

EIB Energy Lending Policy

Supporting the Energy Transformation

Version with updated technical annexes - May 2023



European
Investment Bank

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EIB ENERGY LENDING POLICY

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Executive Summary

1. To meet the objectives of the Paris Agreement, energy systems across the world must transform rapidly. This profound challenge requires significant, sustained investment in the energy sector over the coming decades. The European Investment Bank is the EU bank and one of the world's largest multilateral financiers of climate action. It can help to foster this investment.
2. The EU continues to lead the world in tackling climate change. In 2019 it adopted a comprehensive legal framework to deliver ambitious climate and energy targets for 2030, including further reducing greenhouse gas emissions, increasing energy efficiency and promoting the use of energy from renewable sources. This framework builds upon all dimensions of the Energy Union, including energy security, a fully integrated internal energy market and research and innovation. In line with the temperature objectives of the Paris Agreement, the EU is pursuing the long-term aim of a climate-neutral economy.
3. Delivering on these EU targets requires long-term investment, the majority of which will come from the private sector. The Bank's energy lending policy (ELP) sets out how the Bank, as a public bank, can help support the EU in meeting this challenge. It focuses the Bank's activities on those areas in which it can provide a high degree of additional value by: (i) overcoming persistent investment gaps, which remain despite existing policies; (ii) focusing on infrastructure needed over the long term, including the important dimension of innovation and scaling up of low-carbon technologies; (iii) supporting new market-based investment in the energy sector, in particular for relatively new types of infrastructure (auctions, demand response, storage).
4. In practice, the value the Bank can bring depends significantly on the context within which it operates. The Bank therefore intends to **strengthen its dialogue with Member States** to explore how its lending and advisory services can be most effective in supporting national energy and climate plans. Similarly, outside the Union, in light of the **nationally determined contributions**, the Bank's activities will focus on achieving the Sustainable Development Goals and the objectives of the Paris Agreement. In adopting this policy, the Bank's activities in the energy sector are fully aligned with the Paris Agreement.
5. The Bank's activities focus on four separate themes (see Figure 1). **Energy efficiency** investment, notably in residential buildings, needs to double in the coming decade. Despite numerous policy measures, a persistent investment gap remains. Given the pressing need to accelerate market uptake for energy efficiency, and as an exception to its general rule, the Bank will consider financing up to 75% of eligible capital expenditures. The Bank has been very active in this field for a number of years and, in cooperation with the European Commission, it will establish a new **European Initiative for Building Renovation (EIB-R)** to support new ways to attract finance for building rehabilitation. This will examine the development of relatively new sources of energy efficiency finance, such as models of mortgage-based lending.
6. **Decarbonising energy supply** to meet the 2030 targets requires at least a doubling of today's EU renewable power generation capacity. In close cooperation with the European Commission and other partners, the Bank will endeavour to **support the market integration of renewable electricity projects**, as well as increased regional cooperation. In addition, there is a need to support other types of renewables (renewable heating), the **production and integration of low-carbon gases** (such as hydrogen) and low-carbon fuels. The Bank will reinforce its technical and financial advisory services to project developers and public authorities seeking to scale up investment programmes. Finally, it will look to support the development of a sustainable supply of critical raw materials needed for the transformation.

Figure 1: The themes of the ELP



7. Investment in **innovative low-carbon technology** needs to increase. This will reduce the cost of meeting long-term targets, as well as increasing the global competitiveness of European industry. Building on its experience, the Bank will continue to support innovation from the earliest stage in the research laboratory to the demonstration of pre-commercial technologies, in close alignment with the EU Strategic Energy Technology Plan and the new Innovation Fund being established under the Emissions Trading Directive. The Bank will also support initial commercial production lines related to breakthrough technologies.
8. New investment opportunities in power markets are emerging, often associated with new business models that respond to improvements in market design. Battery storage and demand response are beginning to be deployed, together with small-scale decentralised energy sources. New participants are entering the market, consumers are becoming more active and communities are set to play an increasing role. The Bank will seek to support these **new types of energy infrastructure** to stimulate their market uptake.
9. The Bank will continue to support the development of electricity networks, including the interconnection target agreed for 2030 and European projects of common interest. It will look to prioritise investments that increase network flexibility.
10. It is important to stress at the outset that the Bank appreciates the necessary role that gas will continue to play to decarbonise energy systems. Natural gas will be progressively replaced by low-carbon gases such as biogas, synthetic gas and hydrogen. This transition to low-carbon gas is a significant challenge to the industry. The Bank will therefore focus its support within the gas sector on this issue, ranging from the production of low-carbon gases, transportation and distribution to integration within the power and heat sector. In the case of power generation, the GHG emission threshold is set at a reduced level to focus Bank support towards low-carbon power plants, including renewables and carbon capture and storage, as well as the most efficient combined heat and power projects.
11. Focusing on long-term energy investment represents an ambitious challenge, and thus **the Bank will phase out support to energy projects reliant on unabated fossil fuels**. This implies that the Bank will phase out support to (i) the production of oil and natural gas; (ii) traditional gas infrastructure (networks, storage, refining facilities); (iii) power generation technologies resulting

in GHG emissions above 250 gCO₂ per kWh of electricity generated, averaged over the lifetime for gas-fired power plants seeking to integrate low carbon fuels and (iv) large-scale heat production infrastructure based on unabated oil, natural gas, coal or peat.

12. Phasing out fossil-fuels represents a significant change for the Bank. In order to manage this change, the Bank will continue to approve projects already under appraisal until the end of 2021. In addition, during this period, the Bank can approve gas infrastructure projects included under the 4th list of Projects of Common Interest co-financed with EU budget.
13. The long-term energy transformation is profound. Solidarity is required to ensure that potentially vulnerable groups or regions are supported. As part of its broader climate strategy, the Bank will therefore establish an **Energy Transition Package** to provide extra support to those Member States or regions with a more challenging transition path. At the level of national energy systems, the package focuses existing Bank assistance, including advisory services, on energy projects that support the transition in those Member States that benefit under the EU Modernisation Fund. As an exception to its general rule, the Bank will consider financing up to 75% of the eligible project cost. Without prejudice to the MS competence on the EU budget, the EIB commits to work with the European Commission on the Just Transition Initiative in order to unlock finance and expertise in the areas covered by this initiative, consistent with the Bank's Energy Lending Policy.
14. More broadly, at the regional level, building on its existing experience and in close cooperation with wider European initiatives in this area, the Bank will reinforce its support for economic development and job creation in regions transitioning away from fossil fuels, including through activities that go beyond energy lending that will be addressed in the framework of the Bank's climate strategy.
15. This energy lending policy represents a significant change in the Bank's approach to the energy sector and an important input into the Bank's overall climate strategy. It is also important to stress that it applies alongside other Bank policies and operational documents, including notably the overall EIB Operational Plan, credit risk principles, or other sector lending policies. It should be stressed that the capacity of the Bank to support some of the priorities outlined in this policy will depend to a significant degree on access to risk capital or grant support, in particular through InvestEU or the Neighbourhood, Development and International Cooperation Instrument outside the EU. Moreover, Bank-wide principles and standards defined in the Guide to Procurement, Environmental and Social Standards or Gender Strategy have important implications for all Bank activities, including in the energy sector.

1. Introduction

1. The European Investment Bank (EIB or the Bank) has been investing in the energy sector since its establishment under the Treaty of Rome in 1957. During the intervening 60-year period, the Bank has made a significant contribution to the financing of the energy infrastructure which underpins today's European internal energy market, helping to deliver sustainable, secure and affordable energy to EU citizens and businesses.
2. Over time, the Bank has steadily increased its activity in the energy sector outside the EU, working under various mandates to support energy projects which further European policy objectives, notably in regions neighbouring the Union and across the developing world.
3. Over the last five years, the Bank's energy lending represented on average approximately EUR 12 to 14 billion of investment in the energy sector per year. This has largely supported energy efficiency, renewable energy and energy grids. In recent years, a wide range of advisory services has increasingly complemented the Bank's lending activity.
4. Energy lending also forms a core component of the Bank's climate finance. The Bank is one of the world's largest multilateral providers of finance for climate action projects, for example financing to the tune of over EUR 16 billion in 2018. The Bank adopted a [climate strategy](#) that sets out its ambition to play a leading role in mobilising the finance needed to achieve the temperature objectives contained in the Paris Agreement.
5. The Bank's previous energy lending policy was adopted in 2013, at the height of the financial and economic crisis. It had a natural focus on helping to maintain the investment needed to meet European energy policy goals, including the 2020 targets. As confirmed by a recent [ex-post evaluation](#), the 2013 policy was "a major step forward for the Bank," not least in focusing the Bank's operations on the largest investment needs in the energy sector.
6. This update of the Bank's energy lending policy reflects several important recent changes. Firstly, the EU has adopted a comprehensive legal framework to deliver ambitious 2030 targets. Secondly, the Paris Agreement provides greater clarity on the nature of the investment needed for the long-term energy transformation. Many energy projects that the Bank supports today will potentially be operating beyond 2030 and hence need to be aligned with the Paris Agreement. Thirdly, access to finance has significantly improved for parts of the energy market, compared to the time of the previous policy. This policy provides an opportunity for the EIB, as the EU bank, to set out how it can best stimulate the overall investment required.
7. The operating environment of the Bank itself has evolved considerably, in particular through a strategic partnership with the European Commission in the Investment Plan for Europe. This is currently evolving still further in the context of the next European multiannual financial framework 2021-2027 and in particular InvestEU.
8. The document is structured as follows. Chapter 2 outlines the context of the energy transformation and the expected implications for capital investment, both within and outside the Union. The subsequent two chapters focus on how the Bank will support these investments. Chapter 3 sets out the general approach of the energy lending policy. Chapter 4 provides more detail along the four themes of the policy: unlocking energy efficiency, decarbonising energy supply, supporting innovative technologies and new types of energy infrastructure and securing the enabling infrastructure.
9. Five annexes are included in the policy. The first four present systematically the project eligibility and technical and economic assessment criteria applied by the Bank, including the key criteria it

uses to record a project as providing a relatively high contribution to the policy. A final annex concerns the cost of carbon used by the Bank. The annexes are available on a dedicated energy lending policy webpage and contain more technical information, which may be of particular interest to potential customers.

10. This policy has benefitted from an extensive set of written contributions from stakeholders, as well as a public consultation meeting held in Brussels on 25 February 2019. The Bank's response to the public consultation responses can be found on the EIB website ([here](#)). The Bank would like to thank all those stakeholders who took the time to respond to this exercise.
11. The energy lending policy is consistent with the Bank's overarching climate strategy and sits alongside the other sector policies of the Bank. For instance, the policy does not cover clean mobility, or industrial processes and the Bank's support for nuclear power generation and fuel cycle projects has not been addressed in this policy review. The exact scope of the energy sector policy – which can be complex in practice for an integrated energy system – is set out in the technical annexes.
12. The energy lending policy also works within the given wider operating environment and risk capacity set out in the EIB [Operational Plans](#), based on EIB credit risk principles and approval procedures. Equally, compliance with the Bank's [Guide to Procurement](#) and [Environmental and Social Standards](#) are required for the Bank's support to energy projects through investment loans or framework loans. These latter documents provide standalone guidelines and rules covering all relevant Bank operations, including energy.
13. The energy lending policy covers all EIB activity in the energy sector – namely financial support, advisory services and technical assistance, regardless of the channel of support. In other words, this policy applies not only to direct investment loans but also to all intermediated operations of the Bank, including those carried out through commercial banks and investment funds.

