environmental sustainability and climate action investments. This is particularly relevant for credit lines provided through our financial intermediaries to finance small and medium-sized businesses, including farms.


Werner Schmidt, director, Environment and Sustainable Territorial Development, Projects, EIB

Our focus will be to assist countries in their transition to a low-carbon economy, while ensuring the sustained economic development of cohesion regions. With the help of InvestEU and the Just Transition Fund, we expect to make attractive financing available for the regions most impacted by the transition, helping them cope with its social dimension. We will identify climate champions and support them with advice and financing.

Anita Fuerstenberg-Lucius, director, Central and South Eastern Europe, Operations, EIB

We are familiar with transitions, with helping regions to transform. We're stepping up our efforts. With the Just Transition, where we come in is to translate the transition plans that are being put together by cities or regions into investment programmes. In this, there is a clear role for the European Investment Bank, for the Investment Hub and for our Projects Directorate to advise regions as to how they could – based on their transition plan and strategy – support this with investments.

Leonard Reinard, head of division, Regional Development, Projects, EIB



We plan dedicated support for the green/energy transition of several industries through intermediated lending. Commercial banks are setting up products to support the investments of companies operating in sectors heavily affected by the green/energy transition, such as automotive, steel and plastics. We also see an increasing trend toward digitalisation – particularly for agriculture – which has a direct impact on climate change mitigation. We are seeking opportunities in renewables and energy efficiency, potentially entailing more (adequately mitigated) risk-taking.

Miguel Morgado, director, Adriatic Sea, Operations, EIB

The transition towards low-carbon, climate-resilient development in Morocco – as well as in other Mediterranean countries – is a huge institutional and financial challenge. It requires the overall regulatory system to become more climate-friendly, with mobilisation of financial resources and significant support to strengthen technical capacities. In alignment with the European Commission, the EIB will strengthen the dialogue at the technical level with the local government and put in place an action plan to transfer the best practices and know-how in green finance developed in our deals in Europe. It is important to leverage our investment with the policy support provided by the EU to ensure full coherence in the implementation of the European Green Deal outside the EU.

Anna Barone, head of Morocco office, EIB

In the last five years more than 180 major investments were approved for funding with JASPERS support, with a total investment cost of €58 billion and EU grants of €31 billion. Half of these investments contributed to climate action, with over 20% directly allocated to it. We will continue and deepen our work to assist EU regions in their climate ambitions. We will provide advice that promotes planning-led and integrated strategies, programmes and project pipelines, for example in coal and Just Transition regions. We expect our work to be even more entrenched on the local level to promote coherent and integrated climate and transition projects. To bring value to people and to promote a greener EU, sectors such as education, research and innovation will also play a key role (including innovative solutions like the circular economy and social innovation). We will adapt our working methods to best support EU and Bank climate targets on the local level.

Eugenia Kazamaki Ottersten, head of division, JASPERS Smart Development, EIB

SHELTER FOR THE CLIMATE

When people can't afford to live close to their work, their quality of life suffers. And so does the climate. Here's a series of projects that aim to counter the need for long commutes that emit lots of carbon.

A home is a basic need, but many Europeans can't find a decent, affordable place to live. That's obviously a social problem. It may surprise you that it also contributes to global warming.

The shortage of good, energy-efficient homes in Europe is especially bad in a lot of urban areas, where 70% of the population lives. It impairs the quality of life for many people, who can only afford housing a long way from their jobs. And that hurts the climate, when those people commute long distances by car and use more fossil fuels. Then there's an energy consumption angle within the cities. Homes and buildings, especially old, leaky ones, are one of the top consumers of energy.

Big steps for housing and energy

When people can't find good housing, this increases the social divide in European communities. It causes public health problems, poor public safety, shortages of workers in central locations and inefficient labour markets. In Ireland, for example, thousands of people linger on waiting lists to get better housing. In France, it's difficult for nurses to find affordable accommodation in central Paris. The housing and energy challenge is immense. Nearly half of all European residential buildings were constructed before 1970, when materials, standards and techniques didn't take into account how much energy was consumed. The European Commission estimates that 75% of buildings and housing needs to be made more energy efficient to meet Europe's climate goals.

