



Funded Projects under Horizon 2020

Secure, clean and efficient energy

Low-Carbon Energy Calls 2014

Source: European Union Open Data Portal

(<https://open-data.europa.eu/en/data/dataset/cordis-h2020projects-under-horizon-2020-2014-2020>)

Status: June 2015

Compilation: NCP Energy Germany

This document gives information on calls and funded projects of the EU Framework Programme for Research and Innovation Horizon 2020 for the Societal Challenge – Secure, clean and efficient energy for the year 2014.

The data used in this document was extracted from the tables available at the website of the European Union Open Data Portal. More data is available in those tables.

List of abbreviations:

Type of Action:

IA: Innovation action

RIA: Research and Innovation action

CSA: Coordination and Support action

Structure of the document:

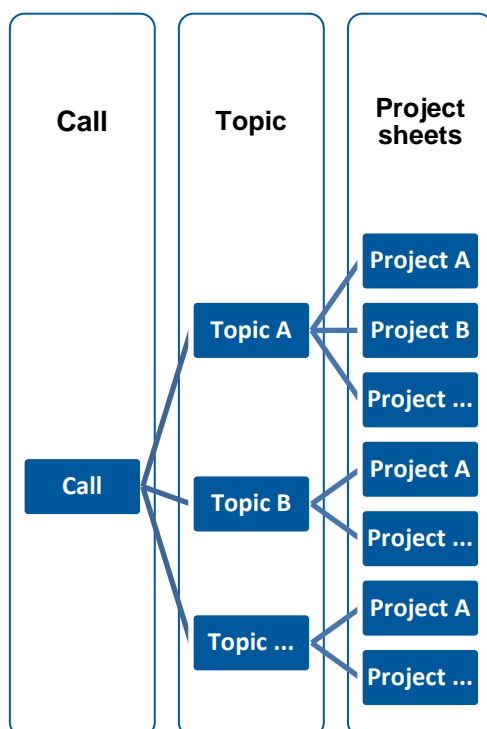
List of Calls

Table: Overview of all Energy Efficiency Calls in 2014

Individual Call:

Table: List of topics

Project sheets of projects belonging to a topic following the structure below:



Secure, clean and efficient energy

List of Calls Low-Carbon Energy

Work Programme 2014

H2020-LCE-2014-1	
Budget: 113 Mio.€	Deadline: 01.04.2014
Topic	Title
LCE-01	New knowledge and technologies
LCE-02	Developing the next generation technologies of renewable electricity and heating/cooling
LCE-11	Developing next generation technologies for biofuels and sustainable alternative fuels
LCE-15	Enabling decarbonisation of the fossil fuel-based power sector and energy intensive industry through CCS
LCE-16	Understanding, preventing and mitigating the potential environmental impacts and risks of shale gas exploration and exploitation

H2020-LCE-2014-2	
Budget: 86.5 Mio.€	Deadline: 10.09.2014
Topic	Title
LCE-03	Demonstration of renewable electricity and heating/cooling technologies
LCE-12	Demonstrating advanced biofuel technologies
LCE-19	Supporting coordination of national R&D activities
LCE-20	The human factor in the energy system

H2020-LCE-2014-3	
Budget: 158.4 Mio.€	Deadline: 07.05.2014
Topic	Title
LCE-04	Market uptake of existing and emerging renewable electricity, heating and cooling technologies
LCE-07	Distribution grid and retail market
LCE-08	Local / small-scale storage

LCE-10	Next generation technologies for energy storage
LCE-14	Market uptake of existing and emerging sustainable bioenergy
LCE-18	Supporting Joint Actions on demonstration and validation of innovative energy solutions

H2020-LCE-2014-4**Budget: 1.5 Mio.€****Deadline: 01.04.2014****Topic Title**

LCE-22 Fostering the network of National Contact Points

CALL: H2020-LCE-2014-1

Topic	Title	Number of funded projects	Total EU-contribution [€]
LCE-01	New knowledge and technologies	5	18,249,638.00
LCE-02	Developing the next generation technologies of renewable electricity and heating/cooling	8	46,784,189.18
LCE-11	Developing next generation technologies for biofuels and sustainable alternative fuels	2	10,597,665.00
LCE-15	Enabling decarbonisation of the fossil fuel-based power sector and energy intensive industry through CCS	2	21,747,072.30
LCE-16	Understanding, preventing and mitigating the potential environmental impacts and risks of shale gas exploration and exploitation	4	11,540,566.80
Total		21	108,919,131.28