Reporting and follow-up

14. As agreed as part of the action plan resulting from the ex-post evaluation of the 2013 Energy Lending Criteria, a dedicated webpage for this policy provides (i) links to the policy, including annexes, and (ii) relevant public presentations given by the Bank on its energy activities.
15. As part of its annual reporting commitments, the Bank will provide a breakdown of energy activity by the core themes of this policy. This will include an indicator on the percentage of operations recorded as providing a high contribution to the energy lending policy as set out in the annexes. In addition, the annual report will include an update on the main initiatives announced under this policy. Finally, the annual report will be used as an opportunity to provide an update on any technical changes to the policy. Revised versions of the policy annexes will duly be uploaded onto the dedicated energy lending policy webpages.
16. The Bank will make a mid-term review of this lending policy in early 2022 in order to discuss the implications of the EU Sustainable finance Taxonomy, of further policy development in the context of the European Green Deal and the EU external action.

2. Investing to transform energy systems

The world is not on track to meet the targets of the Paris Agreement

1. At the 21st session of the Conference of Parties to the United Nations Framework Convention on Climate Change in Paris in December 2015, nearly 200 countries [agreed](#) to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C.”
2. A recent report¹ issued by the Intergovernmental Panel on Climate Change concludes that in order to limit the temperature increase to 1.5°C, global anthropogenic greenhouse gas emissions need to reach net zero by 2050. The equivalent target in the case of limiting the increase to 2°C is to reach net-zero emissions around 2070.
3. Even taking into account all the contributions to the Paris Agreement, the world is currently not on track to reach either of these targets. For instance, despite the recent increase in investment in renewable energy, the EU is still largely dependent on fossil fuels for transport, industry and heating and, in many EU Member States, for power generation. This highlights the considerable challenge the EU faces in meeting the long-term targets of the Paris Agreement. At the same time, energy systems will need to ensure energy security and affordability – for both citizens and businesses operating in a competitive global market.
4. Outside the EU, energy demand continues to grow globally and most countries still rely on fossil fuels. Access to energy for the 600 million people without modern sources of cooking, heat or electricity is an important priority. The current lack of energy access, mainly in Africa, has a disproportionate negative impact on women and girls. The UN 2030 Agenda for Sustainable Development, adopted by UN member states in 2015, includes 17 [Sustainable Development Goals](#), including one specifically designed to ensure universal access to reliable and modern energy by 2030, to increase substantially the share of renewable energy, and to double the global rate of energy efficiency.

The energy transformation

5. Energy systems need a substantial transformation to meet long-term climate targets. There is broad consensus on the following core elements of the transformation.
 - Significant investment in **energy efficiency** is required to reduce the energy needed to meet rising demand for energy services (heating/cooling, lighting, power, transport);
 - Based on recent dramatic cost reductions, the share of **renewable** energy technologies will increase substantially. Wind and solar power, in particular, are projected to represent the majority of low-carbon energy sources by 2050. These technologies are variable in nature – i.e. they fluctuate depending on whether the sun shines or the wind blows. As a result, there is a need to increase the **flexibility** of energy systems, including different forms of storage, flexible capacity and demand response;
 - **Decentralised** energy will account for an increasing share of the new investment in power generation: i.e. power will increasingly be injected into the low- and medium-voltage distribution network, rather than being injected from centralised sources into the high-voltage transmission system;

¹ Intergovernmental Panel on Climate Change, 2018, [Special Report](#) on Global Warming of 1.5°C.

- As in the economy at large, energy systems will become increasingly **digitalised**, helping to integrate decentralised resources into the energy system, and increasing consumer participation in energy markets more directly;
 - The heat, industry and transport sectors are expected to become increasingly **electrified**, as a way to reduce greenhouse gas emissions, driving up electricity demand and increasing sector integration;
 - Achieving net-zero emissions will require a diverse **portfolio of technologies** and increased innovation.
6. Whilst these core elements are increasingly clear, modelling exercises highlight that there are many different pathways compatible with the overall transformation. The future energy and technology mix will depend in particular on the evolution of the relative costs of different technologies, behavioural responses of people and businesses towards opportunities to save energy, or the willingness of people to adjust current lifestyles. As a result, there is a pervasive uncertainty surrounding each pathway.
 7. Today, energy systems remain largely based on fossil fuels. All decarbonisation scenarios imply that by mid-century this will change, driven by the deployment of renewables. While coal disappears, the gas infrastructure can continue to be used to shift away from coal in certain countries in the next decade and to transport low-carbon gases. The power sector has to be almost fully decarbonised before 2050 and have negative emissions in some scenario to reach net-zero emissions in the energy sector.
 8. Despite this consensus on the necessary direction of travel, the scale of investment and progress across individual technologies differs widely. As monitored by the International Energy Agency report on [Tracking Clean Energy Progress](#), the scale of investment is considered to be not on track to reach the Paris Agreement.
 9. Progress along the energy transformation pathway will inevitably entail complex challenges around social acceptability, both at local and national level. More broadly, different pathways may have distinct impacts on affordability, regional employment, productivity and international competitiveness.
 10. Energy security must be maintained during the energy transformation. The energy system itself has to become more cyber-secure and climate-resilient. Modern, digitalised economies rely on an uninterrupted energy supply. Renewable energy reduce dependence on imported fossil fuels. While the power system currently enjoys excess capacity in most markets, integrating a high share of renewables may raise new issues to deal with their seasonal variability and ensure the adequacy of power systems.
 11. Government policy will play a central role in providing a robust regulatory framework to help overcome some of this uncertainty around the energy transformation and, thus, facilitate the investment needed. As presented briefly in the next section, the EU is playing a leading role in this field.

EU energy and climate policy

12. The EU, which emits around 10% of global greenhouse gases, is a leader in the energy transition. Over a decade ago, the EU agreed on the so-called 20-20-20 package of energy and climate targets for 2020, aiming to reduce greenhouse gas emissions by 20% on 1990 levels, to increase the share of renewable energy in the EU energy mix to 20%, and to increase energy efficiency by 20%. The

EU is largely on track² to deliver these targets, in a period in which the EU economy has grown by 58%.

13. Building on this success, the EU has adopted targets that are more ambitious for 2030: to reduce greenhouse gases (compared to 1990 levels) by 40%, to reach at least a 32% share of renewable energy consumption and to achieve energy savings of at least 32.5%. These commitments for 2030 have been submitted as the EU contribution under the Paris Agreement.
14. In late 2018, the EC adopted the [Clean Planet for all](#) communication³, presenting a long-term strategic vision for a climate-neutral economy, with a target to reach net-zero emissions within the EU by 2050. This vision is supported by detailed long-term modelling results, which illustrate a range of impacts under different scenarios.
15. At the same time, the EU has agreed a comprehensive legislative framework to ensure that it delivers on the 2030 targets. This required the amendment of the EU Emission Trading System Directive⁴, plus agreement on the eight legislative proposals made by the EC in the [Clean Energy for All Europeans](#) package.
16. Whilst adopting Union-wide targets, the package leaves flexibility for Member States as to how to achieve them. As part of the Energy Union's governance, therefore, Member States are submitting integrated [National Energy and Climate Plans](#) for the period 2021-2030. These plans cover all five dimensions of the [Energy Union](#): (i) security and solidarity, (ii) the integrated internal energy market, (iii) energy efficiency, (iv) decarbonisation, and (v) research, innovation and competitiveness.
17. The incoming European Commission announced in September 2019 ambitious objectives to further increase decarbonisation efforts with the proposal for a [European Green Deal](#) aiming at making the EU the world's first climate neutral continent and increasing climate ambitions by 2030. This includes calls for the Bank to increase its support to climate action.
18. In addition, a wide range of European and national policies have a strong influence on the energy sector. With the electrification and development of digitalisation, smart cities and the circular economy, sectors are increasingly integrated. Policies to promote alternative fuels for clean mobility have important implications for investments in the energy sector as well.
19. Consistent with the objectives of the Internal Energy Market, the EU aims to promote market-driven investments. This is increasingly visible in some recent renewable energy investments, which benefit from very limited government support and are driven by electricity market prices. The Clean Energy for All Europeans package further improves the design of the electricity market, with the aim of providing more efficient price signals.

² This paragraph, including the statistics, is drawn from the EC Fourth Report on the [State of the Energy Union](#). Preliminary data suggests that GHG emissions in 2017 were 22% below 1990 levels. Moreover, in 2017, the share of renewable energy in the EU energy mix was 17.5%, although the pace of increase has slowed since 2014. Further effort is required to increase energy efficiency, with recent data suggesting that primary energy consumption was 1 561 million tonnes of oil equivalent in 2017 – still significantly above the target of 1 483 million tonnes for 2020.

³ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank. A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, COM/2018/773 final.

⁴ Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, as amended by Directive (EU) 2018/410.

20. In addition to relying on the market, the EU also provides direct financial support to incentivise energy investment, currently foreseen in the next Multi-annual Financial Framework through the InvestEU Facility, Structural Funds within the Union, and the Neighbourhood, Development and International Cooperation Instrument outside the Union. The EIB, as the EU bank, is an important additional source of finance. Before turning to the role of the EIB, it is useful to present briefly the likely investment needed to deliver the 2030 package and the Paris Agreement more generally.

Investment required within the EU

21. Decarbonisation involves the deployment of technologies with high upfront investment costs. According to the modelling used to underpin the EC long-term vision for 2050, energy investments in the EU need to almost double during the decade 2021-30, i.e. from EUR 229 billion per year on average over the period 2011-20 to EUR 396 billion per year from 2021 to 2030. This increases to EUR 520-575 billion per year in the subsequent decades, more than 2.5 times the current level.
22. Energy efficiency investments in buildings and industry represent approximately three-quarters of the total energy investment required in the period 2021-30, equal to EUR 281 billion per year. The energy efficiency target is expected to reduce overall energy consumption in the EU by 2030 and therefore the investment needs in new energy infrastructure on the supply side.
23. This modelling exercise projects that the use of all fossil fuels will decrease dramatically in Europe. Coal, in the absence of carbon capture and storage, is the most carbon-intensive fuel and its use dwindles to close to zero by 2050. Oil consumption decreases gradually in the transport and agricultural sectors, but almost disappears from the building sector. The share of oil declines from 30% today to 8-12% of primary energy consumption by 2050, contributing to reduced energy imports and reduced air pollution.
24. Gas continues to be used in the EU in long term decarbonisation scenarios. It will be progressively replaced by low-carbon gases such as e-gases, biogas or hydrogen. Natural gas consumption is expected to decline by 20% from today's level by 2030 and by 70 to 85% by 2050. Investments in new gas infrastructure decline sharply in the coming decade. According to the International Energy Agency's [Sustainable Development Scenario](#), consistent with the goals of the Paris Agreement, investments in gas transmission and distribution networks represent around 2% of total EU investment needs over the two decades to 2040. These investments are needed primarily to maintain the gas network, with higher levels required in eastern Member States to alleviate existing bottlenecks and integrate low-carbon gases.
25. Power generation investment will continue to be dominated by renewables, in particular wind and solar PV. Power generation investments remain stable at EUR 55 billion per year, with the required increase in renewable capacity largely offset by the expected future reduction in unit costs. Given the existing installed conventional generation, capacity additions of new gas power plants are expected to be limited, representing around 1% of total investment, and to take place mainly in some countries to replace ageing or polluting capacity.
26. Investment in power grids is driven by the increased electrification and the need to integrate high shares of renewable capacity across Europe. It increases by 70% in the decade 2021-30 to reach EUR 59 billion per year. Investment takes place both at transmission and distribution networks, in order to further deploy smart grids, integrate decentralised energy sources, electric vehicles and enable the active participation in energy markets of energy consumers.