"Providing people with a home is the most important part of our social housing projects, but if it's done in an energy efficient way, that's a great benefit," says Gerry Muscat, who heads urban development at the Bank. "Many housing projects we are involved in help people and the climate."

Even something as simple as changing lightbulbs makes a big difference. An Austrian lighting company, **Zumtobel Group**, is performing heavy research into more efficient lighting and light management that makes sure lighting systems are used only when needed. Early in 2019, the European Investment Bank approved the second part of two €40 million loans to broaden the company's research into making lighting more connected to digital services.

Growing cities, rental shortages

In Sweden and Poland, the growth of mid-size cities is dramatically increasing demand for affordable housing. Sweden is tackling the problem by building thousands of affordable rental homes. In September 2019, the European Investment Bank approved a nearly €300 million loan to support the Swedish move with near-zero energy plans that adopt the highest efficiency standards.

“ Many housing projects we are involved in help people and the climate. ”

Gerry Muscat, head of Urban Development, EIB

In Poznan, a city in central Poland, many residents do not qualify for city-supported affordable housing because their incomes are too high, yet they also can't buy a home in the regular market because they have a low credit rating. The city and a local housing company started a project for these residents that also has a day-care centre, a kindergarten, a playground for kids and parking spaces for the disabled. The goal is to build more than 1 000 flats in this new neighbourhood. The European Investment Bank signed a €34 million loan for this project.

“Our goal is to make Poznan an attractive centre, where people on all budgets can call the place home, commute easily and enjoy a level of municipal services that is modern and ecological,” says Grzegorz Ganowicz, chairman of the city council.

The Bank also signed a €19 million deal in 2019 in Poland with **BNP Paribas Bank Polska** to improve energy efficiency in existing homes. The Polish bank will use the money to give loans to farmers and homeowners to install solar panels. The money also will help housing associations improve energy efficiency.

In France, young professionals especially have a hard time finding affordable homes. The country is solving this problem by building homes for people who don't qualify for housing support, but who also don't have enough money to afford decent housing. The Bank has invested a total of €1.3 billion in affordable housing projects in the country to build around 27 800 lodgings.

Big demand for new homes in Africa

As with everything else the Bank does, its social and affordable housing work isn't confined to Europe. In Africa and around the globe, EIB projects help build better places to live – and reduce energy consumption. That's important because, after all, Africa's cities will be home to an additional 765 million people by 2055, creating a large demand for affordable housing.

The European Investment Bank is contributing nearly \$20 million to a series of affordable and green housing projects in Namibia and Botswana. This housing is expected to save 20% on water and electricity use.

“Our ultimate goal is to offer a good quality of life to a group of people who have been underserved,” says Cathal Conaty, managing director of **International Housing Solutions II**, a fund backed by the EIB that is raising money for housing projects in Namibia and Botswana.

COHESIVE AND CREATIVE

A long history of investment for cohesion in Europe's poorer regions is a foundation for the EIB's role in the European Commission's Just Transition Mechanism.

When you're struggling day to day to keep an old district heating system in operation, it's hard to make plans that respect new developments in EU energy policy, too. So the western Romanian city of Oradea turned to a special unit at the European Investment Bank to help with its transition to cleaner energy. "It's hard to see the forest for the trees," says Ioan Maghiar, planning manager for the Oradea Municipality. "We needed to look for a creative solution at a higher level."

In 2019, the Bank's Project Advisory Support Unit delivered an eight-month study that Oradea is already implementing – with positive implications for the city's economy and climate action. With new sources of energy and efficiency measures recommended by the Bank, Oradea's district heating system will **cut carbon emissions by 44% by 2050**. The city will also be able to end subsidies to the heating system's private operator in 10 years. "That's an important impact on the local budget," says Emmanuel Morel, a senior EIB environment expert based in Bucharest.

