Agentschap NL
Ministerie van Economische Zaken

Horizon 2020

Introduction to Horizon 2020 & the Societal challenge Energy including heat/cold

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» *Als het gaat om duurzaamheid, innovatie en internationaal*

A new programme

SEVENTH FRAMEWORK PROGRAMME

cip competitiveness and innovation framework programme 2007-2013

eit

2007-2013 → **2014-2020**

Horizon 2020 – three pillars

1. Excellent science

- European Research Council
- Future and Emerging Technologies
- Marie Curie actions
- Research infrastructures

2. Industrial Leadership

- **Enabling and industrial technologies**

  ICT, nanotechnologies, materials, biotechnology, manufacturing, space
- Access to risk finance
- Innovation in SMEs

3. Societal Challenges

- Health, demographic change and wellbeing
- Food security, sustainable agriculture, marine and maritime research & the bioeconomy
- **Secure, clean and efficient energy**
- Smart, green and integrated transport
- Climate action, resource efficiency and raw materials
- Inclusive, innovative and secure societies

Types of actions

Instruments (in pillar 2 en 3):

- Research & Innovation (100%) **– min 3 participants from 3 different countries**
- Innovation (70%) - **– min 3 participants from 3 different countries**

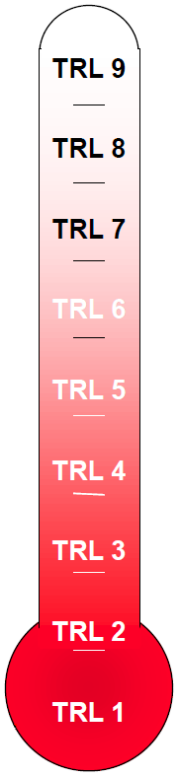
- SME – **one legal entity is sufficient, collabo. with knowledge institue can be a good idea esp. In phase 2**
- Fast Track to Innovation (vanaf 2015?)

- Procurement (PCP / PPI)
- Prize

- Coordination and Support Action (CSA)
- ERA-NET

Types of actions

Technology Readiness Levels (TRLs)



Full commercial application

System complete and qualified

Demo in operational environment

Demo in relevant environment

Technology validation in relevant environment

Technology validation in lab

Applied research / proof of concept

Technology concept formulation

Basic research

Idea

Horizon 2020

Energy Challenge

3 priority areas in 2014/2015

- **Energy Efficiency**
- **Low-carbon energy**
- **Smart cities**

Heating and cooling

	AREA	TRL	TYPE
Heating and cooling			
EE 13	Technology for district heating and cooling	4-6	RIA
EE 14	Removing market barriers to the uptake of efficient heating and cooling solutions		CSA

	AREA	TRL	TYPE
LCE 1	New knowledge and technologies	2 > 3-4	RIA
Renewable electricity and heating/cooling			
LCE 2	Developing the next generation technologies of renewable electricity and heating/cooling	3-4 > 4-5	RIA
LCE 3	Demonstration of renewable electricity and heating/cooling	5-6 > 6-7	IA
LCE 4	Market uptake of existing and emerging renewable electricity, heating and cooling technologies	7-9	CSA

Supporting the development of a European Research Area in the field of Energy			
LCE 18	Supporting Joint Actions on demonstration and validation of innovative energy solutions	5-6 > 6-7	ERA-NET
LCE 19	Supporting coordination of national R&D activities	2 > 5	CSA

EE 13 – 2014/2015: Technology for district heating and cooling

Develop, demonstrate and deploy a new generation of highly efficient, intelligent **district heating and cooling systems** which are capable of integrating multiple efficient generation sources, including different kinds of renewable energy, **cogeneration**, **waste heat** from industrial or other sources and storage, and which can be operated at different temperature levels. Such systems can be **new schemes or refurbished and optimised existing DH systems**. These systems might combine hybrid technologies and/or new thermal carrier fluids to improve the overall efficiency; help decrease the end user cost of transporting heating and cooling energy, be compatible and connected with intelligent electricity and gas networks; and utilize surplus electricity from the grid. Such systems should be compatible with and capable of integration with low energy buildings, including nearly zero energy buildings (e.g. by means of low temperature district heating).

Bring down heat distribution losses and integrate storage through the use of innovative pipe and storage design, high performance insulation materials, reduced operating temperatures, intelligent, efficient system for fluid handling or intelligent metering, control and grid optimisation strategies, including from analysing smart meter data, consumer interaction and behaviour.

