



Identification of EU funding sources for the regional heating and cooling sector

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PNO Consultants*



for the Joint Research Centre

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The study covers European funding sources for the current programming period (2014-2020). Where possible, an outlook will be provided for the period beyond 2020 (2021-2027). The overview will focus on public funding, both grants and other financial instruments such as soft loans and guarantees.

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List of abbreviations and definitions

AC	Associated Countries
bn	Billion
CC	Candidate Countries
CCS	Carbon Capture and Storage
CEF	Connecting Europe Facility
CF	Cohesion Fund
CHP	Combined Heat and Power (or cogeneration)
COSME	Competitiveness of Enterprises and Small and Medium-sized Enterprises
CSA	Coordination and Support Actions
DG	Directorate General
EC	European Commission
EAFRD	European Agricultural Fund for Rural Development
EASME	Executive Agency for Small and Medium-sized Enterprises
EBRD	European Bank for Reconstruction and Development
EE	Energy Efficiency
EEPR	European Energy Programme for Recovery
EFSI	European Fund for Strategic Investments
EFTA	European Free Trade Association
EIAH	European Investment Advisory Hub
EIB	European Investment Bank
EIC	European Innovation Council
EIT	European Institute of Innovation and Technology
EMFF	European Maritime and Fishery Fund
EP	European Parliament
EPC	Energy Performance Contracting
ERC	European Research Council
ERDF	European Regional Development Fund
ES	Energy System
ESCO	Energy Service Company
ESF	European Social Fund
ESI Funds	European Structural and Investment Funds
ETC	European Territorial Co-operation
ETS	Emissions Trading Scheme
EU	European Union
FET Open	Future and Emerging Technologies Open
FP7	7 th Framework Programme for Research and Technological Development
FTI	Fast Track to Innovation
GBER	General Block Exemption Regulation

GEFF	Green Economy Finance Facilities
GLA	Greater London Authority
H2020	Horizon 2020
HVAC	Heating, Ventilation and Air Conditioning
IA	Innovation Action
IB	Intermediate Bodies
ICT	Information and Communication Technology
INEA	Innovation & Networks Executive Agency
JASPERS	Joint Assistance to Support Projects in European Regions
JESSICA	Joint European Support for Sustainable Investment in City Areas
JRC	Joint Research Centre
LIFE PF4EE	LIFE Private Finance for Energy Efficiency
M	Million
MA	Managing Authority
MFF	Multiannual Finance Framework
MS	Member State(s)
NCP	National Contact Point
NER	New Entrant's Reserve
NGO	Non-Governmental Organizations
OCT	Overseas Countries and Territories
OP	Operational Programme
PDA	Project Development Assistance
PDU	Programme Delivery Unit
PM	Particulate Matter
PV	Photovoltaic
R&D	Research and Development
RES	Renewable Energy Source
RIA	Research and Innovation Action
S3PE	Smart Specialisation Platform on Energy
SCC	Smart Cities and Communities
SF	Structural Funds
SFSB	Smart Finance for Smart Buildings
SME	Small and Medium-sized Enterprises
STE	Solar Thermal Energy
TA	Technical Assistance
TC	Territorial Cooperation
TRL	Technology Readiness Level
UIA	Urban Innovative Actions

Disclaimer

This report contains information on EU funding sources. All information in this report has been researched and compiled with utmost diligence of EU funding experts.

Nevertheless there is no guarantee that the presented information captures all types of funding for regional heating and cooling projects as well as errors and mistakes cannot be totally excluded, given that various sources sometimes contradict each other.

1 Executive Summary

This report provides an overview of relevant EU funding sources for projects aimed at improving energy efficiency and deploying renewable energy in the heating and cooling sector, and to support innovation and job creation at regional level in the same sector.

This study covers European funding sources for the current programming period (2014-2020). Where possible, an outlook will be provided for the period beyond 2020 (2021-2027). The overview will focus on public funding, both grants and other financial instruments such as soft loans and guarantees.

EU funding for heating and cooling projects is channelled both through the five European Structural and Investment Funds (ESIF) and through dedicated EU grants and financial instruments. The bulk of ESIF funding under the Cohesion Policy is concentrated on less developed European countries and regions, whereas the other EU funding sources are typically open to applicants in all Member States. Many EU funding instruments require cross border cooperation, but there are also EU instruments that allow for a single applicant.

Some of the EU funding sources in this report are well-known and established, others are less popular. Typically, the more popular programmes also have lower winning chances. It may therefore pay off to look at alternatives. Moreover, preparing an EU funding project can be complex and time consuming. A review of several surveys on the subject revealed that experience of drafting project applications is one of the major differences between successful and unsuccessful applicants.

For highly innovative projects, it is often needed to maximise the utilisation of public funds in order to close the business case. The many EU funding sources cover different project activities, different phases in the technology development (TRL levels) and increasingly also the different types of finance (e.g. equity, debt) that are required to fund a project. This offers opportunities to combine EU funding.

One option is to use several instruments for the various phases of project development (e.g. research, pilot, demonstration). Another possibility is to cover each activity with a different instrument, for instance by applying for a Project Development Assistance (PDA) grant to cover the project development and applying for a LIFE subsidy (the EU's funding instrument for the environment and climate action) to cover the implementation of the project. Increasingly, EU grants can also be combined with EU debt financing, provided by one of the EU innovative financial instruments. However, there are some limitations to combining public funding sources (e.g. non-cumulation and state aid regulations). Although it is the primary responsibility of the managing authorities to verify compliance with the regulations, there are several cases where this did not happen correctly, sometimes with the consequence that beneficiaries had to repay (part of) the funding.

2 Introduction

Heating and cooling in buildings and industry accounts for approximately half of the EU's final energy consumption. When considering EU households, almost 80 % of total final energy use is used for heating and hot water. While cooling is a small share of total energy use, demand from households and businesses is increasing during the summer months. This trend is also linked to climate change and temperature rises.¹

Some 85 % of heating and cooling is still generated from fossil fuels and in order to reach the EU's climate and energy goals², the heating and cooling sector must strongly reduce its energy consumption and its use of fossil fuels. The European Commission (EC) has targeted policies towards a more efficient and decarbonised heating and cooling sector, such as the Energy Efficiency Directive³, the EU Strategy on Heating and Cooling⁴ and the proposed revision of the Renewable Energy Directive⁵.

For this reason, heating and cooling is one of the areas of the smart specialisation platform on energy (S3PE)⁶, where Member States and regions receive support for uptake of European funding. The goal of S3PE is to better align regional activities through the identification of technologies and innovative solutions that contribute to the EU energy policy priorities. The platform supports with regions to analyse current priorities and policies and to identify good practises and roadmaps for bottom-up transregional cooperation. This platform is managed by the European Commission's Joint Research Centre (JRC), and promoted by DG REGIO and DG ENER.

Heating and cooling is a broad subject. Cutting the energy consumed by heating and cooling in buildings and industry can be achieved through scaling up the use of advanced construction and design techniques and high-performance insulation materials when renovating buildings. Moreover, energy use can also be reduced by providing better information and control of energy use with intelligent thermostats. Energy can also be saved by upgrading heating and cooling equipment such as boilers to the latest, most efficient technologies. Other renewable heating and cooling technologies such as biomass boilers and solar heating systems reduce the use of fossil fuels. In industry, energy for heating and cooling can be saved with energy-efficient technologies such as combined heat and power units which produce both heat and electricity, and via energy management solutions and technologies.¹

2.1 Objective

The objective of this study is to inform regions how they can better access European funding sources for projects aimed at improving energy efficiency and deploying

¹ European Commission (2018). Heating and Cooling. Retrieved on 28 September 2018 at ec.europa.eu/energy/en/topics/energy-efficiency/heating-and-cooling.

² European Commission (2015). Energy Union Factsheet. MEMO/15/4485. Brussels, 25 February 2015.

³ European Union (2012), Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC. Official Journal of the European Union, L315/1, 14.11.2012.

⁴ European Commission (2016). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. An EU strategy on Heating and Cooling. COM(2016) 51 final, Brussels, 16.2.2016.

⁵ European Commission (2016). Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (recast). COM/2016/0767 final - 2016/0382 (COD), Brussels, 30.11.2016.

⁶ European Commission, Joint Research Centre (2018) Energy and the Smart Specialisation Platform on Energy (S3PEnergy) via s3platform.jrc.ec.europa.eu/s3p-energy

renewable energy in the heating and cooling sector, and to support innovation and job creation at regional level in the same sector.

2.2 Scope

The scope of this report is to present the available EU funding sources suitable for regions which want to develop projects in the heating and cooling domain. Programs are presented and provide details about amount of funding available and its requirements.

Funding sources and time periods

This study will cover European funding sources for the current programming period (2014-2020). Where possible, an outlook will be provided for the period beyond 2020 (2021-2027). The overview will focus on public funding, both grants and other financial instruments such as soft loans and guarantees.

Activities to be funded

There are various ways to reduce energy demand in the heating and cooling sector. For instance by improving the building envelope, or by employing more efficient energy conversion technologies. More indirectly, innovation in the heating and cooling sector can also accelerate the transition to more efficient energy system. The employment benefits that are associated with the energy transition will also be addressed in this study.

The scope of activities that will be considered in this analysis of EU funding sources for the heating and cooling sector specifically includes, but is not limited to:

- District heating and cooling. Efficient district heating and cooling means a district heating or cooling system using at least 50 % renewable energy, 50 % waste heat, 75 % cogenerated heat or 50 % of a combination of such energy and heat⁷;
- Renewable heat and cooling sources, e.g. geothermal, solar, biomass, heat pumps;
- House renovation;
- Support R&I on energy efficiency in heating and cooling to public and private organisations;
- Support local SMEs.

Technology Readiness Levels (TRL)

This study will cover funding opportunities for measures to improve energy efficiency and deploy renewable energy in the heating and cooling sector in different technology maturity levels.

These are typically indicated by the so called Technology Readiness Levels (TRL)⁸:

⁷ Eurostat (2017) Reporting instructions for completing the district heating and district cooling template for data reporting under Article 24(6) of Directive 2012/27/EU.

- TRL 1 – basic principles observed
- TRL 2 – technology concept formulated
- TRL 3 – experimental proof of concept
- TRL 4 – technology validated in lab
- TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 7 – system prototype demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

More background on the interpretation of TRL levels in various EU programmes can be found in Annex A.

2.3 Reading guide

An executive summary of this report can be found in chapter 1.

Chapter 2 sets the scene by providing the objective and scope of this study.

In chapter 3 of this report a high-level overview of EU funding sources is given, which provides the framework for the next chapters.

In chapter 4 the EU grants related energy efficiency and heating and cooling, as well as research and innovation and support to SMEs, are discussed in detail.

In chapter 5 the EU innovative financial instruments (e.g. loans and guarantees) related to energy efficiency and heating and cooling, as well as research and innovation and support to SMEs, are discussed in detail.

Chapter 6 explains the regulatory framework and the possibility to combine different EU funding sources.

Chapter 7 contains some concluding remarks.

⁸ European Commission (2017). Horizon 2020 Work Programme 2018-2020. General Annexes. European Commission Decision C(2017)7124 of 27 October 2017.

3 Context

3.1 EU funding

This chapter provides background information on the various EU funding instruments and explains how the various instruments originated and relate to each other. This knowledge is not required per se to apply for each of the instruments but will help to understand their context and to interpret their priorities.

3.1.1 Climate action budget

The transition to clean energy is one of the key priorities of the EU and requires enormous investments in the years to come. For this reason, large sums of public funding are directed to this challenge. To respond to investment needs related to climate change, the EU has decided that at least 20 % of its budget for 2014-2020 – as much as EUR 200 billion over the whole period – should be spent on climate change-related actions. To achieve this result, climate action is integrated into all major EU spending programmes, in particular regional development and the Cohesion Fund, energy, transport, research and innovation, the Common Agricultural Policy as well as the EU's development policy⁹.

In 2017 the amount was more than EUR 31 billion, 20.3 % of the total budget. This brings the total cumulative amount for climate mainstreaming by the end of 2017 to more than EUR 100 billion.



Figure 1 EU funding channeled to climate action (2014-2017). All amounts in the chart are in EUR million.⁹

This budget is channelled through various EU funding sources. Some of the instruments are specifically directed at energy investments, but many are more general instruments, aimed at for instance innovation or economic development.

Funding instruments

EU funding is often provided in the form of subsidies, but the EU increasingly also offers soft loans or other innovative financial instruments to stimulate its policies.

⁹ European Commission (2018). Report from the Commission to the European Parliament, the Council and the Court of Auditors 2017. Annual Management and Performance Report for the EU Budget. COM/2018/457 final.

Subsidies are the most common form of EU funding for energy efficiency, renewable energy and innovation. EU energy subsidies are mostly funded from the structural investment funds (ESIF), Horizon 2020, LIFE and NER300/ETS Innovation Fund.

Innovative financial instruments, often tailored to the dynamics of energy investments, offer promising solutions to the challenge of financing the energy transition. Soft loans, for example, are an increasingly popular instrument for the EU to (co)finance energy investments. These loans are mostly directly or indirectly provided by a public bank (e.g. EIB) or an intermediary, offering favourable terms and accepting higher risk than commercial financiers.

Funds management

There are two main types of EU funding¹¹²: funds which are managed centrally and directly by the European Commission, e.g. for research; and funds whose management is shared between the EU and the Member States, e.g. the Structural Funds and the Cohesion Fund. The EU entrusts management of the latter to the Member States. The bulk of EU spending involves funds which come under shared management by the EU Member States.

3.1.2 Jointly managed funds

European structural and investment funds (ESI Funds)

Over half of EU funding (EUR 450 billion for the period 2014-2020) is channelled through the five European structural and investment funds (ESI Funds). They are jointly managed by the European Commission and the EU countries.

For funds in 'shared management', the Commission currently entrusts the Member States with implementing programmes at national level. Member States then allocate these funds to end recipients (e.g. companies, farmers, municipalities, etc.). The Member State has primary responsibility for setting up a management and control system which complies with the requirements of the Regulations, the Commission plays a supervisory role.

Due to this 'fragmented' management structure, general statements regarding the accessibility of the EU structural funds are hard to make. Priorities and eligibility criteria differ per country and even per region. Each country and region distributes the funds in accordance with their own political agenda, within the framework set by the EC. This report can therefore only provide information in general terms. Applicants are advised to consult their local authorities for the eligibility criteria of ERDF and CF funds in their region.

The five European Structural and Investment Funds (ESI Funds) are¹⁰:

¹⁰ European Union (2013). Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006.

- The **European Regional Development Fund (ERDF)**¹¹ promotes balanced economic development in the different regions of the EU. The budget is EUR 183.3 billion for the period 2014-2020.
- The **European Social Fund (ESF)**¹² supports employment-related projects throughout Europe and invests in Europe's human capital. The budget is EUR 507.4 million for the period 2014-2020.
- The **Cohesion Fund (CF)**¹³ funds transport and environment projects in countries where the gross national income (GNI) per inhabitant is less than 90 % of the EU average. In 2014-2020, these countries are Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia.
- The **European Agricultural Fund for Rural Development (EAFRD)**¹⁴ focuses on resolving the particular challenges facing EU's rural areas. The budget is EUR 607.3 million for the period 2014-2020.
- The **European Maritime and Fisheries Fund (EMFF)**¹⁵ helps fishermen to adopt sustainable fishing practices and coastal communities to diversify their economies, improving quality of life along European coasts.

Of these funds, the European Regional Development Fund (ERDF) and the Cohesion Fund (CF) are the most relevant funds for energy financing.

The ESI Funds support actions and activities under the Cohesion Policy¹⁶. Cohesion policy is the policy behind the hundreds of thousands of projects all over Europe that receive funding from the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund. The bulk of Cohesion Policy funding is concentrated on less developed European countries and regions in order to help them to catch up and to reduce the economic, social and territorial disparities that still exist in the EU. In particular, this policy provides the necessary investment framework and strategy to meet the agreed growth goals under the Europe 2020 Strategy.

3.1.2.1 Classification per region

Moreover, under the Cohesion Policy, a classification of development for regions is used in ERDF, ESF and CF. This classification determines the amount of funding percentage or funding priorities, and is as follows¹²:

¹¹ European Commission (2018). European Regional Development Fund. Retrieved on 21 September 2018 at ec.europa.eu/regional_policy/en/funding/erdf/.

¹² European Commission (2018). European Social Fund. Retrieved on 13 September 2018 at ec.europa.eu/regional_policy/en/funding/social-fund/.

¹³ European Commission (2018). Cohesion Fund. Retrieved on 10 September 2018 at ec.europa.eu/regional_policy/en/funding/cohesion-fund/.

¹¹² European Commission (2018). Glossary. Shared management. Retrieved on 7 December 2018 at ec.europa.eu/regional_policy/en/policy/what/glossary/s/shared-management

¹⁴ European Commission (2018). European Agricultural Fund for Rural Development. Retrieved on 10 September 2018 at ec.europa.eu/regional_policy/en/policy/EAFRD.

¹⁵ European Commission (2018). European Maritime and Fisheries Fund. Retrieved on 13 September 2018 at ec.europa.eu/regional_policy/en/policy/EMFF.

¹⁶ European Commission (2014). An Introduction to EU Cohesion Policy 2014-2020. June 2014.

- more developed regions, with a GDP/capita of 90 % or higher than EU-27 average;
- transition regions, with a GDP/capita between 75 and 90 % of EU-27 average;
- less developed regions, with a GDP/capita of 75 % or lower than EU-27 average.

An overview of the classification for structural funds per region can be found on the EC's website¹⁷.

3.1.2.2 Thematic objectives

There are 11 thematic objectives defined within the Cohesion Policy to which ESI Funds contribute (table 1). Main priorities are indicated in bold.

Table 1 Overview of 11 thematic objectives within the EU Cohesion Policy and the corresponding ESI Funds¹⁸

Thematic objectives		European Structural and Investment Funds				
		ERDF	ESF	CF	EAFRD	EMFF
1	Strengthening research, technological development and innovation	X	X		X	
2	Enhancing access to, and use and quality of, information and communication technologies	X	X			
3	Enhancing the competitiveness of SMEs	X	X		X	X
4	Supporting the shift towards a low-carbon economy	X	X	X		
5	Promoting climate change adaptation, risk prevention and management	X		X	X	
6	Preserving and protecting the environment and promoting resource efficiency	X		X		X
7	Promoting sustainable transport and improving network infrastructures	X		X		
8	Promoting sustainable and quality employment and supporting labour mobility	X	X			
9	Promoting social inclusion, combating poverty and any discrimination	X	X		X	
10	Investing in education, training and lifelong learning	X	X			
11	Improving the efficiency of public administration	X	X	X		

¹⁷ European Commission (2018). Regional Policy. Is my region covered? Retrieved on 21 September 2018 at ec.europa.eu/regional_policy/index.cfm/en/policy/how/is-my-region-covered/

¹⁸ European Commission (2018). Regional Policy. Priorities for 2014-2020. Retrieved on 21 September 2018 at ec.europa.eu/regional_policy/en/policy/how/priorities

3.1.2.3 ESI Funds for Energy

ESI Funds play an essential role in promoting innovation in the field of energy, developing ICT applications in the field of energy, supporting SMEs and boosting the shift towards a low-carbon economy. In this regard, energy efficiency investments, particularly on the energy efficiency of buildings and businesses play a key role. Higher energy efficiency will lead to lower energy bills, better living and working conditions, local jobs and more competitive businesses. Renewable energy and smart distribution grids, smart energy transmission and storage infrastructure and decarbonisation of the transport sector are also supported under ESI Funds.¹⁹

Support for energy efficiency implementation and research and innovation under ESI Funding Programmes:

- EUR 13.3 billion and EUR 3.4 billion under ERDF and CF for supporting energy efficiency measures in public and residential buildings and in companies respectively;
- EUR 2.6 billion under ERDF for research and innovation and adoption of low-carbon technologies;
- EUR 870 million and EUR 438 million under EAFRD for energy efficiency measures in rural development and innovative projects related to energy efficiency, renewable energy, climate and the environment respectively;

The different funding opportunities under ESI Funds / ERDF that are specifically relevant for regional heating & cooling projects in the EU are:

- INTERREG: European Territorial Co-operation (ETC)
 - Cross-border (INTERREG A)
 - Transnational (INTERREG B)
 - Interregional (INTERREG C)
- URBACT III
- Urban Innovative Actions (UIA)

3.1.3 Centrally managed funds

In addition to the jointly managed funds, large sums are available to support research, development and innovation through centrally managed EU funding programmes and financial instruments. A significant share of this funding is directed towards the energy transition. The bulk of EU financial support for support of research, development and innovation is channeled through the Horizon 2020 programme (see also figure 1). Together with smaller Sectoral R&D programmes, these are estimated to provide

¹⁹ European Commission (2015). Contribution of the European Structural and Investment Funds to the 10 Commission Priorities – Energy Union and Climate. December 2015.

EUR 120 billion to directly support research, development and innovation activities over the period 2014 – 2020.²⁰

The Europe 2020 Strategy includes thematic funding programmes that are divided over its three priorities: Smart Growth, Sustainable Growth and Inclusive Growth.

Under 'Smart Growth' one of the sub goals is to strengthen and further develop the role of EU instruments to support innovation, particularly for Small and Medium Enterprises (SMEs).

Under 'Sustainable Growth' sub goals are to improve the business environment, especially for SMEs, including improving affordable access to finance, as well as to help decouple economic growth from the use of resources, support the shift towards a low carbon economy, increase the use of renewable energy sources and promote energy efficiency. In addition, the implementation of the Energy Efficiency Action Plan at Member State level includes a programme in resource efficiency (supporting SMEs as well as households) by making use of structural and other funds to leverage new financing through existing highly successful models of innovative investment schemes.

EU funding programmes

The main funding opportunities under EU funding programmes that are specifically relevant for regional heating & cooling projects in the EU are listed below. In the next chapters these funding instruments are discussed in more detail.

- Horizon 2020
 - Calls under: WP10 Secure, Clean and Efficient Energy
 - Innovation in SMEs
 - EUROSTARS
 - SME instrument
 - Fast Track to Innovation (FTI)
 - Future and Emerging Technologies (FET) Open
- LIFE
 - Specific calls under: Environment – Climate Change – Energy
 - Specific calls under: Climate Action – Climate Change Mitigation
- Connecting Europe Facility (CEF) – Energy

Innovative financial instruments

Innovative financial instruments are a way of deploying EU budgetary resources, and are complementary to grants or subsidies. Financial instruments provide support for investments by way of loans, guarantees, equity and other risk-bearing mechanisms,

²⁰ European Parliamentary Research Service (2015). Overview of EU funds for research and innovation. Briefing, September 2015, PE 568.327.

possibly combined with technical support, interest rate subsidies or guarantee fee subsidies.

Moreover, financial instruments help to mobilise additional public or private co-investments in order to address market failures in line with Europe 2020 and cohesion policy priorities. Their delivery structures entail additional expertise and know-how, which helps to increase the efficiency and effectiveness of public resource allocation. These instruments provide a variety of incentives to better performance, including greater financial discipline at the level of supported projects.

Building on the implementation experiences with financial instruments in past cohesion policy cycles and reflecting the importance attached to them in the multiannual financial framework 2014-2020, the legislative and policy framework for 2014-2020 encourages further expansion and strengthening the use of financial instruments in the new programming period as a more efficient and sustainable alternative to complement traditional grant-based financing²¹.

The different financial instruments that are specifically relevant for regional heating & cooling projects in the EU are listed below. In the next chapters these funding instruments are discussed in more detail.

3.1.3.1 Energy-related financial instruments

- LIFE Private Finance for Energy Efficiency instruments (PF4EE)
- Joint European Support for Sustainable Investment in City Areas (JESSICA)
- Smart Finance for Smart Buildings
- European Energy Efficiency Fund
- EBRD financing - GEFFs and SEFFs
- Green Bonds

3.1.3.2 General financial instruments for project implementation, R&I and SME support

- European Fund for Strategic Investments (EFSI)
- Joint Assistance to Support Projects in European Regions (JASPERS)
- European Investment Fund
- InnovFin SME Guarantee Facility & Equity
- COSME Loan Guarantee Facility & Equity Facility for Growth

3.2 European Funding Sources after 2020

In May 2018, the Commission published its legislative package comprising proposals for a post-2020 multiannual financial framework (MFF). This MFF also contains the plans and budgets for the EU funding programmes that are discussed in this report. Any comments

²¹ European Commission (2018). Regional Policy – Financial Management. Retrieved on 22 September 2018 at ec.europa.eu/regional_policy/en/funding/financial-management/

in this report that are made on the post 2020 period, are thus preliminary and may be subject to change.