The project is part of a long tradition of EIB lending that ensures Europe's poorer regions get a fair chance at prosperity. From 2014 to 2019, the EU bank provided more than €100 billion of financing in cohesion regions.

Now that the EU aims to decarbonise the continent by 2050, there's a new and urgent element to the Bank's cohesion investment with the European Commission's Just Transition Mechanism, part of the European Green Deal. **The European Investment Bank will be a crucial element of the mechanism, which aims to ensure that regional economies and industries dependent on fossil fuels are not left behind in the transition to lower emissions.** "Just Transition is an expansion of an area in which the EIB has a lot of expertise," says Leonard Reinard, head of the Bank's regional development division. "For every city or region, the transition will be unique. It's not one-size-fits-all. Each region has to find its own tailor-made, place-based transition plan, and the Bank will help turn that into concrete investment plans and projects."

The Project Advisory Support Unit's work helped Oradea and two other Romanian cities figure out a cleaner, more efficient future for their district heating systems. Oradea is already testing geothermal power from water two kilometres underground, providing 7% of the energy for its district heating system. The district heating provides heat and hot water to 70% of the city's 200 000 residents. "It would have taken a lot longer to understand what's happening at the European level without the EIB," Maghiar says.

Service is increasingly reliable, which boosts Oradea's ability to attract people and businesses. "A city that's taking on this challenge has found the holy grail of urban planning," says Sebastian Hyzyk, who heads the EIB unit. "They're making their space attractive to citizens, and citizens are

“ **A city that’s taking on this challenge has found the holy grail of urban planning.** ”

Sebastian Hyzyk, head of the EIB’s Project Advisory Support Unit

where knowledge and growth come from these days.” In 2020, the unit is taking on similar projects for four other Romanian cities as part of its €70 million, seven-year advisory programme.

Good for Europe

In the mineral mining region around Plovdiv, Bulgaria’s second-largest city, KCM has long refined metals, primarily zinc and lead. The company’s manufacturing process is being upgraded to provide greater resource efficiency, better protect the health of its 1 500 workers and comply with future, more stringent environmental regulations in the metallurgical industry.

The EIB backed KCM with a €65 million loan in 2019 to help upgrade its processes and increase its use of “secondary materials” – zinc and lead from recycled materials such as batteries, furnace dust and oxides. KCM’s new facilities will result in more automated and environmentally-friendly zinc and lead production, and increase recycling capacity. “It’s good for Europe, because this project shows how metallurgy should be in the 21st century,” says Ivan Dobrev, KCM’s chief executive. “The loan helps us increase the value of our technology by scaling it up.”

The loan is backed by the European Fund for Strategic Investments, as it supports **an innovative company that is the only provider of lead and zinc in Central and South-East Europe.** “These materials are vital to other industries in the region, such as the automotive and construction sectors,” says Venera Gandzhova, the project’s loan officer. It will also bring a number of environmental benefits. “The project follows the trend of the sector to move towards more recycled materials, which are processed with highly energy- and resource-efficient technology” says Liesbet Goovaerts, an EIB engineer. “That aligns it with the Paris Agreement.”