Develop **optimisation, control, metering, planning and modelling tools** such as intelligent thermal agile controllers embedding self-learning algorithms which help to optimise the overall efficiency of technology-hybrid systems and IT supervision systems capable of delivering real-time performance indicators, which are likely to modify consumption behaviour.

Develop **new solutions for low temperature heat recovery and recirculation**

The activities are expected to be implemented at **TRL 4-6**.

Average grant size: EUR 1.5 and 2 million

Innovative energy systems integrating the electricity grid and the heating/cooling grid (and possibly also energy storage), TRL 6-8, should be addressed in LCE7 and/or LCE8

EE 14 - 2014/2015: Removing market barriers to the uptake of efficient heating and cooling solutions

Individual heating and cooling: Innovative measures to accelerate the replacement of old, inefficient space heaters and packaged cooling systems with products having A+++ to A+ energy labels. The replacement should not lock out energy savings from other energy measures in the rest of the building/system.

Inspection of heating and cooling systems: support for the implementation of inspection in heating and cooling systems as indicated in Articles 14 and 15 of the EPBD. This includes actions using monitoring and ICT as ways to reduce the need for physical inspections. Actions could also support the provision of advice to users as well as monitoring the results of advice.

For industrial heating/cooling:

o deploy effective heating/cooling solutions in industry that integrate demand and supply;

o deploy renewable heating and cooling solutions in relevant industrial sectors (e.g. food and drink industries);

o contribute to identifying, developing, and promoting new markets for the recovery of heat from industry by putting stakeholders together, including activities aiming at supporting public acceptance of waste heat recovery projects;

o exchange of information and knowledge.

Energy supply systems: Proposals should lead to the opening up of new markets for the most efficient large, medium or small scale systems, potentially including solar cooling systems. They should build on experience from existing best practice examples. Proposals could address the development and implementation of: a) support and incentive schemes, b) organisational, managerial and business innovative models and c) new regulatory frameworks and codes that lead to substantial growth and improved transparency. Proposals could include activities aimed at improving the performance of existing systems as an example to encourage further use of these technologies.

For district heating/cooling industry: develop good practice, licensing criteria, efficiency benchmarks and consumer protection codes to improve the transparency of the market and increase consumer trust. Ensure exchange of information, knowledge of using best practice examples and knowledge of consumer practices, motivations and barriers.

Develop and demonstrate the tools and methodologies required to conduct the heating and cooling planning procedures necessary at the member state and EU level, such as energy system analysis using CHP and energy storage, geographical information systems (GIS) for matching heat supply and demand, as well as measures to overcome implementation challenges. These should make it possible for local communities and member states to develop strategies for the achievement of the overall EU targets.

LCE 2

2014:

i. *Solar cooling systems* – Solar cooling systems reliability remains uncertain causing high installation and operation costs and hampering acceptance Innovative solutions are needed to reduce the complexity of the installation, to improve components performance and reliability, and to ensure cost reductions.

ii. *Improving efficiency of biomass CHP systems while widening the feedstock base* – Micro and small-scale CHP (0.5-250 kW and 0.25-1 MW input power respectively) have a high potential for heat and electricity production for decentralized applications. Cost effective, robust and environmentally friendly micro and small-scale CHP systems with high thermal and electrical efficiency need to be developed allowing the use of solid, liquid or gaseous sustainable biomass feedstock, such as agricultural and forest residues, upgraded solid or liquid bioenergy carriers with higher energy density, industrial by-products and biogas/biomethane.

LCE2

2015:

Solar heating for industrial processes– The potential benefit of using solar heat above 200°C in industrial processes has been already acknowledged. Innovative concepts, processes and technologies for these applications are needed which can be easily integrated into existing industrial plants and processes.

ii. *Improving efficiency of low emission biomass CHP systems while widening the feedstock base* – Current residential-scale boilers can combust only one type of feedstock (e.g. wood chips, wood pellets). New flexible and robust residential-scale low emission boilers for heat applications need to be developed using a wider range of sustainable feedstock (including mixtures) with high ash content such as agricultural and forest residues, upgraded solid or liquid bioenergy carriers with higher energy density and industrial byproducts.

LCE 3

2014:

Shallow geothermal energy: Improved vertical borehole drilling technologies to enhance safety and reduce costs – Shallow geothermal energy systems are ideally suited to meet the ambitious energy saving targets of the EU. They can provide heating and/or cooling or both. Further improvement of the efficiency of shallow geothermal systems and reduction of installation costs are needed to increase deployment of these geothermal systems for the heating & cooling market.