27. The relative burden of investment to reach 2030 goals may differ across the EU, with a potentially higher burden on lower-income Member States. According to analysis by the EC⁵, the increase in annual average investment to meet the 2030 targets is 38 percentage points above the reference case for those Member States with a per capita income below 60% of the EU average. By contrast, for the remaining 18 Member States, the increase is only 19 percentage points. Various measures, notably the EU Modernisation Fund⁶, are helping to redress this imbalance.

Investment required outside the EU

28. Demand for energy is increasing rapidly in many regions of the world, in particular Asia, the Middle East, Africa and Latin America. According to the International Energy Agency, total energy investment is projected to be around EUR 2.5 trillion per year by 2030, seven times the level of investment within the EU. Developing countries are investing in new energy infrastructure and it is important that the majority of this investment be compatible with the Paris Agreement.

29. [Nationally Determined Contributions](#), which are at the heart of the Paris Agreement, will consist of plans that describe the efforts that each country intends to make to reduce national emissions and to adapt to the impacts of climate change. While many countries will continue to rely on fossil fuels to meet growing demand, many will take advantage of the rapid cost decline of renewables and make progress in integrating renewables into energy systems, as well as improving energy efficiency. Given the scale of energy investment needed outside the EU, there is a need to focus EU action on investments that can have a significant impact on decarbonising existing systems.

30. At the same time, it is important to recognise the different needs of countries outside the EU. Access to energy remains a fundamental issue. According to the International Energy Agency, achieving universal energy access, as targeted by UN Sustainable Development Goal 7, would require investment of some EUR 48 billion per year between 2018 and 2030, representing about 2% of total annual energy sector investment. In addition, air pollution is a major health and environmental issue and a core driver in transforming energy systems in certain countries.

31. The EU Neighbourhood, Development and International Cooperation Instrument for the period 2021-27 introduces financial mechanisms to leverage the EU budget and crowd in private investments. External action in the energy sector is embedded in other EU international objectives and energy and climate change diplomacy. In the energy sector, the focus of the EU is on access to basic energy services, addressing climate change mitigation and adaptation, increasing energy efficiency and deploying renewable energy.

⁵ EC Staff Working Document, Impact Assessment accompanying the Communication on a policy framework for climate and energy in the period from 2020 up to 2030, SWD(2014) 15 Final, of 22.1.2014.

⁶ The Modernisation Fund is established under Article 10(d) of Directive (EU) 2018/410 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814.

3. Approach of the energy lending policy

1. The primary objective of the energy lending policy is to ensure that the EIB, as the EU bank, makes the most effective use of its limited resources to support the new EU energy policy framework. This chapter focuses on this objective, in the context of the required investment to meet the 2030 targets and beyond, as outlined in Chapter 2.
2. The chapter begins by emphasising the Bank's focus on supporting ambitious EU targets for 2030 and beyond. It then presents, in general terms, how the Bank can provide a higher degree of additionality in helping support EU policy, including outside the Union. Finally, it sets out the implications with respect to fossil fuel projects – namely that the Bank will phase out support to such energy projects.

Supporting ambitious EU energy and climate targets

3. Meeting the 2030 targets will require sustained increased investment within the EU over the next decade. There is a need to boost energy efficiency, generate an increasing share of power and heat from low-carbon sources, reinforce and expand electricity networks and innovate towards new low-carbon technologies, including low-carbon gases such as hydrogen.
4. The Bank will support the EU in delivering these targets. The Bank typically supported around EUR 10-12 billion per year in the EU in recent years. It will therefore focus on deploying its support most effectively to foster the overall EUR 400 billion investment needed and on catalysing the private sector.
5. The investment challenge to meet the 32.5% energy efficiency target by 2030 is considerable. Despite significant policy attention over recent years, for various reasons many investment opportunities to save energy are not taken. The Bank believes it can help address this persistent investment gap.
6. On the supply side, meeting the target of a share of at least 32% for renewable energy by 2030 is likely to require at least doubling Europe's current capacity in renewable power generation. Much of this will be met from variable sources (wind and solar) that are increasingly being integrated into electricity markets. Meeting the target will also require further investment in heating from renewable sources and low-carbon gases. The Bank will focus on helping Europe deliver the renewable energy target.
7. As noted in the Paris Agreement, significant innovation and deployment will be required to enable an effective long-term response to climate change. The EU [Strategic Energy Technology Plan](#) provides a roadmap to improve technology performance, complemented by detailed [implementation plans](#) to help deliver the improvements through particular projects. The Bank will continue to support projects developed under these plans, as well as the wider deployment of mature technologies. This includes the development of alternative energy carriers, such as hydrogen.
8. In addition to innovation, there is a need to invest in new types of energy infrastructure, such as different types of storage, demand response and new digital technologies. This can help to integrate high shares of renewables across different sectors of the economy. The new EU electricity directive opens up new opportunities for investment. The Bank will seek to support these new types of investment.
9. Finally, reinforcing electricity grid infrastructure is important to enable increased electrification and integration of renewables and new types of energy infrastructure in energy systems.

Investment in national electricity networks is likely to increase in the next decade, both at transmission and distribution level. The EU has an interconnection target of 15% of installed capacity for 2030, following the 10% target for 2020. The Bank will continue to support the development of the electricity network.

Providing additionality

10. The EIB can in principle support a variety of energy investment projects, ranging from energy efficiency investments, power plants and energy grids to new business models and innovation. This section focuses on how, at the general level of the energy sector as a whole, the Bank can provide a significant degree of additional value, in the context of existing energy policies implemented by the EU and Member States and considering the need to mobilise private sector finance for the large majority of the overall investment needed.
11. As a public bank, the EIB is invited to consider areas of investment in which markets may fail to invest (either at all, quickly enough or to the same extent) in infrastructure needed to meet the requirements of society. Box 1 summarises the main types of market failures associated with the energy sector. In the light of the Clean Energy for All package, as well as the scale and type of investment needed to meet the ambitious EU goals, there are three areas where the Bank can potentially provide particularly significant additional value.
12. Firstly, the Bank can contribute to the closing of persistent investment gaps. There are areas in which, despite policy support and the availability of finance, there is substantial evidence that investment remains too low. This is relevant for energy efficiency, in particular the renovation rates of buildings, or investment in low-carbon innovation. Overcoming these investment barriers will be essential to meeting 2030 targets.
13. Secondly, as a long-term investor, the Bank supports investment decisions taken to meet long-term goals. Energy infrastructure is largely a very long-term business. The Bank can help focus its support on infrastructure that will be used for decades to come, when energy systems will need to be low-carbon. This is particularly relevant for energy grids, infrastructure enabling sector integration and innovation more broadly.
14. Finally, the Bank can support new market-based investment in the energy sector. This includes projects deriving their revenues (in part or in full) from energy markets or tendered using market mechanisms such as auctions. Increasing shares of solar and wind production mean that electricity markets will be characterised by frequent switching between periods of relative production surplus and periods with relative shortage. Market prices can help send important signals about the need for investment in different types of system flexibility, such as storage, interconnection, demand response, further variable renewables, etc. This is a relatively new development within the EU, but also with a limited track record upon which to raise finance. The Bank can help to support projects structured appropriately for this new regulatory framework.
15. This general approach has been used in Chapter 4 to identify more detailed areas in which the Bank can bring higher additional value. Furthermore, the annex contains clear guidance on the types of energy projects that the Bank will record as providing a high contribution to the energy lending policy.

Box 1: Additionality and market failures in the energy sector

In economic theory, private markets lead to efficient decisions – including investment decisions – under a demanding set of conditions. In reality, these conditions are only met to varying degrees. Investment decisions are likely in practice to be hampered for a number of reasons. In the energy sector, these include:

- The presence of environmental externalities – notably carbon emissions and local air pollutants – that are only partially internalised;
- Externalities that are not captured in the return on investment, notably for companies investing in low-carbon innovation and industrialisation, and for energy efficiency investments;
- Some public goods characteristics of energy security that cannot be captured by investors;
- The incomplete nature of markets, particularly due to the lack of liquid futures markets to hedge investments, compounded by the time required to change the design of markets;
- The imperfect nature of competition, in activities which have been only relatively recently opened to competition, but also in the case of electricity grids, which are natural monopolies;
- The presence of informational barriers, particularly for smaller actors, and coordination failures between Member States.

EU and national energy policies are largely directed at addressing these shortcomings and thus ensuring that European energy markets function well. Nevertheless, despite this policy and regulatory framework, investment levels in practice tend to remain too low, particularly for the types of energy assets required for the energy transformation. The Bank cannot necessarily solve this problem alone. However, by supporting particular types of projects, it can complement and reinforce climate and energy policy.

Working with Member States to build on the national and energy climate plans

16. To put this general approach towards providing high additional value into practice, it is necessary to apply this within the specific circumstances of a project, i.e. a specific business model or counterparty operating within a specific regulatory and market environment. The new national energy and climate plans provide a new opportunity to assess the strategic role of the Bank within a national context.
17. The Bank will therefore seek to **strengthen its dialogue with Member State governments** and relevant actors in the energy sector on the basis of the final national energy and climate plans. The national plans are required to present, where applicable, financing measures both at the national and European level. As one significant additional source of EU-level financial support, the Bank will therefore offer to organise dedicated **Energy Finance Workshops** with interested Member States to identify how its lending and advisory services can be most effectively directed towards supporting these plans.

Phasing out lending to fossil-fuel energy projects

18. As set out above, the Bank will focus on the long-term investment required to meet the EU 2030 targets and 2050 objectives, which present high investment gaps, a longer-term perspective and a greater investment challenge. A consequence of the focus on these priorities is that the Bank will **phase out support to energy infrastructure directly associated with unabated fossil fuels**.
19. Once in effect, this means that the Bank will not support upstream oil or natural gas production, coal mining, infrastructure dedicated to coal, oil and natural gas (networks, liquefied natural gas terminals, storage).

20. Instead, in the energy sector⁷ the Bank will support the development of low-carbon fuel projects, and the infrastructure needed to integrate low carbon gases into existing gas infrastructure. The Bank will continue to support digitalisation of existing energy networks including smart meters intended to reduce gas consumption and the purchase of efficient gas-fired boilers as part of wider energy efficiency programmes for buildings or SMEs.
21. Regarding power generation, the EIB will support power projects resulting in specific emissions below a certain threshold. The level of this emission standard is set at 250 gCO₂ per kWh of electricity generated⁸. This level was set to allow the Bank to focus on the most efficient combined heat and power projects. For power plants progressively increasing the share of low-carbon gases, the emission standard can be met on average over the plant's economic lifetime. The Bank will also seek to support research and development into the use of hydrogen by gas turbine technology.
22. The Bank's decision to phase out lending to fossil fuels energy projects is a significant change in its policy. To manage this change smoothly, the Bank will continue to potentially approve gas infrastructure projects already formally under appraisal⁹ until the end of 2021. Moreover, during this period, the Bank can approve any gas infrastructure project on the 4th PCI list co-financed with EU budget.
23. Phasing-out support for fossil fuel projects reflects a decision by the Bank to focus its limited resources on investments needed to meet the EU 2030 targets. The Bank acknowledges that fossil fuels will continue to play a role within the global energy system up to 2030 and that switching from oil or coal to natural gas may reduce greenhouse gas emissions in the short term. These investments are very likely to take place even without EIB financing.
24. It is important to note that the Bank will continue to support security of supply without relying on fossil fuels. This support will be channelled directly by reinforcing electricity networks, as well as indirectly by reducing energy demand through energy efficiency projects, or through low-carbon power generation. The Bank wishes to focus on newer dimensions of security, such as through demand response or storage, which need to be deployed at scale.

