



#H2020Energy

Horizon 2020 Work Programme for Research & Innovation 2018-2020

Energy efficiency (SC3, NMBP- EeB & SPIRE) Calls 2018 & 2019

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Research and
Innovation

POLICY BACKGROUND

1. **Clean Energy Policy Package** including:

- The revision of Energy Performance of Buildings Directive (EPBD)
- The revision of Energy Efficiency Directive (EED)

2. The next **Multiannual Financial Framework (MFF)** proposal including:

- Horizon Europe
- LIFE/ Clean Energy Transition

Clean Energy for ALL Europeans Package

THE RIGHT REGULATORY FRAMEWORK FOR POST – 2020



Energy Union Governance



Energy Efficiency

(Energy Efficiency Directive, European Performance of Buildings Directive)



Renewables

(Revised Renewable Energy Directive)

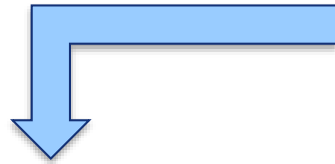


New Electricity Market Design



Energy prices and costs report

Energy efficiency first principle:
Energy Efficiency is the most cost-effective way of achieving Energy Union objectives.



Main legal acts – to be finalised during Bulgarian Presidency

Revision of the Energy Performance of Buildings Directive

- Council adoption on 14 May 2018, publication OJ on 19 June

Revision of the Energy Efficiency Directive

- Political agreement reached on 19 June (Commission, EP, Council). Finalisation by summer 2018,




Clean Energy for ALL Europeans Package

REVISION OF THE EED



2030 ENERGY EFFICIENCY TARGET- LONGER TERM PERSPECTIVE FOR INVESTORS



PROVIDING A FURTHER BOOST TO BUNDLING SMALL-SCALE PROJECTS THROUGH CONTINUATION OF ENERGY SAVING OBLIGATIONS FOR MEMBER STATES IN ARTICLE 7

REVISION OF THE EPBD*



REINFORCED LONGER TERM BUILDING RENOVATION STRATEGIES

- 2050 vision for a decarbonised and highly efficient building stock
- Intermediary milestones in 2030 & 40
- Stronger financing component
- Reinforcement of EPCs in connection with financial support



SMARTER BUILDINGS, BETTER CONNECTED

- A smart readiness indicator for buildings, for the benefit of consumers
- Reinforced building automation and controls
- Enhanced transparency of national building energy performance calculation methodologies



SUPPORTING E-MOBILITY

- E-mobility infrastructure deployment in buildings car parks
- Simplification of the deployment of recharging points (permitting procedures)
- Targeted exemptions (e.g. for SMEs)



* https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ%3AL%3A2018%3A156%3ATOC&uri=uriserv%3AOJ.L_.2018.156.01.0075.01.ENG

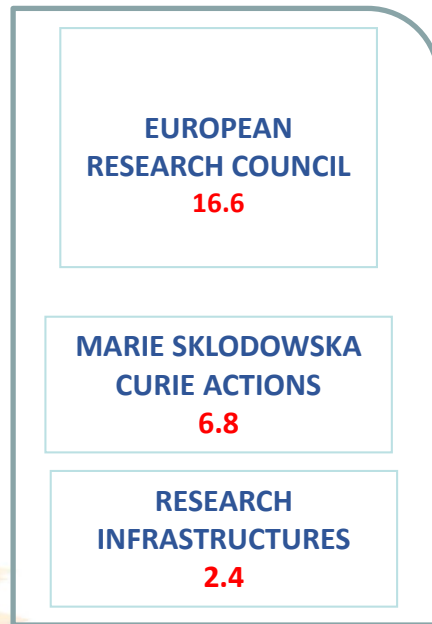
EU funding of energy efficiency - next MFF:

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

Overall to meet 30% target by 2030 investments into energy efficiency of buildings (residential and tertiary) need to increase by EUR 53 billion/year

Horizon Europe: 2021-2027: € 94.1bn

OPEN SCIENCE 25.8



GLOBAL CHALLENGES & INDUSTRIAL COMPETITIVENESS 52.7



OPEN INNOVATION 13.5



STRENGTHENING THE EUROPEAN RESEARCH AREA 2.1



MISSIONS

Clusters in 'Global Challenges and Industrial Competitiveness'

Clusters	Areas of intervention	
Health	<ul style="list-style-type: none"> * Health throughout the life course * Non-communicable and rare diseases * Tools, technologies and digital solutions for health and care 	<ul style="list-style-type: none"> * Environmental and social health determinants * Infectious diseases * Health care systems
Inclusive and Secure Societies	<ul style="list-style-type: none"> * Democracy * Social and economic transformations * Protection and Security 	<ul style="list-style-type: none"> * Cultural heritage * Disaster-resilient societies * Cybersecurity
Digital and Industry	<ul style="list-style-type: none"> * Manufacturing technologies * Advanced materials * Next generation internet * Circular industries * Space 	<ul style="list-style-type: none"> * Key digital technologies * Artificial intelligence and robotics * Advanced computing and Big Data * Low carbon and clean industry
Climate, Energy and Mobility	<ul style="list-style-type: none"> * Climate science and solutions * Energy systems and grids * Communities and cities * Industrial competitiveness in transport * Smart mobility 	<ul style="list-style-type: none"> * Energy supply * Buildings and industrial facilities * Clean transport and mobility * Energy storage
Food and Natural Resources	<ul style="list-style-type: none"> * Environmental observation * Agriculture, forestry and rural areas * Food systems * Circular systems 	<ul style="list-style-type: none"> * Biodiversity and natural capital * Sea and oceans * Bio-based innovation systems

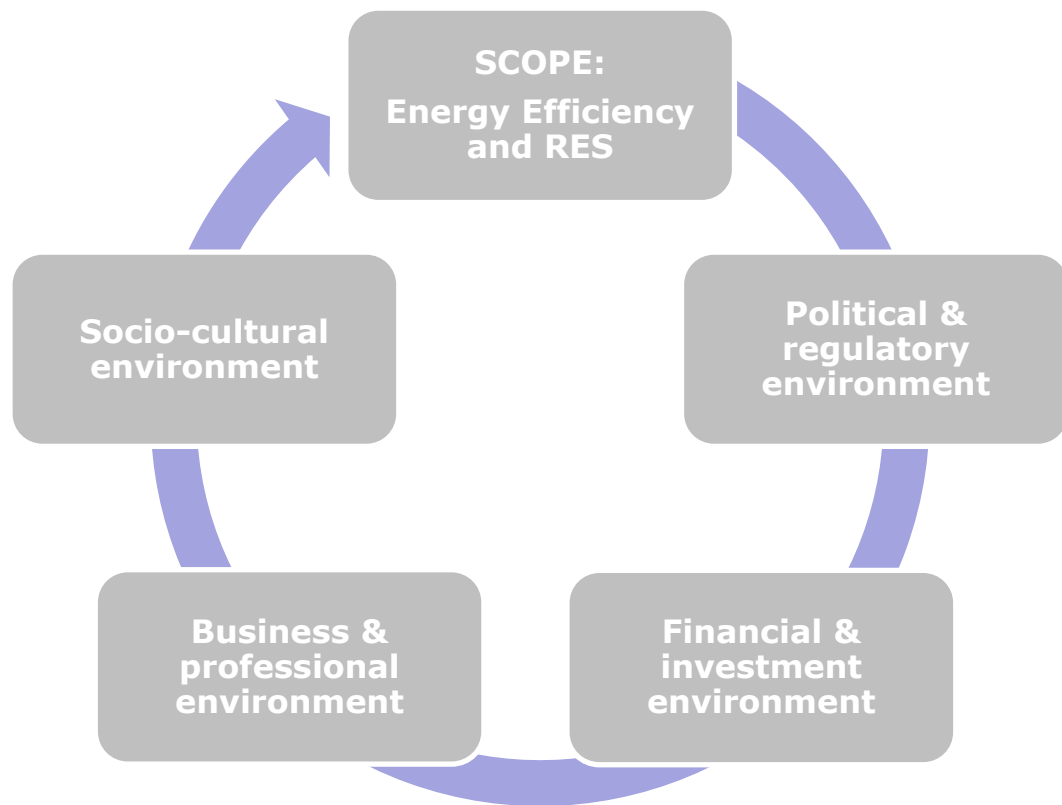
THE CLEAN ENERGY TRANSITION SUB-PROGRAMME IN LIFE

- **Building capacity to create the right market & regulatory conditions for the energy transition.**

The total budget envelop for 2021-2027: € 1 bn

Delivery modes:

- 1) developing and spreading best practice in policy implementation,
- 2) mobilising investments,
- 3) improving skills and creating market conditions for technology deployment,
- 4) engaging citizens and supporting the transition in vulnerable groups.