Formally, the MFF is approved by a unanimous decision of the Council of Ministers and the Parliament has to give its consent. At the time of writing (late 2018) this has not happened yet. It is scheduled for 9 May 2019 during the Sibiu Summit.

The new budget will enter into force in January 2021 for a period of 7 years, until 2027. For the next EU budget period from 2021-2027, the Cohesion Policy and the EU's main investment policy will be modernised.²²

Roughly, funding of the different aspects of the energy transition under the next MFF will be covered by the following instruments:

Capacity building and policy support:	<i>LIFE/Clean Energy Transition</i>
R&I and technology development:	<i>Horizon Europe</i>
Direct support towards clean energy investments:	<i>ESIF/ERDF</i>
Mobilising private investments through de-risking:	<i>InvestEU</i>

3.2.1 EU Funding Programmes

With a budget of EUR 373 billion for this period, the future Cohesion Policy will contribute to bridge gaps between and within Member States. Although Cohesion policy will see cuts, one of its five key objective areas will channel funds for a “clean and fair energy transition” to local and regional authorities. The new policy will focus on five investment priorities²³, consisting of:

- **Smarter Europe**, through innovation, digitisation, economic transformation and support to small and medium-sized businesses
- a **Greener, carbon free Europe**, implementing the Paris Agreement and investing in energy transition, renewables and the fight against climate change
- a more **Connected Europe**, with strategic transport and digital networks
- a more **Social Europe**, delivering on the European Pillar of Social Rights and supporting quality employment, education, skills, social inclusion and equal access to healthcare
- an **Europe closer to citizens**, by supporting locally-led development strategies and sustainable urban development across the EU.

Between 65-85 % of the European Regional Development Fund and Cohesion Fund budget will go towards supporting innovation, SMEs, digital technologies and industrial modernisation, as well as towards delivering on the Paris Agreement by investing in the energy transition and the circular economy.²² Moreover, the Cohesion Policy will continue investing in all regions, but will focus more on supporting locally-led development strategies and empower local authorities in the management of funds. The aim for the future Cohesion Policy is to be a more simplified and flexible framework with fewer and clearer rules.

²² European Commission (2018). EU budget: Regional Development and Cohesion Policy beyond 2020. Press Release. Strasbourg, 29 May 2018.

²³ European Commission (2018). EU Budget for the future. Regional Development and Cohesion. 29 May 2018.

3.2.2 InvestEU Programme

Based on the public consultation for the next MFF and the mid-term evaluations of the EU centrally-managed financial instruments and the EFSI, the Commission proposed the creation of the InvestEU Programme, a single EU investment support mechanism for internal action for the 2021-2027 MFF.

The program will consist of the InvestEU Fund, in which public and private investments are mobilized through guarantees from EU budget, an advisory hub and a portal, in which beneficiaries are provided with technical advice and in which projects and investors are brought together.

The InvestEU programme²⁴ will further boost investment, innovation and job creation in the EU in the period 2021-2027. The focus areas are Sustainable Infrastructure, Research, Innovation and Digitisation, Social Investment and Skills and Small and Medium-sized Companies. The programme will simplify and streamline investment support in the EU by bringing together several financial instruments from the Investment Plan for Europe from the period 2014-2020 (figure 2).

²⁴ European Commission (2018). EU Budget for the future. What is the InvestEU Programme? 6 June 2018.

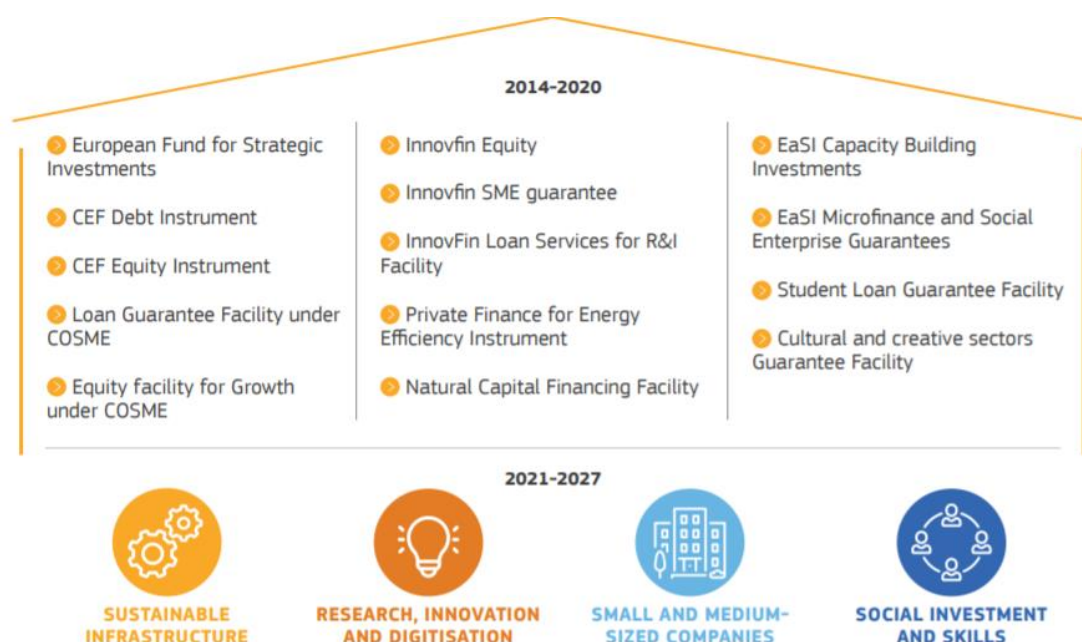


Figure 2 Financing programmes in the period 2014-2020 that will be part of the InvestEU programme in 2021-2027. ³¹

The InvestEU Fund would be the successor programme to the EFSI and the current centrally managed financial instruments (excluding external action financial instruments). The InvestEU Advisory would be the successor mechanism to the EIAH and current centrally managed technical assistance initiatives. The InvestEU Portal is the successor of the European Investment Project Portal.

The InvestEU program will have a budget of EUR 15.2 billion for the period of 2021-2027, resulting in EUR 38 billion in guarantees.

3.3 EU subsidies in practice

As an addition to the factual information in this chapter, this section addresses some concerns that potential applicants associate with EU funding.

3.3.1 Success rates

This report provides a fairly complete overview of relevant EU funding sources for (innovative) heating and cooling projects. Some of these funding sources are well-known and established, others are less popular. Typically, the more popular programmes also have lower success rates. It may therefore pay off to consider alternatives.

Horizon 2020 for instance, is the most established and popular EU subsidy programme. It is the most versatile programme with the largest budget. At the same time the popularity has put substantial pressure on the success rates, which are around 15 % on average (of course these success rates differ per call). For the SME instrument, success rates are even slimmer, at around 8 % for phase 1 and around 5 % for phase 2.²⁵ Success rates for less popular programmes can be more encouraging. The overall success rates for Eurostars in the last evaluation round was for instance 25 %²⁶ and success rates of 50 % can be seen in the INTERREG programmes²⁷.

3.3.2 Required efforts

Preparing an EU funding project and writing the application requires a substantial effort. For Horizon 2020 for instance, this may take around 200-400 hours. Key is to involve someone with experience in such processes. A meta-analysis of several surveys²⁸ among applicants of EU funding programmes revealed that the experience of drafting project applications is one of the major differences between successful and unsuccessful applicants.

3.3.3 Cooperation

Many EU funding instruments require cross border cooperation. This allows applicants to benefit from expertise abroad and to expand their EU network. At the same time it can be a barrier for application. In the latter case, it is good to know that there are also EU instruments that allow for a single applicant. Examples are the SME instrument, the PDA instruments or the LIFE programme (although for the latter programme, cooperation will increase an applicant's chances).

²⁵ EU Startups (2018). Are you a smart innovator and eligible to receive EU funding? Retrieved on 20 September 2018 at eu-startups.com/2018/07/are-you-a-smart-innovator-and-eligible-to-receive-eu-funding/

²⁶ EUROSTARS (2018) Eurostars-2 cut-off 8 funding results: 102 projects worth € 157 M approved. Retrieved on 23 October 2018 at eurostars-eureka.eu/content/eurostars-2-cut-8-funding-results-102-projects-worth-%E2%82%AC-157-m-approved

²⁷ INTERREG North Sea Region (2018). Funding available for new projects. Retrieved on 5 October 2018 at northsearegion.eu/about-the-programme/programme-news/funding-available-for-new-projects/

²⁸ Surveys reviewed: Spok R. (2010), How the EU Structural funds are perceived by both successful and unsuccessful applicants? (survey results), EUROPEUM Institute for European Policy; Ministry of Finance Latvia (2009), Centralised EU Funds (European Social Fund, European Regional Development Fund, Cohesion Fund), Final Beneficiaries, Satisfaction Survey, Latvijas Fakti, Dec. 2009; ECORYS (2011), Evaluation of the South East Europe Programme 2007-2013, First Evaluation Report – Draft, Client: VÁTI Hungarian Public Nonprofit Company on Regional Development and Town Planning, Rotterdam, 4 April 2011., INTERACT (2010), Study towards cross-programme evaluation, Operational aspects of cross-programme cooperation in Central and South-Eastern Europe, Support mutual learning, Final Report, Interact programme, June 2010.

3.3.4 Administration

Administrative requirements of EU projects are demanding, although they have been simplified over the past years. For the application phase, the required efforts are largest for the first application. For subsequent applications, organisations already have some of their forms registered with the EC and may have other forms more readily available in their administration. Project administration in the implementation phase will be much easier with a proper administration process in place at the start of the project. The biggest issues are typically encountered when insufficient administration leads to EC requests after project closure, requiring beneficiaries to dig in their archives for information that may not have been recorded in the first place.

4 EU grants

The EU awards grants to organisations and, occasionally, individuals, to help them carry out projects that further its policies. In most cases, EU funding does not cover 100 % of the project finance. Rather, grants are a form of complementary financing, and the beneficiary organisation will also put up a percentage of the funding for their project. The European Commission advertises grant opportunities through calls for proposals.

4.1 European Structural and Investment Funds

As aforementioned in chapter 3, there are five European structural and investment funds that together cover the bulk of energy financing, namely:

- European Regional Development Fund (ERDF)
- Cohesion Fund (CF)
- European Social Fund (ESF)
- European Agricultural Fund for Rural Development (EAFRD)
- European Maritime and Fisheries Fund (EMFF)

Of these funds, the ERDF and the CF are by far the most relevant funds for energy financing. Moreover, several EU funding programmes are funded through the ERDF, such as INTERREG, URBACT III and Urban Innovative Action.

Although the structural funds are the most important source of funding for heating and cooling projects, particularly in less developed regions, general statements regarding their accessibility are hard to make. These funds are managed jointly by the EU and the EU countries (see 3.1.2 Jointly managed funds), so priorities and eligibility criteria differ per country and even per region. Each country and region distributes the funds in accordance with their own political agenda, within the framework set by the EC. This limits the possibilities to elaborate in this report on the terms and conditions of the structural funds with respect to heating and cooling projects. This report can therefore only provide information in general terms. Applicants are advised to consult their local authorities for the eligibility criteria of ERDF and CF funds in their region.

4.1.1 Cohesion Fund (CF)

The Cohesion Fund (CF)¹⁴ funds transport and environment projects in countries where the gross national income (GNI) per inhabitant is less than 90 % of the EU average. The Cohesion Fund supports projects in the following areas:

- Supporting the shift towards a low-carbon economy;
- Promoting climate change adaptation, risk prevention and management;
- Preserving and protecting the environment and promoting resource efficiency;
- Promoting sustainable transport and improving network infrastructures.

This includes regional energy efficiency projects. In 2014-2020, eligible countries for this support are: Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia.

4.1.2 European Regional Development Fund (ERDF)

The ERDF allocates budget to EU Member States and is one of the main financial instruments of the Cohesion Policy. ERDF's purpose is to contribute to reduce disparities between levels of development of EU regions.

The main focus areas are innovation and research, the digital agenda, support for SMEs and the low-carbon economy (table 1). The resources allocated to these priorities differ per category of region¹²:

- In more developed regions, at least 80 % of funds must focus on at least two of these priorities, and at least 20 % to low-carbon economy projects;
- In transition regions, this focus is for 60 % of the funds, and at least 15 % to low-carbon economy projects;
- This is 50 % in less developed regions, and at least 12 % to low-carbon economy projects.

Beneficiaries can apply for ERDF funding through the managing authority in their Member State.

4.1.3 European Social Fund (ESF)

The European Social Fund is the EU's main tool for promoting employment and social inclusion. The ESF priorities are 1) to boost the adaptability of workers with new skills, and enterprises with new ways of working, and 2) to improve the access to employment for everyone. Its relevance for energy efficiency projects lies therefore mainly in training and skills development for employment in this sector. Each Member State, in partnership with the EC, has agreed on one or more Operational Programmes for ESF funding for the period 2014-2020. Beneficiaries can apply for project funding from ESF through the managing authority in their country⁷⁹.

4.1.4 European Agricultural Fund for Rural Development (EAFRD)

The European Agricultural Fund for Rural Development focuses on increasing the competitiveness of European agriculture and forestry, improving environmental management and improving social and economic living conditions in rural areas.

One of the six priorities for the agricultural fund set by the EU in the period 2014-2020 is the promotion of resource efficiency and support for the shift towards a low-carbon and climate-resilient economy in the agriculture, food and forestry sectors. This could also include energy efficiency projects in rural areas.

4.1.5 European Maritime and Fisheries Fund (EMFF)

The EMFF is the Union fund that will support the objectives of the Common Fisheries Policy (CFP), the growth of a sustainable blue economy and the European Union's international commitments in the field of ocean governance.

As under the 2014-2020 period, the EMFF will support innovative investments from private stakeholders in the whole value chain of the fisheries sector and in aquaculture. It will also support projects that foster the growth of a sustainable blue economy, including energy efficiency in the sector's infrastructure.

4.2 Horizon 2020 and Horizon Europe

1. Target areas

Horizon 2020 is the financial instrument implementing the Innovation Union²⁹, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. The goal is to ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation. The program offers research institutes, companies and governments the chance to get financing for the development and demonstration of innovations. The three Horizon 2020 research priorities are:



1. Tackling Societal Challenges

- Health, demographic change and wellbeing;
- Food security, sustainable agriculture and forestry, marine and maritime and inland water research;
- Secure, clean and efficient energy;
- Smart, green and integrated transport;
- Climate action, environment, resource efficiency and raw materials;
- Inclusive, innovative and reflective societies;
- Secure societies.

2. Industrial Leadership

- ICT;
- Nanotechnologies, advanced materials and production;
- Space;
- Access to risk finance;
- Innovation in SMEs.

3. Excellent Science:

²⁹ European Commission (2018). Innovation Union. Retrieved on 17 October 2018 at ec.europa.eu/info/research-and-innovation/strategy

- European Research Council (ERC);
- Future and Emerging Technologies (FET);
- Marie Skłodowska-Curie;
- Research Infrastructures.

Horizon 2020 supports both projects at the beginning of the innovation chain that are mainly focused on research, so-called Research and Innovation Actions (RIAs), as well as projects closer to the market, so-called Innovation Actions (IAs), in which prototypes are demonstrated. Moreover, Coordination and Support Actions (CSA) are supported, in which projects under research priorities are supported that focus on standardization, dissemination, awareness raising and communication, networking, coordination or support services activities, or policy dialogues and mutual learning exercises and studies.

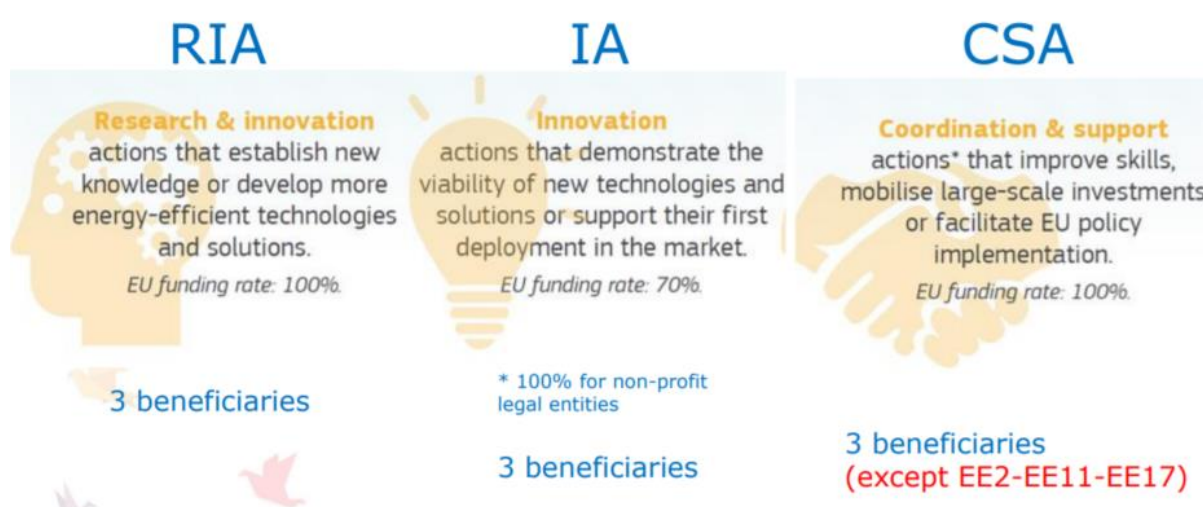


Figure 3 Energy efficiency (SC3, NMBP- EeB & SPIRE) Calls 2018 & 2019.³⁰

In addition, in 2017 the European Innovation Council pilot (EIC pilot) was as part of the Horizon 2020 Work programme 2018-2020. This pilot brings together the SME Instrument, the Fast Track to Innovation (FTI), Future and Emerging Technologies (FET), Open and Horizon Prizes, in order to provide a 'one stop shop' for funding of innovators/innovations in the EU.³⁷ More information on this can be found in 4.2.2 – 4.2.3.

2. Type of funding

The type of funding is usually reimbursement of cost grants, in which either the actual costs, unit costs and flat-rate costs are funded or a lump sum grant is awarded. There are no budget restrictions, unless specified in the call. This is the case for both RIA, IA and CSA grants.

3. Conditions for using the instrument

³⁰ European Commission – DG Energy (2018). Horizon 2020 Work Programme for Research & Innovation 2018-2020. Presentation Margot Pinault, Energy Efficiency unit.

- **Applicant requirements**

For most Horizon 2020 calls, a project consortium needs contain at least a minimum of three beneficiaries from three different EU Member States or H2020 associated countries. In recent Horizon 2020 Work Programmes, some calls require only one beneficiary from an EU Member State or H2020 associated country. For all project types additional beneficiaries/linked third parties from any country are usually allowed as well depending on the call requirements.

- **Co-funding percentage and other financial requirements**

The funding percentage for RIA is 100 % of eligible costs (unless the call provides exceptionally for another rate). For IA this percentage is 70 % (100 % for non-profit organisations) of eligible costs (unless the call provides exceptionally for another rate), and thus co-funding is required. For CSA the funding percentage is 100%.

- **Project size**

Grants vary roughly between EUR 2 and 20 million per call, depending on the type of project.

- **Eligible costs**

Eligible costs are defined per call, but usually consist of:

- direct personnel costs;
- direct costs of subcontracting;
- direct costs of providing financial support to third parties (if applicable);
- other direct costs;
- indirect costs;
- specific cost categories (if option applies).

For lump sum grants eligible costs are the costs for the action (direct and indirect costs).

- **Technology Readiness Levels (1-9), if applicable**

Technology Readiness Levels vary per H2020 call. Depending on the specific purpose of the call, projects in pre-commercial development, demonstration and market uptake could apply. However, the project needs to be innovative and have specific impact.

Research and Innovation Actions (RIAs) aim at TRL levels of 3-6.

Innovative Actions (IAs) aim at TRL levels of 5-7.

4. Relevance for the heating and cooling sector

The calls that are relevant for the subject of this report can be found under a number of themes. Next to implementation, in some call topics also research and innovation and support to SMEs is included. The most relevant calls for 2018-2020 can be found in particular under the theme **Secure, clean and efficient energy**.³¹ Some relevant calls (non-exhaustive) will be mentioned below:

³¹ European Commission (2018). Horizon 2020 – Work Programme 2018-2020. 10. Secure, clean and efficient energy. Decision C(2018)4708 of 24 July 2018.

EE - Energy Efficiency

Buildings represent a large share of the energy used in the EU (40 %) and energy efficiency measures, including heating and cooling, are important technologies for the decarbonisation of the EU building stock by 2050.

Call topics:

- LC-SC3-EE-1-2018-2019-2020: Decarbonisation of the EU building stock: innovative approaches and affordable solutions changing the market for buildings renovation.
- LC-SC3-EE-2-2018-2019: Integrated home renovation services.
- LC-SC3-EE-4-2019-2020: Upgrading smartness of existing buildings through innovations for legacy equipment.
- LC-SC3-EE-6-2018-2019-2020: Business case for industrial waste heat/cold recovery.
- LC-SC3-EE-13-2018-2019-2020: Enabling next-generation of smart energy services valorising energy efficiency and flexibility at demand-side as energy resource.
- LC-SC3-EE-16-2018-2019-2020: Supporting public authorities to implement the Energy Union.
- LC-SC3-EE-17-2019: European City Facility - European cities as key innovation hubs to unlock finance for energy efficiency (Smart Financing for Smart Buildings)

RES – Global Leadership in Renewables

This area supports activities across the full innovation chain, from identifying breakthrough technologies to supporting the entire portfolio of renewable energy technologies at laboratory scale, dedicating support to validation in relevant environment of most promising technologies, finally supporting market up take introduction with collaborative and not purely technological activities. ²⁷

Call topics:

- LC-SC3-RES-4-2018: Renewable energy system integrated at the building scale.
- LC-SC3-RES-5-2018: Increased performance of technologies for local heating and cooling solutions.
- LC-SC3-RES-8-2019: Combining Renewable Technologies for a Renewable District Heating and/or Cooling System.

ES – Smart Citizen-centred energy system

This area puts the citizen in the centre of the EU's energy system and supports actions are needed to support the best implementation of the EU's energy policy package "Clean Energy for all Europeans".

Call topics:

- LC-SC3-ES-3-2018-2020: Integrated local energy systems (Energy islands)
- LC-SC3-ES-7-2018: Pan-European Forum for R&I on Smart Grids, Flexibility and Local Energy Networks
- LC-SC3-ES-9-2019: ERA-NET Co-Fund Enhanced cooperation in Digitalisation of Energy Systems and Networks

SCC - Smart Cities and Communities

To achieve the necessary energy transition in cities, it is essential to increase energy systems integration and to push energy performance levels significantly beyond the levels of current EU building codes and to realize the deployment of Positive Energy Districts.

Call topic:

- LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities

5. Application deadline

Horizon2020 deadlines differ per call and can be found in the Work Programme.³¹

6. Managing authority

The H2020 Programme is funded by the European Commission and is managed mainly by the Innovation and Networks Executive Agency (INEA).

7. Budget

In total, the European Commission has made EUR 80 billion available for the H2020 programme from 2014-2020.

8. Programming period

Horizon 2020 funding period is from 2014-2020. After this period, Horizon Europe will run from 2021-2027. For Horizon Europe, EUR 100 billion will be made available for the period 2021-2027.

This programme will focus on creating more impact, but will have similar research priorities, defined in three pillars: Open Science, Global Challenges and Industrial Competitiveness and Open Innovation.³²

- The Open Science pillar (EUR 25.8 billion) will support frontier research projects through the European Research Council, funds fellowships and exchanges for researchers through Marie Skłodowska-Curie Actions, and invests in world-class research infrastructures.
- The Global Challenges and Industrial Competitiveness pillar (EUR 52.7 billion) will directly support research and innovation relating to societal challenges, reinforces technological and industrial capacities, and sets EU-wide missions to tackle some of our biggest problems. Climate, Energy and Mobility will one of the clusters under this pillar and focuses on renewable energy systems and grids, as well as supply, storage and buildings and industrial facilities in energy transition.
- The Open Innovation pillar (EUR 13.5 billion) aims to make Europe a frontrunner in market-creating innovation via the European Innovation Council by developing the overall European innovation landscape and fostering the integration of business, research, higher education and entrepreneurship.