Topic LCE-01 – Projects:

Acronym: SWInG	
Title: Development of thin film Solar cells based on Wide band Gap kesterite absorbers	
Starting date: 01.06.2015	End date: 01.06.2018
Total cost: 3,254,755 €	EU max. contribution: 3,254,755 €
Type of Action: RIA	
Coordinator: Interuniversitair Micro-Electronicacentrum IMEC VZW (BE)	
Participants:	
<ul style="list-style-type: none"> ▪ Zentrum fuer Sonnenenergie- und Wasserstoff-Forschung Baden-Wuerttembergstiftung; ▪ Helmholtz-Zentrum Berlin fuer Materialien und Energie GmbH; ▪ Universiteit Gent; 	<ul style="list-style-type: none"> ▪ Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek TNO; ▪ Centre National de La Recherche Scientifique; ▪ Midsummer AB
Countries: DE; BE; NL; FR; SE	
Objectives:	
<p>The aim of this proposal is to develop wide band gap thin film solar cells based on kesterite absorbers for future application in high efficiency and low cost tandem PV devices. The SWInG working group will focus both on the development of the processes for the synthesis of such solar cells based on the Cu_2ZnXY_4 (with $X=Sn, Si$ and $Y= S, Se$) compounds and on the understanding of the physical and electrical properties of the high band gap absorber in order to reach high conversion efficiency. The key research challenges will be: developing up-scalable processes for the synthesis of the absorbers; defining the specifications for high quality wide band gap absorbers as well as suitable back contact and buffer/window layers; assessing the potential of this technology for PV applications. The wide band gap thin films solar cells developed in this project are expected to reach a stable efficiency of 15 % on a laboratory scale and 12 % for a mini-module prototype. The publications of specifications for the synthesis of high quality Cu_2ZnXY_4 absorber as well as suitable back/front contact are expected. The lead users will be PV modules manufacturers that work so far with thin films technologies, as well as the companies that design and produce the machines for the synthesis of such devices. The results will be disseminated and communicated to the European PV industries and the scientific community. The intensive exchange of researchers between the partners during the project will also lead to an enhanced European collaboration in the research field of thin film solar cells.</p>	

Acronym: WETFEET	
Title: Wave Energy Transition to Future by Evolution of Engineering and Technology	
Starting date: 01.05.2015	Starting date: 01.05.2018
Total cost: 3,456,883.75 €	Total cost: 3,456,883.25 €
Type of Action: RIA	
Coordinator: Wavec/Offshore Renewables - Centro de Energia Offshore Associacao (PT)	
Participants:	
<ul style="list-style-type: none"> ▪ Aurora Ventures Limited; ▪ University of Plymouth; ▪ Innosea; ▪ Instituto Superior Tecnico; ▪ Teamwork Technology BV; ▪ EDP Inovacao SA; 	<ul style="list-style-type: none"> ▪ The University of Edinburgh; ▪ Universitat Linz; ▪ Trelleborg Ridderkerk BV; ▪ Selmar SRL; ▪ Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna
Countries: UK; FR; PT; NL; AT; IT	
Objectives:	
<p>The recent experience with ocean wave energy have revealed issues with reliability of technical components, survivability, high development costs and risks, long time to market, as well as industrial scalability of proposed and tested technologies. However the potential of wave energy is vast, and also positive conclusions have been drawn, in particular that wave energy is generally technically feasible.</p> <p>Having substantial insight into successes and drawbacks in past developments and existing concepts, the promoters have identified 'breakthrough features' that address the above mentioned obstacles, i.e. components, systems and processes, as well as the respective IP. These breakthroughs are applied to two wave concepts, the OWC and the Symphony, under development by members of the consortium. The following main avenues have been identified:</p> <ol style="list-style-type: none"> 1. Survivability breakthrough via device submergence under storm conditions; 2. O&M (operation and maintenance) breakthrough via continuous submergence and adaption of components and strategies; 3. PTO breakthrough via dielectric membrane alternatives to the "classical" electro-mechanical power take-off equipment; 4. Array breakthrough via sharing of mooring and electrical connections between nearby devices, as well as integral approach to device interaction and compact aggregates; <p>WETFEET addressees Low-carbon Energies specific challenges by targeting a set of breakthroughs for wave energy technology, an infant clean energy technology with vast potential.</p> <p>The breakthrough features of WETFEET are developed and tested on the platform of two specific converter types (OWC and Symphony) with near-term commercial interest, and a large part of the results can make a general contribution to the sector, being implemented in other technologies.</p>	