Providing new support for the transition

25. Meeting long-term energy and climate targets may have different impacts across the Union. As mentioned in paragraph 23 of Chapter 2, some Member States need to increase investment more than others to meet the 2030 targets. Traditional energy industries such as coal mining are important economic activities in regions throughout the Union, providing significant local employment. These issues touch upon questions of social justice and solidarity. The Bank is committed to ensuring the success of the transformation and will therefore create a dedicated **Energy Transition Package (ETP)**.
26. As recognised in the Emissions Trading Systems Directive, some countries are eligible for support under the Modernisation Fund¹⁰. Under the Energy Transition Package, and as an exception to its

⁷ Infrastructure dedicated to providing fuel for transportation is covered by the bank's transport lending policy. Under the current policy, alternative transport fuels are supported by the bank.

⁸ The level of emission is above the benchmark being proposed under the EU taxonomy for sustainable investment in its 18 June 2019 report, which is 100 gCO₂/kWh.

⁹ Including Projects of Energy Community Interest (PECI) and in the list of Projects of Mutual Interest (PMI).

¹⁰ The beneficiaries are listed in Annex IIb of Directive (EU) 2018/410 as Bulgaria, Czech Republic, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Romania and Slovakia. However, in order to respect the Emissions Trading Systems Directive, the Energy Transition Package will also include projects "aiming at the decarbonisation of the electricity supply of Greece's islands."

general rule, the Bank will consider financing up to 75% of the eligible cost of all energy projects eligible under this energy lending policy¹¹ situated within those Member States benefitting under the Modernisation Fund. In the context of the national energy and climate plans, the Bank will also look to provide advisory services to support the transition. This is partly underway through the JASPERS initiative and, in close cooperation with the EC, could potentially be reinforced in the framework of additional project development services.

27. Without prejudice to the MS competence on the EU budget, the EIB commits to work with the European Commission on the Just Transition Initiative in order to unlock finance and expertise in the areas covered by this initiative, consistent with the Bank's Energy Lending Policy. There is a need to address the impact of the phasing out of fossil fuel activities on employment and economic activity at a local level, ensuring economic restructuring which gives rise to new employment opportunities. The Bank is already active in several **coal and carbon-intensive regions** providing framework loans to support integrated territorial development strategies. Through the Energy Transition Package, the bank will support the implementation of the Just Transition Initiative, including reconversion projects at coalmines, where consistent with this ELP. Note that this support for integrated development strategies goes beyond the scope of this energy lending policy, and will be addressed more comprehensively over time in the framework of the Bank's climate strategy.

Supporting the energy transformation and energy access outside the Union

28. Outside the Union, the Bank will support the development of energy systems that are low-carbon, efficient and reliable, and which improve access to modern and affordable energy. In large parts of the developing world, demand for energy services is growing rapidly and requires the construction of new energy infrastructure that will help foster sustainable economic growth for decades to come. The Bank will focus its support on energy technologies consistent with decarbonisation and the energy transformation. By applying its environmental and social standards and procurement processes, the Bank will continue to ensure the support of sustainable, high-quality infrastructure that delivers long-term economic benefits.
29. As part of its commitment to inclusive and sustainable growth, the Bank will continue to support energy projects that contribute to the aims of the 2030 UN Agenda for Sustainable Development, notably ensuring universal access, accelerating improvement in energy efficiency and doubling the share of renewable energy by 2030 (Sustainable Development Goal 7). Clean energy improves air quality for local populations. Energy is a necessary condition for essential services (education, health) for industrialisation, job creation and economic development (Sustainable Development Goal 8), improving health and well-being (Sustainable Development Goal 3) and poverty alleviation (Sustainable Development Goal 1).
30. The Bank will focus support on the energy transformation within Europe's neighbouring regions: the European energy community, the eastern neighbourhood and southern neighbourhood. The Bank will also support projects in sub-Saharan Africa, where the share of the population with access to modern energy services remains very low. More generally, the Bank will also seek to support the energy transformation in other regions, in particular Asia and Latin America. The Bank will strive to continue to develop a range of financial and non-financial instruments addressing the needs of different regions, in particular in the context of the EU Neighbourhood Development and International Cooperation Instrument initiative and in accordance with the Bank's mandates in these different regions.

¹¹ To avoid doubt, this refers to all projects eligible for support under this energy lending policy from 2021 onwards.

31. The Bank's energy lending volume represents only a tiny fraction of the required investment outside the EU. The Bank will continue to reinforce its activities with donors to blend its financial support with technical assistance and investment grants. A wide range of technical and financial advisory support is required across the project cycle, including capacity building. Although the Bank clearly understands that national climate ambitions embodied in the Nationally Determined Contributions are differentiated, the Bank will seek to advance the global leadership of the EU on sustainable development, including climate action. **The Bank will therefore look to support projects that reinforce the Nationally Determined Contributions.**

4. The core components of the energy lending policy

1. This chapter summarises the new policy. It is structured around four themes:
 - Unlocking energy efficiency;
 - Decarbonising the supply of energy;
 - Supporting innovative technologies and new types of energy infrastructure;
 - Securing the enabling infrastructure.
2. The Bank recognises that the “energy efficiency first” principle applies across all energy investment activities. This refers to the need “to consider, before taking energy...investment decisions, whether cost-efficient, technically, economically and environmentally sound alternative energy efficiency measures could replace in whole or in part the envisaged...investment measures”. For the Bank, this translates in practice into a requirement to consider carefully the impacts of energy efficiency on future energy demand, when assessing the economic case for energy investments. In this sense, this principle applies to the entire energy lending policy.
3. Annexes I-IV provide further material on the technical and economic criteria used by the Bank in the appraisal of potential projects. These annexes are structured according to the same themes as this report, specifying criteria for all the Bank’s operations, both inside and outside the Union.

Figure 1: Themes of the energy lending policy



Unlocking energy efficiency

4. The EU has agreed on an energy efficiency target of 32.5% by 2030. Outside the Union, the UN sustainable development goals seek to double the global rate of improvement in energy efficiency by 2030. Given the persistent investment gap in this area described above, the Bank has an important role to play in supporting EU and national policies to stimulate the necessary investment, both within and outside the Union.
5. Energy efficiency concerns all sectors of the economy and hence is relevant across the Bank's activities. As set out in more detail in Annex 1, the energy lending policy focuses on investments required to reduce demand for energy in buildings and industry, as well as in the supply of energy. To be eligible on energy efficiency grounds, a project needs to demonstrate credible energy savings compared to a baseline.
6. This section sets out three areas on which the Bank will focus in the years ahead: an initiative to increase the renovation rates of buildings; support for high levels of energy performance in new buildings; and the increase of energy efficiency investment by SMEs and industry more broadly. There is an urgent need to invest, and financing energy efficiency remains complex. The Bank will continue to support energy efficiency through energy performance contracts, which is particularly relevant to public sector programmes. To accelerate the uptake of energy efficiency investment, the **Bank will finance up to 75% of the eligible portfolio capital cost**, both within and outside the Union.

A European Initiative for Building Renovation

7. Recent European Commission modelling work shows that investment in energy efficiency in Europe will have to more than double in the coming decade. There is a persistent investment gap in building renovation. Owners and other stakeholders have to make decisions to invest in energy efficiency measures. The availability of attractive financing conditions can help encourage that decision.
8. Most of the required individual renovation investment projects are relatively small. The Bank can reach these projects by working in partnership with cities, municipalities, housing companies, funds and corporates, as well as through financial intermediaries with local retail networks. Although the regulatory environment differs across Europe, the Bank has considerable experience in providing finance to partners through a variety of channels, including climate action credit lines, sharing the underlying risks contained within the partner's portfolio of energy efficiency loans, and ensuring access to technical assistance and advisory services that help develop internal capacities to appraise energy efficiency investments. These elements have been put in practice through a number of recent initiatives, including the [Private Finance for Energy Efficiency](#) and Smart Finance for Smart Buildings Facility.
9. Experience has shown that support for project development can be particularly helpful in overcoming investment barriers in building renovation. Indeed, solely improving the terms and availability of debt for energy efficiency projects is rarely sufficient. Many investment opportunities, even those offering relatively short payback periods, are not taken. Technical assistance is usually provided in cooperation with the EC for a wide range of energy efficiency activities, from upstream policy development to capacity building and project development, which includes the provision of energy audits.
10. In the EU, together with the EC, the Bank has developed the [European Local Energy Assistance](#) (ELENA) facility, which has worked for over ten years to help devise large-scale bankable energy

efficiency projects and programmes. The facility focused initially on supporting public authorities, but now also includes private entities, such as banks. The facility has been expanded with a further EUR 97 million that the Bank will seek to deploy over the period until 2023. This additional funding is focused on residential buildings and aims to support the joint Smart Finance for Smart Buildings initiative.

11. Building on this experience, the Bank will establish a **European Initiative for Building Renovation**. This new facility will increase the visibility of the Bank's activities, give priority to renovation and reinforce Bank support for:

- The aggregation into portfolios of building renovation projects and the provision of tailored financial support, ranging from traditional long-term loans to guarantees, equity or receivables financing. This support can be provided alongside national or regional financial support programmes;
- New sources of finance. The Bank will consider supporting new ways to attract finance for building rehabilitation, which may include unlocking new markets in energy efficiency mortgage-based lending or securitisation;
- Linking the financial products developed with dedicated technical assistance, notably under ELENA, which can help further increase volume and impact.

The Bank will work in cooperation with the EC to seek further opportunities to develop and support activities in building renovation, with the objective of scaling up lending to this sector, which is facing the biggest investment gap in the EU.

12. There are tremendous opportunities to save energy outside the EU as well. In the Bank's experience, access to funding to help support the preparation and implementation of projects, as well as investment grants, can help deliver significant additional investment. The Bank will therefore seek to increase its cooperation with the EC and other partners to develop and implement programmes to deliver finance and technical assistance for building rehabilitation programmes, notably in the partner and southern and eastern neighbouring countries.

Support to new buildings that exceed national mandatory standards

13. The Bank has supported the initial development of the market for "nearly zero energy buildings" in Europe over the last five years. It intends to continue to support construction of new buildings with high energy-performance standards.

14. To be considered an energy efficiency project, the energy performance standard of new buildings supported by the Bank¹² will need to exceed national mandated standards and building codes transposing the Energy Performance of Buildings Directive¹³. Moreover, as set out in detail in Annex 2, the Bank will focus its support on housing or buildings that serve a wider public function.

¹² The Bank will continue – under different public policy goals – to support the construction of certain types of new buildings that meet minimum legal standards. However, they will be eligible under those different policy goals and not as energy efficiency projects.

¹³ Directive 2010/31/EU on the energy performance of buildings, as amended by Directive (EU) 2018/844. The implementation of the Energy Performance of Buildings Directive requires that national nearly zero energy buildings standards apply to all buildings from 2021. This implies that private buildings achieving nearly zero energy buildings levels, which obtain a building permit until end-2020, remain eligible for EIB financing. The Energy Efficiency Directive requires that savings that result from the implementation of mandatory Union standards shall not be claimed as energy savings.