³² European Commission (2018). EU Budget for the future. EU Funding for Research and Innovation 2021-2027. 7 June 2018.

9. More information

The official webpage for the Horizon 2020 programme is: ec.europa.eu/horizon2020.

All projects funded under Horizon 2020 (and preceding programmes) can be found in the CORDIS database: cordis.europa.eu/projects/home_en.html. The database includes a search function that allows for instance to search for projects in the heating and cooling sector.

National Contact Points (NCPs)

The network of National Contact Points (NCPs) is the main structure to provide guidance, practical information and assistance on all aspects of participation in Horizon 2020. NCPs are also established in many non-EU and non-associated countries ("third countries").

NCPs are national structures established and financed by governments of the 28 EU member states and the states associated to the framework programme. NCPs give personalised support on the spot and in applicants' own languages. The NCP systems can vary from one country to another from highly centralised to decentralised networks, and a number of very different actors, from ministries to universities, research centres and special agencies to private consulting companies.

As the NCPs are national structures, the type and level of services offered may differ from country to country. In general, the following basic services are available in accordance with the NCP Guiding Principles doc agreed by all countries:

- Guidance on choosing relevant H2020 topics and types of action
- Advice on administrative procedures and contractual issues
- Training and assistance on proposal writing
- Distribution of documentation (forms, guidelines, manuals etc.)
- Assistance in partner search

4.2.1 SME instrument

1. Target areas

The SME instrument offers Europe's brightest and boldest entrepreneurs the chance to step forward and request funding for breakthrough ideas with the potential to create entirely new markets or revolutionise existing ones. It supports ground-breaking innovative ideas for products, services or processes that are ready to conquer global markets. There are no predefined topics for the SME instrument, only the most excellent and impactful ideas receive support.

As part of the EIC pilot, Horizon 2020 funds high-potential innovation developed by SMEs through the SME instrument. The programme supports close-to-market activities, with the aim to give a strong boost to breakthrough innovation with a market-creating potential. Highly innovative SMEs with a clear commercial ambition and a potential for high growth and internationalisation are the prime target.

2. Type of funding

Grants are a form of complementary financing and the beneficiary organisation is also expected to put up a percentage of the funding for their project. These grants are offered in two phases.

3. Conditions for using the instrument

- **Applicant requirements**

The SME Instrument is available for SMEs only and as per eligibility conditions, a proposal will be considered eligible if all three of the following conditions are met:

- The applicant is a for-profit SME³³, including newly created companies and start-ups, from any sector;
- The applicant is established in an EU Member State or a Horizon 2020 associated country;
- The applicant is not found in a situation of concurrent submission/implementation with another SME Instrument proposal/project.

- **Co-funding percentage and other financial requirements**

Projects in the SME instrument receive EU co-financing for 70 % of the eligible costs, and the beneficiary needs to secure 30 % at least of public or private contribution to complete its budget either from its own resources or from other sources. This remaining funding can however not be from another EU funding source.

- **Project size and duration**

The size of EU grant provided to the final recipients for phase I, for feasibility assessment purposes (optional) per project is EUR 50 000 (lump sum). The size of EU grant provided for business innovation grants for innovation development & demonstration purposes for the phase II (possible) weighs between EUR 0.5 - 2.5 million. Higher or lower amounts can be requested, when duly justified during application.

Project duration is normally around 6 months (Phase I) and 12 to 24 months (Phase II) to complete. The duration could be longer in exceptional and well-justified cases.

- **Eligible costs**

The SME instrument follows the total costs principle. The payment scheme is mainly based on the principle of advance payments, but also on the principle of reimbursement of costs that were actually incurred (including flat rates).

The eligible costs include:

- staff, office and administration;
- travel and accommodation;
- external expertise and services;
- equipment;
- infrastructure and construction works.

³³ For-profit SMEs' means micro-, small- and medium-sized enterprises, as defined in Commission Recommendation 2003/361/EC, that are not 'non-profit legal entities' as defined in the Horizon 2020 Rules for Participation (Regulation No 1290/2013): i.e., a 'legal entity which by its legal form is non-profit-making or which has a legal or statutory obligation not to distribute profits to its shareholders or individual members'

For each budget line, a definition is provided as well as guidance for budgeting and reporting.

- **Technology Readiness Levels (1-9), if applicable**

Projects at the technology readiness level 6 or higher (technology demonstration) have the best chances to receive funding.

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

SME Instrument supports innovative projects in different sectors from SMEs. Energy related solutions, such as urban energy infrastructure (for heating and cooling) and improving energy efficiency of the built environment, could be supported providing that projects are innovative.

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

SME Instrument supports innovative projects in different sectors from SMEs. Research and innovation in energy efficiency of the built environment or energy networks, could be supported providing that projects are innovative.

- **Support local SMEs**

The SME Instrument is available for SMEs only.

5. Application deadline

The SME instrument works with 4 cut-off dates per year for both phase 1 and phase 2.³⁶

Phase 1	02 September 2020
08 February 2018	04 November 2020
03 May 2018	
05 September 2018	Phase 2
07 November 2018	10 January 2018
13 February 2019	14 March 2018
07 May 2019	23 May 2018
05 September 2019	10 October 2018
06 November 2019	09 January 2019
12 February 2020	03 April 2019
06 May 2020	05 June 2019

09 October 2019

19 May 2020

08 January 2020

07 October 2020

18 March 2020

6. Managing authority

The Executive Agency for Small and Medium-sized Enterprises (EASME) has been set-up by the European Commission to manage the SME instrument on its behalf.

7. Budget

Overall budget of the SME instrument is EUR 1.6 billion. Yearly budget (indicative) of the SME instrument over the period 2018-2020 is as follows³⁴:

- 2018: EUR 479 million;
- 2019: EUR 552 million;
- 2020: EUR 600 million.

8. Programming period

The current SME instrument funding period is from 2018-2020. The SME instrument will be continued after 2020 under the new European Innovation Council. The council will house three popular competitions already running under Horizon 2020, namely: the SME Instrument, Fast Track to Innovation and FET Open. It will invite more financiers and innovators to evaluate proposals and supply more mentoring and coaching to young companies. And it will reorganise all the funding schemes into two main types: modest “pathfinder” grants for early-stage, high-risk innovation, open to individuals and companies, and larger “accelerator” funding to get the innovations to market.

9. More information

The official webpage for SME Instrument is: sme.easme-web.eu

Project examples can be found at ec.europa.eu/easme/en/news/257-innovators-selected-funding-under-eic-sme-instrument

4.2.2 Fast Track to Innovation (FTI)

1. Target areas

The Fast Track to Innovation (FTI)³⁵ provides funding for bottom-up proposals for close-to-market innovation activities in any area of technology or application. This thematic openness – combined with the possibility for all kinds of innovation actors to work together and deliver innovation onto the market and/or into society – is set to nurture trans-disciplinary and cross-sectoral cooperation. The FTI's aim is to:

- Reduce time from idea to market;

³⁴ European Commission (2018). EASME. SME Instrument. Retrieved on 19 October 2018 at ec.europa.eu/easme/en/sme-instrument

³⁵ European Commission (2018). Horizon 2020 – Fast Track to Innovation. Retrieved on 3 September 2018 at ec.europa.eu/programmes/horizon2020/en/h2020-section/fast-track-innovation-pilot

- Stimulate the participation of first-time applicants to EU research and innovation funding;
- Increase private sector investment in research and innovation.

Being part of the EIC pilot, the programme can help partners to co-create and test breakthrough products, services or business processes that have the potential to revolutionise existing or create entirely new markets. Actions should be 'business-driven' and are intended to give breakthrough innovation ideas the last push before shaking up the market.

2. Type of funding

Via the Fast Track to Innovation (FTI) Initiative, the H2020 programme awards grants a consortium of partners to help them carry out projects that further its policies. In this case, grants are a form of complementary financing and the beneficiary organisation is also expected to put up a percentage of the funding for their project.³⁵

3. Conditions for using the instrument

• Applicant requirements

Proposals for funding must be submitted by consortia comprising between three and five legal entities established in at least three different EU Member States or countries associated to Horizon 2020. Substantial industry involvement in FTI actions is mandatory to ensure quick market take-up ('quick' meaning within a three-year period after the start of the FTI-action). This industry involvement implies either:

- the allocation of at least 60 % of the budget to industry participants in the consortium, or;
- the presence of a minimum number of two industry participants in a consortium of three or four partners, or of three industry participants in a consortium of five partners.³⁶

• Co-funding percentage and other financial requirements

Projects in the FTI instrument receive EU co-financing for 70 % of the eligible costs, and the beneficiary needs to secure 30 % at least of public or private contribution to complete its budget either from its own resources or from other sources. This remaining funding can however not be from another EU funding source.³⁶

• Project size

The size of the FTI grant provided to the final recipients per project amounts up to EUR 3 million.

• Eligible costs

The FTI Initiative follows the total costs principle. The payment scheme is mainly based on the principle of fast payments within 6 months from signing the contract. The eligible costs include:

- staff, office and administration;
- travel and accommodation;
- external expertise and services;

- equipment;
- infrastructure and construction works.

For each budget line, a definition is provided as well as guidance for budgeting and reporting.

- **Technology Readiness Levels (1-9), if applicable**

Projects under FTI should be close to market, with TRL 6-8.

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

FTI instrument supports innovative projects in different sectors. Energy related solutions, such as urban energy infrastructure (for heating and cooling) and improving energy efficiency of the built environment, could be supported providing that projects are innovative and have impact.

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

FTI instrument supports innovative projects in different sectors. Research and innovation in energy efficiency of the built environment or energy networks, could be supported providing that projects are innovative and have impact.³⁶

- **Support local SMEs**

FTI does not specifically support SMEs, but SMEs could be part of a project consortium under FTI.³⁶

5. Application deadline

There are six cut-off dates in 2019 and 2020: 21 February 2019, 23 May 2019 and 22 October 2019; 19 February 2020, 9 June 2020 and 27 October 2020. Time-to-grant for participants is targeted to be six months at most.³⁶

6. Managing authority

The FTI programme is managed by the Executive Agency for Small and Medium-sized Enterprises (EASME), which has been set-up by the European Commission to manage the FTI scheme on its behalf.

7. Budget

³⁶ European Commission (2018). Horizon 2020 Work-Programme 2018-2020. Towards the next Framework Programme for Research and Innovation: European Innovation Council (EIC) pilot. European Commission Decision C(2018)4708 of 24 July 2018.

FTI has a total budget of EUR 300 million for the period 2018-2020. This budget is derived from the Horizon 2020 priority “Societal Challenges” and the specific objective “Leadership in Enabling and Industrial Technologies (LEITs)”.

8. Programming period

The current FTI funding period is from 2018-2020.

The FTI will be continued after 2020 under the new European Innovation Council. The council will house three popular competitions already running under Horizon 2020, namely: the SME Instrument, Fast Track to Innovation and FET Open. It will invite more financiers and innovators to evaluate proposals and supply more mentoring and coaching to young companies. And it will reorganise all the funding schemes into two main types: modest “pathfinder” grants for early-stage, high-risk innovation, open to individuals and companies, and larger “accelerator” funding to get the innovations to market.

9. More information

The official webpage for FTI is: ec.europa.eu/easme/eic-fast-track-innovation-fti

4.2.3 Future and Emerging Technologies (FET) Open

1. Target areas

Future and Emerging Technologies (FET) Open is part of the EIC pilot and supports the early-stages of the science and technology research and innovation around new ideas towards radically new future technologies. FET Open calls for collaborative research and innovation actions that pass all the gatekeepers programme:

- Radical vision
- Breakthrough scientific and technological target
- Ambitious interdisciplinary research
- Novelty
- Foundational
- High-risk

Moreover, FET Innovation Launchpad Actions also supports projects that turn results from FET-funded projects into genuine societal or economic innovations.

2. Type of funding

Via FET Open, the H2020 programme awards grants to help organisations and researchers in Europe and globally to carry out highly innovative projects.³⁷

3. Conditions for using the instrument

- **Applicant requirements**

FET Open invites any type of legal entities to participate: academia, industry, end-users, from anywhere in the world to participate, when they are associated to the EU. The minimum requirement for a project consortium is at least three independent legal entities

³⁷ FFG (2018). FET Open Call 2018. Presentation of 28 February 2018, retrieved at ffg.at/sites/default/files/downloads/call/fet_open_28.02.2018_webinar.pdf

from at least three different EU countries or countries associated to H2020. Only participants from European, associated and developing countries can get funded.³⁸

- **Co-funding percentage and other financial requirements**

Projects in the FET Research and Innovation Action have a funding rate 100 % of eligible direct costs. In addition, 25 % thereof can be added to cover indirect costs.³⁶

- **Project size**

The size of EU grant provided to the final recipients depends on the type of FET Open actions. For research and innovation actions, the size per action is up to EUR 3 million. For CSA actions, it ranges from EUR 0.5 million and up to 0.7 million. For FET Innovation Launchpad Actions (CSA), the size per action is up to EUR 0.1 million.³⁷ Higher or lower amount can be requested, when duly justified during application.

- **Eligible costs**

The FET Open covers the following costs:

- personal costs;
- travel costs and related subsistence allowance;
- costs for other (minor) goods and services;
- costs for subcontracting or for providing support to 3rd parties;
- depreciation costs for equipment, infrastructure or other assets;
- capital and/or operating costs of large research infrastructures.

- **Technology Readiness Levels (1-9), if applicable**

Not applicable.

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

FET Open supports innovative projects in different sectors. Energy related solutions, such as urban energy infrastructure (for heating and cooling) and improving energy efficiency of the built environment, could be supported providing that projects are innovative, high-risk, foundational and have impact, among other requirements. A project consortium needs to consist of at least 3 different legal entities from 3 different EU Countries and the applicant concerned should be a legal entity/company or research organisation within this sector.

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

FET Open supports innovative projects in different sectors. Research and innovation in energy efficiency of the built environment or energy networks, could be supported providing that projects are innovative, high-risk, foundational and have impact, among other requirements. A project consortium needs to consist of at least three different legal

³⁸ Albania, Armenia, Bosnia-Herzegovina, Faroe Islands, Georgia, Iceland, Israel, Macedonia, Moldova, Montenegro, Norway, Serbia, Switzerland, Ukraine, Tunisia, Turkey; as well as 'Developing countries' as listed in Annex A of H2020, e.g. Argentina, Bolivia, Colombia, Costa-Rica, Chile, Egypt, Indonesia, Jordan, Kenya, Malaysia, Morocco, Mongolia, Nicaragua, Pakistan, Panama, Peru, Philippines, Venezuela, Vietnam; and International European interest organisations, e.g. CERN, EMBL, ESA, EUROFUSION, XFEL.

entities from three different EU Countries and the applicant concerned should be a legal entity/company or research organisation within this sector.

- **Support local SMEs**

FET Open encourages SMEs to apply as part of a project consortium under the instrument.

5. Application deadline

FETOPEN-01-2018-2019-2020. FET-Open Challenging Current Thinking (Research and Innovation Action): 24 January 2019, 18 September 2019 and 13 May 2020.

FETOPEN-03-2018-2019-2020. FET Innovation Launchpad (Coordination and Support Action): 8 October 2019 and 14 October 2020.³⁹

6. Managing authority

The European Commission is the managing authority of the FET Open programme.

7. Budget

The total indicative budget for the FET-Open from 2018-2020 is EUR 579.5 million. The indicative funding budgets available per cut-off date for this topic are as follows⁴⁰:

- 2018: EUR 185.70 million
- 2019: EUR 247.50 million
- 2020: EUR 214 million

8. Programming period

The current FET Open funding period is from 2018-2020. The FET open will be continued after 2020 under the new European Innovation Council. The council will house three popular competitions already running under Horizon 2020, namely: the SME Instrument, Fast Track to Innovation and FET Open. It will invite more financiers and innovators to evaluate proposals and supply more mentoring and coaching to young companies. And it will reorganise all the funding schemes into two main types: modest “pathfinder” grants for early-stage, high-risk innovation, open to individuals and companies, and larger “accelerator” funding to get the innovations to market.

9. More information

The official webpage for FET open is: ec.europa.eu/programmes/fet-open. Project examples can be found at ec.europa.eu/digital-single-market/en/projects/75998/3599.

³⁹ European Commission (2018). CALL: FET OPEN – NOVEL IDEAS FOR RADICALLY NEW TECHNOLOGIES.

⁴⁰ European Commission (2018). Horizon 2020 – Work Programme 2018-2020. 2. Future and Emerging Technologies. Decision C(2018)4708 of 24 July 2018.

4.2.4 European Institute of Innovation and Technology (EIT)

Funding and technical support for the energy transition is also available under the European Institute of Innovation and Technology (EIT). The EIT is an independent EU body funded through Horizon 2020 that is strengthening Europe's ability to innovate.

The EIT's Innovation Communities create and find innovative solutions to major challenges, including energy, climate, health, raw materials, digitalisation and food. They offer access to talent, knowledge, funding and new business sectors to:

- develop innovative products and service
- start new companies
- train a new generation of entrepreneurs

The EIT now has six Innovation Communities, including two relevant communities in the light of heating and cooling projects:

- EIT Climate-KIC: addressing climate change adaptation and mitigation challenges;
- EIT InnoEnergy: achieving sustainable energy.

These EITs operate in innovation hubs, spread across the EU to increase the impact of the EIT's activities. Both Climate-KIC and InnoEnergy support initiatives by providing access to their expertise and network.

Climate-KIC also provides financial support to ambitious initiatives with a clear pathway to positive climate impact, consistent with the Paris Agreement targets and Climate Innovation Impact Goals. There are different types of calls and funding is available for 2019 onwards. The application process depends on the country your organisation resides, and on the content, aim of your project and 'innovation stage' of your project. The 5 types of calls are:

- Climate Innovation Ecosystems
- Earlier Stage Innovation
- Later Stage Innovation
- Education
- Regional Innovation Scheme (RIS)

Moreover, both EIT Climate-KIC and EIT InnoEnergy support start-ups – from idea to validation - with seed funding. More information can be found at climate-kic.org and innoenergy.com.

4.3 LIFE

1. Target areas

LIFE is the EU's multiannual programme for Environment and Climate for the period 2014–2020 and is structured around the two sub-programmes LIFE Environment and LIFE Climate Action.

LIFE Environment focuses on projects that contribute to the development and implementation of EU environmental policy and



legislation in general and in the area of nature and biodiversity and on information, communication and awareness raising campaigns in line with the priorities of the 7th Environment Action Programme⁴¹. The specific thematic priorities are:

- Environment and Resource Efficiency;
- Nature and Biodiversity;
- Environmental Governance and Information.

LIFE Climate Action focuses on projects that reduce greenhouse gas emissions, contribute to supporting efforts leading to increased resilience to climate change and/or promote awareness raising on climate matters. The specific thematic priorities are:

- Climate Change Mitigation;
- Climate Change Adaptation;
- Climate Governance and Information.

2. Type of funding

The LIFE programme provides grant funding. Debt financing is available under the Private Finance for Energy Efficiency (PF4EE) facility (section 5.1).

3. Conditions for using the instrument

• Applicant requirements

The programme is open to the participation of entities registered in the Member States of the European Union being (1) public bodies, (2) private commercial organisations and (3) private non-commercial organisations (including NGOs). Third countries and projects that cooperate with international organizations are eligible as well, as the LIFE programme provides grants for activities outside the EU. The LIFE Programme may fund public and private bodies out of the following countries: EFTA, Candidate Countries, countries to which the European Neighbourhood Policy applies and countries which have become members of the European Environmental Agency, and some Overseas Countries and Territories (OCT).

Collaboration with one or multiple parties is not obligatory. However, the participation of one or more international partners significantly increases your application's chance of success. Transnational projects will receive extra points in their evaluation.

- Co-funding percentage and other financial requirements

The maximum percentage that the LIFE programme funds is 60 % of total eligible costs. Other costs need to be co-financed.

• Project size

There is no fixed minimum size for project budgets. However, large projects (i.e. over EUR 5 million total costs) have been financed several times in the past, small projects (below EUR 500 000) have seldom succeeded due to the limited output and consequently the low added value.

⁴¹ European Commission (2013). Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet'. Official Journal of the European Union, L 354/171.

- **Eligible costs**

- Direct personnel costs;
- Travel and subsistence costs;
- External assistance costs;
- Durable goods (Infrastructure costs, Equipment costs, Prototype costs);
- Costs for consumables;
- Other costs;
- Overheads are eligible at a flat rate, which will be fixed in the grant agreement as a percentage (maximum 7 %) of the total eligible direct costs of the entire project.

- **Technology Readiness Levels (1-9), if applicable**

Not applicable, however, the LIFE programme mainly supports demonstration and market uptake projects.

4. Relevance for the heating and cooling sector

LIFE funds innovative projects that demonstrate new techniques and methods. These 'traditional' style projects are complemented by 'integrated' projects that combine LIFE funding with other sources of support to maximise their impact over a large area. Next to contributing to the implementation, updating and development of EU policy and legislation, projects under the LIFE programme must have an added value for Europe and address specific topics as listed in the Guides for Applicants for each thematic priority.

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

Under LIFE Environment the following type of projects are of relevance⁴²:

- 1) Projects implementing integrated and comprehensive policies for sustainable urban planning and design through innovative approaches regarding urban public transport and mobility, sustainable buildings, energy efficiency or urban biodiversity conservation;
- 2) Local and regional energy projects addressing air quality and emission reductions in atmospheric particulate matter (PM) hotspots in areas with continued high use of coal and biomass burning heating applications.

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

Of relevance under LIFE Climate Action are projects that share and develop expertise across Europe on the challenges and opportunities related to the 2030 climate and energy policy objectives and highlight the potential in the Member States for further mainstreaming climate and energy into macro-economic policies. Projects could for instance have a focus on: less environmentally harmful taxation/subsidies, energy efficiency and renewable policies, enabling legislative frameworks for private sector

⁴² European Commission – LIFE Programme (2018) LIFE Environment and Resource Efficiency. Guidelines for Applicants 2018.

contribution, inter alia, to restoring public finance, reducing energy dependency, accelerating innovation and creating jobs while reducing emissions.⁴³

- **Support local SMEs**

The LIFE program does not specifically support (local) SMEs.

5. Application deadline

Typically, every year in April a call is published. For LIFE Environment there is a two-stage application process, in which the first stage needs to be submitted in June and the second stage in January the year after. For LIFE Climate Action the full proposal needs to be submitted in June.

6. Managing authority

The LIFE programme is managed by the Directorate-General for Environment of the European Commission.

7. Budget

The programme has an overall budget of EUR 3.4 billion. For the remaining three years of the programme (2018-2020) the budget is over EUR 1.6 billion.⁴⁴

8. Programming period

The LIFE program funding period is from 2014-2020. The funding for the EU LIFE programme is increased by 60 % for the period 2021-2027 and will have about EUR 5 billion at its disposal. While most of the additional money will go to fund LIFE's environment and biodiversity stream, a slight increase could happen in the climate pillar of LIFE.

The support for capacity building for the clean energy transition contributing to climate change mitigation, currently funded under Horizon 2020 for the period 2014-2020, should be moved into LIFE in the next MFF. The reason was the greater suitability of the LIFE programme in terms of intervention logic, objectives and delivery mechanisms as well as targeted group of beneficiaries as compared to the research and innovation framework which is more suited for the development of first-of-a-kind technologies than to support their replication and upscaling. Integrating a Clean Energy Transition sub-programme into LIFE will address these shortcomings and increases the overall coherence of the Union funding while offering potential for synergies with other actions on environment and climate. The total budget envelop for the Clean Energy Transition sub-programme for 2021-2027 will be EUR 1 billion.

In the field of Climate Action, the LIFE programme will, in continuation of the 2014 – 2020 LIFE programme, also include a sub-programme on 'Climate Change Mitigation and Adaptation'⁴⁵.

⁴³ European Commission – LIFE Programme (2018). LIFE Climate Action. Guidelines for Applicants 2018.

⁴⁴ European Commission (2018). COMMISSION IMPLEMENTING DECISION (EU) 2018/210 of 12 February 2018 on the adoption of the LIFE multiannual work programme for 2018-2020. Official Journal of the European Union, L 39/11, 13.2.2018.

9. More information

The official webpage for the LIFE programme is: ec.europa.eu/environment/life.