Acronym: RED-Heat-to-Power	
Title: Conversion of Low Grade Heat to Power through closed loop Reverse Electro-Dialysis	
Starting date: 01.05.2015	Starting date: 01.05.2019
Total cost: 4,130,272.50 €	Total cost: 3,992,402.25 €
Type of Action: RIA	
Coordinator: Wirtschaft und Infrastruktur GmbH & CO Planungs KG (DE)	
Participants:	
<ul style="list-style-type: none"> ▪ Redstack BV; ▪ Fujifilm Manufacturing Europe BV; ▪ The University of Edinburgh; ▪ Universitat Politecnica de Catalunya; 	<ul style="list-style-type: none"> ▪ Centro de Investigaciones Energeticas, Medioambientales y Tecnologicas-Ciemat; ▪ Universita degli Studi di Palermo
Countries: NL; UK; ES; IT	
Objectives:	
<p>The concept is based on the generation of electricity from salinity gradient using Reverse Electro-dialysis with artificial saline solutions operating in a closed-loop. The original salinity gradient is regenerated by a separation step that uses heat at 40 - 100 C.</p> <p>The regenerated solutions can be stored at very low costs and the stack can react within seconds, providing flexibility to the power system. It is a quiet technology operating under normal pressures and temperatures imposing no risks. The industrial partners ensures the MRL will be kept aligned with the advances in TRL.</p> <p>The overall objective is to prove this revolutionary concept, develop the necessary materials, components and know-how for bringing it to the level of a lab prototype generating electricity from low-grade heat at higher efficiencies and lower costs than ever achieved to date. Specific objectives:</p> <p>Select the most suitable technologies for the regeneration process and the combinations of salts and solvents that can maximise the system performance.</p> <p>Create new knowledge for developing: membranes for the selected solutions; membrane manufacturing concepts that can be scaled-up for high volume and low-cost production; efficient stacks suitable for this application; energy efficient regeneration processes.</p> <p>Implement and validate a process simulation tool to analyse the performance under different configurations and operating conditions.</p> <p>Evaluate and improve the performance of the overall system through tests on a lab-prototype, identifying potential up-scaling and operational issues (System efficiencies reaching 15% and power densities of 25 W/m² of cell pair).</p> <p>Define a development roadmap, taking into account environmental, social and regulatory issues, leading to levelised cost of electricity below 0.03 Euro/kWh by 2025 to 2030.</p> <p>Involve target group representatives to the Advisory Board and communicate the key results in order to initiate a dialogue and facilitate the engagement of key actors.</p>	

Acronym: Nano-Tandem	
Title: Nanowire based Tandem Solar Cells	
Starting date: 01.05.2015	Starting date: 01.05.2019
Total cost: 4,332,341.50 €	Total cost: 3,561,841.50 €
Type of Action: RIA	
Coordinator: Lunds Universitet (SE)	
Participants:	
<ul style="list-style-type: none"> ▪ Sol Voltaics AB; ▪ Universite Paris-Sud; ▪ IBM Research GmbH; 	<ul style="list-style-type: none"> ▪ Universiteit Leiden; ▪ Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV
Countries: SE; FR; CH; NL; DE	
Objectives:	
<p>Silicon based photovoltaic cells are the dominant technology for terrestrial solar energy conversion. After many decades of research and development, efficiencies are today flat with the best devices measuring 25 % in the laboratory. Significantly higher conversion efficiencies up to 38.8 % are so far only reached with multi-junction cells based on III-V semiconductors. However, these materials are too expensive for the use in flat-plate modules. Nanowires allow to significantly reduce material needs without compromising absorption or performance. The consortium has already shown InP single-junction nanowire solar cells on InP substrate, reaching world-record efficiencies of 13.8 % and using only 12 % of the volume of a conventional bulk solar cell. Combining III-V nanowires with today's silicon photovoltaic technology offers the potential to reach at the same time very high performance devices, efficient use of materials and low cost. In this project we are aiming to demonstrate an experimental proof of a tandem solar cell composed of a top pn-junction formed in III V nanowires and series connected to a bottom pn-junction formed in silicon. Such solar cell devices are either fabricated by direct growth of the nanowires on Si or by transferring a film of nanowires embedded in a polymer onto a Si bottom cell. Besides developing the best process to demonstrate such tandem solar cells with > 25 % efficiency, we are also addressing the important aspect of scaling up the technology to large areas. To reach this objective, we are developing technologies for large area III V nanowire arrays (> 10 cm²) based on nano-imprint technology and epitaxial growth or on a new vapour phase growth method of nanowire aerotaxy. The wide-spread application of nano-materials and III-V compounds in photovoltaics further requires an in depth analysis of ecological and health related risks. In this project we are addressing this important issue already at an early stage of the development.</p>	