15. Outside the EU, the rapid pace of new building construction in many countries plays an important role for future energy efficiency. Applying the same principle as within the EU, the Bank will therefore support new construction that goes significantly beyond current practice in a given country, even in the absence of mandatory targets.

Small and Medium-sized Enterprises (SMEs)

16. SMEs, as well as the heating and cooling sectors, represent another important domain in which to target energy efficiency. While major industry tends to be already energy-efficient in the EU, industrial and service SMEs collectively represent one of the largest untapped markets for energy efficiency. SMEs face various barriers that deter the adoption of energy efficiency measures, such as the fragmentation and small scale of the investments, the lack of internal energy-specific capabilities, insufficient information and the limited access to suitable financial products.
17. Given the similarities between SME programmes and building renovation programmes, in terms of delivery channels and investment barriers, the Bank will seek, in close cooperation with the EC, to integrate SME lending into the European Initiative for Building Renovation. This will allow the Bank to provide an integrated package of advisory support and tailored financial support to financial intermediaries.

Decarbonising energy supply

18. The EU has agreed to reduce greenhouse gas emissions by 2030 by at least 40% from 1990 levels. To achieve this target, the EU has revised the Emissions Trading Scheme, which covers power and heat generation and energy-intensive industry. In addition, the EU climate and energy framework includes a binding target of at least a 32% share of renewables in the final energy mix by 2030. This is likely to translate into a share of around 60% of renewables in the electricity energy mix by 2030, with around 30% from variable sources (wind and solar).

Supporting renewables

19. Meeting the EU 2030 target is likely to involve doubling or tripling today's capacity in renewable power generation¹⁴. The competitive tendering of new capacity and increasing market integration is expected to achieve further cost reduction and deployment of efficient technologies. Deploying this massive capacity of renewables is likely to pose some challenges in terms of system integration, local acceptability and coordination between actors responsible for energy and climate policy. An increasing portion of investments will also be required to maintain and repower existing capacity. The Bank will look to support the roll out of renewables as set out in national energy and climate plans developed by Member States, which collectively need to achieve the EU 2030 target. For renewable projects with a high policy value and where the EIB involvement accelerates the implementation of projects, as set out in Annex II section 2, the Bank will extend its support to up to 75% of the project cost.
20. Moreover, the new European legal framework for renewables seeks to enhance regional cooperation between Member States, including through joint projects and schemes. The Bank will

¹⁴ The Communication on A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, COM(2018) 773 final, (Section 4.2.2.3) forecasts wind capacity to increase from 140 GW in 2015 to 350 GW in 2030 and then to between 700 and 1200 GW by 2050 depending on the scenario. Solar capacity grows from 95 GW in 2015 to 320 GW in 2030 and 500 to 970 GW in 2050 depending on the scenario.

give particular attention to supporting such renewable projects, including cross border schemes, and will cooperate closely with the European Commission in the context of the Union's renewable energy financing mechanism¹⁵.

21. As the market share of renewables increases, EU policy seeks to further integrate renewables into power markets. Market integration is necessary to reduce levels of public support and ensure that market revenues increasingly reveal the different values of particular technologies in particular locations. There is a shift from a cost-based approach to a value approach to assessing renewable projects. When appraising the benefits of wind or solar, the Bank considers the profile of generation and takes into account the evolution of the value of production as the market share of variable renewables increases over time.
22. Renewable projects without government support have become an emerging trend in the market. The new legal framework – in particular the EU Emissions Trading Scheme, the renewable and electricity directives – aim to strengthen market price signals. Corporate power purchase agreements are being signed in Europe. Nevertheless, it is still relatively early to conclude how these improvements in the functioning of the wholesale electricity market will impact on investment incentives, including on the availability and cost of finance.
23. Given the large investment needs, the Bank sees a continued role in helping support the market integration process, in particular where exposure to new sources of risk may impinge upon the terms and conditions available in the commercial banking market for renewable projects. The Bank will seek to use the risk-sharing capacity available through InvestEU, or other sources of funding, to reinforce its activities in this area. In particular, the Bank will explore in consultation with the EC the possibility of providing a targeted financial instrument to help support the development of the emerging corporate power purchase agreement market.

Investing in technologies needed for decarbonisation

24. In addition to wind and solar, long-term decarbonisation targets are expected to require investment in a wide portfolio of technologies, including some renewables which currently have relatively high costs. Available evidence¹⁶ suggests that there is strong potential for cost reduction as the deployment of some promising technologies increases. The Bank will therefore continue to focus its support on the early deployment of these technologies with the aim of increasing industrial learning and promoting future cost reduction. When appraising such projects, however, it is difficult to estimate the contribution of an individual project to future cost reductions. As set out in Annex II, the Bank will in general assume a positive overall economic justification for such projects.
25. For the purposes of this review, the Bank's policy for support for nuclear power generation and fuel cycle projects remains fully applicable and unchanged from the previous policy¹⁷ approved by the Board in 2013.
26. The decision to phase out power and heat generation from fossil fuel sources results in the application of a new emission standard by the Bank. The technologies and types of projects

¹⁵ This is established under Article 33 of Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

¹⁶ For a recent survey, see JRC Technical Report (2018), Cost development of low-carbon energy technologies: scenario-based cost trajectories to 2050.

¹⁷ The technical and economic assessment criteria approved in 2013 (CA/466/13, Document 13/331) are available in the [Energy Lending Criteria](#), paragraphs 135 to 142, pp. 33-35.

affected are identified in Annexes II and III: renewable projects with GHGs (e.g. large hydro or geothermal), thermal power plants using a high proportion of low carbon fuels (e.g. low-carbon gases, bioliquid fuels), highly efficient gas-fired co-generation of heat, power and/or cooling, decentralised energy (e.g. decentralised hybrid systems in islands).

27. The emission standard is set at a level that enables the Bank to finance efficient flexible cogeneration of heat and power projects. Based on recent projects appraised by the Bank, the emission standard is set at 250 gCO₂/kWh_e. This level is above a proposed EU benchmark for sustainable investment but it enables the bank to focus on projects needed over the long term by encouraging innovation, focusing on the development of new sources of flexibility and accelerating the development of low-carbon gases.
28. In comparison with power generation, renewable heat is still at a relatively early stage of adoption. Under the recast Renewable Energy Directive¹⁸, Member States will endeavour to increase the share of renewable energy supplied for heating and cooling. As set out in detail in the Annex, renewable heating technologies (e.g. geothermal, ambient air, biomass, solar) are all eligible for support by the Bank.
29. In addition, the Bank will also support the production of low-carbon gases, including hydrogen, biogas and synthetic gas, as well as renewable liquid fuels. These energy carriers can play an important role in long-term decarbonisation and require the development of an appropriate regulatory framework in the coming years. The conditions for support to low-carbon gas infrastructure are set out in Annex IV.

Supporting innovation and new energy infrastructure

Supporting innovative technologies

30. As noted in the Paris Agreement, significant innovation – and deployment of this innovation through commercial production – is required to accelerate and enable an effective long-term response to climate change. The Bank will support the competitiveness of EU industry in low-carbon technology, including by strengthening the sustainable supply of critical raw materials. In addition to improving existing technologies, there is also a need to explore new technological pathways and develop new solutions to manage the interactions between different sectors and integrate the increasing share of renewable energy.
31. A key cornerstone of the energy transformation is the possibility of benefitting from the contributions of a wide portfolio of energy technologies and services. Many of these technologies are still at the RDI stage and need to achieve substantial performance and cost improvements. The EU [Strategic Energy Technology Plan](#) provides a roadmap to improve technology performance, complemented by detailed [implementation plans](#) to help deliver the improvements through particular projects. **The Bank will continue to support projects aligned with the Strategic Energy Technology Plan**, with particular attention paid to the underlying implementation plans.
32. Demonstrating relatively early stage technologies usually requires public support, such as renewable energy support schemes or grants. Within the context of the fourth phase of the EU Emissions Trading Scheme, the EU has agreed to develop what will become one of the world's largest funding programmes for innovative energy technologies, the **EU Innovation Fund**. Based on its experience, the Bank has worked closely with the European Commission on the design of

¹⁸ Article 23 of Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources.

the new fund. Moreover, in due course, the Bank will seek to provide additional financial support to those projects that are awarded funding under this scheme.

33. Standalone large-scale demonstration projects, however, need to be accompanied by significant deployment of key energy technologies. Development of new production lines for innovative technologies helps to boost European industrial competitiveness. The EU supports innovation and industrialisation of key energy transformation technologies in Europe. In that perspective, in addition to RDI programmes, the Bank will also support investment in pilot and demonstration plants, or initial full-scale commercial production lines related to breakthrough technologies supported under the Strategic Energy Technology Plan and Horizon Europe, such as promising, innovative renewable energy, energy efficiency, heating and cooling or storage technologies.
34. Innovation and its commercialisation is also required to ensure the diffusion of new technologies for consumers, building on opportunities created through the wider trend of digitalisation and decentralisation. Smaller companies are critical in this regard, although often confronted with particular challenges in raising financing. The EIB will continue to deploy its tailored instruments in this field, including through venture debt and equity funds.
35. To conclude, the development and commercialisation of innovative technologies requires significant investment. However, given the inherent risks involved, conventional debt finance is often unavailable. This has led the Bank, working closely with the European Commission, to develop dedicated financial instruments, which provide direct support to a project, but also serve a wider function in signalling to other potential financiers. **The Bank will look to consolidate this experience to reinforce its support for innovative energy technologies, including for initial production lines**, in particular through InvestEU. The technical and financial expertise of the Bank stands ready to support the origination and implementation of projects via its portfolio of advisory services.

New types of energy infrastructure: battery storage, demand response and decentralised energy sources

36. New technologies, market rules and players are leading to the rapid development of new sources of energy and flexibility. This includes: (i) the provision of flexible sources to the power system derived from battery storage, increasing electrification and demand response; and (ii) the deployment of small-scale decentralised energy sources, enabled by the digitalisation of energy.
37. The capital investment needs for these new types of energy infrastructure are difficult to estimate. New entrants are often involved – energy consumers, energy service companies, energy communities or aggregators – and tend to rely on relatively novel business models for energy producers or consumers.
38. New entrants are likely to encounter difficulties in raising finance in general. This is potentially exacerbated if they are exposed to the risk of wholesale market prices. New market design rules have recently been adopted and financiers cannot take comfort from an established track record.
39. The Bank will seek to support these new types of market-driven energy infrastructure, including with upstream advisory services to help develop robust business models. Nevertheless, the financial risks around new energy business models can be high. The Bank therefore expects to support such projects and counterparties using appropriate financing solutions, potentially supported by EC risk-sharing mandates. Bank financing volumes may remain modest, but they can have a strong early demonstration effect, helping to leverage additional private sector investment.

40. Finally, many new sources of flexibility are still at an early stage of deployment and have relatively high costs. This is expected to change as the capacity deployed increases. For the purpose of its appraisal of such projects, the Bank will adopt a similar approach to that taken for technologies still at an early stage of deployment. It will assume in general that the long-term economic benefits can justify higher initial costs, in particular when there are novel features associated with the technology, revenue streams or market rules. However, in appraising a particular project, the Bank will benchmark it against available sector evidence, notably in terms of cost and expected revenues.