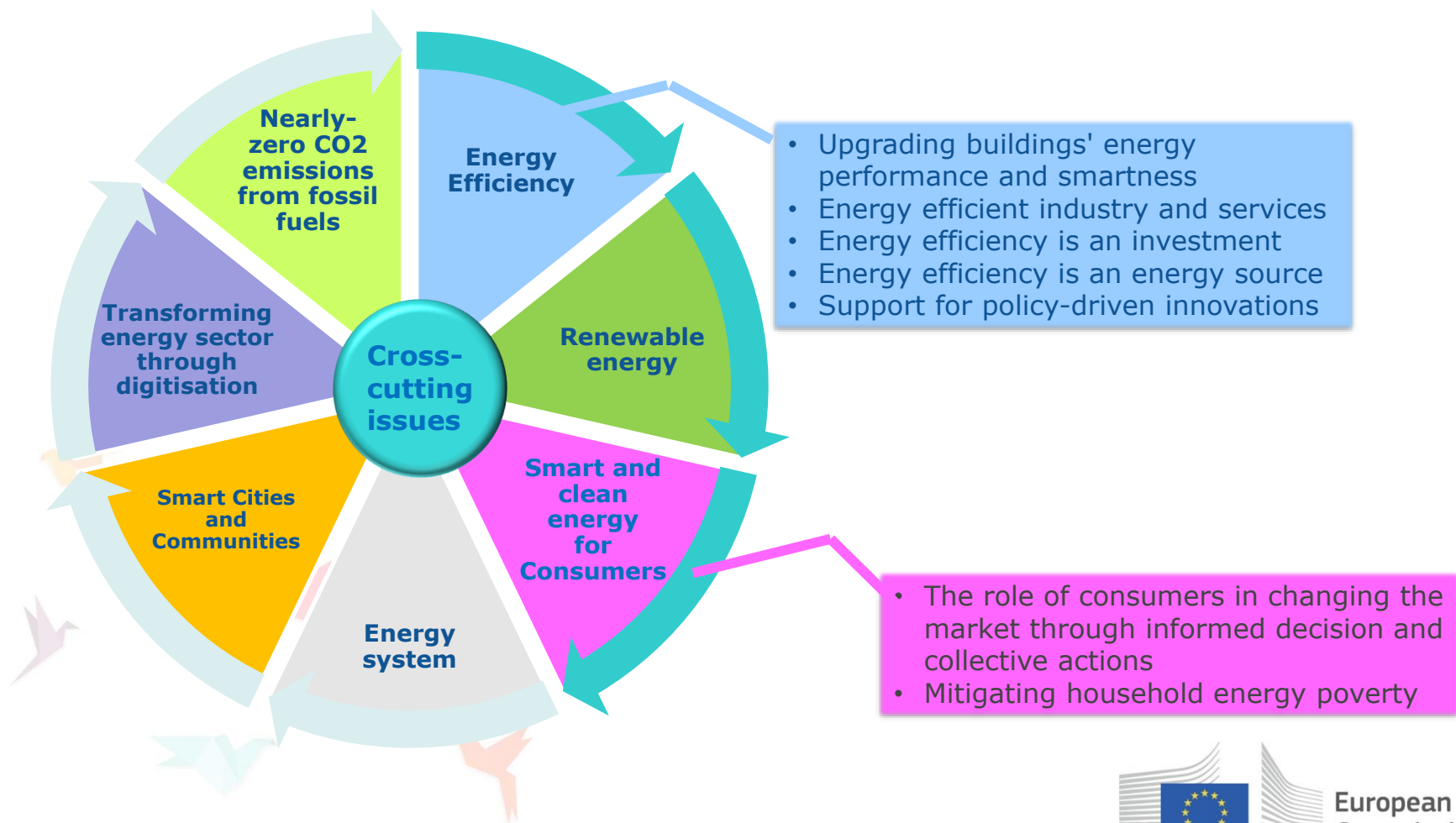
ENERGY EFFICIENCY IN HORIZON 2020

Calls presentation:



Overview- H2020 Societal Challenge 3

Secure, clean and efficient energy



H2020: Main type of actions in Call 2018/19

RIA

Research & innovation

actions that establish new knowledge or develop more energy-efficient technologies and solutions.

EU funding rate: 100%.

3 beneficiaries

IA

Innovation

actions that demonstrate the viability of new technologies and solutions or support their first deployment in the market.

EU funding rate: 70%.

* 100% for non-profit legal entities

3 beneficiaries

CSA

Coordination & support

actions* that improve skills, mobilise large-scale investments or facilitate EU policy implementation.

EU funding rate: 100%.

3 beneficiaries
(except EE2-EE11-EE17)

KPIs & typical impacts indicators

Energy savings triggered (GWh/year)

Investments in sustainable energy triggered (million EUR/year)

Prototypes or demonstrators developed

New products, processes or methods launched

Patents registered

Peer-reviewed publications or articles accepted

Policies or strategies created / adopted

People trained or qualified, Stakeholders reached, Behaviour changed

Renewable energy production triggered

Building renovations performed

Costs saved,

Jobs created

Key Performance Indicators collected across EE projects

Indicators typically referred to in energy efficiency calls

Other impact indicators

'Guidelines for the calculation of performance indicators'

Link: <http://ec.europa.eu/easme/sites/easme-site/files/guidelines-for-the-calculation-of-performance-indicators.pdf>



SC3 - ENERGY EFFICIENCY CALLS 2018-2019



Buildings



Industry, Products
& Services



Finance for
Sustainable
Energy



Public
authorities



Consumers

Energy Efficiency Call 2018 Deadline 4 Sept. 18	EE01	EE02*	EE06	EE09	EE14	EC01
	EE05		EE08	EE10	EE16	EC02
			EE13	EE11*		
			EE15			

Energy Efficiency Call 2019 Deadline 3 Sept.19	EE01	EE06	EE09	EE14	EC01
	EE02	EE08	EE10	EE16	EC02
	EE03	EE13	EE11	EE17**	
	EE04	EE15			
	EE05				

* Single beneficiaries eligible

* **Deadline: 5 February 2019**

H2020 Energy Efficiency Call 2018 Info Day (25 October 2017)

topic specific sessions available on-line:

<https://ec.europa.eu/easme/en/horizon-2020-secure-clean-and-efficient-energy-info-day>



Buildings



**Industry, Products
& Services**



**Finance for
Sustainable
Energy**



**Public
authorities**



Consumers





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Societal Challenge 3-Energy Efficiency- **Buildings**

Research and
Innovation

Specific Challenge:

- Action is needed to improve rates of renovation through innovation in technologies, process and business models
- Deep renovation needs to be more attractive & reliable, less disruptive & costly, faster, more environmentally friendly
- Proposals should roll out holistic solutions aimed at consumers

Scope:

- Innovations across the value chain, during any stages of design or construction
- Building fabric, technical systems, links to DHC are all relevant
- Address the drivers to renovate buildings
- Multiple benefits of energy efficiency

TRL
8-9

EUR 3-4 million

IA
70%

LC-SC3-EE-2-2018-2019: "Integrated home renovation services"

Specific challenge:

- Many project promoters lack the skills and capacity to set up, implement and finance ambitious sustainable energy projects
- In addition, many lack access to attractive and adequate financing products from the market

More information

- **Webinar** on "Home Renovation": **21 November 2017**

<https://ec.europa.eu/energy/en/financing-energy-efficiency/sustainable-energy-investment-forums>



LC-SC3-EE-2-2018-2019: "Integrated home renovation services"

Scope:

- Create (or replicate) "integrated home renovation services", operational by the end of the action
- Cover the whole "customer journey": from technical and social diagnosis, technical offer, contracting of works, structuring and provision of finance, to the monitoring of works and quality assurance.
- Create more demand for holistic approaches as a result of improved offer by trustful market operators and better awareness from homeowners
- Optimise the services required along the renovation process (based on a thorough analysis of the local needs and actors in place)
- Reduce renovation costs and time on-site through standardised approaches (e.g. optimized business processes, standardised contractual arrangements, branding of the proposed services, ...)