Just Transition for the environment and people

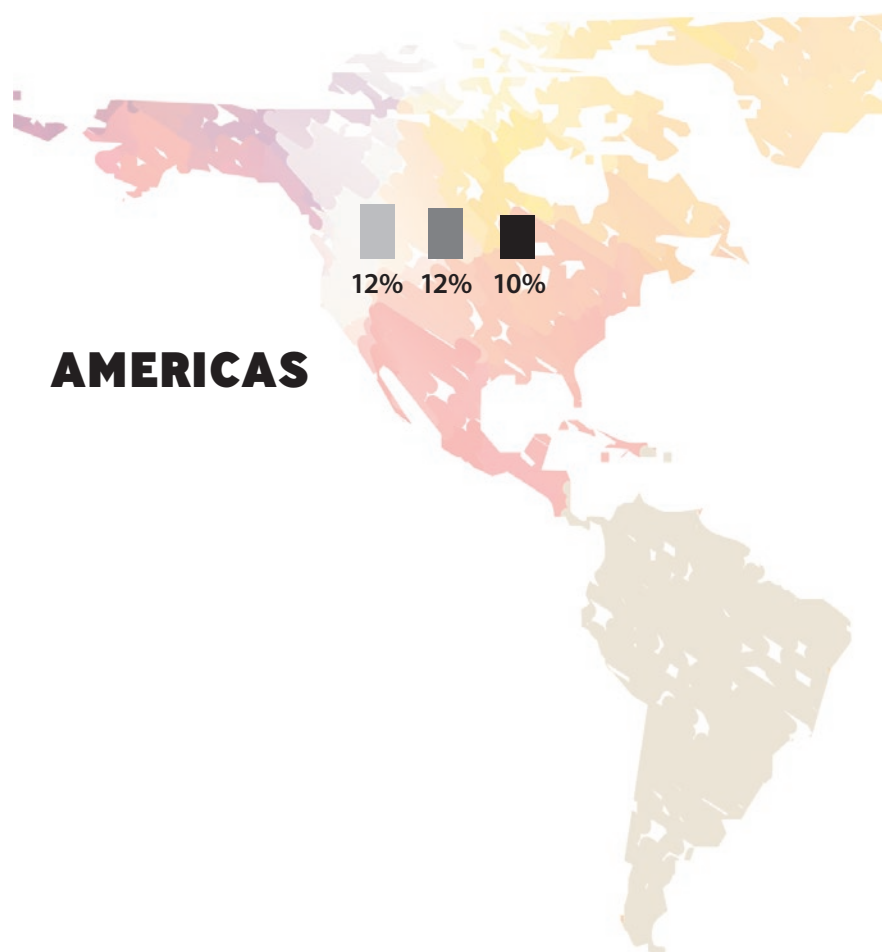
The Just Transition is not only about business. It has an important social aspect. That aspect is illustrated by the EIB project signed in 2019 to finance rehabilitation and energy efficiency measures for 9 600 social housing units in the former mining region of Nord-Pas-de-Calais in northern France. The €153 million loan contributes to climate action by cutting the energy use of 22 457 beneficiaries. It also brings annual savings of €1 200 per household on energy bills.

The loan is part of a €765.2 million project by Maisons & Cités, a local public housing company. “It’s not only about making a house that’s better to live in or that’s good for the environment,” says Souad Farsi, an EIB engineer. “**This is for the environment and also for people.**” And that’s the concept of a Just Transition in a nutshell.

WHERE THE MONEY COMES FROM

The European Investment Bank, the world's largest multilateral borrower and lender, raised €50.3 billion on the international capital markets in 2019. The Bank's issuance reaches investors who might not typically invest in Europe and who contribute indirectly to European projects by investing in EIB bonds.

The Bank issued bonds in **17 currencies**, with the majority raised in the core currencies of the euro, US dollar and British pound. Diversified sources and tenors give flexibility to the Bank's funding strategy. The multicurrency approach also enables the EIB to access some local currencies for disbursements.