Project examples can be found at: ec.europa.eu/environment/life/project/Projects/index.cfm

4.4 INTERREG: European Territorial Co-operation (ETC)

INTERREG aims to strengthen Europe and reduce economic disparities between regions and Member States by stimulating cooperation projects. In 79 programmes, countries and regions work together in different ways on challenges on innovation, research, sustainable energy, climate adaptation and transport. There are three main programmes within INTERREG, focusing respectively on cross-border, transnational and interregional cooperation in the EU.

1. Target areas

Cross-Border Cooperation (INTERREG A)

INTERREG A supports cooperation between NUTS 3 regions⁴⁶ from at least two different Member States lying directly on the borders or adjacent to them. There are 60 cooperation programmes in the EU that aim to tackle common challenges identified jointly in border regions and to exploit the untapped growth potential in border areas, while enhancing the cooperation process for the purposes of the overall development of the EU (figure 4). This is achieved by enhancing the quality of life in the often-peripheral border regions, notably via investments in: Innovation, Health care, Education, Employment and Labour mobility.

⁴⁵ European Commission (2018). Proposal for a regulation of the European Parliament and of the Council establishing a Programme for the Environment and Climate Action (LIFE) and repealing Regulation (EU) No 1293/2013. COM/2018/385 final/2 - 2018/0209 (COD).

⁴⁶ The [NUTS classification](#) (Nomenclature of territorial units for statistics) is a hierarchical system for dividing the economic territory of the EU. NUTS subdivides each Member State into a whole number of regions at NUTS 1 level. Each of these is subdivided into regions at NUTS level 2, and these in turn into regions at NUTS level 3.

NUTS 1: regions with 3 – 7 million inhabitants.

NUTS 2: regions with a per capita GDP less than 75% of the EU average with 800 000 – 3 million inhabitants.

NUTS 3: small regions for specific diagnoses with 150 000 – 800 000 inhabitants.

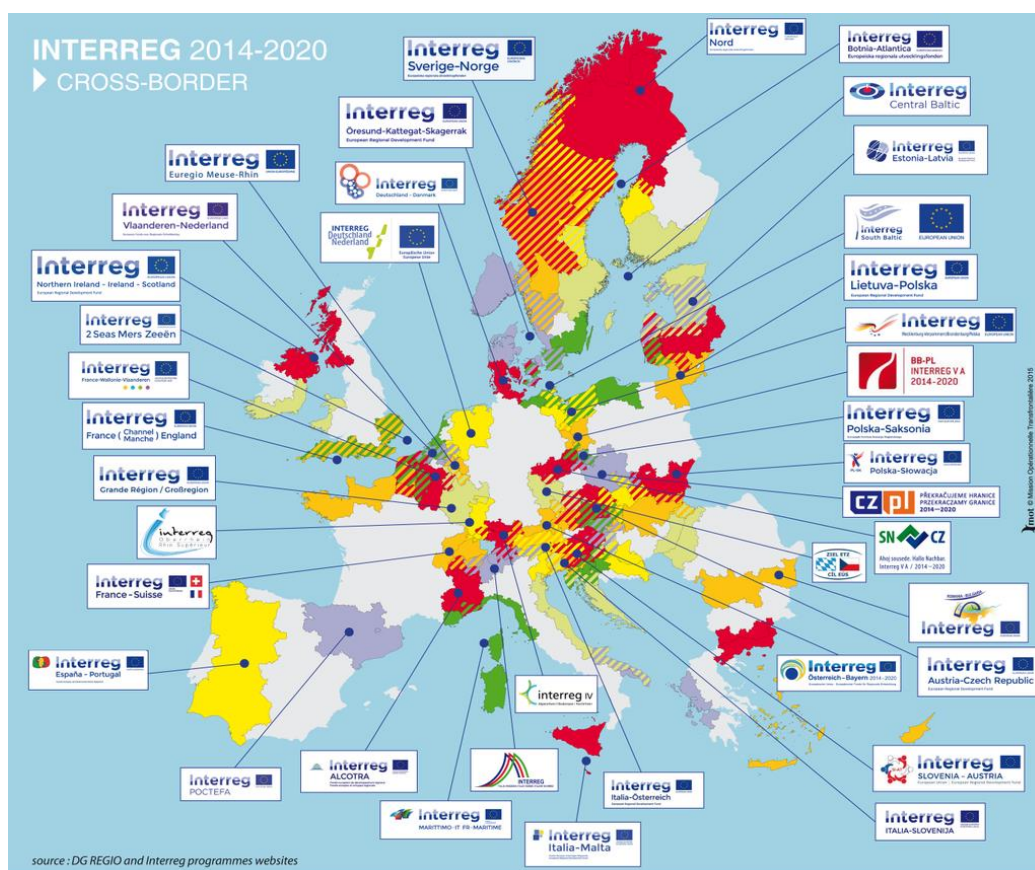


Figure 4 Overview of 57 cross-border INTERREG cooperation programmes in 2014-2020⁴⁷

2) Transnational Cooperation (INTERREG B)

INTERREG B involves regions from several countries and aims to promote better cooperation and regional development within the EU through a joint approach to tackle common issues. There are 15 cooperation programmes in the EU. These programmes support a wide range of project investment related to for instance innovation, environment, accessibility and urban development. The transnational programmes add a European dimension to regional development so these are developed from analysis at the EU level and are leading to agreed priorities and coordinated strategic responses. This allows meaningful work between regions from several EU Member States on matters such as communication corridors, flood management, international business and research linkages and the development of more viable and sustainable markets.

⁴⁷ European Commission (2018). Interreg A - Cross-border cooperation. Retrieved on 4 September at ec.europa.eu/regional_policy/nl/policy/cooperation/european-territorial/cross-border/#4

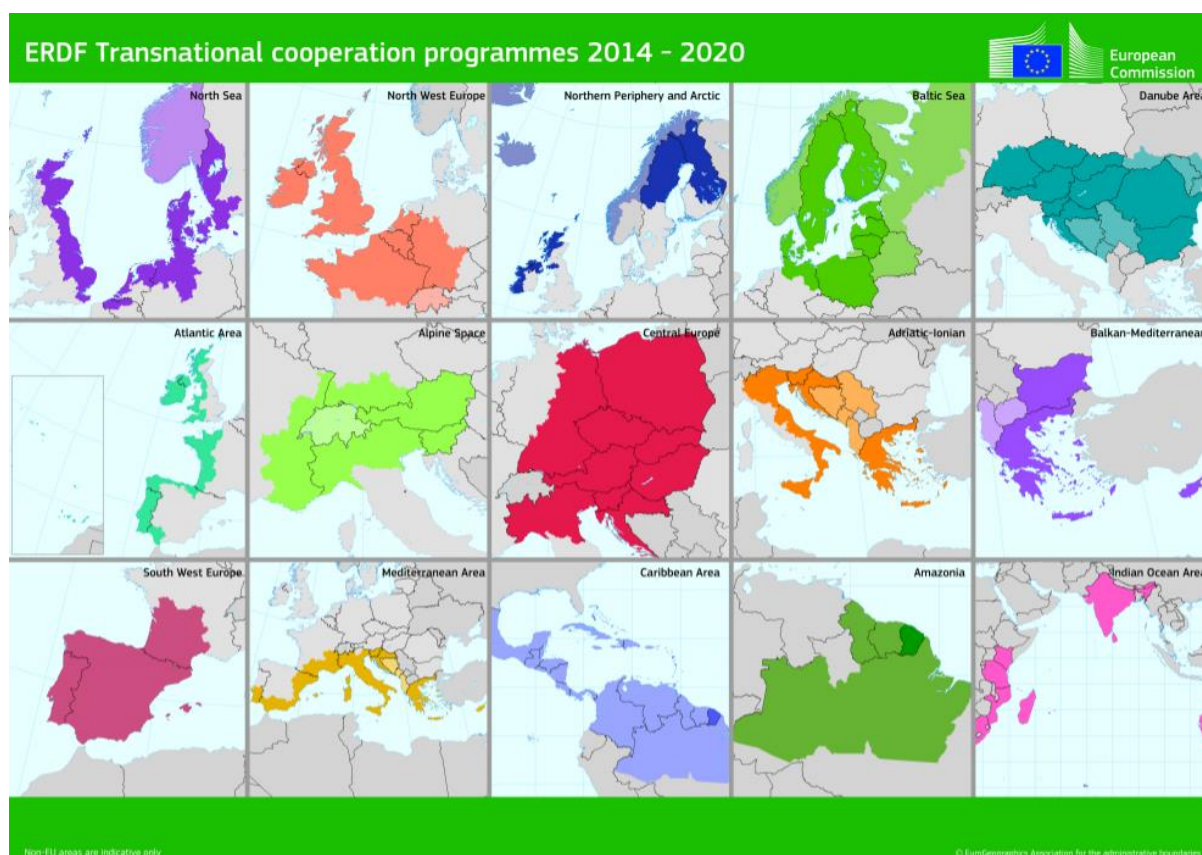


Figure 5 Overview of 15 transnational INTERREG cooperation programmes in 2014-2020.⁴⁸

3) Interregional Cooperation (INTERREG C)

INTERREG C operates at pan-European level, covering all EU Member States, and builds networks to develop good practice and facilitate the exchange and transfer of knowledge and experience by successful regions. It showcases what regions do well, to the benefit of those still investing. INTERREG C provides financial support to any actions developed which must fall into one of the following: Research and innovation, SME competitiveness, Low-carbon economy and Environment and resource efficiency.

Next to INTERREG C, 3 networking programmes (URBACT III, INTERACT III and ESPON) exist and together provide a framework for exchanging experience between regional and local bodies in different countries. While URBACT III funds a limited number of networking projects (more information in 4.6), INTERACT and EPSON are merely networking programmes support EU institutions, and projects and programmes within INTERREG.

2. Type of funding

INTERREG Europe co-finances in the form of a grant, for maximum 85 % of project activities that are carried out in partnership with other policy organisations based in

⁴⁸ European Commission (2018). Interreg B - Transnational cooperation. Retrieved on 4 September at ec.europa.eu/regional_policy/nl/policy/cooperation/european-territorial/trans-national/

different countries in Europe. In this case, grants are a form of complementary financing, and the beneficiaries are also expected to put up 15% of the funding for their project.⁴⁹

3. Conditions for using the instrument

- Applicant requirements

Any organisation based in the 28 EU Member States, as well as Norway and Switzerland, are eligible for INTERREG funding. Projects have to involve partners from at least three countries, from which at least two partners must be from the EU member states, financed by the Interreg programme. The exact requirements differ per programme.

INTERREG A:

- Public authorities on local, regional and national levels;
- Institutions governed by public law (e.g. regional development agencies, business support organisations, universities);
- Private non-profit bodies.

INTERREG B & C:

- Public authorities on local, regional and national levels;
- Managing authorities and intermediate bodies in charge of the 'Investment for Growth and Jobs' or 'European Territorial Cooperation' programmes;
- Agencies, research institutes, thematic and non-profit organisations, when, these types of organisations engage with local policymakers in order to identify options for collaboration. These organisations must be based in the EU.

- Co-funding percentage and other financial requirements

INTERREG programmes will co-finance up to 85 % of project activities that are carried out in partnership with other policy organisations based in different countries in Europe. Public bodies and bodies governed by public law will be co-financed at a rate of 85 %; Private non-profit bodies at a rate of 75 %; and Norwegian organisations at 50 %. The remaining funding has to be provided by the partner organisations themselves. Organisations from Switzerland need to contact the National Point of Contact to receive information on funding opportunities.

- Project size

Depending on the number of partners involved, the average total budget of a project is expected to be EUR 1-2 million.⁴⁹ Different conditions apply for INTERREG B, covering larger areas of co-operation such as the Baltic Sea, Alpine and Mediterranean regions, as well as some non-EU countries, for which calls for proposals are published throughout the programme period.

- Eligible costs

The eligible costs for the different budget lines applicable in the programme include: staff; administration; travel and accommodation; external expertise and services; equipment. For each budget line, a definition is provided as well as guidance for

⁴⁹ INTERREG Europe (2018). Interreg Europe Programme Manual. Version 5, 13 April 2018.

budgeting and reporting. However, different INTERREG programmes or regions might have specific (financial) rules and regulations. Also, specific rules and conditions apply for ineligible costs, fines, and financial penalties.⁴⁹

- Technology Readiness Levels (1-9), if applicable

Not applicable.

4. Relevance for the heating and cooling sector

- Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)

One of the priority areas of the INTERREG programme is Low-carbon Economy and refers to the transition to a low-carbon economy. Regional policies in this field include support actions and investments to increase levels of energy efficiency, including in public buildings and the housing sector. Moreover, another aim of the priority is to raise the share of energy from renewable sources in the overall energy mix by facilitating the production and distribution, as well as to encourage reduction of energy consumption by businesses and households overall.

District heating and cooling projects, renewable heat and cooling sources and house renovation can thus be (co)financed. However, the scale of the project is important. For instance, there should be a sufficient number of houses, impacting an appropriate number of people based in a defined region within the programme. Also, in case of INTERREG B and C the project must be developed in collaboration with different kinds of stakeholders, in the public, private, knowledge, and civil-society levels.

Moreover, this priority area also focuses specifically on regional and local public authorities and regional energy, development and environmental agencies next to the applicant requirements mentioned before.

- Support research & innovation on energy efficiency in heating and cooling to public and private organisations

One of the priority areas of the INTERREG programme is Research & Innovation and refers to improving regional infrastructures for research and innovation and to capacities to develop excellence in this field, as well as to the actual delivery of innovation in regional innovation chains. Projects focusing on research and innovation on energy efficiency in heating and cooling can thus be (co)financed when jobs and regional growth are created.

- Support local SMEs

One of the priority areas of the INTERREG programme is SME Competitiveness and refers to supporting SMEs in all stages of their life cycle to develop and achieve growth and engage in innovation. This mainly focuses on regional policies needed to actively support entrepreneurship development and capacity building as a building block for business creation and growth, including access to finance (e.g. through facilities for start-up capital or guarantees), knowledge and to international markets. These SMEs could also be in the energy sector and there is thus potential to support these type of companies under INTERREG from a financial and policy perspective.

5. Application deadline

INTERREG A application deadlines can be found on the websites of the cross-border INTERREG cooperation programmes indicated in figure 4. The same applies to INTERREG B programmes (figure 5).

For INTERREG C, the application calls are between March-July. The definite dates for 2019 and 2020 are not yet known⁵⁰.

6. Managing authority

The programme is managed and supported by a series of different bodies that are responsible for administering the programme and assisting projects.⁵¹

7. Budget

The INTERREG programmes are co-financed by the European Regional Development Fund for the period 2014-2020⁴⁹:

- INTERREG A has a budget of EUR 6.6 billion.
- INTERREG B has a budget of EUR 2.1 billion.
- INTERREG C has a budget of EUR 359 million.

8. Programming period

The INTERREG programme funding period is from 2014-2020. INTERREG funding for 2021-2027 will be cut by 12 % compared to the 2014-2020 period (EUR 8.4bn compared to EUR 9.3bn in 2014-2020). Moreover, the INTERREG Europe interregional programme will most likely not continue after 2020.

9. More information

The official webpage for the INTERREG programme is: interregeurope.eu. On this website, project examples can be found as well.

4.5 Connecting Europe Facility (CEF)

1. Target areas

The Connecting Europe Facility (CEF) finances projects which fill the missing links in Europe's energy, transport and digital backbone. Targeted investments in key infrastructures will help to create jobs and



⁵⁰ INTERREG Europe (2018). Call for projects. Retrieved on 3 September 2018 at interregeurope.eu/projects/apply-for-funding/

⁵¹ INTERREG Europe (2018). Organisation chart. Retrieved on 3 September 2018 at interregeurope.eu/about-us/our-organisation/

boost Europe's competitiveness. CEF will focus on three main sectors of trans-European development:

CEF Transport: Focus on infrastructure development projects (studies and works) with high EU added value, such as building missing cross-border links and removing bottlenecks along main trans-European transport corridors. Emphasis will be put on sustainability, effective interconnectivity across borders, effective interoperability (intelligent traffic management systems) and enhanced safety.

CEF Digital: Guidelines established in the context of the Europe Infrastructure Package (EIP) identify projects of common interest for the deployment of high-speed broadband networks and digital service infrastructures, aimed at improving the competitiveness of the European economy (particularly SMEs – productivity boost).

CEF Energy: The main aim of CEF Energy is to connect so-called energy islands, to ensure security of supply and to support large scale deployment of energy from renewable sources. This requires upgrading of existing and development of new energy transmission infrastructures of European importance. CEF will contribute to eliminating investment uncertainties and potential obstacles (such as lengthy permit-granting procedures). In the energy sector, the CEF supports projects of common interest that pursue one or more of the following objectives:

- 1) Increasing competitiveness by promoting the further integration of the internal energy market and the interoperability of electricity and gas networks across borders;
- 2) Enhancing the EU's security of energy supply;
- 3) Contributing to sustainable development and protection of the environment, by the integration of energy from renewable sources into the transmission network and by the development of smart energy and carbon dioxide networks.

2. Type of funding

The expected maximum grant percentage is 50 % for both studies and works. Next to direct grants, CEF will mobilise private financing and allow for innovative financial instruments such as guarantees and project bonds to gain maximum leverage from EU funding. The funding rates may be increased to a maximum of 75 % for actions which provide a high degree of regional or Union-wide security of supply, strengthen the solidarity of the Union or comprise highly innovative solutions.

3. Conditions for using the instrument

• Applicant requirements

Proposals for CEF Energy can be submitted by:

- One or more Member States;
- By international organisations, joint undertakings, or public or private undertakings or bodies established in Member States (with the agreement of the Member States concerned).

Where necessary to achieve the objectives of a given project of common interest third countries and entities established in third countries may participate as well.

- **Co-funding percentage and other financial requirements**

The co-funding percentage is 50 %. The expected maximum grant percentage is 50 % for both studies and works. Next to direct grants, CEF will mobilise private financing and allow for innovative financial instruments such as guarantees and project bonds to gain maximum leverage from EU funding. The funding rates may be increased to a maximum of 75 % for actions which provide a high degree of regional or Union-wide security of supply, strengthen the solidarity of the Union or comprise highly innovative solutions.⁵²

- **Project size**

There are no size requirements regarding the requested CEF financial contribution and/or total budget for proposals submitted under the CEF Energy programme.

- **Eligible costs**

Eligible costs under CEF Energy include:

- staff, office and administration;
- travel and accommodation;
- external expertise and services;
- consumables and supplies;
- reporting and dissemination costs;
- equipment;
- infrastructure and construction works.

For each budget line, a definition is provided as well as guidance for budgeting and reporting.

- **Technology Readiness Levels (1-9), if applicable**

The CEF programmes support technologies in the demonstration phase, e.g. with a TRL of 9.

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

CEF Energy supports demonstration projects that enhance energy security of supply, integrates the EU internal energy market and that integrates renewable energy sources into the network, as well as develop smart grids and CO₂ networks. Energy related solutions, such as district heating and cooling networks, could be supported under CEF Energy.

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

CEF Energy supports demonstration projects that enhance energy security of supply, integrates the EU internal energy market and that integrates renewable energy sources into the network, as well as develop smart grids and CO₂ networks. Research and Innovation in energy efficiency, such as district heating and cooling networks, could be supported under CEF Energy providing this includes the implementation of solutions in a demonstration project.

⁵² European Commission (2013). Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010. Official Journal of the European Union, L 348/129.

- **Support local SMEs**

CEF does not specifically support SMEs.

5. Application deadline

The CEF Energy programme works with one or two calls for project applications every year. The forthcoming calls have not been published yet, but are expected to be around March-May and June-October.⁵³

6. Managing authority

The CEF programme is managed by the Innovation and Networks Executive Agency (INEA) under the European Commission.

7. Budget

CEF has an overall budget of more than EUR 33 billion for the period 2014-2020, of which EUR 5.85 billion is allocated for CEF Energy.

8. Programming period

The CEF Energy programme funding period is from 2014-2020. The CEF programme will be continued after 2020. The Connecting Europe Facility will see its funding doubled, and most importantly, will now also focus on financing cross-border renewable energy projects.

For the period 2021-2027, the Commission proposes a total budget of EUR 42.3 billion for the then EU-27 while the first CEF 2014-2020 had about EUR 30 billion for EU-28. The energy budget of EUR 8.7 billion should help the transition towards clean energy and complete the Energy Union, making the EU energy systems more interconnected, smarter and digitalised. The focus is on cross-border renewable energy projects, interoperability of networks and better integration of the internal energy market.

9. More information

The official webpage for CEF Energy is: ec.europa.eu/inea/cef-energy

4.6 Project Development Assistance (PDA)

The European Commission has set up a series of facilities funding Project Development Assistance (PDA) to support ambitious public authorities - regions, cities, municipalities or groupings of those - and public bodies in developing bankable sustainable energy projects. The PDA facilities aim to bridge the gap between sustainable energy plans and real investment through supporting all activities necessary to prepare and mobilise

⁵³ European Commission – INEA (2018). CEF Energy Calls. Retrieved on 29 October 2018 at ec.europa.eu/inea/en/connecting-europe-facility/cef-energy/calls

investment into sustainable energy projects. These activities can include feasibility studies, stakeholder and community mobilisation, financial engineering, business plans, technical specifications and procurement procedures.

The PDA facilities were funded through the Intelligent Energy - Europe programme (IEE) and now through Horizon 2020 Energy Efficiency. The two main PDA facilities are ELENA and the PDA call in the Horizon 2020 programme, currently the EE11 call.

4.6.1 ELENA

1. Target areas

ELENA is a joint initiative by the EIB and the European Commission under the Horizon 2020 programme. ELENA provides grants for technical assistance focused on the implementation of energy efficiency, distributed renewable energy and urban transport projects and programmes. The grant can be used to finance costs related to feasibility and market studies, programme structuring, business plans, energy audits and financial structuring, as well as to the preparation of tendering procedures, contractual arrangements and project implementation units. ELENA may co-finance investment programmes in the following fields:

Energy efficiency and distributed renewable energy

- public and private buildings (including social housing), commercial and logistic properties and sites, and street and traffic lighting to support increased energy efficiency;
- integration of renewable energy sources (RES) into the built environment – e.g. solar photovoltaic (PV) on roof tops, solar thermal collectors and biomass;
- investments into renovating, extending or building new district heating/cooling networks, including networks based on combined heat and power (CHP), decentralised CHP systems;
- local infrastructure including smart grids, information and communication technology;
- infrastructure for energy efficiency, energy-efficient urban equipment and link with transport.

Urban transport and mobility

- investments to support the use and integration of innovative solutions for alternative fuels in urban mobility;
- investments to introduce on a large-scale new, more energy-efficient transport and mobility measures in urban areas including passenger transport, freight transport, etc.

2. Type of funding

ELENA provides grants for the implementation of projects and programmes. In this case, grants are a form of complementary financing, and the beneficiary is also expected to put up a percentage (minimum 10 %).

3. Conditions for using the instrument

- **Applicant requirements**

ELENA is open to any public or private entity/project promoters such as local, regional or national authorities, transport authorities and operators, social housing operators, and other companies (e.g. estate managers, retail chains, energy service companies) to develop and launch investible (bankable) Investment Programmes in the fields of energy efficiency, building-integrated renewable energy and sustainable urban transport. Typically, ELENA supports projects above EUR 30 million with a maximum 3-year implementation period for energy efficiency and 4-year for urban transport and mobility. Smaller projects are supported when they are integrated into larger investment programmes. Applications may be submitted by a single applicant or by a consortium.

- **Co-funding percentage and other financial requirements**

ELENA co-finances/covers up to 90 % of eligible project development costs, which may include expenses related to feasibility and market studies; programme structuring; energy audits; financial structuring and/or preparation of tendering procedures and contractual arrangements. It does not cover costs related to the investment itself.⁵⁴ Financial assistance is awarded retrospectively.

- **Project size**

The size of ELENA projects and programmes are normally above EUR 30 million.

- **Eligible costs**

ELENA technical assistance can be provided for development of feasibility and market studies, structuring of programmes, business plans, energy audits, preparation of tendering procedures and contractual arrangements, and programme implementation units and include any other assistance necessary for the development of Investment Programmes (hardware costs such as measurement equipment, computers or office space, are excluded). The cost of additional staff assigned to the implementation of the TA is an eligible cost.

- **Technology Readiness Levels (1-9), if applicable**

PDA instruments cover the project development costs of proven technologies, i.e. TRL 9.