CSA
100%

EUR 0.5-1.5 million



LC-SC3-EE-03-2019-2020: Stimulating demand for sustainable energy skills in the construction sector

Specific Challenge:

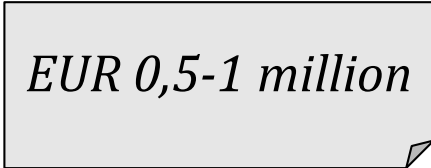
- Based on results of BUILD UP Skills, act at market level and support legislative changes to stimulate the demand for energy skills

Scope:

- Tools facilitating the mutual recognition of energy skills and qualifications (e.g. skills registers/passports, mobile apps...)
- Initiatives raising awareness of home and building owners/tenants
- Support to public authorities for the development of new legislative frameworks (e.g public procurement)
- Partnerships with producers and retailers
- Initiatives reinforcing the link between skills/education and energy performance/quality of construction



CSA
100%



EUR 0,5-1 million

LC-SC3- EE-04-2019: Upgrading smartness of existing buildings through innovations for legacy equipment (IA)

Specific challenge :

- **Buildings:** transition from energy consumers to active contributors to the energy system
- **Smart buildings :** managing themselves, interacting with their occupants and with the grid
- **Improving efficiency of existing building stock as main challenge**
- **Focus on legacy equipment :** longer lifecycle, higher costs of replacement, or difficult to integrate in buildings

Scope :

- **Demonstrate technological solutions to manage building energy and interact with the grid based on user preferences**
 - using IT to upgrade existing buildings
 - connecting both short and long lifecycle equipment
- **Plan broad uptake on energy markets and integration into specific building typologies**
- **Maximise consumer comfort : cost-effective, user-friendly, easy to install, saving energy and money**

TRL
6-8

EUR 3-4 million

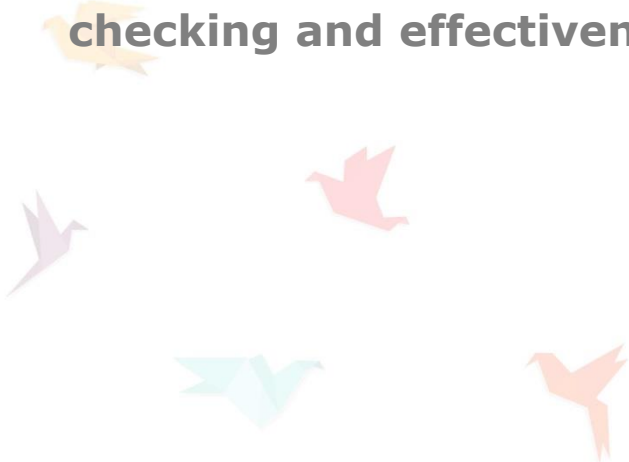
IA
70%



LC-SC3- EE-05-2018-2019: Next-generation of Energy Performance Assessment and Certification

Specific Challenge:


- **Assessment processes and certificates need to become more reliable, user-friendly, cost-effective and compliant with EU legislation**
- **Holistic assessment of buildings: envelope and system performances, smart readiness, RES, final energy use, comfort levels**
- **Use of International and EU standards, particularly ISO/CEN**
- **Assessments take into account actual measured data from sensors**
- **Demonstrate how schemes could be strengthened, modernised and best linked to national certification schemes, enhancing compliance checking and effectiveness of financial support**



EE-05-2018-2019: Next-generation of Energy Performance Assessment and Certification

Scope (2018):

- **Involve stakeholders including certification bodies, in stimulating roll-out of next-generation schemes**
- **Develop strategies to help converge EPC practices across EU**
- **Assess applicability of schemes through case studies**
- **Demonstrate potential of EU-wide uptake of the schemes**
- **Embed EPCs in energy audits, databases, one-stop-shops**
- **Link EPCs to buildings renovation passports, individual buildings renovation roadmaps or building logbooks**



EUR 1-2 million

*CSA
100%*

EE-05-2018-2019: Next-generation of Energy Performance Assessment and Certification

Scope (2019):

- Innovative approaches for assessing building energy performance
- Reliable assessment of building intrinsic performances
- Work towards output-based assessments using available building energy related data
- Improve reliability, cost-effectiveness and compliance with EU-standards, to allow for EU-wide deployment
- Involve relevant stakeholders, including certification bodies
- Consider using EPCs in building passports and renovation roadmaps



TRL
6-7

IA
70%

The European portal for energy efficiency buildings

www.buildup.eu

BUILD UP The European Portal For Energy Efficiency In Buildings

Home News & Events Practices Learn Explore Topics

EVENT
BUILD UP Webinar | Low Energy Apartment Futures (LEAF)

BUILD UP Webinar | Low Energy Apartment Futures (LEAF)
Practical Approaches to the Building Renovation Challenge

Energy Savings Calculations under the Energy Efficiency Directive, Art.7

Renovalue roundtable: Integrating Sustainability in Property Valuation - Highlights available

Horizon 2020: 50 new Energy Efficiency projects funded

Tweets

OoEnergiesparverband @OoESV 24 Feb
The fun has begun in Wels at the #WSED - THE conference on energy efficiency and renewable energy! pic.twitter.com/ML1tXqf0c
Retweeted by BUILD UP

Tweet to @EU_BUILDUP

- Upload and collaborate
- Exchange best practice
- Latest news, research
- Find data tools, financing schemes, project case studies

NEWS

European Commission presents sustainable energy security package

EVENTS

BUILD UP Webinar | Low Energy Apartment Futures (LEAF)

8 Mar 2016



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Energy Consumers and Energy Services

Research and
Innovation

EC1 - The role of consumers in changing the market through informed decision and collective actions

2018:

Informing and motivating consumers to change old and inefficient appliances to more efficient ones

2019:

Set up and/or support consumer cooperatives, collective purchase groups and/or other collective actions to increase energy efficiency and/or optimise energy management within the community

Collective actions- collective solutions to distributed RES generation, storage, demand-response aggregation and/or energy efficiency improvements

*CSA
100%*

EUR 1-2 million

Scope 2018:

- Develop activities informing and motivating consumers to change old and inefficient installed appliances
- Focus on highest energy saving potential (e.g. boilers, local space heaters, air heaters)
- Address financial aspects (cost savings, payback period) and multiple benefits of energy efficiency improvements (e.g. improved air quality)

The proposed action should:

- Address the risk of "rebound effects", where relevant
- Involve all relevant stakeholders and relevant consumer organisations
- Tackle consumer data ownership and privacy, where relevant



EC1–2019: Collective actions for local sustainable energy

Scope 2019:

Set up and/or support consumer cooperatives, consumer purchase groups, and other collective actions to increase energy efficiency and/or optimise energy management in energy communities

The proposed action **should**:

- Identify and address **regulatory barriers** and contractual conditions, possibly linking with structural solutions with public authorities
- Demonstrate that collectively organised energy-related actions are **financially viable and attractive to the consumer-members** of the energy community.