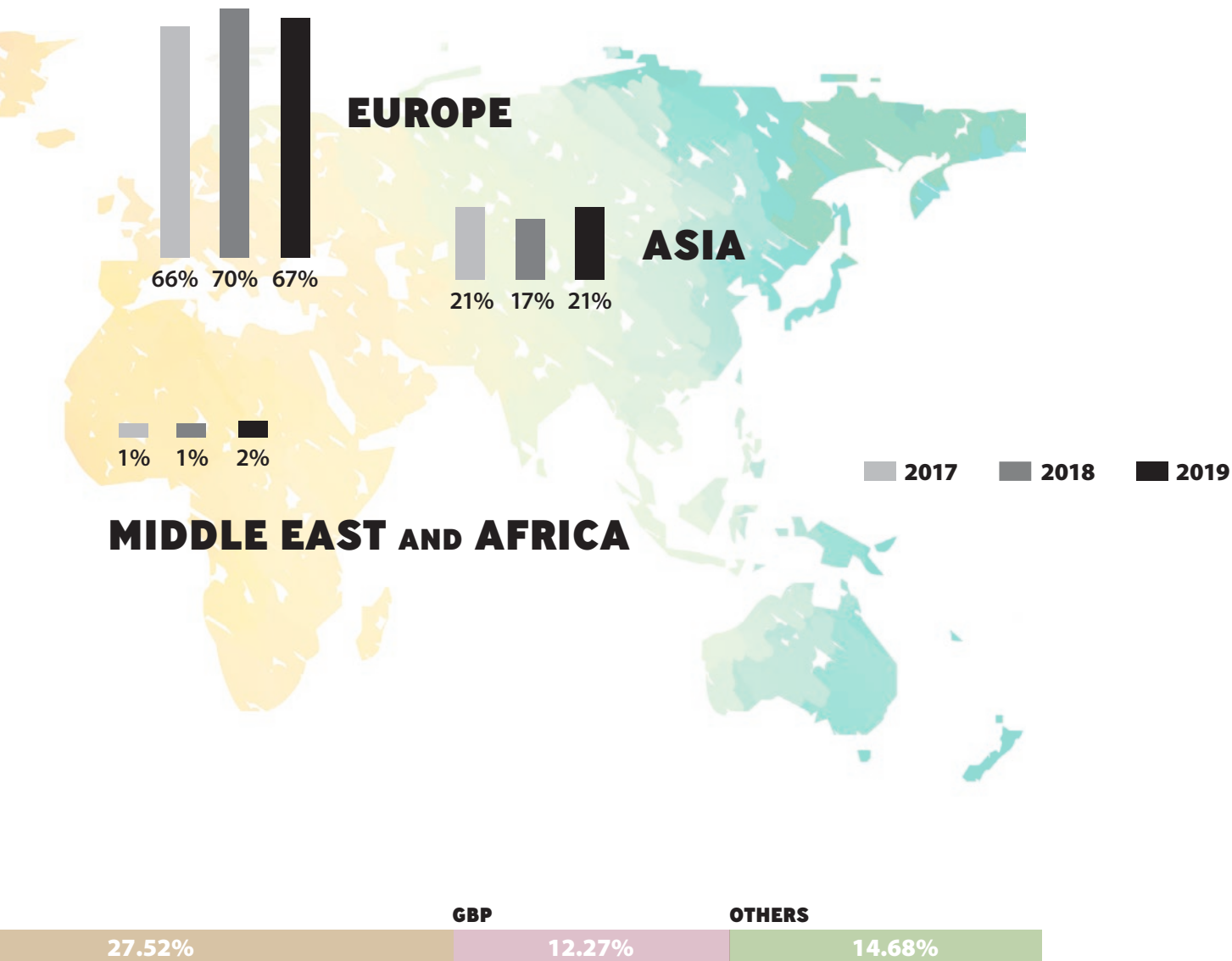
ISSUANCE BY CURRENCY

EUR

45.10%

USD

The EIB raised **€50.3bn** on the international capital markets in 2019



GOVERNANCE

The EIB is an EU body, accountable to the Member States, and a bank following applicable best banking practice in decision-making, management and controls. During 2019, the **Board of Governors** was made up of ministers from each of the then 28 Member States, usually Ministers of Finance. With the departure of the United Kingdom from the EU on 1 February 2020, that number fell to 27. The Governors set out the Bank's credit policy guidelines and approve the annual accounts. They decide on capital increases and Bank participation in financing operations outside the EU. They also appoint the Board of Directors, the Management Committee and the Audit Committee.

The **Board of Directors** takes decisions on loans, borrowing programmes and other financing matters. It meets ten times a year to ensure that the Bank is run in accordance with EU Treaties, the Bank's own Statute, and general directives laid down by the Board of Governors. As of 1 February 2020, there are now 28 directors, one nominated by each Member State and one by the European Commission. There are also 31 alternate directors. To broaden the Board of Directors' professional expertise, six experts may be co-opted to participate in Board meetings as non-voting advisers. Decisions are taken by a majority representing at least 50% of the capital subscribed by the Member States and one third of Board members entitled to vote, unless otherwise provided for in the Statute. The Board is chaired by the President, in a non-voting capacity.