Securing the enabling infrastructure

Investing in strengthening electricity networks

41. For the electricity market, the energy policy framework adopted in 2018 confirms an interconnection target of 15% of installed capacity¹⁹ for 2030, following on from the 10% target for 2020. Such projects typically face coordination issues between Member States. The third list of projects of common interest contains 106 electricity transmission and storage projects, and four smart grids that can benefit from EU grants under the Connecting Europe Facility. The EIB will also continue to support these projects.
42. Besides interconnections, investment in national electricity networks is likely to remain high for the next decade, both at transmission and distribution level. The new Directive on common rules for the internal market in electricity (Electricity Directive) introduces measures to ensure that distribution system operators develop investment plans supporting the integration of renewables. The Directive promotes the use of flexibility sources in distribution networks and requires distribution system operators to cooperate with transmission system operators for the effective participation of these distribution-connected flexibility sources (including renewables, demand response, energy storage and market participants engaged in aggregation) in the internal market (including retail, wholesale and balancing markets). This infrastructure needs to be developed in a timely fashion and anticipate future long-term flexibility needs in order to avoid the risk of slowing the deployment of renewables.
43. Electricity network investment decisions are taken for the long term and this makes the sector a natural fit for a long-term lender such as the Bank. The growth in these types of project will depend on network companies' investment plans and national regulatory frameworks.
44. The Bank will give high priority to projects that will enable the integration of renewables (connection, increase in maximum hosting capacity, reduction of curtailment, etc.) and infrastructure that will be needed to support the development of electromobility and of decentralised flexibility sources connected to distribution networks. The Bank will support the development of energy communities and microgrids, enabling investment in new types of energy infrastructure, including in small isolated systems. This may include, in particular, projects increasing the degree of automation, digitalisation and "smartness" of power systems.
45. In countries outside the EU, the action of the EIB focuses on access to electricity as a fundamental requirement for economic development and regional integration.

¹⁹ Communication on strengthening Europe's energy networks, COM(2017) 718.

Supporting the transition to low-carbon gas networks

46. The Bank will support gas network projects that are planned to transport low carbon gases, including the rehabilitation and adaptation of existing gas infrastructures when it is part of this goal. As set out in Chapter 3, from 2021 onwards the Bank will no longer support investment in other natural gas infrastructure.

Heat networks

47. District heating networks can play an important role in certain markets both in the EU and outside the EU, and can be used by decarbonised sources of heat supply. The Bank will continue to finance the expansion and rehabilitation of these networks under the conditions set out in Annex IV. In parallel to its financing, the Bank is providing project preparation and implementation support to public authorities and promoters developing strategies to decarbonise district heating systems.

48. Outside the EU, the EIB will continue to work with the EC and other partners to develop and implement programmes to deliver energy efficiency finance and capacity building technical assistance for district heating, notably in the partner and southern and eastern neighbouring countries.

ANNEXES

Updated in May 2023

EIB ENERGY LENDING POLICY

Introduction

This document contains updated annexes to the Bank's Energy Lending Policy (ELP) adopted by the EIB's Board of Directors in November 2019. It replaces the initial set of annexes published in November 2019. This update includes technical changes needed after three years of implementation and to reflect some of the recent developments in EU policy. It is issued concurrently with the mid-term review of this policy that can be accessed [on EIB website](#). The ELP adopted in 2019 already focused the Bank on energy efficiency, renewable and other low-carbon fuels, electricity (and heat) networks and innovation.

These annexes apply to energy projects financed by the European Investment Bank, including operations inside and outside the European Union, to intermediated financing and financing under the lending mandates of the Bank. They are consistent with the Paris alignment framework defined in the EIB Group's Climate Bank Roadmap.

The annexes refer to the themes outlined in the main ELP report. Each is structured in a similar manner. Section 1 defines the classes of projects that are eligible for the Bank's financing and are consistent with the Paris alignment framework defined in the EIB's [Climate Bank Roadmap](#) approved in 2020. Based on the rationale presented in the ELP's main document and the [Additionality Impact and Measurement Framework](#), section 2 of each annex indicates the types of projects that the Bank sees as providing a particularly high level of support to the Bank's energy lending policy objectives. Lastly, section 3 sets out specific technical and economic criteria that the Bank applies when appraising a particular type of project.

In order to contribute to the European Union's REPowerEU Plan²⁰, the EIB has the ability until the end of 2027, to provide financing of up to 75% of project costs for all renewable energy, electricity network and green innovative energy projects. This was already the case for energy efficiency projects since the 2019 ELP.

Annex V to the ELP, on carbon pricing, was replaced in 2020 by Annex 5 to the Climate Bank Roadmap (see CBR pp. 115-121), which defines carbon shadow prices aligned with the objective of the Paris Agreement. These aligned carbon prices are presented below (Table 1). The Bank's shadow cost of carbon has been aligned to reflect the best available evidence on the cost of meeting the Paris temperature targets.

²⁰ [EIB boosts clean energy financing in support of REPowerEU Plan](#)

Table 1: Recommended aligned EIB shadow cost of carbon (€₂₀₁₆/tCO_{2e})

	2020	2025	2030	2035	2040	2045	2050
Value (€/tCO _{2e})	80	165	250	390	525	660	800

Source: Climate Bank Roadmap

Please note that the lending criteria in these annexes are not exhaustive, and as part of its due diligence the Bank's technical teams may require additional criteria on a case-by-case basis. This document presents criteria specific to energy projects that complement the Bank's general requirements in terms of economic appraisal, procurement, environmental and social standards and climate reporting. The key documents and standards applied by the Bank across sectors are as follows:

- [Guide to Procurement for projects financed by the EIB](#)
- [EIB Environmental and Social Standards](#)
- [The EIB Group PATH Framework](#)
- [EIB Project Carbon Footprint Methodologies](#)
- [EIB Group Climate Bank Roadmap 2021-2025](#) (see in particular Annex 2, Table A — Energy)
- [The Economic Appraisal of Investment Projects at the EIB](#) (under review)

The EIB adopts changes to its standards and guides on a regular basis and the latest versions are available on the EIB website.

Technical changes to these energy annexes may be made over time. If so, the revised version will be uploaded in due course onto the dedicated energy webpages of the EIB.

Annex I: Energy efficiency

This annex covers energy efficiency in buildings, industry, small and medium enterprises (SMEs), public lighting and cogeneration. It does not cover energy efficiency in transport.

1. Eligibility

In principle, the Bank can support the following types of projects:

- Renovation: projects that improve the energy performance of existing buildings.
- New construction: buildings exceeding minimum regulatory requirements, promoting best market practice and in addition contributing to increase the stock of housing or serving wider public policy goals such as urban regeneration, education, public research or the provision of healthcare services;
- Other investments motivated by energy efficiency: public lighting renovation, industrial facilities, small and medium enterprises (SMEs).

The same criteria apply both inside and outside the European Union. However, to establish a relevant baseline, it may be necessary to carry out a detailed analysis of the minimum requirements and/or applicable market standards in certain jurisdictions.

In order to provide specific technical criteria, detailed eligibility rules for different energy efficiency sub-sectors are provided in section 3.

2. High contribution to the EIB's Energy Lending Policy objectives

When appraising projects, the Bank will deem the following types of projects to have a high alignment with the EIB's Energy Lending Policy:

- Renovation of the existing building stock. The rate of building renovation remains very low (at around 0.4% to 1.2% per year), while a rate of around 2% to 3% per year would be needed to accomplish the European Union's energy efficiency ambitions;
- Integrated, innovative energy-efficiency building technologies and solutions. Innovative or new approaches to implementing or scaling up energy efficiency (for example, energy service (ESCO) companies);
- Investments achieving the highest energy efficiency performance in new constructions (for example, net-zero buildings);
- Energy efficiency in small and medium enterprises (SMEs). Collectively, SMEs represent one of the largest untapped markets for energy efficiency measures, due to the fragmentation and small scale of the investments, the lack of internal sector expertise, insufficient information and limited access to suitable financial products;
- Outside the European Union: projects which contribute to increasing energy efficiency in line with Nationally Determined Contributions (NDCs) under the Paris Agreement.

3. Technical and economic assessment criteria

SECTOR	SUB-SECTOR	CRITERIA
Buildings	Renovations of existing buildings in the European Union	<p>The Bank will support:</p> <ul style="list-style-type: none"> all capital expenditure in renovation of existing buildings that comply with the technical screening criteria set out in the substantial contribution to climate action mitigation as set out in the Taxonomy Delegated Act; any individual measures related to improvements in the energy performance of existing buildings, substantially contributing to climate change mitigation as set out in the Taxonomy Delegated Act. <p>The expected energy savings can be estimated through an energy audit, a comparison between the energy performance certificate before and after the renovation, or any other transparent and proportionate method acceptable to the Bank.</p> <p>National energy performance standards for buildings comply with the EU Energy Performance of Buildings Directive (EPBD), that is, in line with the cost optimum level. Project promoters must ensure that their renovation measures are compliant with national energy performance standards.</p> <p>Economic assessment: In the case of investment loans, the Bank's economic assessment is based on a cost-benefit analysis that includes energy savings and a reduction in greenhouse gas (GHG) emissions [tier 1 benefits], as well as other economic benefits such as extension of economic life and reduction in maintenance costs [tier 2 benefits], when they are measurable and quantifiable. In the case of bank-intermediated operations, the economic case is assumed ex-ante to be met on the basis of the cost optimality of the national standard.</p>
	New construction in the European Union	<p>The Bank will support the construction of new buildings as energy efficiency projects if: (i) the new buildings comply with the technical screening criteria for substantial contribution to climate change mitigation set out in the EU taxonomy adopted by the EIB in a phased implementation of the criteria following the market readiness to apply such requirements; and (ii) the building contributes to increase the stock of housing or wider public policy goals such as urban regeneration, education, public research or the provision of healthcare services.</p> <p>Economic assessment: In the case of investment loans, the economic assessment is based on adjusting the financial returns, taking into consideration the economic benefits of the heat and electricity saved and the value of externalities — CO₂ savings and security of supply — and wherever possible, other benefits related to energy savings, such as lower maintenance costs, longer asset life, thermal comfort benefits, improved working environment, or higher employee productivity. The expected energy savings will derive from a comparison between the expected performance of the new building and the minimum regulatory requirements for new construction.</p>
	Renovations and new construction outside the European Union	<p>The Bank will support projects that adopt best energy standards as compared to a baseline that will be defined on a case-by-case basis by the Bank's services through a transparent, practical method, such as the International Finance Corporation (IFC)'s Excellence in Design for Greater Efficiencies (EDGE) tool. The Bank will also consider partial energy efficiency eligibility for less ambitious renovations, based on evidence of energy-related individual measures. New buildings should contribute to other public policy goals, such as housing, urban</p>

		<p>regeneration, education, public research or provision of healthcare services.</p> <p>Economic assessment: As within the European Union.</p>
Public lighting renovation projects		<p>Investments to improve the energy performance of public lighting are eligible. Extension or construction of new public lighting systems is generally excluded from the energy lending policy (such projects may be financed by the Bank under other public policy objectives). Only measures identified by an energy audit carried out in line with EN 16247 (or another equivalent standard) are eligible.</p> <p>Economic assessment: A cost-benefit analysis that includes the multiple benefits of energy efficiency, when they are measurable and quantifiable, and the externalities. The expected energy savings will derive from a comparison with the baseline.</p>
Industrial facilities and SMEs	Energy-efficiency improvements in existing industrial facilities (brownfield)	<p>The Bank will support investments under the eligibility of energy efficiency in existing industrial facilities or SMEs if these are primarily motivated by energy savings.</p> <p>Energy efficiency investments must be defined on the basis of either:</p> <ul style="list-style-type: none"> • an energy audit (in line with EU Standard EN 16247, energy or equivalent), or compliance with a white certificate scheme; • an energy management system in which the company has implemented the list of measures in ISO 50001; or • a list of measures established by the EIB, or any other transparent and proportionate method acceptable to the Bank that shows an improvement in energy performance. <p>Energy efficiency in existing industrial facilities must not increase capacity significantly. In the case of existing energy-intensive industries (sectors that have a product benchmark under the EU emissions trading system, ETS), any increase in emissions resulting from an increase in capacity needs to be fully offset by emissions savings from energy-efficiency measures within the existing capacity. This requirement would not be applicable to the energy-efficiency improvements of SMEs and mid-caps when those investments are included in their energy management systems in line with ISO 50001.</p> <p>Economic assessment: A cost-benefit analysis that includes the multiple benefits of energy efficiency, when they are measurable and quantifiable, and the externalities. The expected energy savings will derive from a comparison with the baseline.</p>

Annex II: Energy supply

This annex covers the generation of electricity, heating and cooling, as well as the production of fuels from renewable²¹ and low-carbon energy sources. Please note that innovation projects²² are included in Annex III.