Acronym: GreenDiamond	
Title: Green Electronics with Diamond Power Devices	
Starting date: 01.05.2015	Starting date: 01.05.2019
Total cost: 4,443,920 €	Total cost: 3,983,756 €
Type of Action: RIA	
Coordinator: Centre National de La Recherche Scientifique (FR)	
Participants:	
<ul style="list-style-type: none"> ▪ University College London; ▪ Cambridge Microelectronics Ltd; ▪ Fundacion Tecnalia Research & Innovation; ▪ Universidad de Cadiz; ▪ Installation Europeenne de Rayonnement Synchrotron; ▪ Wind Inertia Technologies S.L.; ▪ Ion Beam Services; ▪ Kurt Salmon Luxembourg S.A.; 	<ul style="list-style-type: none"> ▪ Interuniversitair Micro-Electronicacentrum IMEC VZW; ▪ Agencia Estatal Consejo Superior de Investigaciones Cientificas; ▪ Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV; ▪ The Chancellor, Masters and Scholars of the University of Cambridge; ▪ Commissariat A L Energie Atomique et aux Energies Alternatives
Countries: UK; ES; FR; LU; BE; DE	
Objectives:	
<p>The key to the efficient transmission and conversion of low-carbon electrical energy is the improvement of power electronic devices. Diamond is considered to be the ultimate wide bandgap semiconductor material for applications in high power electronics due to its exceptional thermal and electronic properties. Two recent developments - the emergence of commercially available electronic grade single crystals and a scientific breakthrough in creating a MOS channel in diamond technology, have now opened new opportunities for the fabrication and commercialisation of diamond power transistors.</p> <p>These will result in substantial improvements in the performance of power electronic systems by offering higher blocking voltages, improved efficiency and reliability, as well as reduced thermal requirements thus opening the door to more efficient green electronic systems. These improvements are expected to increase the efficiency of power converters by a factor of 4, yielding a 75% reduction in losses. In this context, the objective of GreenDiamond is to fabricate a 10kV transistor in a high power package, followed by a high voltage AC/DC converter based on such devices.</p> <p>To meet GreenDiamond's challenging goals, the consortium gathers experts on power device design, diamond growth and characterization, packaging and testing as well as an innovative end-user. Most of the partners are also involved in SiC or GaN technology, allowing the project to benefit from their ample experience and achievements in wide bandgap semiconductors. As far as diamond transistor structure is concerned, unlike GaN and SiC, Europe still has a significant scientific and technological advantage over non-EU competitors. It is therefore extremely important to maintain the competitive edge that will lead the development of truly green electronics in the near to medium term future.</p>	

Topic LCE-02 – Projects:

Acronym: LIFES 50plus	
Title: Qualification of innovative floating substructures for 10MW wind turbines and water depths greater than 50m	
Starting date: 01.06.2015	Starting date: 01.10.2018
Total cost: 7,274,837.50 €	Total cost: 7,274,837.50 €
Type of Action: RIA	
Coordinator: Norsk Marinteknisk Forskningsinstitutt AS (NO)	
Participants:	
<ul style="list-style-type: none"> ▪ Politecnico di Milano; ▪ Dr Techn Olav Olsen AS; ▪ Germanischer Lloyd Industrial Services GmbH; ▪ Ideol; ▪ Universitaet Stuttgart; ▪ Offshore Renewable Energy Catapult; 	<ul style="list-style-type: none"> ▪ Ramboll Management Consulting GmbH; ▪ Iberdrola Ingenieria y Construccion SA; ▪ Fundacio Institut de Recerca de L'energia de Catalunya; ▪ Danmarks Tekniske Universitet; ▪ Fundacion Tecnalia Research & Innovation
Countries: IT; NO; DE; FR; UK; ES; DK	
Objectives:	
<p>The focus of the project will be on floating wind turbines installed at water depths from 50m to about 200m. The consortium partners have chosen to focus on large wind turbines (in the region of 10MW), which are seen as the most effective way of reducing the Levelized Cost of Energy (LCOE). The objective of the proposed project is two-fold: 1. Optimize and qualify, to a TRL5 level, two (2) substructure concepts for 10MW turbines. The chosen concepts will be taken from an existing list of four (4) TRL>4 candidates currently supporting turbines in the region of 5MW. The selection of the two concepts will be made based on technical, economical, and industrial criteria. An existing reference 10MW wind turbine design will be used throughout the project. 2. More generally, develop a streamlined and KPI-based methodology for the design and qualification process, focusing on technical, economical, and industrial aspects. This methodology will be supported by existing numerical tools, and targeted development and experimental work. It is expected that resulting guidelines/recommended practices will facilitate innovation and competition in the industry, reduce risks, and indirectly this time, contribute to a lower LCOE. End users for the project deliverables will be developers, designers and manufacturers, but also decision makers who need to evaluate a concept based on given constraints. The proposed project is expected to have a broad impact since it is not led by single group of existing business partners, focusing on one concept only. On the contrary, it will involve a strong consortium reflecting the value chain for offshore wind turbines: researchers, designers, classification societies, manufacturers, utilities. This will ensure that the project's outcomes suit the concrete requirements imposed by end-users.</p>	