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

The development of energy related solutions for energy efficiency, such as district heating and cooling, (co)financed under ELENA. To facilitate the mobilisation of funds for investments in sustainable energy at local level, ELENA supports beneficiaries in preparing large sustainable energy investment programmes in cities and regions. These project development activities include all solutions for increasing energy efficiency or savings: thermal insulation, efficient air conditioning and ventilation or efficient lighting; Integration of renewable energy sources (RES) into the built environment – e.g. solar photovoltaic (PV), solar thermal collectors and biomass; Investments into renovating, extending or building new district heating/cooling networks, based on highly efficient

⁵⁴ European Commission (2018). ELENA: supporting the deployment of sustainable and innovative urban mobility. Retrieved on 18 October 2018 at ec.europa.eu/transport/themes/sustainable/news/2018-06-28-elena_en

combined heat and power (CHP) or renewable energy sources, as well as decentralised CHP systems (building or neighbourhood level).⁵⁵

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

The development of energy efficiency projects, including (applied) research can be (co)financed under ELENA. This does not include technology development, but rather research actions aimed at the successful implementation of energy efficiency measures, such as market research.

- **Support local SMEs**

ELENA does not necessarily support local SMEs, but SMEs could be part of a project development consortium.

5. Application deadline

In principle, proposals can be submitted, and funding agreements signed at any time, as long as there is budget available. Regularly updated information on budget availability is provided on the ELENA webpage. There will be no calls for proposals and assistance will be granted on a first-come first-served basis as per the availability of budget.

6. Managing authority

ELENA is managed by the European Commission and the European Investment Bank. The ELENA Technical Assistance Facility is to improve the preparation of quality projects.

7. Budget

The annual grant budget is currently around EUR 30 million. Projects are evaluated, and grants allocated on a first-come-first-served basis.

8. Programming period

ELENA is funded through the Horizon 2020 programme, running until 2020. ELENA is actively promoted by the European Commission so there is no reason to expect that the programme will be terminated in the near future.

9. More information

The official webpage for the ELENA programme is:

<http://www.eib.org/en/products/advising/elena/index.htm>

Project examples can be found at:

<http://www.eib.org/en/products/advising/elena/projects/index.htm>

⁵⁵ European Investment Bank (2010). Sectoral summary sheet. ELENA – European Local Energy Assistance. QH-80-09-999-EN-C.

4.6.2 Horizon 2020 Topic LC-SC3-EE-11-2018-2019-2020 (PDA)

1. Target areas

As part of the Horizon 2020 EE11 topic, Project Development Assistance (PDA)³¹ is provided to public and private project promoters. The action supports building technical, economic and legal expertise needed for project development and leading to the launch of concrete investments. These investments will have to be launched before the end of the action which means that projects should result in signed contracts for sustainable energy investments to that effect, e.g. construction works, energy performance contracts, turnkey contracts.

Proposals in this topic focus on one or more of the following sectors:

- Existing public and private buildings including social housing, with the aim to significantly decrease energy consumption in heating/cooling and electricity;
- Energy efficiency of industry and service; energy efficiency in all modes of urban transport (such as highly efficient transport fleets, efficient freight logistics in urban areas, e-mobility and modal change and shift); and
- Energy efficiency in existing infrastructures such as street lighting, district heating/cooling and water/wastewater services.

2. Type of funding

Via the H2020 programme, the EU awards grants to help organisations to help carry out projects that further its policies. In this case, grants are a form of complementary financing, and the beneficiary organisation is also expected to put up a percentage of the funding for their project. However, for CSA actions such as EE11 PDA, the EU funds 100 % of eligible costs.

3. Conditions for using the instrument

• Applicant requirements

The EE11 call is open to public and private project promoters such as public authorities or their groupings, public/private infrastructure operators and bodies, energy service companies, retail chains, large property owners and services/industry. Applications may be submitted by a single applicant or by a consortium.

- Co-funding percentage

CSA projects in the H2020 Initiative receive EU Funding of 100 % of eligible costs (unless the call provides another rate).

- Project size

For each action, the contribution from the EU ranges between EUR 0.5 and 1.5 million. Every million Euro of H2020 support should trigger investments worth at least EUR 15 million (1:15), such that the total investment portfolio is EUR 7.5 – 50 million.

- Eligible costs

Eligible costs are defined per call, but usually consist of:

- direct personnel costs;
- direct costs of subcontracting;
- direct costs of providing financial support to third parties (if applicable);
- other direct costs;
- indirect costs;
- specific cost categories (if option applies).

- **Technology Readiness Levels (1-9), if applicable**

PDA instruments cover the project development costs of proven technologies, i.e. TRL 9. PDAs innovative aspects are in financing and organisation of the project.

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

PDA supports building technical, economic and legal expertise needed for project development and leading to the launch of concrete investments, which are the final aim and deliverable of the project. As mentioned before, this includes the development of energy efficiency projects in existing public and private buildings, industry and service and transport and existing infrastructure. This includes for instance district heating and cooling project preparations.

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

The development of energy efficiency projects, including (applied) research can be (co)financed under PDA. This does not include technology development, but rather research actions aimed at the successful implementation of energy efficiency measures, such as market research.

- **Support local SMEs**

PDA does not necessarily support local SMEs, but SMEs could be part of a project development consortium.

5. Application deadline

The next call is open from 12 March 2019 – 3 September 2019. It is expected that in 2020 the application period for this call is around the same time.

6. Managing authority

The European Commission is the managing authority of the programme.

7. Budget

This PDA facility focuses on small and medium-sized energy investments of at least EUR 7.5 million to EUR 50 million. Large scale investments are covered by the ELENA facility.

8. Programming period

The current Horizon 2020 Topic EE11 (PDA) funding period is from 2018-2020. The PDA call is expected to return in the Horizon Europe programme.

9. More information

The official webpage for the H2020 PDA is: ec.europa.eu/programmes/horizon2020/en/h2020-section/secure-clean-and-efficient-energy

4.7 URBACT III

1. Target areas

URBACT III provides a framework of networks between local and regional bodies facing similar urban challenges and is organised around four main objectives⁵⁶:



1. Capacity for Policy Delivery: to improve the capacity of cities to manage sustainable urban policies and practices in an integrated and participative way.
2. Policy Design: to improve the design of sustainable urban policies and practices in cities.
3. Policy Implementation: to improve the implementation of integrated and sustainable urban strategies and actions in cities.
4. Building and Sharing Knowledge: to ensure that practitioners and decision-makers at all levels have access to knowledge and share know-how on all aspects of sustainable urban development in order to improve urban development policies.

To reach these objectives, URBACT III develops 3 types of interventions, namely transnational exchanges, capacity-building and capitalisation & dissemination.

2. Type of funding

URBACT is largely a support and networking organisation, and funds limited number of projects. The URBACT III programme co-finances recipients in the form of subsidy to implement programme activities such as capacity building for urban stakeholders, expertise at project and programme level and National URBACT points.

3. Conditions for using the instrument

• Applicant requirements

The main beneficiaries are cities, municipalities, metropolitan authorities and similar organisations from EU 28 Member States, as well as Norway and Switzerland. Other beneficiaries include local agencies, provincial, regional and national authorities, universities and research centers. All beneficiaries need to be (semi) public or public equivalent bodies.⁵⁶

• Co-funding percentage and other financial requirements

Activities of eligible beneficiaries are co-financed as follows⁵⁶:

- less developed and transition regions receive up to 85 % ERDF contribution;

- more developed regions receive up to 70 % ERDF contribution;
- partners from Switzerland shall be co-financed at up to 50 % by a Swiss national fund;
- Norway is a partner state of the URBACT programme. Norwegian cities may participate in Transfer Network at their own cost.

- **Project size**

The standard network budget is EUR 600 000 - 750 000 for the activity to share good practice within the Transfer network.⁵⁶

- **Eligible costs**

The budget for Transfer Networks are divided over 5 categories of costs: i) Staff; ii) Office & Administration; iii) Travel & Accommodation; iv) External Expertise; v) Equipment Expenditure. For each cost category, detailed information about the eligibility of costs, methods for calculation and specific rules apply.⁵⁶

- **Technology Readiness Levels (1-9), if applicable**

Not applicable.

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

URBACT III supports urban sustainable policies and practices in general, and focuses hereby on knowledge and capacity building. Energy related solutions could be a topic under this, however, projects implementing solutions are not eligible.

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

URBACT III supports research and innovation on urban sustainable policies and practices in general, and focuses hereby on knowledge and capacity building. Energy efficiency related research and innovation could be a topic under this, however, the execution of these projects is not eligible under this programme.

- **Support local SMEs**

URBACT III does not specifically support SMEs, however these type of companies can be involved in for instance local/regional stakeholder groups under the activities in the programme.

5. Application deadline

From 2014-2020, only two waves of calls for proposals are foreseen. In January 2019 a new call will open for Action-Planning Networks: supporting cities in addressing a policy challenge by producing an integrated action-plan.⁵⁶

⁵⁶ URBACT (2017). The URBACT III Programme. Programme Manual, 8th Version. Approved by the Monitoring Committee on 17 November 2017, Mouans-Sartoux, France.

6. Managing authority

The Managing Authority of URBACT III is The Commissariat Général à l'Égalité des Territoires (General Commissariat for Territorial Equality), which is under the responsibility of the French Prime Minister. This Managing Authority is responsible for implementing the programme, making sure that it is managed in compliance with the law and with European financial procedures.⁵⁷

7. Budget

URBACT is an instrument of the Cohesion Policy, co-financed by the European Regional Development Fund, the 28 Member States, Norway & Switzerland. For URBACT III the total budget is EUR 96.3 million for the period 2014-2020 (excluding contributions from Norway and Switzerland), cofinanced by ERDF (77.1 %), national contributions (5.7 %) and local contributions (17.2 %). The budget finances URBACT networks, as well as all the activities linked to expertise, capitalisation and communication.⁵⁶

8. Programming period

The URBACT III programme funding period is from 2014-2020. For 2021-2027, the proposed European Urban Initiative will provide a more streamlined and coherent approach to capacity building, innovative actions, knowledge and policy development and communication by combining the various urban tools, such as URBACT or the Urban Innovative Actions, in a single programme.

9. More information

The official webpage for the URBACT programme is: urbact.eu

4.8 Urban Innovative Actions (UIA)

1. Target areas

Urban Innovative Actions (UIA) is an EU Initiative that provides urban areas throughout Europe with resources to test innovative and creative solutions to address urban challenges and see how these work in practice. A project or idea that can generate a real positive change for citizens are funded through supporting urban authorities. The topics that are addressed in the framework of the UIA Initiative are identified by Member States, representatives of local authorities, NGOs, European and national associations of cities, as well as experts and the Commission, within the frame of the EU Agenda.⁵⁸



For the most recent (4th) Call for Proposals, the following topics are selected:

- digital transition;
- sustainable use of land;
- urban poverty;
- urban security.

⁵⁷ URBACT (2018). Retrieved on 5 September 2018 at urbact.eu.

UIA funds projects that are: Innovative, Participative, Of good quality, Measurable and Transferable.

2. Type of funding

Via the UIA Initiative, the EU awards grants to urban authorities to help them carry out projects that enhances its policies. These grants are co-financing and the beneficiary organisation is also expected to put up 20 % of the funding for their project.⁵⁸

3. Conditions for using the instrument

• Applicant requirements

The beneficiaries of the UIA Initiative are urban authorities:

- Any urban authority of a local administrative unit defined according to the degree of urbanisation as City, town or suburb comprising at least 50 000 inhabitants;
- Any association or grouping of urban authorities of local administrative units defined according to the degree of urbanisation as City, town or suburb where the total population is at least 50 000 inhabitants; this can include cross-border associations or groupings, associations or groupings in different regions and/or Member States;

However, given the complexity of the urban challenges, and to design and implement effective, innovative solutions, urban authorities need to involve all the key stakeholders that can bring expertise and knowledge on the specific policy issue to be addressed. These include agencies, organisations, private sector, research institutions, NGOs.

• Co-funding percentage and other financial requirements

Projects in the UIA Initiative receive ERDF co-financing up to 80 % of the eligible costs, and every partner needs to secure 20 % at least of public or private contribution to complete its budget either from its own resources or from other sources (but not from another EU funding source).⁵⁸

• Project size

The size of the UIA grant provided to the final recipients per project is between EUR 1 - 5 million. Project duration is maximum 3(+1) years.

• Eligible costs

The UIA Initiative follows the total costs principle and is based on the principle of advance ERDF payments, but also on the principle of reimbursement of costs that were actually incurred (including flat rates). The eligible costs include: Staff; Office and administration; Travel and accommodation; External expertise and services; Equipment; Infrastructure and construction works. For each budget line, a definition is provided as well as guidance for budgeting and reporting.⁵⁸

• Technology Readiness Levels (1-9), if applicable

Not applicable.

⁵⁸ UIA (2017). UIA – Guidance. Version 3, 15 December 2017.

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

UIA supports pilot projects to identify and test new solutions which address issues related to sustainable urban development. Energy related solutions could be part of this, as long as it is not just the technical implementation of solutions, but includes innovation and participatory approaches.

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

UIA supports pilot projects to identify and test new solutions which address issues related to sustainable urban development. Research and Innovation in energy efficiency could be part of this, as long as it is not just the research and technical implementation of solutions, but includes innovation and participatory approaches.

- **Support local SMEs**

UIA does not specifically support SMEs, however these type of companies can be involved in for instance local/regional stakeholder groups under the activities in the projects.

5. Application deadline

Call 4 is open until 31 January 2019. Calls for 2019 and beyond have not been published yet.

6. Managing authority

The UIA Initiative is an instrument of the EU and is managed by the DG Regional and Urban Policy via indirect management. In line with Article 1 of the UIA, the Commission has designated the Region Hauts-de-France as Entrusted Entity for the implementation of the UIA Initiative. A Permanent Secretariat has been created to manage the UIA Initiative.

7. Budget

UIA Initiative has a total budget of EUR 372 million for 2014-2020 from ERDF.⁵⁹ For each Call for Proposals, the Commission defines 4 topics.

8. Programming period

The current UIA Initiative funding period is from 2014-2020. For 2021-2027, the proposed European Urban Initiative will provide a more streamlined and coherent

⁵⁹ UIA (2018). What is Urban Innovative Actions? Retrieved on 3 September 2018 at uia-initiative.eu/en/about-us/what-urban-innovative-actions

approach to capacity building, innovative actions, knowledge and policy development and communication by combining the various urban tools, such as URBACT or the Urban Innovative Actions, in a single programme.

9. More information

The official webpage for the Urban Innovative Actions initiative is: uia-initiative.eu

4.9 NER300/Innovation Fund

1. Target areas

NER 300 is one of the world's largest funding programmes for innovative low-carbon energy demonstration projects. The programme acquired its name because it is funded from the sale of 300 million emission allowances from the New Entrants' Reserve (NER). NER 300 was intended to be a catalyst for the demonstration of environmentally safe carbon capture and storage (CCS) and innovative renewable energy source (RES) technologies on a commercial scale within the European Union.

The logo for NER300, with 'NER' in blue and '300' in orange.

The aim of NER 300 is to establish a demonstration programme comprising the best possible CCS and RES projects and involving all Member States. The programme intends to support a wide range of CCS technologies (pre-combustion, post-combustion, oxyfuel, and industrial applications) and RES technologies (bioenergy, concentrated solar power, photovoltaics, geothermal, wind, ocean, hydropower, and smart grids).

Eligibility criteria are key to deciding what the focus of the project should be. Two options are possible: 1) support of first-of-a-kind projects only; or 2) support of first-of-a-kind projects combined with support of proven technologies with an unused carbon-reduction potential. In the first case, projects are only supported if they deploy a cost-effective low-carbon technology that has so far not been sufficiently demonstrated at pilot scale, technologies with a TRL between 5 and 7 and a significant CO₂ reduction potential). In the second case, projects would be supported that implement technologies that are already (largely) proven but largely not in commercial application yet (TRL 8-9) and can bring about additional CO₂ reductions.

Furthermore, the European Commission has proposed a new high budget funding programme for the period 2021-2030 (with some amount possibly made available before 2021). Called the Innovation Fund, it will build on the NER300 programme which awarded EUR 2.1 billion to 38 innovative renewable energy, and one CCS project. In July 2015, the European Commission presented a legislative proposal to revise the EU emissions trading scheme after 2020 (COM (2015) 337) - including an Innovation fund to support innovation in low carbon technologies and processes in industrial sectors (cf. Annex 1 of the ETS directive).

2. Type of funding

Via the NER Initiative, the EU awards grants to beneficiaries to help them carry out projects that further its policies. In this case, grants are a form of complementary

financing, and the beneficiary organisation is also expected to collect a percentage of total funding for their project.

3. Conditions for using the instrument

- **Applicant requirements**

Beneficiaries of the NER programme are: Research centres, Local and Regional authorities, Corporations, Administrations States, SMEs, Universities, Banks and Investment Funds based in the EU.

- **Co-funding percentage and other financial requirements**

Financing under the NER 300 Decision shall be 50 % of the relevant costs, unless the total request for public funding (relevant costs minus operator contribution) would be less than 50 % of the relevant costs and the total amount of funding under the NER 300 Decision would exceed 15 % of the 300 million allowances available. NER 300 grants can be combined with financing from other instruments, for example national funding, EFSI, InnovFin.

- **Project size**

On average, the awarded renewable energy system projects under NER 300 applied for 39 % of their relevant costs to be covered by the programme, less than the possible maximum of 50 %. The NER 300 funding for RES projects ranges from EUR 7 to EUR 203 million.⁶⁰

- **Eligible costs**

NER 300 stipulates that the relevant costs for renewable energy source demonstration projects shall be established by comparing the projects to a conventional production with the same capacity in terms of effective production of energy. More information on this can be found in section 4.8 of the NER 300 Second Call.⁶¹

- **Technology Readiness Levels (1-9), if applicable**

NER 300 and NER 400 have similar targets: post-prototype demonstration technology – usually TRL 5-9.⁶²

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

NER 300 supports innovative low-carbon energy demonstration projects in the field of RES and CCS technology. Energy related solutions, such as smart energy grids, could be supported providing that projects are innovative and impactful. This means that projects either 1) demonstrate a cost-effective low-carbon technology that has so far not been sufficiently demonstrated at pilot scale or 2) implement technologies that are already

⁶⁰ European Commission (2015). Commission staff working document. Impact assessment. Accompanying the document: Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments. SWD(2015) 135 final, Brussels, 15.7.2015.

⁶¹ European Commission (2013). Call for proposals. Concerning the financing of commercial demonstration projects that aim at the environmentally safe capture and geological storage of CO₂, as well as demonstration projects of innovative renewable energy technologies under the scheme for greenhouse gas emission allowance trading within the Community, established by Directive 2003/87/EC. Brussels, 3 April 2013

⁶² Ocean Energy Europe (2018). Financing Ocean Energy Farms. Retrieved on 23 October 2018 at oceanenergy-europe.eu/policy-topics/finance/

(largely) proven but largely not in commercial application yet. District heating and cooling networks could meet these requirements.

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

NER 300 supports innovative low-carbon energy demonstration projects in the field of RES and CCS technology. Research and innovation activities for energy smart grids, could be supported providing that projects are implemented and have impact. This means that projects either 1) demonstrate a cost-effective low-carbon technology that has so far not been sufficiently demonstrated at pilot scale or 2) implement technologies that are already (largely) proven but largely not in commercial application yet. District heating and cooling networks could meet these requirements.

- **Support local SMEs**

NER 300 does not specifically support (local) SMEs. The scale of eligible projects under NER 300 are probably only doable for SMEs when participating in a project consortium.

5. Application deadline

The publication of further NER 300 calls for proposals is not foreseen and the programme should be considered closed⁶³. In 2021, NER400 Innovation Fund will start.

6. Managing authority

NER300 is a financing instrument managed jointly by the European Commission, European Investment Bank and Member States, so-called because Article 10(a) 8 of the revised Emissions Trading Directive 2009/29/EC contains the provision to set aside 300 million allowances (rights to emit one tonne of carbon dioxide) in the New Entrants' Reserve of the European Emissions Trading Scheme (EU ETS) for subsidising installations of innovative renewable energy technology and carbon capture and storage (CCS).

The European Commission is responsible for the overall management and implementation of NER 300. In this, the Commission evaluates proposals submitted by Member States, to sell NER allowances on its behalf, and to manage the revenues and the payment of funds to Member States during project implementation.

7. Budget

The NER 300 allowances have been sold on the carbon market and the money raised — EUR 2.1 billion — will be made available to projects as they operate.⁶⁴

NER 300 also seeks to leverage a considerable amount of private investment and/or national co-funding across the EU, boost the deployment of innovative low-carbon technologies and stimulate the creation of jobs in those technologies within the EU.

⁶³ European Commission (2018). NER 300 programme. Retrieved on 29 October 2018 at ec.europa.eu/clima/policies/lowcarbon/ner300_en

⁶⁴ NER300 (2018). Finance for installations of innovative renewable energy technology and CCS in the EU. Retrieved on 18 September 2018 at ner300.com

8. Programming period

The NER 300 initiative funding period was from 2009-2017. Its successor is referred to as NER400 or the Innovation Fund. It has a funding period from 2021-2030, but some budget will be available before 2021. The indicative budget of NER 400 is EUR 10.7 billion to pilot clean technology projects by the end of the next decade. The Innovation Fund will be filled by selling 400 million allowances from the free allocation portion of EU ETS. 50 million allowances and unused funds from the NER 300 programme should already be available before 2021.

9. More information

The official webpage for NER 300 is ner300.com and for NER 400 Innovation Fund is ner400.com. Project examples can be found at <https://setis.ec.europa.eu/NER300>

4.10 EUREKA

1. Target areas

EUREKA is a leading open platform for international cooperation in innovation that is publicly-funded and intergovernmental. It aims to enhance European competitiveness by fostering innovation-driven entrepreneurship in Europe, between small and large industry, research institutes and universities. By doing this, EUREKA concentrates the existing potential of experts, of knowledge, research facilities and financial resources in a more efficient way. Activities under EUREKA have provided innovative products, processes and services that have been launched onto the market over the last 30 years, creating additional turnover and jobs for European companies, small and large – and by supporting the internationalization of businesses with innovative ideas.⁶⁷



EUREKA Network Projects are transnational, market-driven innovative research and development projects, labelled by EUREKA and supported by the public administrations and public funding agencies that represent EUREKA in each of its 40+ member countries. The EUREKA "bottom-up" approach to project creation continues to be a characteristic which differentiates EUREKA from other such initiatives. This approach allows the project consortia to define the nature of the technologies to be developed and how the project comes together, agree upon the intellectual property rights and build partnerships, to share expertise and ease access to international markets with the results of their research. EUREKA Network projects aim to develop marketable products, services or processes. Participation in international cooperation projects through EUREKA offers businesses, research institutes and higher education institutions a range of advantages.

EUREKA Clusters are long-term, strategically significant industrial initiatives that aim to develop inclusive technologies of key importance for European competitiveness mainly in ICT, energy and more recently in the biotechnology and automation sectors. Eureka EUROGIA2020 is an example of this and focuses on low-carbon energy technologies.

Umbrellas are thematic networks within the EUREKA framework which focus on a specific technology area or business sector. The main goal of an umbrella is to facilitate the generation of EUREKA projects in its own target area.

2. Type of funding

The EUREKA network awards grants to small and large industry, research institutes and universities to help them carry out projects that further its policies. In this case, grants are a form of complementary financing (depending on total available budget and national budget), and the beneficiary organisation is also expected to put up a percentage of the funding for their project. This percentage depends mainly on the project topic.⁶⁷

3. Conditions for using the instrument

• Applicant requirements

To set up a EUREKA project there must be at least two partners from two different EUREKA countries. Partners could be SMEs, large companies, research institutions and universities. EUREKA's extensive national project coordinator network offers advice and support in looking for project partners, launching a project, drawing up a EUREKA proposal finding funding and all other project related matters. The network also promotes project results once the product of research reaches the market, in the applicant's own language and within their cultural context.⁶⁵

- EUREKA members: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, Monaco, Montenegro, the Netherlands, Norway, Poland, Portugal, Russian Federation, San Marino, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, European Commission.
- EUREKA NIPs: Albania, Bosnia and Herzegovina.
- EUREKA Associated countries: Canada, Republic of Korea, South Africa and Chile.