The proposed action **could**:

- Address **split incentives** (e.g. allowing tenants to set up/join the consumer driven collective action)
- Demonstrate collective actions of energy consumers based on the solutions and business approaches using digital tools and technologies (**e.g. digital platforms or blockchain transactions**)

EC2-2018-2019: Mitigating household energy poverty

Challenge

- Ca. 50 million Europeans affected by energy poverty; roots of this phenomenon lie in low income and poor thermal insulation of buildings

Scope

Actions should contribute to actively alleviating energy poverty building on any existing initiatives (e.g. European Energy Poverty Observatory)

The proposed action should cover one or more of the following:

- Facilitate behaviour change and implementation of **low-cost energy efficiency measures** tailored for energy poor households
- Support the set-up of **financial and non-financial support schemes** for energy efficiency and/or small scale renewable energy investments for energy poor households
- Develop, test and disseminate **innovative schemes for energy efficiency/RES investments** established **by utilities** or other obligated parties **under Article 7**



CSA
100%

EUR 1-2 million



Energy Consumers- project examples

Relevant IEE projects <http://ec.europa.eu/energy/intelligent/projects>

Relevant H2020 projects http://cordis.europa.eu/projects/home_en.html

Energy Poverty	Collective actions and prosumers
ASSIST	RESCoop Plus
SMART-UP	CLEAR
FIESTA	Rescoop 20-20-20
TRIME	CO-POWER
EC-LINC	CLEAR 2.0
ACHIEVE	
REACH	

EE-13 Enabling next-generation of Smart Energy Services valorising energy efficiency and flexibility

Challenge

- Potential for Energy (Efficiency) Services not sufficiently tapped.
- New opportunities for innovative services and business models:
 - new sectors
 - new actors
 - new technologies -> new types of services
 - responding to the needs of consumers (e.g. comfort)
 - responding to the needs of the energy system and energy market
 - harnessing new sources of value and revenue streams
 - making use of more accurate data for better accounting and monitoring of savings and loads.



EE-13 Smart Energy Services

NB:

Actions should help prepare the ground for Innovation Actions under Call 2019!

General Scope 2018:

Actions developing integrated concepts and (business) models which

- enhance and refine successful EPC models
- engage new sectors and actors
- integrate energy efficiency services with other energy services (e.g. distributed generation or demand response) and non-energy services
- include pay for performance schemes
- include customer-individualised energy services
- factor in legal and contractual aspects



CSA
100%

EUR 1-2 million

EE-13 Smart Energy Services - 2019



Innovation Action - Call 2019

Demonstration and Testing of innovative energy services in a real environment,
while:

- tapping revenue streams across several market segments and actors in the value chain
- using innovative verification and monitoring measures
- considering legal and contractual aspects
- showing self-sustainability (with substantial contribution from EE and DR)
- incorporating results of specific future demo projects, if available (smart home interoperability; big data; grid services)

IA
70%

EUR 3-4 million



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**"ENERGY EFFICIENCY IS
AN INVESTMENT"**
Financing energy
efficiency projects

Research and
Innovation

Challenge

"Smart Financing for Smart Buildings" initiative

- **More effective use of public funding** (maximised leverage ratio of public funds to private finance)

Scope

- Set-up of new **innovative, operational financing schemes** (regional/national)
- **Replication of previously successful solutions** (e.g. developed/implemented under various PDA facilities, incl. ELENA of EIB)
- **Establishment of regional/national aggregators** able to develop large (standardized) project pipelines
- Creation of **EU or regional/national energy efficiency investment platforms**
 - Organising **dialogue** with and between the relevant stakeholders and
 - Developing **roadmaps**
 - Proposing **improvements in the legal frameworks**
 - Developing and validate standardised **template documents** and **contracts**

Clear **action plan** to communicate across Europe

Financing schemes:

- Tailored and innovative for the targeted regions and market segments
- Targeting specific areas (e.g. energy-intensive industries, buildings etc.)
- Demonstration of market potential, as well as business case and financial viability
(including investment sizes targeted, expected savings, transaction and management costs, expected returns etc.)

Exemplary financing schemes

Dedicated credit lines, guarantee facilities, factoring/forfeiting schemes, on-bill (e.g. utility-financed) or on-tax financing schemes, citizen financing (e.g. crowd-funding) for EE, financing models for deep renovation of buildings (property and rental market), schemes for different industry sectors and cross-sectorial initiatives, solutions integrating existing market-based instruments relevant for EE
(e.g. carbon finance instruments, including those under the EU ETS; EE obligations- art.7 EED, incl. white certificates etc.)

Innovative financing- project examples (H2020/EE)

CITYinvest

- Introduction of **innovative financing schemes** (revolving funds, EPC, third party financing, cooperative models etc.) in **3 pilot regions** (BE, BG, ES)
- **Large-scale capacity building** and training (for public authorities)

TrustEE

- **Investment fund** focused on **industrial energy efficiency**
- Fund-internal **guarantee facility** to reduce risks
- **Third Party Financing** – institutional investors

ESI Europe

- The proposal aims at replicating an innovative financing mechanism for energy efficiency (EE) in Europe, which **specifically targets SMEs**.
- an **energy savings insurance mechanism** – based on standardized contracts - with guarantees by technology providers and validation by independent experts.

EuroPACE

- financing energy renovations by linking debt to the property rather than to the owner and collecting debt repayment through property taxes.

Innovative financing– project examples (IEE)

Energie POSIT'IF:

- Pilot of energy performance contracting in condominiums
- All inclusive package: design, implement, finance, monitor
- As of June 2017, 26 contracts were signed with condominiums in the **Ile-de-France Region**, and up to 5,300 are or will be renovated. In total, €38million of investment
- EIB Loan for 100million€ signed backed by EFSI (Junker Plan)



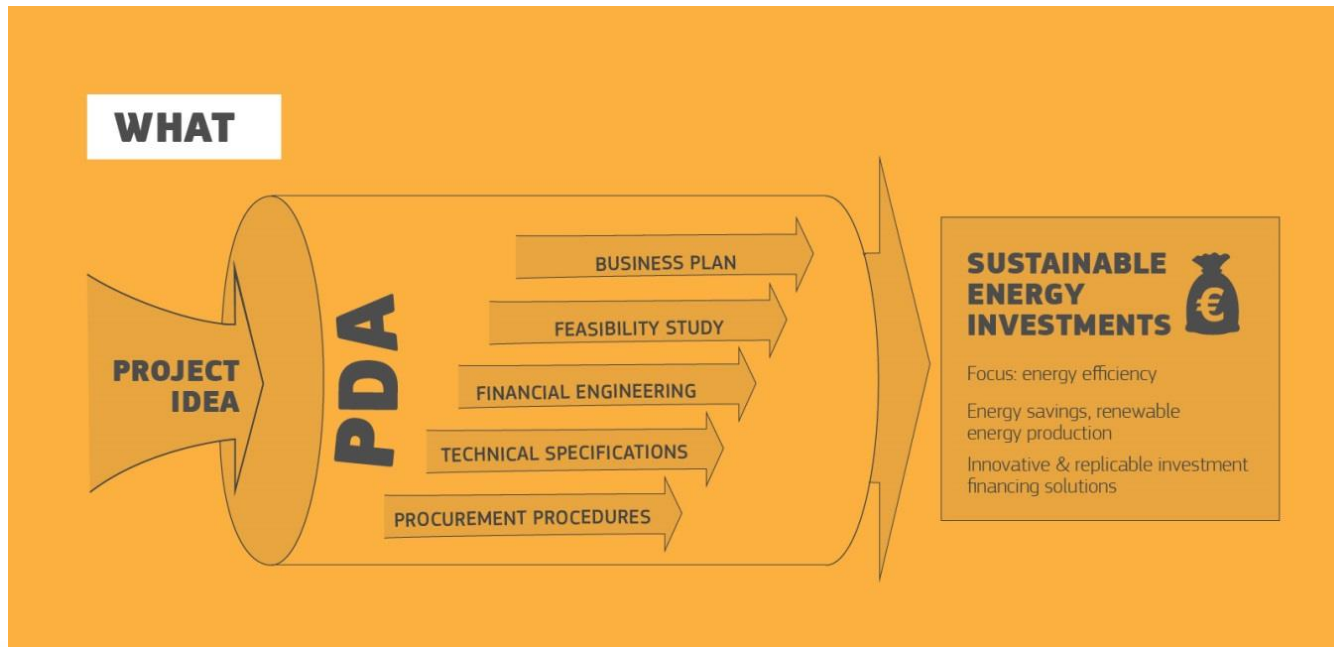
PDA in a nutshell

- Started in 2011 under the Intelligent Energy Europe programme and continued under H2020
- Build capacity and **projects pipelines** across Europe for sustainable energy investments
- **32 projects** funded triggering **>€771m** investments



What?