1. Eligibility

In principle, the Bank can support the following types of projects:

- Renewable energy and low-carbon electricity production, combined cooling/heating and electricity production that meet the Bank's GHG emission standards;
- Electricity, heating and cooling (without electricity generation) using renewable or low-carbon fuels or electricity (such as electric heat pumps, electric chillers, and electric peak/reserve boilers);
- Efficient, gas-fired small individual boilers applicable for buildings or small and medium enterprises (SMEs) as part of broader energy efficiency projects;
- Production and storage of gaseous, liquid and solid energy carriers from renewable and low-carbon energy sources;
- Supply of critical raw materials (CRM) needed for low-carbon technologies in the European Union;
- Clean cooking solutions for households outside the European Union.

For the avoidance of doubt, the following technologies are not eligible for EIB financing, as per the EIB's Climate Bank Roadmap:

- Coal mining, processing, transport and storage;
- Oil exploration and production, refining, transmission, distribution and storage;
- Natural gas exploration and production, liquefaction, regasification, transmission, distribution and storage (see Annex IV);
- Large-scale heat production for district heating based on unabated oil, natural gas, coal or peat, allowing for the exceptions shown in heating and cooling above;
- Fossil fuels used for industrial heat production;
- Hydrogen production from fossil fuels which is not low-carbon.

²¹ The Bank defines renewable energy sources in accordance with Article 2 of Directive (EU) 2018/2001 as "energy from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, ambient energy, tidal, wave and other ocean energy, hydroelectricity, biomass, landfill gas, sewage treatment plant gas and biogases."

²² This annex covers mature technologies, namely those that have reached [Technology Readiness Level](#) 9. Innovative projects, with a lower technology readiness level, are covered in Annex III.

2. High contribution to the EIB's Energy Lending Policy objectives

When appraising projects, the Bank deems the following types of projects to have a high alignment with the EIB's Energy Lending Policy:

- Within the European Union, projects supporting the objectives of the recast Renewable Energy Directive (RED II), including a high degree of market integration²³, community schemes, the European Renewable Energy Financing Mechanism and cross-border aspects;
- The scaling-up of renewable and low-carbon technologies at an early stage of deployment, including low-carbon hydrogen production;
- Outside the European Union, projects helping to increase the share of renewables in line with nationally determined contributions (NDCs) under the Paris Agreement.

²³ That is, with exposure of renewables to market price risk, for example through power purchase agreements (PPAs).

3a. Technical and economic assessment criteria — Electricity generation

SECTOR	SUB-SECTOR/ISSUE	CRITERIA
Electricity generation	Emission standard	<p>The Bank only supports electricity generation projects which emit less than 250 g CO₂ per kWh_e. This criterion applies to all technologies including:</p> <ul style="list-style-type: none"> - electricity generation based on renewable or low-carbon energy sources (for example, geothermal, large-scale hydro, biofuel or biomass); - electricity generation with carbon capture (utilisation) and storage (CC(U)S); - electricity generation using a high proportion of renewable or low-carbon fuels or gaseous, liquid and solid energy carriers; - combined heat and power (see below); and - decentralised energy sources. <p>As an exception to this general rule, the Bank can support gas-fired electricity plants which provide a credible plan to blend increasing shares of renewable or low-carbon gas over the economic lifetime of the project, such that the emission standard above is met on average in that period.</p> <p>A practical guide on the application of the 250 g CO₂/kWh_e emission standard for electricity generation is accessible on the EIB website²⁴.</p>
	Economic assessment	<p>The EIB's economic assessment of an electricity generation project depends on the level of maturity of the technology. Competitive renewable energy technologies undergo a standard economic test to assess their value for the electricity system, taking into account the updated shadow cost of carbon defined in the Climate Bank Roadmap, Annex 5, local air pollutants and other environmental benefits, where applicable.</p> <p>The Bank's standard assessment compares the net present value of the social costs associated with the project to the social benefits of the electricity generated, estimated through the long-run marginal social cost to the system, with adjustments where appropriate for profiling and system adequacy.</p> <p>In general, the economic cost of the project will include the investment in the network required (in full, or on a pro-rata basis if shared) to export the electricity.</p> <p>The Bank adopts a different approach in the case of energy technologies which are at an early stage of deployment and for decentralised energy such as rooftop solar or isolated systems (see section below).</p>

²⁴ [Application of the 250 gCO₂eq/kWh_e emission standard for power generation](#)

Additional requirements for renewable energy sources for electricity generation	Resource assessment (all renewable energy sub-sectors)	The Bank may require adequate resource assessment, conducted by qualified specialists. In the case of non-recourse project finance, this will typically necessitate an independent study or a review of the promoter's study, that is, conducted by a party other than the promoter. This includes careful consideration of resource uncertainty. In the case of wind and solar, the study should also address the likely variation in the pattern of resource on a daily and seasonal basis.
	Biomass	The Bank requires projects to be compliant with sustainability of biomass sourcing and greenhouse gas emissions saving criteria laid down in Renewable Energy Directive II (EU) 2018/2001. For a cogeneration facility from bioenergy with a total rated thermal input of 50 MW or above, all electricity shall be produced from high-efficiency cogeneration, as defined in Directive 2012/27/EU (or as subsequently amended). Additional criteria may be required by the Bank on sustainability and security of biomass supply. All projects must also comply with the best available techniques (BAT) requirements, as per the European Commission's Implementing Decision (EU) 2017/1442.
	Waste-to-energy	Inside the European Union, any form of energy recovery from waste must be compatible with the objectives of the EU Circular Economy Action Plan and be supported by relevant national and regional waste management plans approved by public authorities. Outside the European Union, equivalent principles apply. In the case of eligible waste-to-energy projects which may include electricity, heat, and/or energy carriers, the Bank assesses the economic case based on the cost efficiency of waste treatment.
	Geothermal	The Bank does not finance standalone exploration activities. However, these costs may be eligible as part of a geothermal production project. Artificial stimulation and resulting environmental impacts will be closely scrutinised by the Bank on a case-by-case basis, including heightened scrutiny of environmental and water management, and the capability of robust ongoing regulatory oversight.
	Hydropower	Hydropower projects need to comply with the EIB's Environmental, Climate and Social Guidelines on Hydropower Development .
	Competitive technologies	The Bank closely follows the development of costs within the renewable energy industry. It deems a renewable technology to be competitive when it is likely to meet the Bank's standard economic test on sites with good resource availability. The Bank deems the following technologies to be cost-competitive ²⁵ : onshore wind, hydropower, solar photovoltaic, concentrated solar power (CSP) (parabolic trough), biomass power plants, and mature geothermal technologies.

²⁵ Renewable energy technologies displaying innovative features may be considered as innovative technologies as per Annex III.

	Technologies at an early stage of deployment	<p>The Bank recognises that some renewable technologies are not yet cost-competitive as they have not been deployed at significant scale (among other reasons), but have untapped potential to reduce costs substantially over the medium term in order to become competitive.</p> <p>For these technologies, learning benefits²⁶ cannot be easily quantified within the context of an individual project, and the Bank will run an economic test combining quantitative and qualitative analyses. However, if the cost of the project appears significantly higher than other uses of the same technology, the Bank may decide not to support a project. This analysis will also consider the impact of the project on local electricity prices.</p> <p>While recognising the progress made in recent years, for the purpose of its economic analysis the Bank still considers fixed-bottom offshore wind to be a technology at an early stage of deployment, given the limited capacity in operation and the room for further technology developments and cost decreases. It will closely follow its further development as this technology may be considered competitive in a few years once there is sufficient evidence from completed projects across various geographies.</p> <p>Tower Concentrated Solar Power (CSP), floating solar PV and certain geothermal technologies (on a case-by-case basis) are also considered early-stage technologies.</p> <p>The Bank deems floating offshore wind and ocean energies to be innovative renewable energy technologies (see Annex III).</p> <p>Solutions which combine competitive and/or early-stage technologies will be assessed on a case-by-case basis.</p> <p>For technologies at an early stage of deployment whose costs, such as the levelised cost of electricity, may be high, projects are benchmarked against other similar projects for comparative purposes and keeping track of their progress.</p>
Decentralised electricity supply	Technical requirements	<p>Additional technical requirements for decentralised energy projects, including isolated and small-scale renewable or hybrid off-grid projects:</p> <ul style="list-style-type: none"> - As for all electricity generation projects, electricity generation must result in GHG emissions of less than 250 g CO₂ per kWh_e, considering the expected final output mix for hybrid systems on an annual average. - For economic viability, the economic generation cost must be competitive when compared to the economic cost (including GHG externalities) of the next best alternative (often diesel-based electricity generators, or single-use batteries and lanterns for lighting).

²⁶ For a comprehensive survey of learning rates, see JRC Technical Report (2018), “Cost development of low-carbon energy technologies: scenario-based cost trajectories to 2050.”