• Co-funding percentage and other financial requirements

Projects in the EUREKA network receive varying rates of EU co-financing, depending on available budget, and national country budget of the participating countries. In some cases, EUREKA finances 60 % or 70 % of the eligible costs, and the beneficiary needs to secure the remaining funds from public or private contribution to complete its budget either from its own resources or from other sources. In most cases, it is not possible to combine EUREKA funding with other EU funding sources. The budget for each project depends on the project, consortia, national country budget, etc. Higher or lower amount can be requested, when duly justified during application.

⁶⁵ EUREKA (2018). Frequently Asked Questions. Retrieved on 22 September 2018 at eurekanetwork.org.

- **Project size**

The average size of EUREKA project grant provided to the final recipients approximately EUR 1.74 million. The average size of a EUREKA network cluster project ranges from EUR 2 - 15 million and lasts for approximately 31 months.⁶⁶

- **Eligible costs**

The payment scheme is mainly based on the principle of advance payments, but also on the principle of reimbursement of costs that were actually incurred (including flat rates). The eligible costs include:

- staff, office and administration;
- travel and accommodation;
- external expertise and services;
- equipment;
- infrastructure and construction works.

For each budget line, national contact points provide guidance for networking, budgeting and reporting, etc.

- **Technology Readiness Levels (1-9), if applicable**

Not applicable.

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

EUREKA (network projects) supports transnational, market-driven innovative research and development projects in different sectors. Energy related solutions, such as urban energy infrastructure (for heating and cooling) and improving energy efficiency of the built environment, could be supported providing that projects comply with the requirements mentioned before (innovative, market-driven etc.).

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

EUREKA (network projects) supports transnational, market-driven innovative research and development projects in different sectors. Research and innovation in energy efficiency of the built environment or energy networks, could be supported providing that projects are market-driven and comply with the requirements mentioned before (innovative, transnational etc.).

- **Support local SMEs**

EUREKA does not specifically support SMEs, but SMEs could be part of a EUREKA Cluster network, as well as in network project consortia. EUROSTARS is a EUREKA programme with a specific focus on SMEs. This programme is discussed in section 4.10 of this report.

⁶⁶ EUREKA Secretariat (2015). EUREKA General Presentation. Retrieved on 18 September 2018 at eurekanetwork.org/sites/default/files/eureka-general-presentation.pdf

5. Application deadline

Applications for EUREKA Network Projects are open all year. Application deadlines for specific calls under EUREKA can be found at eurekanetwork.org/calls-for-projects.

6. Managing authority

EUREKA's organisational structure is composed of 3 main bodies: The Chair, the National Representatives and the Secretariat.

7. Budget

As EUREKA works with both public and private funding, total budget is not known. In the period 2008-2014 EUR 37 billion was invested under EUREKA, funding 5920 projects.

8. Programming period

The current EUREKA network funding period is from 2018-2020. The simplification of the complex partnership structures in EU funding, proposed for 2021-2027 does not affect partnerships that operate under specific provisions of the EU treaty. These long-term partnerships can't be much changed by the Commission. This includes big projects such as EUREKA and its Eurostars SME programme.

9. More information

The official webpage for EUREKA is: eurekanetwork.org

Project examples can be found at: eurekanetwork.org/eureka-projects

4.11 Eurostars

1. Target areas

Eurostars aims to stimulate SMEs to lead international collaborative research and innovation projects by easing access to support and funding. It is fine-tuned to focus on the needs of SMEs, and specifically targets the development of new products, processes and services and the access to transnational and international markets. Through this joint Programme, Eurostars aims to combine the best of two worlds with a bottom-up approach, a central submission and evaluation process, and synchronized national funding in 36 countries.⁶⁷

Eurostars targets the development of new products and services. A Eurostars project should be market-driven: it must have a maximum duration of three years, and within two years of project completion, the product of the research should be ready for launch onto the market.

2. Type of funding



⁶⁷ Eurostars (2018). Why EUROSTARS? Retrieved on 19 September 2018 at eurostars-eureka.eu/

Via Eurostars, the EU awards grants to high performing R&D SMEs in Europe to help them carry out projects that further its policies. In this case, grants are a form of complementary financing, and the beneficiary is also expected to collect a percentage of the funding for their project.⁶⁹

3. Conditions for using the instrument

- **Applicant requirements**

Research-performing SMEs can apply for funding under Eurostars. Other SMEs, research institutes, universities and large enterprises may also participate but the project leader must be an R&D-performing SME from a Eurostars country.

The consortium must include at least two partners independent from each other and established in at least two different Eurostars countries. Organisations from any other country may participate (as a third country), but only if two Eurostars countries are already in the project. The consortium should be well balanced, which means that no participant or country can have more than 75 % of the budget of the total project costs.

Eurostars is open to all projects in all technology areas and market fields, but projects must have a civilian purpose.

- **Co-funding percentage and other financial requirements**

Eurostars projects receive varying rates of co-financing, depending on the specific national budget, and guidelines. Overall, the funding percentages of eligible costs are between 40-65 % for SMEs, between 40-100 % for universities and other research organisations. Eligible costs and maximum amount of funding also differ per country.

- **Project size**

Depending on the national budget, the size of the Eurostars grant per project weighs between EUR 100 000 – 500 000. The average project cost of a Eurostars project is EUR 1.4 million.⁶⁸ Eurostars applications pass through a highly-competitive selection process, being scrutinised by a panel of international research and business experts, to ensure that only the best business ideas and strongest partnerships get the support they need. It has been repeatedly shown that Eurostars helps businesses grow their teams, discover new expertise – and attract private investors. The project must be completed in 36 months or less.

- **Eligible costs**

The eligible costs for Eurostars projects depend on specific country regulations. In most cases, these include:

- personnel costs;
- overheads (approx 20 % of personnel costs);
- intellectual property, patents;
- market research and feasibility study;
- experimental costs;
- project management and associated costs, namely transportation;
- development of new or improved products, process or services;

⁶⁸ Eurostars (2018). Eurostars in numbers. Retrieved on 19 September 2018 at eurostars-eureka.eu/eurostars-numbers

- design and implementation of prototypes, models, pilot productions, demonstration etc.

- **Technology Readiness Levels (1-9), if applicable**

Not applicable/varies with domestic regulations. However, in some cases, very low or very high TRL level projects are not funded. For example, TRL 7 to TRL 9 cannot be funded in Spain.⁶⁹

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

Eurostars supports innovative projects in different sectors from SMEs. Energy related solutions, such as urban energy infrastructure (for heating and cooling) and improving energy efficiency of the built environment, could be supported providing that projects are innovative and developed in collaboration with a SME as project leader.

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

Eurostars supports innovative projects in different sectors from SMEs. Research and innovation in energy efficiency of the built environment or energy networks, could be supported providing that projects are innovative and developed in collaboration with a SME as project leader.

- **Support local SMEs**

Eurostars is designed for, and encourages high performing SMEs in Europe to apply. The role of the SME participants in a Eurostars project should be significant: at least 50 % of the project's core activity should be carried out by SMEs.

5. Application deadline

The next call is open until 28 February 2019. Calls for 2019 and beyond are not published yet.⁷⁰

6. Managing authority

The European Commission is the managing authority of the Eurostars initiative, which works in cooperation with the Member States:

- National Funding Bodies are an official body in the governance of Eurostars, tasked with the critical objective of implementing progressive milestones to achieve a short time to contract, balanced funding and more harmonisation. NFBs are the key decision-making body of Eurostars.
- The EUREKA Secretariat is responsible for the implementation of Eurostars. It manages evaluation and monitoring processes, communications and network development activities. Eurostars High Level Group (HLG) decides on the

⁶⁹ Eurostars (2018). Eurostars in Spain. Retrieved on 20 September 2018 at eurostars-eureka.eu/countries/spain

⁷⁰ EUROSTARS (2018). Eurostars 2019 cut-offs. Retrieved on 19 September 2018 at <https://www.eurostars-eureka.eu/2019-cut-offs>.

frequency of the calls. The Eurostars Advisory Group (EAG) decides submission deadline dates.

7. Budget

Eurostars is co-funded from the national budgets of 36 EUREKA countries and by the EU through Horizon 2020. In the 2014-2020 period, it has a total public budget of EUR 1.14 billion.⁷¹

8. Programming period

The current Eurostars funding period is from 2014-2020. The simplification of the complex partnership structures in EU funding, proposed for 2021-2027 does not affect partnerships that operate under specific provisions of the EU treaty. These long-term partnerships can't be much changed by the Commission. This includes big projects such as Eureka and its Eurostars SME programme.

9. More information

The official webpage for Eurostars is: eurostars-eureka.eu

Project examples can be found at: eurostars-eureka.eu/eurostars-numbers

⁷¹ ERA Learn (2018). Eurostars 2. Retrieved on 20 September 2018 at era-learn.eu/network-information/networks/eurostars-2

5 EU Innovative Financial Instruments

Innovative financial instruments are a way of deploying EU budgetary resources, and are complementary to grants or subsidies. Innovative financial instruments are a range of activities such as:

- participation in equity (risk capital) funds
- guarantees to local banks lending to a large number of final beneficiaries, for instance small and medium-sized enterprises (SMEs)
- risk-sharing with financial institutions to boost investment in large infrastructure projects

Full factsheets are only provided for PF4EE and EFSI, the most current Innovative financial instruments.

5.1 LIFE Private Finance for Energy Efficiency (PF4EE)

1. Target areas

The PF4EE aims to increase private financing for investments in energy efficiency projects by stimulating local financial beneficiaries to provide loans for investments in this.⁷²

Projects funded under the PF4EE will:

- Promote energy efficiency in line with the priorities of National Energy Efficiency Action Plan and/or energy efficiency support scheme and/or EU Directives relating to energy efficiency within the Member State concerned;
- Contribute to the objectives of the EU LIFE programme, especially for climate change mitigation;
- Build longer term capacity and support for sustainable low carbon development.

2. Type of funding

The PF4EE will finance energy efficiency from private investors, including SMEs and private individuals, and from municipalities or other public bodies, mainly through financial intermediaries such as commercial banks⁷³, by providing them with:

- Long-term loans from European Investment Bank for energy efficiency, which financial intermediaries on-lend to final recipients in order to further improve their financing conditions;
- Portfolio-based credit risk protection (Risk Sharing Facility), allowing financial intermediaries to provide loans at lower pricing, longer maturities and lighter securities requirements;

⁷² European Union (2015). Private Finance for Energy Efficiency. ec.europa.eu/clima/sites/clima/files/docs/pf4ee_en.pdf

⁷³ European Investment Bank (2017). Private Finance for Energy Efficiency. Support provided under the Instrument as at 31 December 2017. eib.org/attachments/pf4ee_support_beneficiaries.pdf

- Expert Support Facility to help financial intermediaries effectively assesses energy efficiency projects.

In practice, this means that final recipients of PF4EE financing need to apply for energy efficiency loans from the selected bank that implements PF4EE in their country. At the moment of writing, PF4EE is operating in the following EU Member States: Belgium, Croatia, Cyprus, Czech Republic, France, Greece, Italy, Portugal, and Spain.

3. Conditions for using the instrument

- Applicant requirements

The final recipients for the PF4EE are private investors in Member States investing into energy efficiency projects. The beneficiaries could include SMEs and private individuals (e.g. house or business owners). Moreover, public sector bodies undertaking small energy efficiency investments and capable of using energy savings to repay up-front borrowing could also benefit from loans.⁷²

- Co-funding percentage and other financial requirements

EIB Loans for EE may finance up to 75 % of the capital cost of eligible investments. The remaining part of the capital cost will be financed by the financial intermediaries and/or by final recipients.⁷⁴

- Project size

The size of the energy efficiency loans range between EUR 40 000 to EUR 1.125 million and higher in exceptional cases (up to EUR 5 million).

- Eligible costs

Eligible costs are investment costs in energy efficiency projects. These costs should be justified on the basis of an economic cost-benefit-analysis, for which generally applies that the net present value of the energy saved including externalities, is greater than the net present cost of the project over its lifetime.

- Technology Readiness Levels (1-9)

Not applicable.

4. Relevance for the heating and cooling sector

- Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)

1) District Heating / District Cooling: New systems and the rehabilitation or extension of existing systems are eligible, provided the investment plan for the system ensures heat will be produced mainly from high-efficient cogeneration, residual waste heat or renewable energy. Long-term heat supply costs including all necessary rehabilitation must be economically competitive with heat produced by individual boilers in buildings.

⁷⁴ European Investment Bank & European Commission (2015). Request for proposals in order to become a financial intermediary under the PF4EE.

2) Energy Efficiency in Buildings: Major renovation of existing buildings as defined in Energy Performance of Buildings (EPBD)⁷⁵ are eligible, if investments minimally achieve the cost-optimum refurbishment level as reported by the Participating Country. Other energy related building technologies in renovations (i.e. HVAC, control and regulation systems, and lighting) that are not subject to this directive could be eligible if demonstrating economic profitability.

3) High efficiency co-generation of heat and power projects are eligible if primary energy savings meet criteria for high-efficiency cogeneration. Microgeneration is also eligible.⁷⁶

- Support research & innovation on energy efficiency in heating and cooling to public and private organisations

The PF4EE does not support research & innovation on energy efficiency in heating and cooling.

- Support local SMEs

The PF4EE does not specifically support (local) SMEs, but SMEs are eligible for receiving PF4EE funding.

5. Application deadline

Applications for LIFE PF4EE are open during the LIFE programming period. Funding applications can to be submitted to one of the financial intermediaries.⁷

6. Managing authority

The PF4EE is managed by the European Investment Bank and funded by the LIFE Programme.

7. Budget

The LIFE programme committed EUR 80 million to fund the credit risk protection and expert support services. The EIB will leverage this amount, making a minimum of EUR 480 million available in long term financing.

8. Programming period

The LIFE programme funding period is from 2014-2020. It is likely that after this period the PF4EE will continue, however, at the moment of writing there is only a proposed regulation for the LIFE programme for the period 2021-2027.⁷⁷

⁷⁵ European Union (2010), Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings, Official Journal of the European Union, L153/13, 28.6.2010.

⁷⁶ European Union (2004), Directive 2004/8/EU of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC, Official Journal of the European Union, L52/50, 21.2.2004.

⁷⁷ European Commission (2018). Proposal for a Regulation of the European Parliament and of the Council – establishing a Programme for the Environment and Climate Action (LIFE) and repealing Regulation (EU) No 1293/2013. COM(2018)385/977239

9. More information

The official webpage for the LIFE Private Finance for Energy Efficiency instruments programme is: ec.europa.eu/environment/life/funding/financial_instruments/pf4ee.

5.2 European Fund for Strategic Investments (EFSI)

1. Target areas

The European Fund for Strategic Investments (EFSI)⁸² aims to help overcome the current investment gap in the EU and is one of the three pillars of the Investment Plan⁸¹ for Europe. This plan aims to revive investment in strategic projects around Europe the continent to ensure that money reaches the real economy.



EFSI is demand-driven and provides support for projects everywhere in the EU, including cross-border projects. The fund supports investments in different fields, including research and development, digital, transport and social infrastructures, energy and resource efficiency, and the environmental. EFSI focuses on SMEs and midcap companies (max. 3000 employees) and since 2017 also has a stronger focus on climate action.

2. Type of funding

EFSI offers funding in the form of guarantees.

3. Conditions for using the instrument

- **Applicant requirements**

EFSI funding can be provided to projects from the public sector, as well as to private promoters participating in public projects. Local authorities, public sector companies, as well as large businesses and SMEs can benefit from EFSI support through different direct financial products of the EIF financial intermediaries.

- **Co-funding percentage and other financial requirements**

The EIB finances maximum 50 % from a total amount of projects/investments of EUR 50 million.⁷⁸

- **Project size**

There is no minimum or maximum project size. Projects should be (1) economically viable with the support of the fund, (2) sufficiently mature to be appraised on a global or local basis, (3) of European added value and consistent with EU policy priorities (such as, for example, the 2030 climate and energy package). There are no geographic or sector quotas.⁷⁹

- **Eligible costs**

⁷⁸ European Investment Bank (2017). Investment Plan for Europe. DOI:10.2867/870933.

⁷⁹ European Commission (2015). The European Fund for Strategic Investments (EFSI) – Questions and Answers. 13 January 2015.

No information available.

- **Technology Readiness Levels (1-9), if applicable**

Not applicable.

4. Relevance for the heating and cooling sector

- **Energy related solutions (District heating and cooling, Renewable heat and cooling sources, House renovation)**

EFSI supports initiatives related to energy and resource efficiency, and the environment. Energy related solutions, such as urban energy infrastructure and energy efficiency improvements in buildings, are topics under which projects could be supported under this fund. The Smart Finance for Smart Buildings Facility (section 5.3) is for a large amount financed by EFSI.

- **Support research & innovation on energy efficiency in heating and cooling to public and private organisations**

EFSI supports initiatives related to energy and resource efficiency, as well as research and development. Research and innovation in the field of energy efficiency could thus be supported under EFSI.

- **Support local SMEs**

SMEs are encouraged to apply for EFSI funding.

5. Application deadline

There is no information available on deadlines for applications. Applications for funding need to be requested at EIF financial intermediaries. An overview of these intermediaries can be found here: eif.org/what_we_do/where/index.htm

6. Managing authority

EFSI is launched jointly by the EIB Group – the European Investment Bank and European Investment Fund – and the European Commission. It is managed by the EIB.

7. Budget

EFSI is a EUR 26 billion guarantee from the EU budget, complemented by a EUR 7.5 billion allocation of the EIB's own capital. The total amount of EUR 33.5 billion aims to unlock additional investment of at least EUR 500 billion by 2020.⁷⁹

8. Programming period

The funding period is from 2015 – 2020. The InvestEU Fund (see Chapter 3) would be the successor programme to the EFSI and the current centrally managed financial instruments (excluding external action financial instruments).

9. More information

The official webpage for EFSI is: eib.org/efsi

5.3 Smart Finance for Smart Buildings

In a meeting on 6 February 2018, the Board of the European Investment Bank (EIB) approved the creation of a brand new financial instrument, the Smart Finance for Smart Buildings initiative. The aim of the Smart Finance for Smart Buildings initiative is to make investments in energy efficiency projects in residential buildings more attractive to private investors, through the intelligent use of EU grants as a guarantee. Being financed through EFSI (section 5.2) and ESI Funds, this new instrument, together with other EU policy initiatives for smart buildings, aims to unlock a total of EUR 10 billion in public and private funds between now and 2020 for energy efficiency projects. It is estimated that this could support up to 220 000 jobs, and help establish a renovation market for SMEs worth up to EUR 120 billion.⁸⁰

At the time of writing, the facility has not been launched yet and no further details are available on its terms and conditions.

5.4 European Energy Efficiency Fund

The European Energy Efficiency Fund is intended for local or regional authorities, or public and private institutions acting on behalf of those authorities, that want to implement projects in the context of energy efficiency and sustainable energy. The focus is mainly on small-scale projects. This could include making more energy-efficient government buildings or residential areas, more efficient lighting, cooling and heating, solutions for environmentally friendly transport and projects in the context of sustainable energy. In this fund no grants or subsidies are given, instead the fund works with financial support mechanisms such as guarantees or 'soft' loans.



5.5 European Investment Fund

The European Investment Fund (EIF) and supports SMEs with risk finance. EIF is part of the EIB group and offers financial products to intermediaries, such as banks, guarantee and leasing companies, micro-credit providers and private equity funds. SMEs can apply for loans, guarantees, venture capital or equity investments through intermediaries in the EU country where the SME is established. The objective of the EIF herein is to foster EU objectives in the field of entrepreneurship, growth, innovation, research and development, employment and regional development. Next to this, there are other financing programmes managed under EIF.

As with EFSI funding, there is no information available on deadlines for applications. Applications for funding for any of the EIF programmes need to be requested at EIF financial intermediaries. An overview of these intermediaries can be found here: eif.org/what_we_do/where/index.htm

⁸⁰ European Commission (2017). Smart Finance for Smart Buildings Investment Facility. ec.europa.eu/smart-finance-smart-buildings-investment-facility

5.5.1 InnovFin

InnovFin provides financial support for research and innovation projects for different types of organisations. The programme covers a wide range of financial instruments; loans, guarantees and equity-type funding. InnovFin is available in all EU Member States and Associated Countries under the H2020 Programme and financing is either provided directly or via an intermediary. For SMEs, the most relevant instruments are the InnovFin SME Guarantee and Equity.⁸¹

SME Guarantee Facility

InnovFin SME Guarantee Facility provides finance to SMEs and small mid-caps (<500 employees) that are active in the value chain of research & innovation investments, in sectors covered by Horizon 2020 (this includes clean energy). This finance is channeled through financial intermediaries and consists of guarantees and counter-guarantees on debt financing between EUR 25 000 and EUR 7.5 million.

Equity

InnovFin Equity provides equity finance to early-stage research and innovation driven enterprises, mainly in the form of seed funding and venture capital. The equity support is channeled through intermediaries who target technological, non-technological, organisational or social innovations, in sectors covered by Horizon 2020 (this includes clean energy).

5.5.2 COSME

COSME is the EU programme for the Competitiveness of Enterprises and SMEs. The programme supports SMEs by facilitating access to finance, by supporting internationalisation and access to markets, and by improving the business environment. The programme period is 2014-2020 and the total budget is EUR 2.3 billion. Financial support is provided during different stages of the business life cycle through the Loan Guarantee and Equity facilities.⁸²

Loan Guarantee Facility

This facility provides guarantees and counter-guarantees to financial institutions, in order for them to provide loans and lease finance to SMEs. It is expected that COSME will enable between 220 000 and 330 000 SMEs to obtain financing for a total value of between EUR 14 and 21 billion.

Equity Facility for Growth

This facility provides risk capital to equity funds investing in SMEs, mainly in the expansion and growth phases. The Facility should help between 360 and 560 firms to receive equity investment with an overall volume invested ranging from EUR 2.6 to 4 billion.

⁸¹ European Investment Bank (2018). What InnovFin products are available and who can benefit from them? Retrieved on 19 October 2018 at www.eib.org/en/products/blending/innovfin/products

⁸² European Commission (2018). COSME. Europe's programme for small and medium-sized enterprises. Retrieved on 19 October 2018 at ec.europa.eu/growth/smes/cosme_en

5.6 EBRD financing – SEFF/GEFF

The European Bank for Reconstruction and Development (EBRD) is an international bank with a public mandate.



This public role puts the energy sector “at the centre of the Bank's mandate to foster the transition to market-oriented economies and its function to promote environmentally sound and sustainable development”. The EBRD was founded to further progress of developing economies towards market-oriented economies. In the EU, it is therefore active in the emerging economies of Eastern Europe.

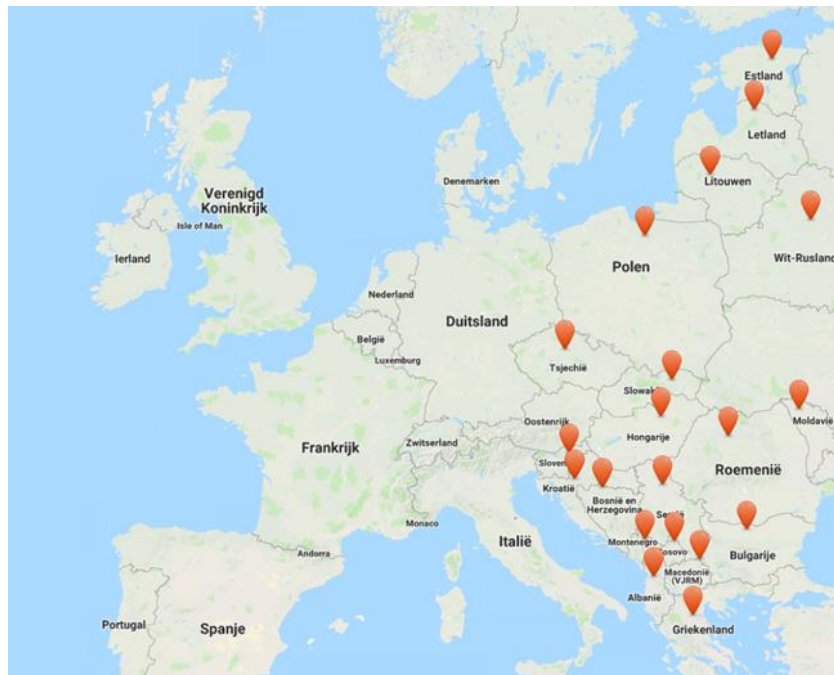


Figure 6 EBRD activities in the EU. Source: EBRD

Through credit lines such as the Sustainable Energy Financing Facilities (SEFFs) and Green Economy Finance Facilities (GEFFs), the EBRD extends credit to local financial institutions that seek to develop sustainable energy financing as a permanent area of business. Finance for sustainable energy projects is provided for two key areas: energy efficiency and small-scale renewable energy. Local financial institutions on-lend the funds which they have received from the EBRD to their clients, which include small and medium-sized businesses, corporate and residential borrowers, and renewable energy project developers.