- Launch of concrete sustainable energy investment projects
- Building technical, economic and legal expertise



Who?

- **Public and private project promoters**

- e.g. public authorities or their groupings, public/private infrastructure operators and bodies, energy service companies, retail chains, large property owners and services/industry

- Proposals from 1 single entity are eligible!



Sectors targeted?

FOCUS ON...

ENERGY EFFICIENCY INVESTMENTS IN



Existing public and private buildings
Including social housing



Street lighting



Retrofitting of existing district heating/cooling



Urban transport



Industry and services

new: water/wastewater services

Size of investment portfolio: from EUR 7.5 million to EUR 50 million
For larger-scale investments: see [ELENA facility](#)



Main requirements

- **Lead to investments launched before end of the action** (i.e. signed contracts for sustainable energy investment – e.g. construction work, energy performance contract, turnkey contracts)
- **Every million Euro of H2020 support should trigger investments worth at least EUR 15 million (1:15)**
- Have an exemplary/showcase dimension in their ambition (i.e. reduced energy consumption and/or investment size)
- Deliver **organisational innovation in financial engineering** (e.g. on-bill financing schemes, guarantee funds, factoring funds) **and/or mobilisation of investment programme** (e.g. bundling, pooling, stakeholder engagement)
- Demonstrate high degree of **replicability** and include clear action plan to communicate experiences/results across EU towards potential replicators
- Build on the experiences from previous PDA

10 PDA projects

- supported under Horizon 2020 since 2014
- 2014 PDA projects: <http://europa.eu/!Mj83GK> (EE-11-2014)
- 2015 PDA projects: <http://europa.eu/!hX94qJ> (EE-11-2015)
- 2016 PDA projects: <http://europa.eu/!nd94rd> (EE-22-2016)

22 MLEI projects

- supported under Intelligent Energy Europe from 2011-2013
- <https://ec.europa.eu/easme/sites/easme-site/files/mlei-projects-2011-12.pdf>

More information and help

- Public workshop on innovative financing for energy efficiency and renewables: <http://bit.ly/1Ohtl42>
- Innovative financing for energy efficiency and renewables: feedback from successful projects: <http://bit.ly/1G7tMXC>
- Innovative financing solutions: experiences from IEE projects: <http://bit.ly/1G9L9VQ>



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***SUPPORT TO PUBLIC
AUTHORITIES TO BOOST
ENERGY TRANSITION***

Research and
Innovation

Challenge

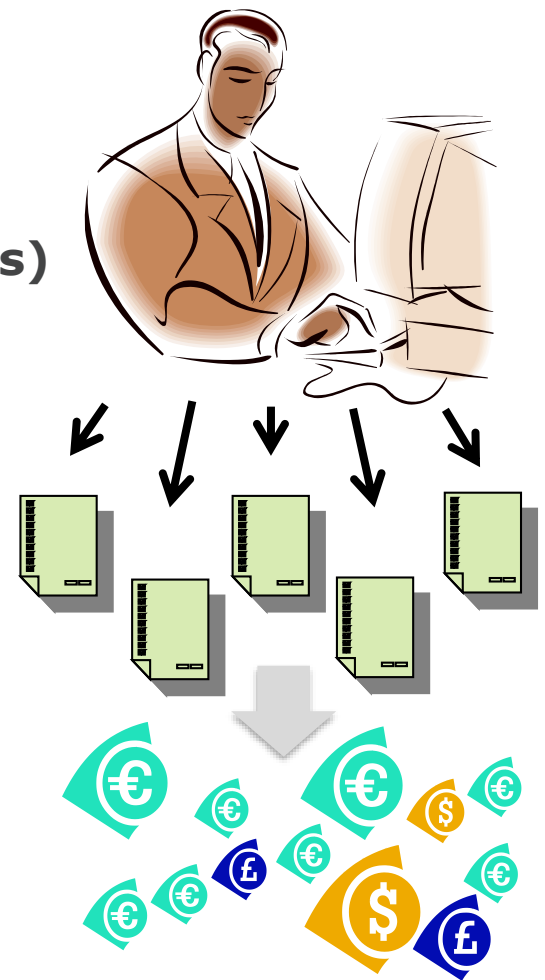
Cities and Communities are key actors for energy transition

- Tremendous potential for building substantial pipeline of investment projects across Europe (energy efficiency and renewable energy)
- Aggregation of smaller projects into sizeable packages
- Mobilisation of significant amount of finance needed
- **Barriers for tapping full potential**
 - Missing capacity of public authorities to **transform long-term strategies** (e.g. SEAPs) into credible, robust and sufficiently mature **investment concepts**
 - **Limited resources** with financial and legal expertise to:
 - Collect additional data
 - Design an investment programme of scale (e.g. pooling projects)
 - Develop adequate finance strategies

Scope

Set up/operation of 'European City Facility' offering financial support and services to large number of cities and municipalities (or groupings)

- To develop innovative investment concepts, covering:
 - Clear identification of potential project pipeline with critical investment scale (e.g. pooling projects and/or bundling with neighbouring communities- grouping of communities)
 - Financing strategy and process to launch investments, considering different financing routes
 - Legal and governance analysis etc.
- Within a limited period of time (e.g. 6-12 months)
- Via "cascade funding" (max. lump sum: EUR 60,000)



Mobilisation of investments

(incl. combination with EFSI, ESIF, PDA, investment platforms)

Implementation

- Approx. EUR 16 million
- Min. 80% directly benefitting cities/municipalities (or groupings)
- 10% for common activities/services underpinning European added value

Expected impacts

- Number of **investment concepts** (overall and transformed into investments)
- **Investments** (in sustainable energy) triggered by public authorities
- Increased leveraging of **finance into EE investments by public authorities**
- At least EUR 20 million EE investments triggered for every million EUR of H2020 support (**leverage 1:20**)
- **Primary energy savings, renewable energy production** triggered
- Public staff with **increased capacity to develop investible EE projects**
- **Innovation uptake** by potential replicators
- **Additional positive effects** (e.g. reduction of GHGs and /or air pollutants)

LC-SC3-EE-16-2019 Implementing the Energy Union: support to local and regional public authorities

Support to local & regional public authorities (scope a)

- **Improved monitoring and verification of energy efficiency savings at all governance levels**
 - Deliver higher quality and consistency of energy efficiency **measures** implemented through enhanced **coordination** of different administrative levels
 - Actions should lead to **politically approved** and **jointly applied** monitoring and verification schemes of energy efficiency measures across local and regional authorities, enhanced and better coordination of the energy efficiency measures implemented and more efficient use of **public spending** in energy efficiency
- **Ambition and long-term visions in energy and climate planning**
 - Support public authorities in the development of **transition roadmaps** that clearly outline the path to the European long-term **2050 targets** and inform the ongoing implementation of **SEAPs/SECAPs** or similar plans and the development of **future plans/targets** for 2030 and beyond
 - Actions should **link** closely to the Covenant of Mayors and/or Smart Cities and Communities initiatives

Support to local & regional public authorities (scope a)