Acronym: CAPTure	
Title: Competitive SolAr Power Towers – CAPTure	
Starting date: 01.05.2015	Starting date: 01.05.2019
Total cost: 6,461,970.43 €	Total cost: 6,104,032.93 €
Type of Action: RIA	
Coordinator: Fundacion Cener-Ciemat (ES)	
Participants:	
<ul style="list-style-type: none"> ▪ Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV; ▪ Electricite de France; ▪ Centro de Investigaciones Energeticas, Medioambientales y Tecnologicas-Ciemat; ▪ K Controls Ltd; ▪ Societe Industrielle de Sonceboz SA; 	<ul style="list-style-type: none"> ▪ Haver & Boecker OHG; ▪ Fundacion Tekniker; ▪ FCT Hartbearbeitungs GmbH; ▪ Eurec EESV; ▪ Bluebox Energy Ltd; ▪ TSK Flagsol Engineering GmbH; ▪ Commissariat A L Energie Atomique et aux Energies Alternatives
Countries: DE; FR; ES; UK; CH; BE	
Objectives:	
<p>The main objective of this project is to significantly reduce costs of concentrated solar power, in order to pave the way for its deserved competitiveness on the power market. Specifically, the solar-to-electric conversion efficiency of the plant will be improved by increased receiver operating temperatures as well as an innovative power cycle configuration also providing advantages regarding plant operation. Additionally, improved control methodologies based on dynamic multi-aiming-point strategies for heliostats will further enhance efficiency. Besides the improvement of the plants efficiency and operation, also the construction and operational costs will be minimized via mass production of heliostats and smart heliostat calibration systems.</p> <p>The global objective of this project is to increase plant efficiencies and reduce levelized cost of electricity (LCOE) by developing all relevant components that allow implementing an innovative plant configuration. This plant configuration is based on a multi-tower decoupled advanced solar combined cycle approach that not only increases cycle efficiencies but also avoids frequent transients and inefficient partial loads, thus maximizing overall efficiency, reliability as well as dispatchability, all of which are important factors directly related to cost competitiveness on the power market. The core topic of the project, the innovative solar receiver, will be an open volumetric receiver allowing operating temperatures beyond 1200 °C, providing the absorbed solar heat to the pressurized air circuit of the Brayton cycle via a network of fixed bed regenerative heat exchangers working in alternating modes (non-pressurized heating period, pressurized cooling period).</p>	