5.7 Technical Assistance

5.7.1 JASPERS

Joint Assistance to Support Projects in European Regions (JASPERS). Its purpose is to promote the efficient use of EU Structural Funds, thereby stimulating future investment. JASPERS helps cities and regions absorb



European funds through top-quality infrastructure projects. The aim is to speed up the absorption of EUR 350 billion of ESI Funds intended to achieve greater cohesion in Europe, through projects which are planned, prepared, procured and run to the highest technical, social and environmental standards possible.

JASPERS is organised into seven divisions, and supports project preparation, independent quality review and capacity building in the following sectors:

- roads;
- rail, air and maritime;
- water and waste;
- energy and solid waste;
- smart development.

JASPERS supports infrastructure projects in different sectors, among these are Energy and Solid Waste and Smart Development. Energy related solutions, such as urban energy infrastructure (for heating and cooling) and improving energy efficiency of the built environment, are topics under which projects are supported. JASPERS can for instance help prepare projects to:

- build wind farms, solar rooftops, geothermic and biomass facilities to increase the share of renewable energy in the energy mix;
- rehabilitate district heating plants and networks to reduce energy losses and thus improve energy efficiency;
- retrofit old buildings for a higher energy performance to improve comfort and reduce energy consumption.

Main focus is on major projects with total eligible cost exceeding EUR 50 million (and in some cases EUR 75 million).⁸³

Potential beneficiaries include public bodies, enterprises (especially SMEs), universities, associations, NGOs and voluntary organisations. Applications for funding should be submitted to the national or regional authority managing the programme. JASPERS' support is available to 20 EU Member States, 3 Candidate Countries as well as to 4 accession countries⁸⁴.

The JASPERS programming period is from 2014-2020. The InvestEU Advisory would be the successor mechanism to the current centrally managed technical assistance initiatives, such as JASPERS.

The official webpage for JASPERS is: jaspers.eib.org

5.7.2 JESSICA

Joint European Support for Sustainable Investment in City Areas (JESSICA) supports sustainable urban development and



⁸³ JASPERS (2017). JASPERS advisory and capacity building support on State Aid issues. Presentation at Seminar State aid in Research, Development and Innovation, 20 October 2017, Brussels.

⁸⁴ Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, France, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and United Kingdom, the former Yugoslav Republic of Macedonia, Montenegro, Serbia and Turkey.

regeneration through financial engineering mechanisms. EU countries can choose to invest some of their EU structural fund allocations in revolving funds to help recycle financial resources to accelerate investment in Europe's urban areas. These investments, which may take the form of equity, loans and/or guarantees, are delivered to projects via so-called Urban Development Funds and, if required, Holding Funds.⁸⁵ JESSICA funds are currently active in 9 EU Member States⁸⁶. An overview of these funds can be found in Annex B.

JESSICA offered the Managing Authorities of Structural Funds programmes the possibility to take advantage of free EIB expertise in setting up their investment fund and to have greater access to loan capital for the purpose of supporting projects in the following areas:

- urban infrastructure, including energy;
- heritage or cultural sites;
- redevelopment of brownfield sites;
- creation of new commercial floor space for SMEs, IT and/or R&D sectors;
- university buildings;
- energy efficiency improvements.

No new JESSICA projects are funded, but the funds established with the JESSICA instrument (Annex B) remain active and open for applicants.

After 2020, the InvestEU Advisory would be the successor mechanism to the current centrally managed technical assistance initiatives, such as JESSICA.

The official webpage for the JESSICA initiative is: ec.europa.eu/jessica.

5.7.3 Energy Efficiency Financial Institutions Group (EEFIG)

The Energy Efficiency Financial Institutions Group (EEFIG) was established in 2013 by the European Commission Directorate-General for Energy (DG Energy) and United Nations Environment Program Finance Initiative (UNEP FI). It is not a technical assistance facility, but it is a source of knowledge on energy efficiency financing.

EEFIG has created an open dialogue and work platform for public and private financial institutions, industry representatives and sector experts to identify the barriers to the long-term financing for energy efficiency and propose policy and market solutions to them. 120 active participants from 100 organisations have engaged to deliver clear and unambiguous messages.

The report by the Energy Efficiency Financial Institution Group (EEFIG), which was published on 26 February 2015, contains recommendations on a range of actions that could help overcome the current challenges to obtaining long-term financing for energy efficiency.

⁸⁵ European Investment Bank (2018). Supporting Urban Development (JESSICA). Retrieved on 18 October 2018 at eib.org/en/products/blending/jessica

⁸⁶ Bulgaria, Czech Republic, Greece, Italy, Lithuania, Poland, Portugal, Spain, United Kingdom

5.8 Green Bonds

Although technically not an EU innovative financial instrument, Green Bonds are innovative ways of financing sustainable energy projects.

Green bonds are issued in order to raise finance for climate change solutions. They can be issued by governments, banks, municipalities or corporations. The green bond label can be applied to any debt format, including private placement, securitisation, covered bond, sukuk. Labelled green loans are an option if they comply with the ICMA Green Bond Principles or the LMA Green Loan Principles. The key is for the proceeds to go to “green” assets.

145 entities have issued green bonds in Europe: that’s a third of the global total. The 7 debit issuers from 2018 and 48 from 2017 have already contributed over EUR 34 bn to the market: half of that is linked to sovereign issues from France and Belgium. Issuers include 48 companies in the energy sector, 35 financial institutions, 23 property companies, 17 local governments and three sovereigns⁸⁷.

5.9 Energy Performance Contracting (EPC)

Even if it is not a funding source, Energy Performance Contracting is an innovative form of financing energy efficiency measures that is increasingly important in the world of energy financing and therefore needs a place in this report.

EPC shifts the costs and part of the benefits of energy efficiency investments to an external contractor. This external contractor is called an Energy Service Company, or ESCO. The ESCO takes care of the energy efficiency investments, guarantees a decreased energy bill and may even finance the investments upfront. A pre negotiated percentage of the savings on the energy bill shall go to the ESCO for a fixed contract period to cover the investment and potential ESCO profit. Until then, the savings for the client will be modest, but after the contract period the client will profit from a significantly lower energy bill.

Figure 7 depicts the principle of energy performance contracting. The ‘project payment’ component is the ESCO’s share of the savings.

The energy performance risk, and sometimes also the financial investment lies with the ESCO. Another advantage of this model is that the proposed energy savings are likely to be achieved, due to the ESCOs expertise and financial interest. Finally, there is no need for the client to monitor the results; the nature of an energy performance contract is such that the ESCO has all the incentives to deliver the agreed savings.

It is important to bear in mind that in order to decrease risk and maximise profits, ESCOs will be inclined to focus on the ‘low hanging fruit’; the simplest measures with the shortest payback periods.

⁸⁷ Climate Bonds Initiative, 2018, The Green Bond Market in Europe.

Consulting experts is recommended for the implementation of this concept as energy performance contracting is rather complex, in particular in terms of contracts, and new.

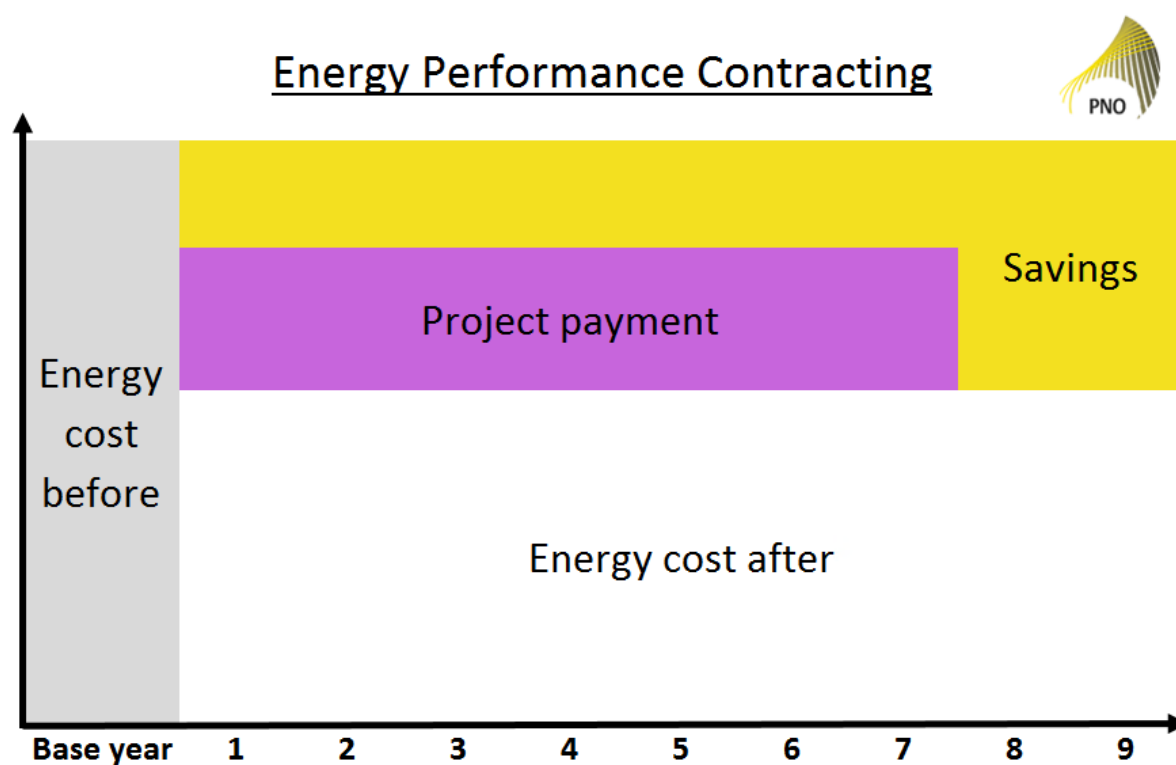


Figure 7 The principle of energy performance contracting. Source: PNO Consultants

6 Combining (EU) funding sources in the heating and cooling sector

For highly innovative projects, it is often needed to maximise the utilisation of public funds in order to close the business case. There are various opportunities which have to be distinguished, with their own set of applicable rules or combination thereof. First of all, there is a possibility of combining multiple EU funding sources. A second option is to combine a European fund with a European public financial instrument, such as a loan to bridge an investment gap of an innovative project. Another option for a beneficiary of European funding is to apply for additional national grants or public financial instruments. A combination of funding is allowed in these situations, if the applicable conditions are met (section 6.2).

An example of combining EU funding sources with a financial instrument is the Smart Finance for Smart Buildings (SFSB) Initiative, where the Commission is developing with the European Investment Bank (EIB) a flexible model of guarantee facility to be deployed primarily at national level. This instrument aims to encourage the combination of different public financing strands, with a special attention being given to the EFSI and ESIF, to get the best possible results. This is also stimulated by the European Commission. The Common Provisions Regulation¹¹ notes that 'synergies should be sought in particular between the operation of ESIF and H2020'.

The funding programmes are regulated on European level, and additionally on national or even local level. In general it is prohibited to receive funding twice for the same costs. National governments who manage European funds such as the ERDF are also bound by state aid rules in their award decision.

In general we have scheduled the opportunities for combining EU funding and the possible limitations below.

6.1 Opportunities for combining EU funding

6.1.1 Covering all TRL levels

From observing the first basic principles, to the roll-out of a technology in the market, innovations pass through various phases of development. These phases are often referred to as Technology Readiness Levels (TRLs). These TRL levels are numbered 1-9, with 1 corresponding to the phase where basic principles are observed, to 9 – 'Actual system proven in operational environment'. EU funding instruments typically target a certain part of this development phase. Figure 8 plots a selection of EU programmes for low carbon innovation on the timeline for innovation development.

Some programmes, such as Horizon 2020, are so extensive that they cover most of the development phases. Within Horizon 2020, a distinction is made between RIA grants (TRL 3-5) and IA grants (TRL 6-7).

Applying for different EU funding instruments for each phase of the innovation development allows you to combine EU funding sources without funding the same activity twice.

EU programmes for low-carbon innovation

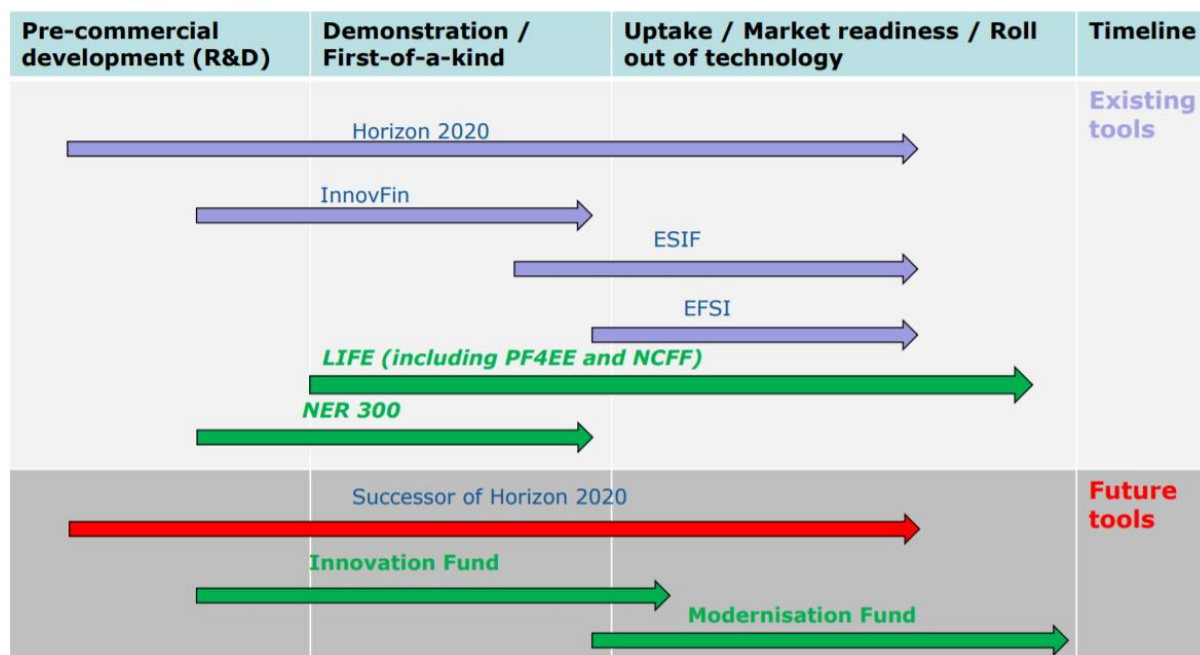


Figure 8 EU Funding sources per development phase. Source: DG CLIMA, 2017.⁸⁸

6.1.2 Covering all activities

Just as there are different instruments for the innovation development phases, there are also EU funding instruments matching different activities. An investment in an innovative heating technology may for instance be eligible for LIFE subsidy. Developing this project, preparing contracts and securing funding, can be supported by EU funding under the Project Development Assistance (PDA) programmes.

6.1.3 Covering the different types of finance

Financing activities in the heating and cooling sector is featured by different types of finance. Whether these activities require financing of a company or financing of a project, typically both equity and debt finance need to be attracted. Traditionally, public funding for innovation or energy investments was provided in the form of grants. Grants are a type of equity finance that does not have to be repaid. Bringing in a substantial share of equity financing, such as a grant, makes it easier to apply for a loan. In itself, this loan can also be sourced from EU funding programmes. Increasingly, public financial instruments are provided in the form of loans. By combining EU grants and (soft) loans, the financing of an initiative in the heating and cooling sector could be covered for an important part by EU funding sources.

⁸⁸ Filippo Gagliardi, 2017, EU sustainable finance tools and policy context. Presentation Filippo Gagliardi, DG CLIMA - European Commission, SEIF Brussels, 19-01-17.

6.2 Limitations to combining EU funding

It is important to stress that each project has to be assessed for its compliance with the specific legal framework such as the work programme. Only then the possibilities to combine financial instruments can be established. Some limitations have to be observed when combining EU funding. In principle, the managing authority of a subsidy programme will verify whether limitations apply. Yet, there are several examples where this check has not been performed correctly by the managing authority, with the result that a beneficiary had to repay (some of) the received funding. Awareness of these limitations on the applicant side may prevent this.

6.2.1 Non-cumulation rule

Conventional grants (not being financial instruments⁸⁹) from the European budget are regulated in Regulation 966/2012 on the “financial rules.”⁹⁰

As a general principle article 125 of Regulation 966/2012 states that grants shall not be cumulative and grants shall not have the purpose or effect of producing a profit within the framework of the action or the work programme. Neither can grants exceed the eligible costs (article 126 of Regulation 966/2012). The non-cumulation rule has been explicitly repeated in article 129 of Regulation 966/2012:

“1. Each action may give rise to the award of only one grant from the budget to any one beneficiary, except where otherwise authorised in the relevant basic acts.

A beneficiary may be awarded only one operating grant from the budget per financial year.

The applicant shall immediately inform the authorising officers of any multiple applications and multiple grants relating to the same action or to the same work programme.

In no circumstances shall the same costs be financed twice by the budget.

2. The Commission shall be empowered to adopt delegated acts in accordance with Article 210 concerning detailed rules on the principle of the non-cumulative award of grants.”

Paragraph 6.1 describes a few possibilities, in compliance with this general rule, to combine EU funding. In case a beneficiary does not act within the legal framework, the Commission may terminate the Action and recover (unjustified) grants.

⁸⁹ E.g. loans, guarantees

⁹⁰ European Commission (2012). Regulation (EU, EURATOM) No. 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union and repealing Council Regulation (EC, Euratom) No 1605/2002.

6.2.2 State aid

When an applicant applies for national or regional funding, in combination with EU funding, the state aid rules apply. Each member state has the possibility to stimulate investments, economic growth and job creation through grants, if the state aid rules are observed. Therefore, a national or regional government will verify if a grant application is allowed on a case-by-case basis in the light of the criteria set out in the applicable state aid guidelines, jurisprudence and Best Practices Code. The starting point is that each financial aid must be notified beforehand to the Commission for approval. However, there are a few exemptions to this rule.

General Block Exemption Regulation (GBER)

The block exemptions under the GBER play an important role. In the General Block Exemption Regulation (GBER) ⁹¹ the Commission has declared certain categories of aid compatible with the internal market of Articles 107 and 108 of the Treaty. This means that a Member State does not have to notify the Commission beforehand of the award of a grant if an exemption applies and the criteria have been met.

The current GBER will remain in force until 31 December 2020 and authorises aid in favour of:

- Regional Investment
- Aid to SME's
- Aid for access to finance for SME's
- Environmental Protection
- Consultancy in favour of SMEs
- Research, Development and Innovation
- Training
- Employment of Disadvantaged and Disabled Workers
- Culture and Heritage conservation
- Local Infrastructures
- Broadband Infrastructures
- Sport and multifunctional recreational infrastructures
- Transport for residents of promoted regions

⁹¹ European Commission (2014). Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty Text with EEA relevance.

Article 8 of the GBER covers the situation of cumulation. Cumulation of different measures of the GBER is possible as long as they concern different identifiable eligible costs. Cumulation is not allowed for partly or fully overlapping costs if such cumulation would lead to exceeding the highest allowable aid intensity applicable under GBER.

De minimis aid

A second possibility for national governments to award grants in compliance with the state aid rules is to use the Regulation on de minimis aid.⁹² In short, the Commission finds that limited aid to undertakings will not effect the trade between Member States or distort the competition. The total amount of de minimis aid granted per Member State to a single undertaking may not exceed EUR 200 000 over any period of three fiscal years.

Article 107 of the Treaty

Finally, state aid for environmental protection and energy objectives may be considered compatible with the internal market within the meaning of Article 107(3)(c) of the Treaty⁹³ if it leads to an increased contribution to the Union environmental or energy objectives (the measure/project should address a market failure in one way or another) without adversely affecting trading conditions to an extent contrary to the common interest. In the Guidelines on State aid for environmental protection and energy 2014-2012 (2014/C/200/01) the Commission sets out the conditions under which aid for energy and environment may be considered compatible with the internal market under article 107 (3)(c).⁹⁴

6.3 Flagship projects

In order to give more context to the EU funding instruments in this report and to provide an example of how different EU funding instruments can be combined to finance heating and cooling projects, this section discusses 3 good practices of such projects.

6.3.1 RE-FIT: Retrofitting buildings for energy efficiency measures

The more than 8.5 million residents and over 976 thousand businesses Greater London comprises are responsible for a final energy consumption of 132,000 GWh (numbers for 2013)⁹⁵. A great part of this consumption is caused by the lack of energy efficient features in buildings. In 2011, London set itself ambitious challenges on reducing CO₂ emissions related to buildings and to achieve that, the city wants to retrofit 2.9 million homes, 11 million m² of floor space of public sector buildings and 44 million m² worth of private sector workplaces by 2025.⁹⁴

⁹² European Commission (2013). Commission Regulation (EU) No 1407/2013 on 18 December 2013 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to de minimis aid.

⁹³ Treaty on European Union and the Treaty on the Functioning of the European Union 2012/C 326/01

⁹⁴ European Commission (2014), Official Journal of the European Union, C 200/1, 28 June 2014. Note, however, that these guidelines do not apply to State aid for research, development and innovation, which is subject to the rules set out in the Community framework for State aid for research and development and innovation.

⁹⁵ Association for the Conservation of Energy (2016). Energy Efficiency in London.

The RE:FIT programme focuses on retrofitting public sector buildings and provides a commercial model for public bodies to implement energy efficiency and building integrated improvements to their buildings.⁹⁶ Thereby, they can reduce carbon emissions substantially whilst accruing substantial financial savings. It is an innovative scheme and represents an investment of GBP 400 million. For both the programme and for the retrofit projects stemming from the programme, multiple funding vehicles and financial instruments are used.

Funding the RE:FIT Programme Delivery Unit

For the period of 2011-2015, the RE:FIT programme has been funded GBP 2.4 million by the EIB through **ELENA** and obtained GBP 0.27 million funding from the Greater London Authority (GLA).⁹⁷

For the subsequent period of 2016-2019, the funding structure has changed to GBP 2.1 million funding from the GLA and GBP 2.1 million from the **ERDF**.⁹⁸ With this funding, the Programme Delivery Unit (PDU) of RE:FIT develops full retrofit projects and supports the building owners through the entire process in its role as facilitator and financial advisor.⁹⁵ The PDU basically manages the RE:FIT framework of suppliers, facilitates the uptake by London's public sector organisations and supports beneficiaries through all project stages. Turner and Townsend, supported by PA Consulting Group, have been appointed to run the RE:FIT on behalf of the Greater London Authority for a period of 3 years. So far, the PDU has been able to engage more than 200 public sector organisations in the programme at which over 660 buildings have been supported in their retrofitting processes accounting for GBP 201 million.⁹⁵

Funding the projects

Funding of the retrofitting building projects can include the following: own funding by the owner of the building, borrowing directly from bank or from public financial institutions and funds such as Public Works Loan Board, Salix or London Energy Efficiency Fund, or can be financed through a third party (e.g. an ESCo; see section 5.9).⁹⁶

- PWLB (Public Works Loan Board): This body operates within the United Kingdom Debt Management Office, which is an Executive Agency of HM Treasury. The function of PWLB is to lend money from the National Loans Fund to local authorities, and to collect the repayments.
- Salix: This publicly funded company delivers 100% interest-free capital to the public sector to improve their energy efficiency and reduce their carbon emissions.
- LEEF (London Energy Efficiency Fund): This fund is procured by the European Investment Bank on behalf of London Green Fund. The London Green Fund obtains its funding from the London Waste and Recycling Board (LWWRB), the Greater London Authority (GLA) and from the ERDF **JESSICA** programme. The funding structure of the LEEF is depicted in figure 9.

⁹⁶ C40 Cities (2017). RE:FIT Programme cuts carbon emissions from London's public buildings

⁹⁷ Cityinvest (2018). London's Building Retrofit Programme – RE:FIT. Greater London – United Kingdom.