- **Stakeholder and public engagement**

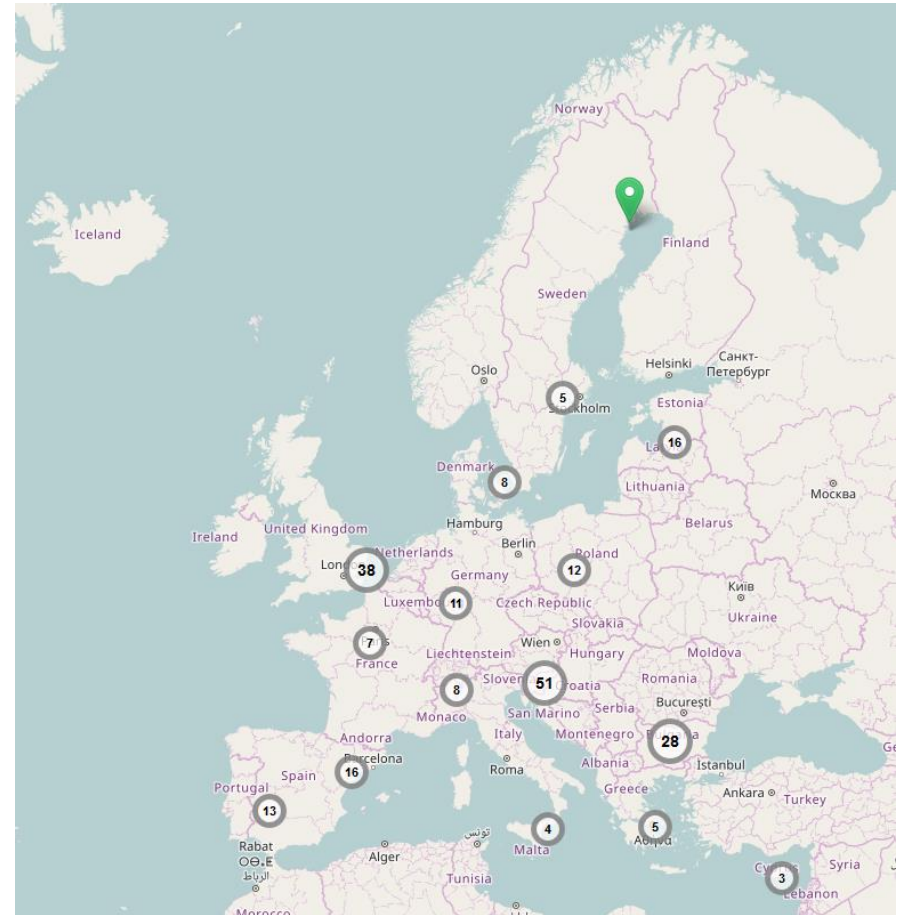
- **Innovative** ways to enable **public engagement** in the energy transition, developing interface capacities within public authorities to engage with **civil society**

- **Effective exchange between peers**

- Deliver **large-scale** and **action-oriented** peer-to-peer **learning programmes** targeting **cities** and/or **regions**, with a strong replication potential European-wide
- Proposals should develop transparent, effective and compelling programmes, building on existing initiatives and real needs and ensure embedded conditionalities such as institutionalisation of the **skill** base and impact monitoring
- Programmes should deliver **public entrepreneurs** able to **drive** the **sustainable energy transition** in their respective territories within the Covenant Mayors and beyond

Project examples

- [multEE](#)
- [Panel 2050](#)
- [Roadmaps for Energy](#)
- PROSPECT
- More projects on:
 - H2020 [Energy Efficiency Data Hub](#) (Topic: Public Authorities)
 - [Intelligent Energy Europe database](#)



Supporting the delivery of the Energy Efficiency Directive (Scope b)

- Actions assisting Member States to fulfil their obligations under the Energy Efficiency Directive
- Actions supporting its efficient implementation taking into account existing effective practices and experiences from across Europe
- Possible areas of work (non-exhaustive):
 - harmonisation of energy savings calculations under Art. 3
 - implementing Energy Efficiency Obligation Schemes or alternative measures and setting up effective and consistent monitoring and verification systems under Art. 7
 - removal of barriers to higher efficiency of the generation, transmission, distribution systems including demand response under Art. 15
- Build in existing initiatives and projects

Project examples

- H2020 EPATEE (<https://epatee.eu/>)

Raise the capacity of policymakers and implementers for policy evaluation by providing them with tools and practical knowledge to make consistent impact evaluation an integral part of the policy cycle



- IEE ENSPOL (<http://enspol.eu/>)

Improve the knowledge and capabilities of Member States with regards to the establishment, revision and implementation of robust Energy Efficiency Obligation schemes and alternative measures under Art. 7



- H2020 BUILD UPON (<http://buildupon.eu/>)

Support Member States in developing and implementing long-term renovation strategies under Art. 4





#H2020Energy

Horizon 2020 Work Programme for Research & Innovation 2018-2020

***POLICY MAKING SUPPORT AND
POLICY IMPLEMENTATION
SUPPORT***

Research and
Innovation

EE-14 Conceptualising Energy Efficiency First (2018) & Modelling Demand (2019)

Challenge

- European Union Strategy and Clean Energy for All Europeans:
 - Energy Efficiency recognised as an energy resource in its own right to compete on equal terms with generation and to have primary consideration in (MS) policies.
- However, not sufficiently understood and taken into account in financial and political decision making:
 - the structure of energy demand
 - the real value of energy efficiency & energy and non-energy impacts
- EE-14 addresses two different dimensions of this challenge:
 - making the energy efficiency first principle more operational (2018);
 - substantiating the demand side aspects in energy modelling (2019).



Research and Innovation Action - Call 2018

Scope

Actions helping make the Energy Efficiency First-principle more concrete and operational.

➔ Actions to qualify and quantify:

- how energy efficiency programmes (end-use, operation, transmission and generation/utilisation of resources) can compete with supply side investments
- how it interacts with other policy objectives (RES, climate, security of supply etc.) at policy level + level of implementation
- value of energy efficiency in the energy system (e.g. for generation/network adequacy etc.) and energy market (participation in and impacts on wholesale, balancing/reserve + capacity markets, impacts on prices and costs)

RIA
100%

EUR 1-1.5 million

EE-14 2019 - Modelling demand

Research and Innovation Action - Call 2019

The action should complement existing demand side energy models by developing

- multiple-agent energy models and/or modelling segments
- methodologies on how to improve and enhance the demand side aspects in modelling.

These models and/or methodologies should:

- model more accurately aspects not yet sufficiently considered in existing models;
- make use of new data sources, including big data (e.g. from smart meters)
- refine the structure and patterns of demand and how it will develop;
- be compatible with the energy models most commonly used at EU-level and contribute to an enhanced demand-side model at European level.



RIA
100%

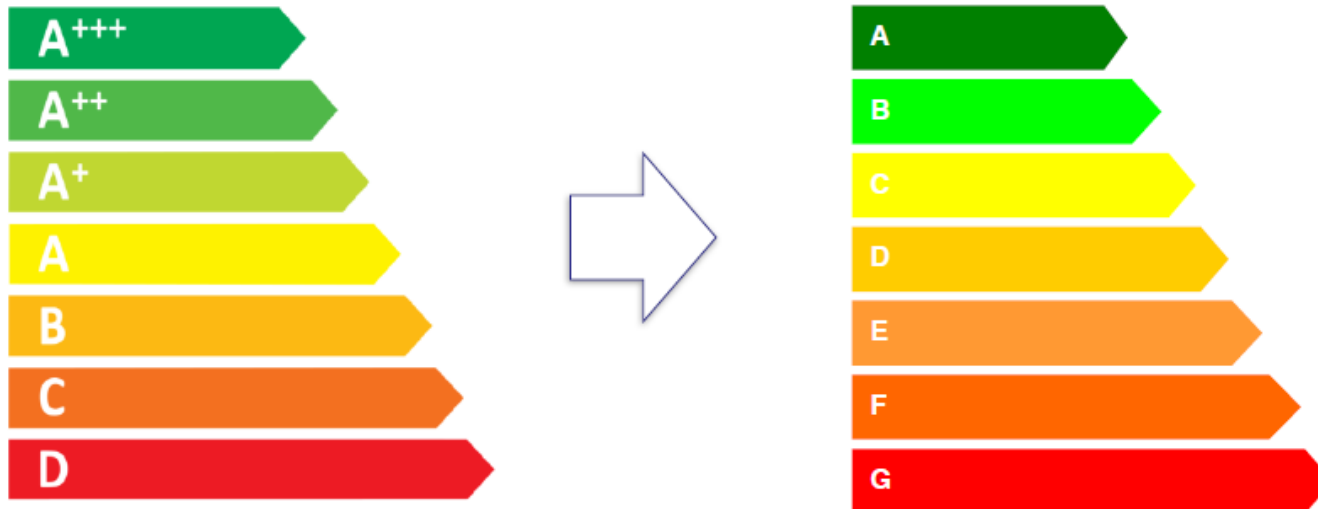
EUR 1-2 million

EE 15: New energy label- policy background

HISTORY OF ENERGY LABELLING



CHANGES IN THE NEW REGULATION – A to G LABEL SCALE



Improving the label's effectiveness

EE 15: New energy label- policy background

CHANGES IN THE NEW REGULATION – A to G LABEL SCALE

Timing for adopting rescaled labels?