The **Management Committee** is the Bank's resident decision-making body. It oversees the day-to-day running of the Bank, prepares decisions for the Board of Directors and ensures that these are implemented. It meets once a week. It works under the authority of the President and the supervision of the Board of Directors. The other eight members are the EIB's Vice-Presidents. Members are appointed for a renewable period of up to six years and are responsible solely to the Bank.

The Bank has an independent **Audit Committee** answerable directly to the Board of Governors. It is responsible for the audit of the Bank's accounts and for verifying that the activities of the Bank conform to best banking practice. The statement of the Audit Committee is submitted to the Board of Governors with the annual report of the Board of Directors. The Audit Committee is composed of six members appointed for a non-renewable term of six consecutive financial years.

Replacement of UK capital

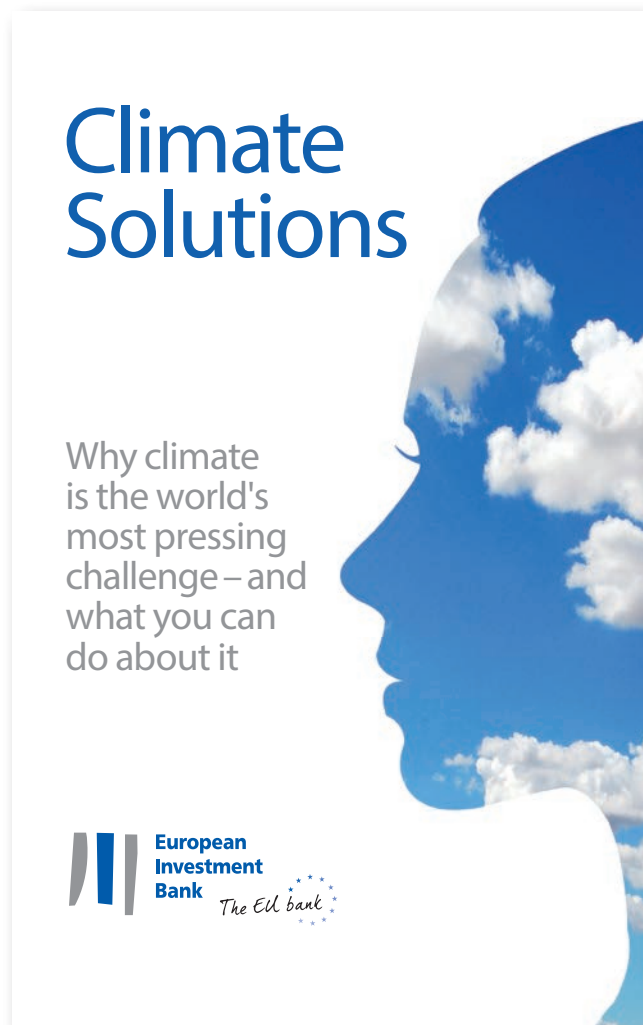
The EIB's Governors unanimously agreed in 2019 that the departure of the United Kingdom from the European Union would not have any impact on the EIB's strong subscribed capital base. The UK's share of EIB paid-in capital prior to Brexit represented €3.5 billion, alongside €35.7 billion of callable capital. Under the Withdrawal Agreement, the UK subscribed capital was replaced by a pro rata increase in the capital of the 27 EU Member States. The UK will provide a guarantee for an amount equal to its callable capital and the EIB will reimburse the UK's paid-in share over 12 annual instalments. The UK's decision to exit the EU will have no material impact on the AAA credit rating of the EIB Group. The EIB Group will fully respect existing finance contracts for projects and investments in the UK. Furthermore, the EIB capital subscribed by Poland and Romania increased on 1 March 2020, providing the EIB with a higher capital base than before Brexit.