⁹⁸ Greater London Authority (2018). MD1531 Mayor's RE:FIT programme 2016-2019.

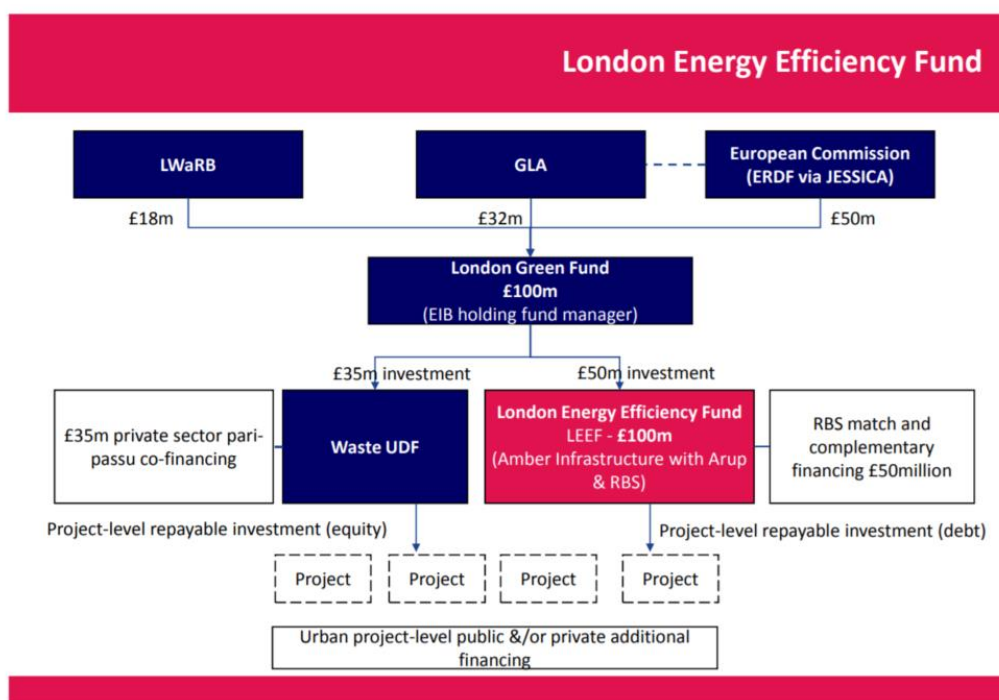


Figure 9 Funding structure of the London Energy Efficiency Fund.
Source: Hadjidakis (2018).⁹⁹

6.3.2 Integrated energy system of the city Mórahalom

Mórahalom is a small city (11275 m²) of around 6000 inhabitants that is known for its thermal baths. It is located in southern Hungary, close to the border with Serbia. In 2002, the local government wanted to improve the heat supply system of the city, mainly because of its inefficiency and size, as well as because of the need for a cheaper energy system. One of the options that was identified as a potential source was geothermal energy.

Using different EU funding sources, a geothermal district heating network was realized (figure 10). This network realized primary energy savings of 650 MWh per year, final energy savings of 478 MWh per year and a CO₂ reduction of 167 tonnes per year.¹⁰⁰

ERDF Project: Revision of territorial environmental programs of Mórahalom (2007-2008)

In 2007, the local government of the Mórahalom region conducted a feasibility study for the exploitation of geothermal energy produced from a geothermal public utility system. This feasibility study, including construction plans and a preliminary environmental impact assessment, were supported by the **ERDF INTERREG IIIA (HUROSCG)** programme with an amount of EUR 235 000¹⁰¹. The objective of the project was to build a demonstrator to further develop the first Hungarian-Serbian cross-border water base and production monitoring system.

SF Project: Geothermic cascade project of Mórahalom (2008-2010)

Based on the results of this feasibility study in the ERDF project, the construction and

⁹⁹ Hadjidakis, D. (2018). RE:FIT. London's building retrofit programme.

¹⁰⁰ Hegyi, F.B. (2018) Stairway to Excellence. Cohesion Policy and the Synergies with the Research and Innovation Funds. Example of Synergies Integrated energy system of the city Mórahalom.

¹⁰¹ SF funding scheme: HURO/0901/222/1.3.4 – INTERREG-ECO

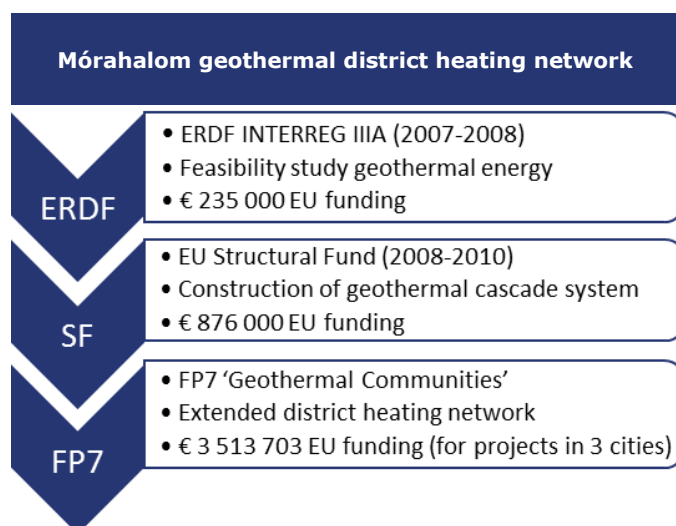
operation of the geothermal cascade system of Mórahalom was realized. This system with a heat capacity of 2620 kW consists of a 1,300-1,400 meters deep thermal well in the northern part of the city and a 2.8-km-long insulated underground pipeline network in which main public buildings are connected. The system's input is fluid of around 70 °C. This geothermal cascade system resulted in an increase from 0 to 80 % of renewable energy used in public institutions and in a natural gas saving of 14,441 gigajoules per year. The construction of this system was a total investment of EUR 1.75 million and was partly funded with EUR 876 000 from **EU Structural Funds**¹⁰².

FP Project: Geothermal Communities (2010-2015)

The innovative infrastructure realized in the SF project, enabled participation a 7th Framework Programme for Research and Technological Development (FP7) - Collaborative Project – Large Scale Integration Project 'Geothermal Communities (GEOCOM)'¹⁰³. This project of EUR 11 million was funded with more than EUR 3.5 million from **FP7**. The project's overall objective was to promote the utilization of geothermal energy and resources as a reliable renewable energy resource through demonstration actions in three cities: Mórahalom (Hungary), Galanta (Slovakia) and Montieri (Italy).

In Mórahalom, the activities under this project focused on demonstration activities complemented by applied research tasks on (1) the technological background of the geothermal resources including system optimisation and system integration; (2) and also on the socio-economic aspects of the current and future investments.

An extended district heating network was constructed, replacing natural gas and fossil-fuel based electricity with geothermal energy using combined heat and power (CHP) pumps. Moreover, waste heat and methane from a thermal spa is used for generating energy as an input for the network. Retrofitting of public buildings in this network (façade insulation, triple glass and other refurbishment measures), as well as a solar thermal installation, have been part of this project as well.¹⁰⁴



¹⁰² ESIF funding instrument: Environmental and Energy Operational Program KEOP-2007-4.1.

¹⁰³ FP7 call: FP7-ENERGY-2008-TREN-1

¹⁰⁴ Geothermal Communities (2018). Retrieved on 7 December 2018 at www.geothermalcommunities.eu/communities/1/chp_utilisation

Figure 10 Funding structure of the Mórahalom geothermal district heating network

6.3.3 Concentrated Solar Power in Cyprus

Cyprus is an island of 9251 km² and has over 1.2 million inhabitants and lies at the south-eastern end of the Mediterranean Sea and Europe. This region is one of the most vulnerable regions in the world regarding climate change. Cyprus has already been affected by droughts and water shortages, and it is expected that this will increase in the future. Next to this, the country has a great challenge ahead in ensuring renewable energy targets.¹⁰⁵

For this reason, research has been done on solar thermal energy production, combined with water desalination by the Cyprus Institute. This is a research institute with a strong scientific and technological focus that has been supported by EU funding instruments for research and implementation of this RES technology.

ERDF project: Solar Thermal Energy Production of Electricity and Water (2011-2014)

After a feasibility study was conducted on the co-generation of electricity and desalinated seawater from concentrated solar power (financed by the Cypriot government), the Cyprus Institute developed a pilot plant, for which EU funding was received. This funding consisted of EUR 1 036 million from **INTERREG-III (Greece and Cyprus)**, ERDF and National Funds of Greece and Cyprus. The total budget was EUR 1.3 million.

The project's objective was to build an experimental solar thermal cogeneration unit in Cyprus. The construction of the plant, named PROTEAS, confirmed the technical feasibility of the innovative idea of cogeneration of desalinated water and electricity by using concentrated solar energy on a small scale and realistic environmental and operating conditions. Activities included:

- Demonstrations of the co-generation concept;
- Production of electricity and water;
- Use of commercial components integrated in a novel way;
- Demonstration of continuous production;
- Thermal energy storage.

The construction and operation of the unit confirmed that the technology is mature enough to be commercially used and highlighted potential needs in subsystems that need

¹⁰⁵ Cyprus Ministry of Agriculture, Rural Development and Environment (2018). Cyprus Seventh National Communication & Third Biennial Report - under the United Nations Framework Convention on Climate Change.

further

development.¹⁰⁶

FP7 project: Scientific and Technological Alliance for Guaranteeing the European Excellence in Concentrating Solar Thermal Energy (2014-2018)

The ERDF project had positive test results for the solar thermal energy production technology, but more research and development was required. This finding led to participation in a **FP7**¹⁰⁷ project on solar thermal electricity (STE), in which 41 partners from 19 countries take part, with the main objective to develop a knowledge position for STE research.¹⁰⁸

The Cyprus Institute has been granted EUR 259 000 in this project, to further develop the solar thermal cogeneration unit that was funded under the INTERREG project. The main activities funded under the FP7 project are training, including PhD fellowships, and innovation activities.

In figure 11, the PROTEAS solar thermal cogeneration unit is shown. It includes a solar field of 50 heliostats of 5m² each, a storage unit and a desalination module.

¹⁰⁶ Stroggiopoulos, G. (2016) Stairway to Excellence. Cohesion Policy and the Synergies with the Research and Innovation Funds. Example of Synergies, The Cyprus Institute: Concentrated Solar Power.

¹⁰⁷ FP7-ENERGY-2013-IRP

¹⁰⁸ STAGE-STE project (2018). Retrieved on 7 December 2018 on stage-ste.eu/index.php

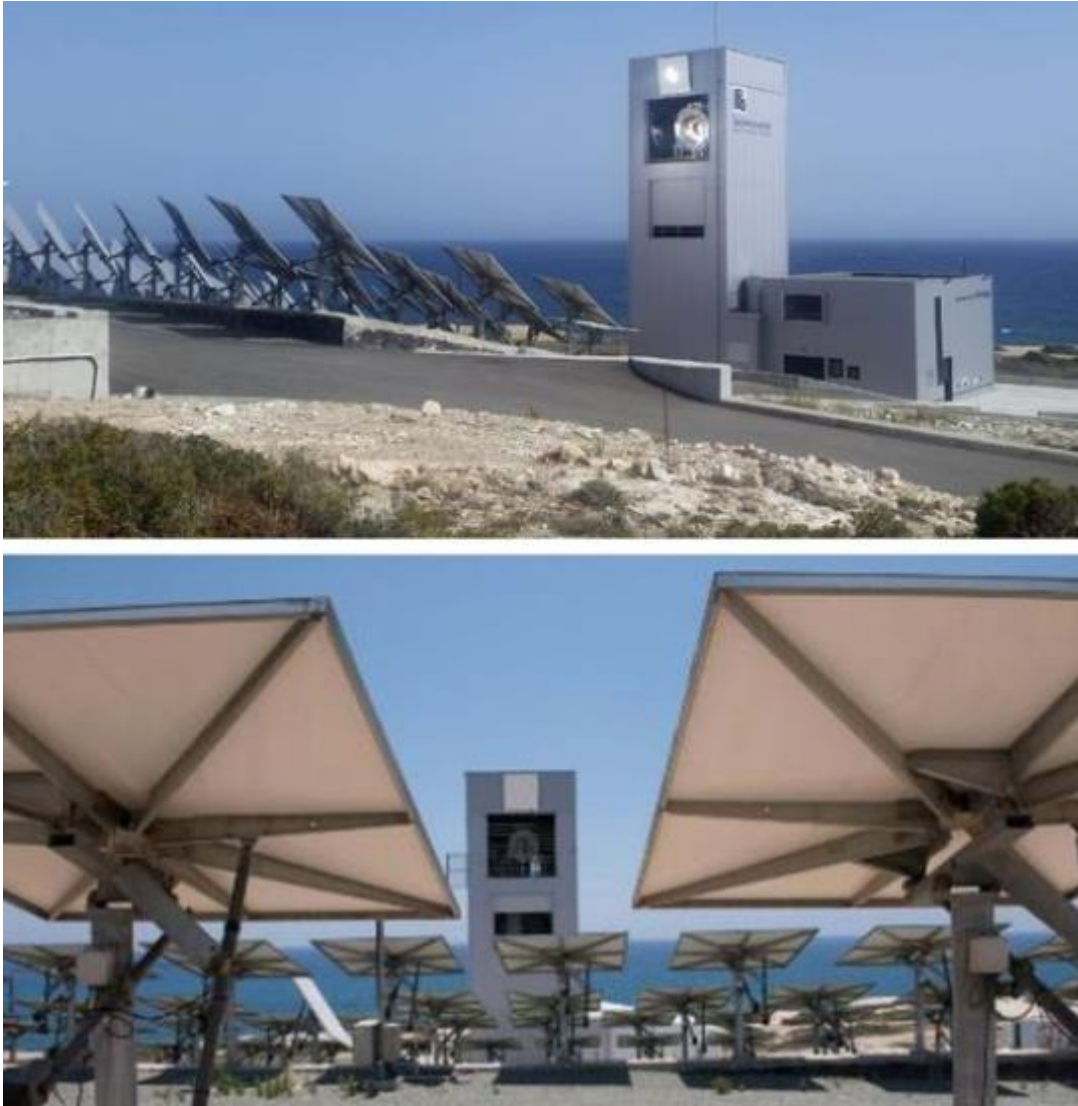


Figure 11 The PROTEAS solar thermal cogeneration unit on Cyprus¹⁰⁹

¹⁰⁹ The Cyprus Institute (2018). Retrieved on 7 December 2018 on cyi.ac.cy

7 Conclusions

The transition to clean energy is one of the key priorities of the EU and requires enormous investments in the years to come. For this reason, large sums of public funding are directed to this challenge.

Heating and cooling in buildings and industry accounts for approximately half of the EU's final energy consumption. No specific funding instruments for heating and cooling exist at EU level, just a few dedicated calls within EU funding programmes. However, heating and cooling is a large and integral part of the energy transitions and as such, heating and cooling projects can tap into the vast spectrum of generic energy subsidies and the more general innovation subsidies.

This report presents an overview of these funding instruments, and aims to guide the reader in this EU funding landscape. To illustrate the amount and variety of funding available, we mention some of the EU funding sources that are discussed in this report:

- For 2014-2020, the ERDF has an overall budget of almost EUR 200 billion. A minimum percentage of ERDF funding (12-20 %) must be channelled towards low carbon projects in regions.
- The EU's Research and Innovation Programme Horizon 2020 provides EUR 5.9 billion in funding towards energy projects between 2014 and 2020.
- Under the CEF, EUR 5.85 billion is available for trans-European energy infrastructure projects such as gas pipelines, transmission grids, LNG terminals, gas storage, and smart grids. For the next period this would increase to EUR 8.7 billion.
- So far, EUR 2.2 billion NER300 funding has been awarded to 38 renewable energy projects and 1 CCS project. The programme has also managed to leverage its funding with EUR 2.86 billion in private investment.
- In renewables alone, EIB lending increased from EUR 0.5 billion per year in 2004 to EUR 6.2 billion per year in 2010.
- The EUR 3.98 billion European Energy Programme for Recovery (EEPR)¹¹⁰ finance aimed to fund 44 gas and electricity infrastructure projects, 9 offshore wind projects and 6 carbon capture and storage projects.

Some of the instruments are specifically directed at energy investments, but many are more general instruments, aimed at for instance innovation. When identifying subsidies for a project, it often helps to look at your project from a different angle, this can typically also bring different funding instruments into view. Looking from an employment perspective for instance, it may bring subsidies in the picture that support social inclusion by subsidising jobs for disadvantaged people (ESF).

¹¹⁰ The programme is no longer active

Investments in energy efficiency or renewable energy often still have relatively long payback periods, or are perceived as high risk investments by financial institutions. Such investments often require the maximisation of public funding in order to close the business case. There are ample opportunities to combine EU funding with local, national or other EU funding instruments. However, there are some limitations to observe, particularly with respect to non-cumulation and state aid regulations.

Some of the EU funding sources in this report are well-known and established, others are less popular. Typically, the more popular programmes also have lower chances to be awarded. It may therefore pay off to examine alternatives. Preparing an EU funding project could be complex and time consuming and it shows that having experience helps in the application process: a review of several surveys on the subject revealed that experience of drafting project applications is one of the major differences between successful and unsuccessful applicants.¹¹¹

¹¹¹ Surveys reviewed: Spok R. (2010), How the EU Structural funds are perceived by both successful and unsuccessful applicants? (survey results), EUROPEUM Institute for European Policy; Ministry of Finance Latvia (2009), Centralised EU Funds (European Social Fund, European Regional Development Fund, Cohesion Fund), Final Beneficiaries, Satisfaction Survey, Latvijas Fakti, Dec. 2009; ECORYS (2011), Evaluation of the South East Europe Programme 2007-2013, First Evaluation Report – Draft, Client: VÁTI Hungarian Public Nonprofit Company on Regional Development and Town Planning, Rotterdam, 4 April 2011., INTERACT (2010), Study towards cross-programme evaluation, Operational aspects of cross-programme cooperation in Central and South-Eastern Europe, Support mutual learning, Final Report, Interact programme, June 2010.

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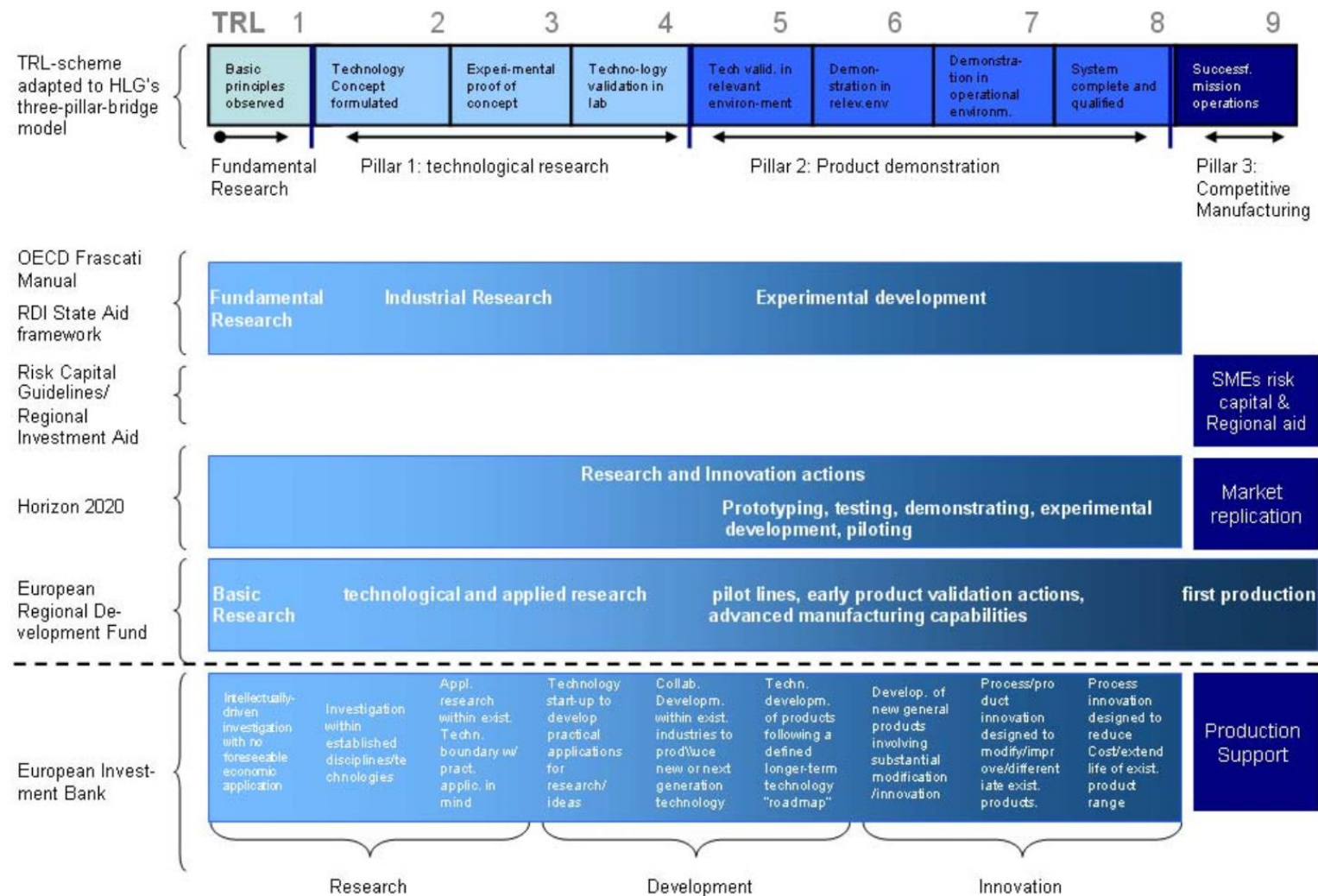
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Annex A: Definitions and criteria applied for R&D&I funding under EU policies and laws



Source:

COM(2012)

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final

Annex B: Active JESSICA funds

Country	JESSICA HF	UDF name	Amount signed (M€)
Bulgaria			
	HF Bulgaria	Regional Urban Development Fund AD	37
		Fund for Sustainable Urban Development of Sofia JSC	24.6
Czech Republic			
	HF Moravia-Silesia	Contera Urban Development Fund MS s.r.o.	170
		CMZRB - Českomoravská záruční a rozvojová banka, a .s.	170
Greece			
	HF Greece	Pancretan Cooperative Bank and TT Hellenic Postbank	15
		National Bank of Greece S.A.	83
		Investment Bank of Greece	49
		EFG Eurobank Ergasias S.A.	67
		Piraeus Bank	39
Italy			
	HF Campania	Iccrea BancaImpressa SPA	31.9
		Banco di Napoli SPA	63.8
	HF Sardinia	Fondo Sardegna Energia (Equiter)	33.1
		Banco di Sardegna S.p.A.	33.1
	HF Sicily	Fondo di Rigenerazione Urbana Sicilia SRL(Equiter)	90
		ICCREA BancaImpresa	53
Lithuania			
	HF Lithuania	Siauliu Bankas AB	18
		Swedbank AB	18
		Siauliu Bankas AB	10
		SEB Bank	6
		VIPA/CPMA	20
		Siauliu Bankas AB	40
Poland			
	HF Mazovia	Bank Gospodarstwa Krajowego	154.7
	HF Pomerania	Bank Gospodarstwa Krajowego	154
		Bank Ochrony Srodowiska S.A.	66
	HF Silesia	Bank Ochrony Srodowiska S.A.	243
	HF Westpomerania	Bank Ochrony Srodowiska S.A.	63
		Bank Zachodni WBK SA	77
	HF Wielkopolska	Bank Gospodarstwa Krajowego	294
Portugal			
	HF Portugal	Banco BPI S.A.	61
		Caixa Geral de Depositos S.A.	49
		Turismo de Portugal IP	15
Spain			

	HF Andalucía	AC JESSICA Andalucía, S.A.	80.5
	HF FIDAE (ES)	Banco Bilbao Vizcaya Argentaria SA	123.2
United Kingdom			
	HF London	Foresight Environmental Fund LP	35
		Amber Green LEEF LP	10
		Amber Green LEEF 2 LLP	40
		The Housing Finance Corporation Ltd (THFC)	12
	HF Northwest England	North West Evergreen LP	36.1
		Chrysalis LP	32.6
	HF Scotland	Amber Green SPRUCE LP	8
		Amber Green SPRUCE 2 LLP	40

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