02 August
2023

Derogations:

- Space heaters (811/2013 & 2015/1187)
- Water heaters (812/2013)

02 August
2030
at the latest

- Household dishwashers (1059/2010)
- Household refrigerating appliances (No 1060/2010)
- Household washing machines (1061/2010)
- Televisions (1062/2010)
- Electrical lamps and luminaires (874/2012)
- Household washer dryers (96/60/EC)

02
November
2018

First labels implemented in the course of 2020

EE 15: New energy label- policy background

CHANGES IN THE NEW REGULATION – DUTIES ON MEMBER STATES AND COMMISSION

Duties on Member States:

Educational and promotional information campaigns to accompany the introduction of labels and rescaled labels.

Duties on Commission:

Support Member States in relation to information campaigns.

Topic EE15

New energy label driving innovation in energy efficiency of products



EE 15: New energy label driving and boosting innovation in energy efficiency of products

Challenge:

- New Energy Labelling regulation foresees "rescaling"
- Challenging operation in terms of organisation and provision of information to concerned market actors
- Need to avoid confusion and replace labels within a short timeframe

Scope:

- Raise the capacity of manufacturers and, in particular, retailers;
- Develop and roll out tailored actions focusing on awareness raising and information campaigns for market actors;
- Exchange of best practices in relation to these campaigns;
- Inclusion of all relevant stakeholders

Art. 8 of the Energy Efficiency Directive

- (4) Member States shall ensure that enterprises that are not SMEs are subject to an energy audit carried out in an independent and cost-effective manner by qualified and/or accredited experts or implemented and supervised by independent authorities under national legislation by 5 December 2015 and at least every four years from the date of the previous energy audit.
- (2) Member States shall develop programmes to encourage SMEs to undergo energy audits and the subsequent implementation of the recommendations from these audits.

EE-08-2018-2019 : Capacity building programmes to support implementation of energy audits

Challenge:

- The lack of expertise, time and capital, including energy audit supporting scheme, often prevents SMEs from implementing energy conservation measures [...].
- The effectiveness of energy audit recommendations is also influenced by people's behaviours and the improvement of enterprises' energy cultures [...] in order to support large enterprises to concretely achieve energy savings.
- Member States to develop programmes encouraging SMEs to undergo energy audits and to implement the recommended energy-saving measures.

EE-08-2018-2019 : Capacity building programmes to support implementation of energy audits

Scope (1/3)

Staff trainings and capacity building programmes **facilitating SMEs to undergo energy audits** and to implement the recommended energy-saving measures.

Proposal shall focus on:

- SMEs specificities (size, lifetime of the company, national/local conditions, sectors, etc.)
- Highlighting the financial aspects
- Bridge the gap between Demand and supply side (SMEs, auditors, financial institutions, managing authorities of supporting schemes)
- Behavioural changes can also be addressed



Target Groups: **SMEs** (managerial and operational staff). The involvement of relevant stakeholders is also encouraged (e.g. multiplier organisations).



EUR 1-2 million



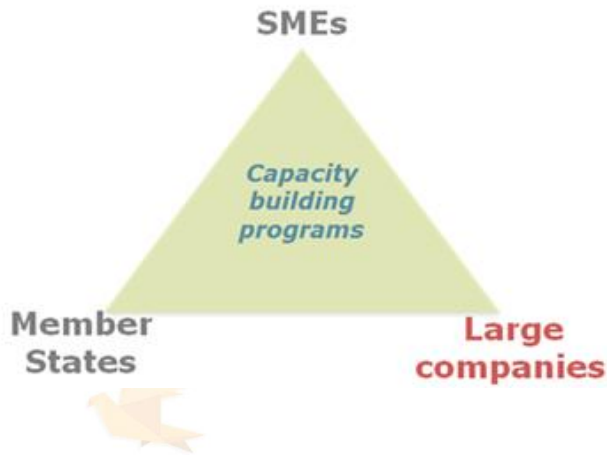
EE-08-2018-2019 : Capacity building programmes to support implementation of energy audits

Scope (2/3)

Capacity building programs supporting the **take-up of audits recommendations** and undertake the actions necessary to reduce energy consumption.

Proposal shall focus on:

- Boosting investment in sustainable energy (maintenance or investments in new equipment)
- Development of corporate policy measures
- Fostering behavioural change and enhancing energy corporate culture
- Building investments, in terms of financial, environmental and health impact



Target Groups: **Large companies** (managerial and operational staff) along with decision makers (e.g. board member) and different departments. The involvement of relevant stakeholders is also encouraged (e.g. multiplier organisations).



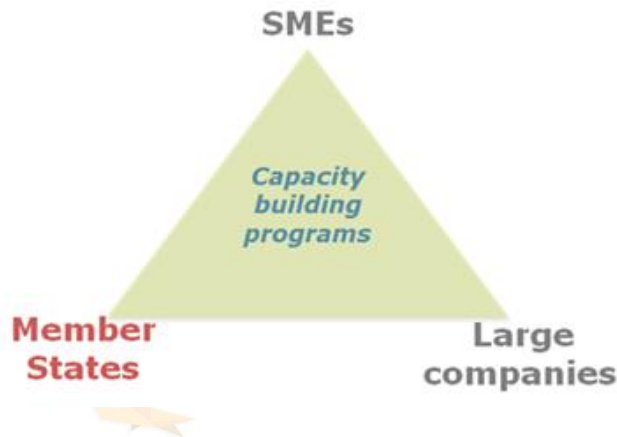
EUR 1-2 million



EE-08-2018-2019 : Capacity building programmes to support implementation of energy audits

Scope (3/3)

Initiatives supporting **Member States** in establishing **national supporting schemes for SMEs** providing appropriate incentives to undergo energy audits and/or to implement the recommended energy-saving measures.



Proposal shall focus also on:

Facilitating peer to peer review and fostering cross boarder collaboration among MSs

Fostering best practices exchange and knowledge-sharing on supporting schemes for SMEs

Development of financial tools (rotating funds/synergies with structural funds)

Target Groups: **Member States, Managing Authorities** (both at national, regional and local level). The involvement of relevant stakeholders is also encouraged (e.g. multiplier organisations).



EUR 1-2 million



List of relevant projects for the EE-08-2018-2019

IEE Database: <http://ec.europa.eu/energy/intelligent/projects/en>

- **STEEEP**
- **SME Energy Check-Up**
- **EMSPI**
- **ECOINFLOW**
- **EUREMplus**
- **SET**

H2020 Database: http://cordis.europa.eu/projects/home_en.html

- **EnergyWater**
- **ENERWATER**
- **WaterWatt**
- **STEAM-UP**
- **EE-METAL**

Note: This is not a restrictive list



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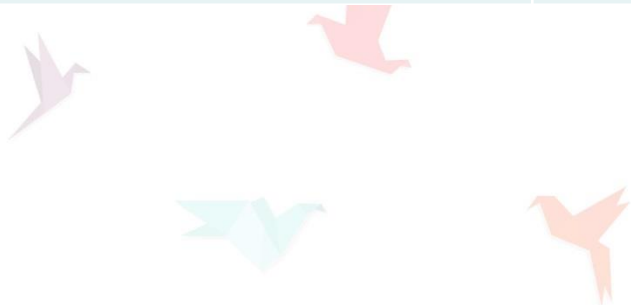
NMBP Programme Energy- efficient Buildings Private-Public Partnership Call 2019

Research and
Innovation

NMBP- EeB PPP

- **LC-EEB-01-2019: Integration of energy smart materials in non-residential buildings (IA)**
- **LC-EEB-03-2019: New developments in plus energy houses (IA)**
- **LC-EEB-05-2019-20: Integrated storage systems for residential buildings (IA)**

Topic	Deadlines
LC-EeB 01-2019	16 Oct.18 - 21 Feb. 2019
LC-EeB 03-2019	16 Oct.18 - 21 Feb. 2019
LC-EeB 05-2019	16 Oct.18 - 21 Feb. 2019





#H2020Energy

Horizon 2020 Work Programme for Research & Innovation 2018-2020

NMBP Programme

Topic LC-EeB-01-2019: Integration of energy smart materials in non-residential buildings

Contact person:

Olga Rio - Unit D3

DG Research & Innovation

Research and
Innovation

LC-EEB-01-2019: Integration of energy smart materials in non-residential buildings

Challenge:

Integration of high-efficiency insulation materials with active energy management components for smart energy storage.