LCE 3

2015:

Demonstration of solar technologies for residential and non-residential buildings - The use of solar energy for the production of domestic hot water and for space heating needs to increase to make full use of this renewable energy source. Innovative and cost-effective solutions in terms of components and system design and with a higher share of heating supplied by solar energy need to be demonstrated.

Evaluation of LCE 2 & 3

Two topics open for all renewables!

The share of the EU contribution benefitting one single technology area:

1)from topics LCE 2 and LCE 11, research & innovation actions in the field of renewables (electricity, heat, cooling and fuels), shall not exceed 25% of the total budget dedicated to these topics,

2)from topics LCE 3 and LCE 12 , innovation actions in the field of renewables (electricity, heat, cooling and fuels), shall not exceed 33% of the total budget dedicated to these topics.

LCE 4 – 2014/2015: Market uptake of existing and emerging renewable electricity, heating and cooling technologies

Ensuring sustained **public acceptance of renewable energy projects** and renewable energy overall, while taking into account the implications of the substantial increase in RES share in the final energy consumption;

Ensuring speedy and user friendly **permitting procedures**;

Implementing renewable energy **policies, codes and legislations** at EU, national, regional and local levels in a coordinated manner using best practice examples with significant replication potential;

Capacity building and contributing to the further development of renewable energy policy, legislation and regulation, and informing the debate on post-2020 horizons;

Capacity building and facilitating the deployment of improved business models and innovative financing schemes for mobilising investments in innovative and established renewable energy systems and services.

TRL 7-9

Budgets

Topics*	Short-hand Description	2014	2015
LCE1	New knoweldge & tech.	20	
LCE2, LCE11	RES – Research	60*	59*
LCE3, LCE12	RES - Demonstration	73*	80*
LCE4, LCE14	Market uptake	20	20

Deadlines

Topics*	2014		2015
LCE1, LCE2, LCE11, LCE15, LCE16	01/04/2014 (Stage 1)	23/09/2014 (Stage 2)	
LCE22	01/04/2014		
LCE4, LCE7, LCE8, LCE10, LCE14, LCE18	07/05/2014		
LCE1, LCE2, LCE11, LCE15, LCE17	03/09/2014 (Stage 1)		03/03/2015 (Stage 2)
LCE3, LCE12, LCE19, LCE20	10/09/2014		
LCE3, LCE12, LCE19, LCE21 LCE4, LCE5, LCE6, LCE9, LCE14			03/03/2015
LCE18			28/04/2015
LCE13			05/05/2015

Simplification of rules for participation

Subsidy:
- Direct costs+ 25% overhead
  Incl research infrastructur
- Subsidy 100% except for *close-to-market = 70%*
  Non-profit poss.100% *close-to-market*

- Shorter *time-to-grant*
- Max 1 audit per project
- Digital signing of documents via Participant Portal
- …

Call for Experts

have high-level of expertise in the relevant fields of research and innovation (see call for details on types of expertise)

can be available for occasional, short-term assignments

Experts, as peer reviewers, assist in the:
evaluation of proposals
monitoring of actions

In addition, experts assist in the :
preparation, implementation or evaluation of programmes and **design** of **policies**.
Assignments mainly concern research and innovation, falling within the Horizon 2020 programme designed to address the challenges Europe is facing through funding excellent science, technology and innovation.

Go to http://ec.europa.eu/research/participants/portal/desktop/en/experts/index.html to register as an expert!

What has been done so far?

Go to Cordis – **Find a project** (database)

http://cordis.europa.eu/fp7/projects_en.html

Or

RVO - **Dashbord**

http://kp7.eglwiki.nl/_php/dashboard.php?landcode=NL&nutscode=&pic=&zoekterm=

How can
RVO help you?

Your National Contact Point for Horizon 2020

Netherlands Enterprise Agency (RVO)

Website and newsletter

Knowledge & advice

Trainings & workshops

Partnersearch

Call us, email us of meet us

In welke Europese call kan ik indienen?

Welke partners heb ik nodig?

Maak ik kans?

Wat zijn de financiële en juridische consequenties?

Hoe schrijf ik een succesvol proposal?

Hoe leg ik Contact met Brussel?

Contact

Netherlands Enterprise Agency (RVO)

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