Acronym: Bio-HyPP	
Title: Biogas-fired Combined Hybrid Heat and Power Plant	
Starting date: 01.06.2015	Starting date: 01.06.2019
Total cost: 5,775,868.75 €	Total cost: 5,775,868.50 €
Type of Action: RIA	
Coordinator: Deutsches Zentrum fuer Luft - und Raumfahrt eV (DE)	
Participants:	
<ul style="list-style-type: none"> ▪ Technische Universiteit Eindhoven; ▪ Micro Turbine Technology BV; ▪ Sunfire GmbH; ▪ Hiflux Ltd; 	<ul style="list-style-type: none"> ▪ Universita degli Studi di Genova; ▪ Gasterra BV; ▪ D'appolonia SPA
Countries: NL; DE; UK; IT	
Objectives:	
<p>To reach the goals of improving the efficiency of CHP systems while simultaneously widening the biomass feedstock base as well as increasing operational flexibility, the project aims to develop a full scale technology demonstrator of a hybrid power plant using biogas as main fuel in lab environment. A combined hybrid heat and power plant combines a micro gas turbine (MGT) and a solid oxide fuel cell (SOFC).</p> <p>The focus of the technology demonstration plant is to prove the functional capability of the plant concept, followed by detailed characterization and optimization of the integration of both subsystems. The main objective is to move the technology beyond the state of the art to TRL 4.</p> <p>Electrical efficiencies of more than 60% and total thermal efficiencies of more than 90% are intended to reach at base load conditions. An operational flexibility ranging from 25% to 100% electric power should be achieved. The emission levels should not exceed 10 ppm NOx and 20 ppm CO (at 15% vol. residual oxygen). The system should allow the use of biogas with methane contents varying from 40-75%, thus covering the biogas qualities from the fermentation of the entire biomass feedstock range.</p> <p>To achieve the objectives the subsystems MGT and SOFC including their subcomponents have to be adjusted and optimized by a multidisciplinary design approach using numerical and experimental measures to ensure a proper balance of plant. In addition an integrated control system has to be developed and implemented to achieve a reliable operation of the coupled subsystems.</p> <p>A detailed analysis of different European markets, economic and technical constraints in terms of biogas production potentials will clarify the regional suitable sizes and attractive performance conditions of the power plant system. To identify cost reduction potentials a thermo-economic analysis will be performed. Here, an internal rate of return (IRR) of the system of higher than 15% should be achieved over a 20 years.</p>	

Acronym: ThermoDrill	
Title: Fast track innovative drilling system for deep geothermal challenges in Europe	
Starting date: 01.09.2015	Starting date: 01.09.2018
Total cost: 5,824,745 €	Total cost: 5,380,995 €
Type of Action: RIA	
Coordinator: Montanuniversitat Leoben (AT)	
Participants:	
<ul style="list-style-type: none"> ▪ Inerco Ingenieria, Tecnologia y Consultoria SA; ▪ Sirius-Es Handels GmbH; ▪ Bestec GmbH; ▪ Rag Energy Drilling GmbH; 	<ul style="list-style-type: none"> ▪ Smith International Italia SPA; ▪ Geo-Energie Suisse AG; ▪ Technische Universitaet Muenchen; ▪ ES-Geothermie
Countries: ES; AT; DE; IT; CH; FR	
Objectives:	
<p>Europe is confronted with significant changes arising from globalisation and the currently political challenges. This means for example based on the latest developments in Ukraine and exceptionally strong European dependency on gas from Russia, deep geothermal energy particularly based on engineered geothermal systems is becoming even more important to care for Europe`s energy security.</p> <p>If deep geothermal energy from EGSs becomes a significant cornerstone in future energy strategy, there is an urgent need to provide cost-efficient and novel drilling technologies and concepts in order to open up new European geothermal reservoirs for energy exploitation.</p> <p>Therefore the overall goal of ThermoDrill is the development of an innovative drilling system based on the combination of conventional rotary drilling with water jetting that will allow at least 50% faster drilling in hard rock, a cost reduction of more than 30% for the subsurface construction and a minimized risk of induced seismic activity.</p> <p>In order to achieve these goals ThermoDrill will mainly address the following research and development topics:</p> <ul style="list-style-type: none"> • enhanced water jet drilling technology for borehole construction and replacement of fracking; • HT/HP crystalline rock jetting and drilling fluids; • systematic redesign of the overall drilling process, particularly the casing design and cementing; • evaluation of drilling technologies and concepts in terms of HSE (health, safety and environmental) compliance. <p>A challenging project such as ThermoDrill can only be addressed by joint and concerted actions of outstanding experts. This means that the ThermoDrill consortium partners belong to Europe`s leading experts in the field of deep drilling technologies/designs, drilling fluids, simulation, optimal shaping of tools like rockbits, etc. The consortium is already well connected through a variety of long standing research partnerships and won`t need great efforts to adjust and synchronize quickly.</p>	