Scope:

- development of lightweight components for building envelopes based on high-efficiency insulation materials combining active/passive management of energy transfers
- solutions:
 - ✓ for new and for retrofitting existing buildings.
 - ✓ allowing installation without modifying/overloading existing structures.
 - ✓ demonstrating a high replication and industrial potential and reduced maintenance costs
- modelling & development of novel testing methodologies for assessing the long-term performance (estimation of durability, service life).

EUR 4-6 million

*TRL
from 5 to 7*

*IA
70%*





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Horizon 2020 Work Programme for Research & Innovation 2018-2020

Industrial Innovation Information Days
Brussels 3-4 October 2017

NMBP Programme
Topic LC-EeB-03-2019: New
developments in plus energy houses

Contact Person:

Carlos SARAIVA MARTINS - Unit D2

DG Research & Innovation

Research and
Innovation

LC-EeB-03-2019: New developments in plus energy houses

Scope:

To develop further the concept of **Plus Energy Houses** that generate, over a year, more energy than is consumed. The energy surplus could be stored or feed into the grid

Demonstrations in **multi-storey apartment building** in each of the **4 climatic zones** (Mediterranean, Oceanic, Continental and Nordic)

- energy efficient design
- novel materials
- energy system integration
- data-based smart management and control systems
- standardisation issues
- financing

*EUR from 6-to
8 million(s)*

*TRL
5 - 7*

*IA
70%*



#H2020Energy

Horizon 2020 Work Programme for Research & Innovation 2018-2020

Industrial Innovation Information Days
Brussels 3-4 October 2017

NMBP Programme

**Topic LC-EeB-05-2019: Integrated
storage systems for residential
buildings**

José Riesgo - Unit D2
DG Research & Innovation

Research and
Innovation

LC- EeB 05 Integrated storage systems for residential buildings

Scope :

Develop short/ medium term solutions beyond water systems (thermochemical) considering space limitation.

Small scale demonstration (technical/ economical).

Solutions:

- Reduce thermal losses, pressure drops, improve heat exchange in and between storage material and heat carrier.
- High energy density storage materials ($< 100^{\circ}\text{C}$, X 10 Water)
- Innovative Reactor Components (heat exchanger)
- Advanced Energy management systems (safety).
- Easy to maintain and not expensive
- Scalability & compactness

*EUR 6-8
million*

**TRL
5-7**

*IA
70%*



#H2020Energy

Horizon 2020 Work Programme for Research & Innovation 2018-2020

ENERGY EFFICIENCY IN INDUSTRY

SUSTAINABLE PROCESS INDUSTRY (SPIRE)
LEIT-NMBP topics
(contact: RTD.D.2, Nicolas Segebarth)

<https://ec.europa.eu/programmes/horizon2020/en/nmbp-work-programme-2018-2020-preparation>

Research and
Innovation

Challenge:

Energy and cost intensive downstream processing operations are often linked to the inefficiencies in the upstream process (e.g. low conversion, formation of co-products, by-products and/or impurities).

Better integration of upstream and downstream unit operations can lead to significant resource and energy efficiency gains in the process industry.

Scope:

Development of economic and industrially viable process technologies providing a deeper integration of upstream and downstream operations.

- Consider modularity and flexibility, as well as potential for transition from batch to continuous operations,
- Increased in safety, productivity, purity and quality of products, as well as resource and energy efficiency while lowering the process environmental footprint, production costs and time to market,
- DEMOs must be included. In real industrial settings (added-value),
- Integration current industrial landscape and replicability to be considered.

TRL
From 5 to 7

IA 70%

EUR from 10 to 14
millions

CE-SPIRE-05-2019: Adaptation to variable feedstock through retrofitting

Challenge:

- **Long lifetime of the equipment** in the process industry (>30 years)
- Keeping facilities up to date both from **technological** and **regulatory** point of view (e.g., zero waste, circular economy).
- Increased **variability of inputs**, need for **higher flexibility and efficiency**

Scope :

- **Simulation models and decision support tools** (flexibility to use feedstock of variable composition, energy efficiency and product quality) including the detection of inefficiencies to support retrofitting;
- Develop **indicators to modify input variables** and its potential of replication across the industry;
- **Adapt equipment** → larger number and more diverse feedstock → transition to variability in quality, quantity and price of feedstock
- Demonstrate the **feasibility** and suitability at **industrial scale** in different process industries

EUR
(8-12 millions)



IA
50%

TRL
5-7



CE-SPIRE-06-2019: Digital technologies for improved performance in cognitive production plants

Challenge:

Shortage in raw materials, increased energy prices and environmental constraints require the European process industry to improve its **performance and flexibility**. **Digitisation** endows the production system with capabilities for analysis enabling the **autonomous operation** of the system based on embedded **cognitive reasoning**.

The system needs to be able to respond to these **dynamic fluctuations**, by adapting the production to stay within the target ranges of production costs and rate, as well as those of and sustainability parameters.

A fully **interactive and self-learning process control** integrated with management tools is essential to obtain an optimal efficiency, maintenance needs and product quality while increasing flexibility of the system in regard to changing feedstock, energy sources and product demand.

Scope:

Development of new technologies to realise **cognitive production plants** by use of smart and networked sensors, data processing and new methods of self-organised processes.

TRL
5-7

IA
70%



EUR (6-8 millions)





#H2020Energy

Horizon 2020 Work Programme for Research & Innovation 2018-2020

ENERGY EFFICIENCY IN INDUSTRY

SUSTAINABLE PROCESS INDUSTRY (SPIRE)
SC3 – Secure, clean and efficient energy topics

Research and
Innovation

LC-SC3-EE-6-2019: Business case for industrial waste heat/cold recovery- symbiosis in industrial parks – non-technological barriers

Challenge:

- Deployment of industrial waste heat/cold recovery in industry hindered by lack of financial/economic justification and non-technological barriers;
- Energy and fuels represent an important part of production costs;
- Sources of heat/cold losses can be a valuable resource.

CSA
100%

Scope:

Improve energy efficiency of industrial parks by one of the following approaches:

- Development **tools facilitating actual implementation of energy cooperation in industrial parks**. Including capacity building of company's management and other related stakeholders.
- Development and testing of **replicable business models and service concepts** for joint energy services in industrial parks (ESCO, other 3rd party organisations).

Proposals should:

- Address **legal issues** in order to adapt regulatory and legal frameworks
- Take into account **sustainability in time** and **replicability** to other industrial parks/business sectors

EUR 1-2
million


LC-SC3-RES-7-2019: Solar Energy in Industrial Processes

Specific Challenge:

- Large potential of applying solar thermal energy for industrial purposes

Scope:

- Solutions that cover the highest possible share of the heat and/or cold demand of one or more industrial processes by means of solar thermal energy (for heat the process temperature shall be higher than 150°C)
- Individual industrial sites and/or industrial parks (coupled to a district heating)



RIA 100%

**TRL
to 4-5**

***SMEs welcome
to participate***

EUR from 3 to 5 million

Thank you !

Work Programmes available online:

Societal Challenge 3:

<http://ec.europa.eu/programmes/horizon2020/en/h2020-section/secure-clean-and-efficient-energy>

NMBP:

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-leit-nmp_en.pdf

participant portal:

<http://ec.europa.eu/research/participants/portal/desktop/en/home.html>