3b Heating and cooling

Heating and cooling; co/tri-generation	Technology	<p>Heating and cooling technologies using electricity (electric heat pumps, electric chillers, or electric peak/reserve boilers), renewable energy, renewable and low-carbon fuels, waste heat, or combined cooling/heating and power (CCHP, CHP) generation are eligible for Bank support.</p> <p>However, as an exception to this general rule, the following components may be eligible when considered a necessary part of the purpose of a broader project:</p> <ul style="list-style-type: none"> • Small individual gas boilers and micro-gas CHP for buildings complying with minimum energy efficiency criteria, defined as A-rated in the European Union or in line with appropriate standards outside the European Union, when part of an energy efficiency project. • Peak/reserve boilers operating on natural gas (or oil, if gas is not available), when part of a renewable energy plant (for example, biomass or CSP), or an eligible district heating and cooling (DH/DC) system (see criteria for energy networks in Annex IV). <p>In the case of gas-fired co/tri-generation, the project is eligible for Bank support if it results in emissions in the production of electricity of less than 250 g CO₂ per kWh_e.</p> <p>Outside the European Union, in areas where access to energy is limited, clean cooking based on efficient liquefied petroleum gas (LPG) systems for household appliances is eligible.</p>
	Economic assessment	<p>In the case of heating or cooling, the Bank compares the project against the least cost feasible economic alternative, taking into account all relevant external costs. In the case of cogeneration, the Bank will compare the project against the separate generation of electricity and heat.</p>
Additional requirements for renewable heating	See 3a	<p>Additional requirements for renewable energy sources set out above with respect to renewable energy for electricity generation apply equally to heat production.</p>

3c Low-carbon fuels and energy carriers

Production of fuels and energy carriers from renewable and low-carbon energy sources	Technical requirements	<p>As applicable, projects will have to comply with the sustainability and GHG emission savings criteria of Directive (EU) 2018/2001 and Directive (EU) 2009/30. The technologies considered should demonstrate acceptable energy conversion efficiency. For projects outside the European Union, equivalent principles will apply.</p> <p>For projects based on biomass feedstock, additional criteria may be required by the Bank on sustainability and security of biomass supply, and independent resource assessments by qualified specialists may be required. Projects involving the use of waste for the production of energy or fuels will have to demonstrate their alignment with the European Union’s circular economy strategy and the relevant national and regional waste management plans.</p> <p>For the storage and transport of fuels, see Annex IV.</p>
	Renewable and low-carbon hydrogen	<p>For the manufacture of hydrogen, including through fossil fuels (mainly natural gas, steam methane reforming) with carbon capture (use) and storage, the EU taxonomy’s corresponding Do No Significant Harm (DNSH) to climate change mitigation criteria have to be met. The technologies considered should demonstrate acceptable energy conversion efficiency.</p> <p>For projects outside the European Union, equivalent principles will apply.</p>
	Biomass fuels	<p>For projects based on biomass feedstock, additional criteria may be required by the Bank on sustainability and security of biomass supply. Independent resource assessments by qualified specialists may also be required.</p>
	Economic assessment	<p>For the production of fuels and energy carriers from renewable and low-carbon energy sources, the Bank will combine quantitative and qualitative analyses to assess the economic viability of the project on a case-by-case basis, taking into account the end use, the production process, the longer-term cost reduction potential of the technology and other factors.</p> <p>Projects involving the production of biofuels will be assessed according to the methodology set for biofuels in “The Economic Appraisal of Investment Projects at the EIB²⁷”. New carriers in general will be subject to similar economic tests. If the scope of a project also entails environmental services, these will be taken into account too.</p>

²⁷ [The Economic Appraisal of Investment Projects at the EIB \(Under review\)](#)

Annex III: Innovation and new types of energy infrastructure

This Annex covers (i) research and innovation in energy, and (ii) new types of energy infrastructure.

1. Eligibility

In principle, the Bank can support the following types of projects:

- Corporate or national research, development and innovation (RDI) programmes;
- Commercial demonstration of innovative technologies, including both demonstration projects and innovative manufacturing processes;
- Innovative low-carbon energy technologies in the areas of renewables, carbon capture (use) and storage CC(U)S, nuclear fission and fusion, renewable energy conversion and storage, and all related information and communications technology (ICT) solutions;
- New types of energy infrastructure and new business models that contribute to increasing the flexibility of energy systems, including batteries, demand response, market participants engaged in aggregation, electrification of transport, heating and cooling, digitalisation projects in the energy sector.

The Bank seeks to support projects contributing to the aims of the Strategic Energy Technology (SET) Plan, including the RDI activities and projects identified through its implementation plans.

For relevant projects outside the European Union, the Bank's screening will apply EU-based sustainability policies and best practices.

2. High contribution to the EIB's Energy Lending Policy objectives

When appraising projects, the Bank will deem any innovative project in line with the present Annex to have a high alignment with the EIB's Energy Lending Policy.

3. Technical and economic assessment criteria

SECTOR	SUB-SECTOR	CRITERIA
Innovation	Innovation, general	<p>The Bank will seek to support research, development, demonstration and commercialisation of technologies that are innovative compared to the state of the art.</p> <p>Project promoters are expected to demonstrate the ability to:</p> <ul style="list-style-type: none"> (i) reach financial close with the required equity contribution (as applicable); (ii) deliver a technically sound project on budget and on time; and (iii) commercialise and replicate the technology in order to achieve (or enable) meaningful GHG emission reduction. <p>In cases where public support is necessary for RDI operations, for example through RDI grants or support for innovative projects with special support schemes, it is expected that projects are presented to the Bank with sufficient comfort that such support will be in place²⁸.</p>
	Commercial demonstration of innovative technologies and manufacturing processes	<p>Technologies should be demonstrated at scale and be sufficiently mature for commercialisation. In certain cases, the promoter may be asked to confirm the technology development track record, with audited data and certifications.</p> <p>For renewable energy technologies, projects need to conform to the criteria presented in Annex II.</p> <p>In the case of first commercial production lines, projects should concern breakthrough technologies contributing to the implementation of the SET Plan and Horizon Europe.</p>
New types of energy infrastructure and new business models	General	<p>The Bank will seek to support new types of energy infrastructure that are at an early stage of deployment and suffer from a lack of investment compared to what is needed to meet EU objectives. For new energy business models, attention will be paid to the regulatory and contractual framework enabling delivery of the flexibility service and justifying the new nature of the business model.</p> <p>For battery storage, the proposed technical solutions must fit with the product or service to be provided. The chemistry and sizing of batteries must be consistent with technical, regulatory and market needs.</p> <p>In terms of demand response, the Bank will finance components related to hardware, software and installation, at the exclusion of commercial and consumer acquisition costs.</p> <p>For digital components including smart meters, applications, platforms, communication and hardware components, the technology solutions must be proven or have reached adequate technology readiness.</p>
Economic assessment		<p>For innovative renewable energy technologies, given the difficulties in assessing learning benefits at project level basis, the Bank will presume in favour of the economic case. A technology-specific assessment is therefore undertaken on a qualitative basis.</p> <p>For new energy infrastructure projects, the Bank may use a quantitative economic assessment, and favour economic cases where there is a new feature associated with revenue streams, market rules or learning benefits. In addition, the Bank will benchmark costs or expected revenues of individual projects before deciding to support them.</p>

²⁸ Both the State Aid Guidelines for Environmental Protection and Energy (2014/C 200/01, par. 3.3.2.1) and the new Renewable Energy Directive (2018/2001, Art. 4) give sufficient flexibility to Member States to exempt demonstration projects from tendering procedures.

Annex IV: Enabling infrastructure

This Annex covers (i) electricity network infrastructure, (ii) low-carbon gas infrastructure (network and storage); and (iii) district heating and cooling networks.

1. Eligibility

In principle, the Bank can support the following types of projects:

- All electricity transmission and distribution infrastructure, with the exception of the direct connection of generating capacity that is not eligible under Annex II (in particular, having an emission standard above 250 g CO₂/kWh_e);
- In the case of low-carbon gas infrastructure (including biogas, synthetic gas and low-carbon hydrogen)
 - a. connection of existing infrastructure to new sources of low-carbon gases that are eligible under Annex II²⁹;
 - b. gas infrastructure projects that are planned to transport or store low-carbon gases, including the rehabilitation and adaptation (repurposing) of existing gas infrastructure under this goal;
 - c. smart meters intended to reduce gas consumption.
- Infrastructure for transportation or storage of CO₂;
- Infrastructure for district heating and cooling.

For the avoidance of doubt, the following projects are not eligible for EIB financing, as per the EIB's Climate Bank Roadmap:

- Oil infrastructure;
- Gas transmission (including Liquefied Natural Gas (LNG) terminals and storage) and distribution networks, with the exceptions mentioned above;
- CC(U)S in combination with enhanced oil recovery or enhanced gas recovery.

2. High contribution to the EIB's Energy Lending Policy objectives

When appraising projects, the Bank will deem the following types of projects to have a high alignment with the EIB's Energy Lending Policy:

- Low-carbon gas network infrastructure (including low-carbon hydrogen);
- Digitalisation;
- Energy communities and micro-grids;
- EU Projects of Common Interest (PCIs);
- Outside the European Union, projects which significantly expand and improve access to electricity.

²⁹ In the context of the ELP, "low-carbon gas" is used as a reference to any gases produced with technologies meeting the criteria as defined in the section 3c of Annex II.

3. Technical and economic assessment criteria

SECTOR	SUB-SECTOR	CRITERIA
Electricity networks	Transmission and distribution (T&D), general	<p>Technical requirement:</p> <ul style="list-style-type: none"> - Planning for network infrastructure must be carried out in line with best industry practice. The design of networks must be sound to ensure cost-efficient, reliable and safe operation. - For technologies with limited or no operational experience, qualification tests must be successful and carried out according to industry standards. - Replacement and lifetime extension of assets must be driven by the consideration of performance and remaining economic life. - Distributed off-grid systems need to provide an acceptable e-waste handling strategy (outside the European Union). <p>Economic assessment: All projects should be economically justified based on the EIB's methodology. For this purpose, the promoter needs to provide sufficient quantitative information to assess the project's effect on system generation cost, network losses, energy not served, demand served, renewable capacity connected, curtailment of renewable energy sources (RES), and CO₂ emissions.</p> <p>Where several feasible alternatives exist, the promoter will need to provide evidence that the retained alternative will be the most cost-effective.</p>
	Projects of Common Interest	<p>Economic assessment: The promoter needs to provide the Bank with a cost-benefit analysis for the project (for instance, ENTSO-E CBA used for the TYNDP³⁰) including the variation in social economic welfare, CO₂ emissions, security of supply and congestion costs/rents. The Bank will review this analysis and potentially adjust the results to account for the Bank's assumptions, notably on carbon cost.</p>
Low-carbon and CO ₂ gas networks	Renewable and low-carbon gas infrastructure (including hydrogen)	<p>The EIB can finance low-carbon gas projects that are planned to transport or store low-carbon gases. The Bank will assess technical feasibility studies demonstrating that the storage, transmission and distribution networks are planned to be dedicated to renewable and low-carbon gases, and the detailed justification and investment decision of the project, as submitted to and approved by the management bodies of the promoter and to the relevant regulatory body (in the case of a regulated asset).</p> <p>In the case of Projects of Common Interest, projects will also be subject by default to Regulation (EU) 2022/869 on guidelines for Trans-European Energy Infrastructure (TEN-E).</p> <p>Project promoters are required to provide a cost-benefit analysis demonstrating the economic viability of the project. Projects need to be Paris Agreement-aligned, as defined in the Bank's Climate Bank Roadmap.</p>
	Transport and storage of CO ₂ for abatement purpose	<p>Eligibility is subject to, among others, the establishment of a monitoring plan for CO₂ leakages, and compliance of CO₂ storage with Directive 2009/31/EC (for projects in the European Union) or ISO 27914:2017 (for projects outside the European Union).</p> <p>Eligibility screening will also rely upon relevant technical documentation or studies demonstrating the technical feasibility and robustness of the CO₂ storage project, including a reservoir development plan and a</p>

³⁰ Cost-benefit analysis used by ENTSO-E for Electricity for the Ten-Year Network Development Plan

		<p>structured risk assessment (covering relevant sub-surface risks such as induced seismicity, scale, corrosion or leakage risks).</p> <p>Hydraulic fracturing for CO₂ injection purposes is not accepted, but may be considered on a case-by-case basis.</p>
District heating/cooling infrastructure (networks and storage)	Eligibility	<p>The Bank will support the rehabilitation or extension of existing networks, or construction of new networks if, as a result of the project, there will be no increase in combustion of solid or liquid fossil fuels or non-organic waste on an annual basis.</p> <p>Note that the production of heat is covered in Annex II. Thermal storage facilities are considered to be a network investment.</p>
	Economic assessment	<p>For new and extended networks, the Bank compares the cost of the project against a least-cost feasible alternative form of individual heat supply, including all externalities. For rehabilitation, the Bank compares the project costs to the benefits, such as the expected energy efficiency and OPEX savings.</p>

EIB Energy Lending Policy

Supporting the Energy Transformation

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