Acronym: CPVMatch	
Title: Concentrating Photovoltaic modules using advanced technologies and cells for highest efficiencies	
Starting date: 01.05.2015	Starting date: 01.11.2018
Total cost: 4,949,596.25 €	Total cost: 4,949,596.25 €
Type of Action: RIA	
Coordinator: Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV (DE)	
Participants:	
<ul style="list-style-type: none"> ▪ Azur Space Solar Power GmbH; ▪ Ricerca Sul Sistema Energetico - RSE SPA; ▪ Universidad Politecnica de Madrid; ▪ Asse SRL; ▪ Cycleco SAS; 	<ul style="list-style-type: none"> ▪ Commissariat A L Energie Atomique et aux Energies Alternatives; ▪ Fundacion Tecnalía Research & Innovation; ▪ Aixtron SE
Countries: DE; IT; ES; FR	
Objectives:	
<p>It has been proven that the only realistic path to close the gap between theoretical and practical ultra-high efficiency solar cells is the monolithic multi-junction (MJ) approach, i.e. to stack different materials on top of each other. Each material/sub solar cell converts a specific part of the sun's spectrum and thus manages the photons properly. However, large area multi-junction cells are too expensive if applied in standard PV modules. A viable solution to solve the cost issue is to use tiny solar cells in combination with optical concentrating technology, in particular, high concentrating photovoltaics (HCPV), in which the light is concentrated over the solar cells more than 500 times. The combination of ultra-high efficient cells and optical concentration lead to low cost on system level and eventually to low levelised electricity costs, today well below 8 €cent/kWh and at the end of this project below 5 €cent/kWh. Therefore, to achieve an optimised PV system (high efficiency, low cost and low environmental impact), world-wide well-known partners in the field of CPV technology propose this project to run and progress together the development of highly-efficient MJ solar cells and the improvement of the concentrator (CPV module) technique.</p> <p>The central objective of the project is to realise HCPV solar cells and modules working at a concentration level $\geq 800x$ with world record efficiency of 48 % and 40 %, respectively, hence bringing practical performances closer to theoretical limits. This should be achieved through novel MJ solar cell architectures using advanced materials and processes for better spectral matching as well as through innovative HCPV module concepts with improved optical and interconnection designs, thus including novel light management approaches. The ambition for this project is not less than to achieve the highest efficiencies on solar cell and module level world-wide, thus Europe will be the top player for the CPV-technology.</p>	

Acronym: FlexiFuel-SOFC	
Title: Development of a new and highly efficient micro-scale CHP system based on fuel-flexible gasification and a SOFC	
Starting date: 01.05.2015	Starting date: 01.05.2019
Total cost: 5,988,163.75 €	Total cost: 5,982,101.25 €
Type of Action: RIA	
Coordinator: Windhager Zentralheizung Technik GmbH (AT)	
Participants:	
<ul style="list-style-type: none"> ▪ Universiteit Utrecht; ▪ Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV; ▪ Hygear BV; ▪ AVL List GmbH; 	<ul style="list-style-type: none"> ▪ Wuppertal Institut fuer Klima, Umwelt, Energie GmbH; ▪ Technische Universiteit Delft; ▪ Bios Bioenergiesysteme GmbH
Countries: NL; DE; AT	
Objectives:	
<p>The project aims at the development of a new innovative highly efficient and fuel flexible micro-scale biomass CHP technology consisting of a small-scale fixed-bed updraft gasifier, a compact gas cleaning system and a solid oxide fuel cell (SOFC). The technology shall be developed for a capacity range of 25 to 150 kW (fuel power) and shall be characterised by a wide fuel spectrum applicable (wood pellets and wood chips of various sizes and moisture contents, SCR, selected agricultural fuels), high gross electric (40%) and overall (85-90%) efficiencies as well as almost zero gaseous and PM emissions. This aim shall be reached by the combination of a fuel-flexible updraft gasification technology with ultra-low particulate matter and condensed alkaline compound concentrations in the product gas, which reduces the efforts for gas cleaning, an integrated gas cleaning approach for dust and HCl removal, desulphurisation and tar cracking as well as a SOFC system which tolerates certain amounts of tars as fuel. It is expected to achieve at the end of the project a TRL of 5.</p> <p>The objectives of the project are highly relevant to the work programme since they focus on the development of a micro-scale CHP technology with extended fuel flexibility which shall be cost efficient and robust and shall distinguish itself by high electric and overall efficiencies as well as almost zero emissions.</p> <p>To fulfil these goals an overall methodology shall be applied which is divided into a technology development part (based on process simulations, computer aided design of the single units and the overall system, test plant construction, performance and evaluation of test runs, risk and safety analysis) as well as a technology assessment part covering risk, techno-economic, environmental and overall impact assessments, market studies regarding the possible potentials for application of the new technology as well as dissemination activities.</p>	