HIGHLIGHTS

FROM THE EUROPEAN INVESTMENT BANK'S OPERATIONAL PLAN FOR 2020

- The clearest priority will be work in the area of **climate action and environmental sustainability**. With the European Investment Bank's commitment to dedicate at least 50% of its financing to this and the target of unlocking more than €1 trillion of investment over the next decade, 2020 will see us start on the necessary adjustments. By the end of 2020, we will refrain from all financing activities that are not aligned with the Paris Agreement.
- **Economic and social cohesion and convergence** remains a statutory raison d'être for the Bank. The next EU Cohesion Policy will run from 2021-27, and at present it is estimated that the number of less developed and transition regions will grow under the new eligibility criteria. The European Investment Bank will work together with the European Commission, in particular on the proposed Just Transition Mechanism to assist regions currently more dependent on fossil fuels in their transition to low-carbon and resilient economies.
- The EIB Group will continue preparations for the implementation of EU mandates in the **post-2020 Multi-Annual Financial Framework** and negotiations with the Commission on the financial products to be deployed. The preliminary text of the **InvestEU** Regulation was adopted in April 2019 and confirms the EIB Group's role as the main partner, responsible for the delivery of 75% of the programme. **The Neighbourhood, Development and International Cooperation Instrument** proposed by the Commission will provide budgetary guarantees and financial instruments for the EIB Group to continue to play its role as a strategic partner outside the EU.
- The European Council has initiated a discussion to enhance the efficiency and impact of the European **development finance** architecture, with respect to the roles of the Commission, the European Bank for Reconstruction and Development and the European Investment Bank. Options, including establishing an EIB subsidiary for development finance, will be studied further in 2020.
- Following a thorough review of its equity activities, a new **Group Equity Strategy** will aim to better address investment gaps in the equity market and encourage crowding-in of private capital to achieve the greatest policy impact. A more diversified financial sector with a higher share of equity funding will help stabilise the financial system and enhance access to finance for dynamic and innovative entrepreneurs in the EU.
- The **signature orientation for 2020 is €63 billion**, which we currently also expect to continue at the same level for 2021-2022.

The full public version of the Operational Plan for 2020 can be consulted at <https://www.eib.org/en/publications/operational-plan-2020>



Climate change is the biggest threat to humanity. But so many people need to respond in so many different ways, it's hard to know what *you* should do. **Climate Solutions** details the challenges, lays out the solutions and shows you exactly what *you* can do to make them happen. Whether you're a policymaker, a financial institution or a citizen, **Climate Solutions** is your checklist to save humanity.

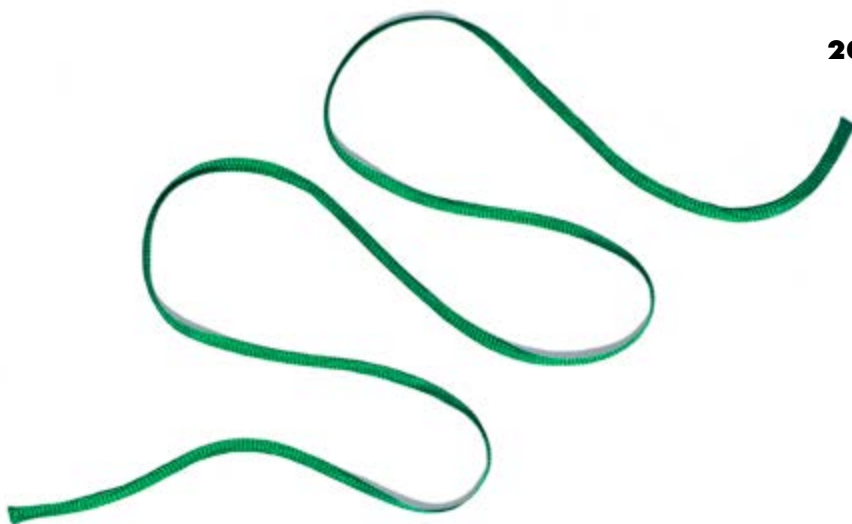
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THE GREEN THREAD

2019 ACTIVITY REPORT



The EIB Group consists of
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