Acronym: DESCRAMBLE	
Title: Drilling in supercritical geothermal condition	
Starting date: 01.05.2015	Starting date: 01.05.2018
Total cost: 15,615,955 €	Total cost: 6,753,635 €
Type of Action: RIA	
Coordinator: Enel Green Power (IT)	
Participants:	
<ul style="list-style-type: none"> ▪ Stiftelsen Sintef; ▪ Christian-Albrechts-Universitaet zu Kiel; ▪ Consiglio Nazionale delle Ricerche; ▪ Sintef Petroleum AS; 	<ul style="list-style-type: none"> ▪ Rheinisch-Westfaelische Technische Hochschule Aachen; ▪ Technische Universitaet Bergakademie Freiberg
Countries: NO; DE; IT	
Objectives:	
<p>The aim of the "Drilling in dEep, Super-CRitical AMBients of continental Europe: DESCRAMBLE' project is to develop novel drilling technologies for a proof-of-concept test of reaching deep geothermal resources and to contribute to a low-carbon European society. To achieve this target the first drilling in the world in an intra-continental site at a middle-crustal level will be performed. The test site is an existing dry well in Larderello, Italy, already drilled to a depth of 2.2 km and temperature of 350 °C, which will be further drilled to 3-3.5 km to reach super-critical conditions unexpectedly experienced, and not controlled, in a nearby well in 1979.</p> <p>The project will be organized into two main phases: (1) Drilling in super-critical conditions, including drilling components, well materials, design and control; (2) Geo-Scientific activities for predicting and controlling critical conditions, which considers petrological, physical and chemical characterization, simulation and monitoring, including high temperature and pressure tools.</p> <p>Main expected outcomes:</p> <ul style="list-style-type: none"> • Improved drilling concepts in deep crustal conditions • New drilling materials, equipment and tools • Physical and chemical characterization of deep crustal fluids and rocks <p>The site is perfect for such an experiment, as it is representative of most deep crustal levels in Europe, cost effective since drilling to reach the target is reduced to a minimum, practical due to the high probability of encountering super-critical conditions. The productivity and efficiency of the project are guaranteed by the combination of industrial and research participation and by the recognised expertise of the consortium in geothermal R&D as well as oil and gas drilling, bringing together excellence in the respective sectors.</p> <p>DESCRAMBLE will explore the possibility of reaching extremely high specific productivity per well, up to ten times the standard productivity, with a closed loop, zero emission, and reduced land occupation.</p>	

Acronym: Sharc25	
Title: Super high efficiency Cu(In,Ga)Se ₂ thin-film solar cells approaching 25%	
Starting date: 01.05.2015	Starting date: 01.11.2018
Total cost: 6,152,979.25 €	Total cost: 4,563,122.75 €
Type of Action: RIA	
Coordinator: Zentrum fuer Sonnenenergie- und Wasserstoff-Forschung Baden-Wuerttembergstiftung (DE)	
Participants:	
<ul style="list-style-type: none"> ▪ Helmholtz-Zentrum Berlin fuer Materialien und Energie GmbH; ▪ Interuniversitair Micro-Electronicacentrum IMEC VZW; ▪ Flisom AG; ▪ Laboratorio Iberico Internacional de Nanotecnologia; 	<ul style="list-style-type: none"> ▪ Manz CIGS Technology GmbH; ▪ Universite du Luxembourg; ▪ Eidgenoessische Materialpruefungs- und Forschungsanstalt; ▪ Universite de Rouen; ▪ Universita degli Studi di Parma; ▪ Aalto-Korkeakoulu
Countries: DE; BE; CH; PT; LU; FR; IT; FI	
Objectives:	
<p>Prime objective of the Sharc25 project is to develop super-high efficiency Cu(In,Ga)Se₂ (CIGS) solar cells for next generation of cost-beneficial solar module technology with the world leading expertise establishing the new benchmarks of global excellence.</p> <p>The project partners ZSW and EMPA hold the current CIGS solar cell efficiency world records of 21.7% on glass and 20.4% on polymer film, achieved by using high (~650°C) and low (~450°C) temperature CIGS deposition, respectively. Both have developed new processing concepts which open new prospects for further breakthroughs leading to paradigm shift for increased performance of solar cells approaching to the practically achievable theoretical limits. In this way the costs for industrial solar module production < 0.35€/Wp and installed systems < 0.60€/Wp can be achieved, along with a reduced Capex < 0.75€/Wp for factories of >100 MW production capacity, with further scopes for cost reductions through production ramp-up.</p> <p>In this project the performance of single junction CIGS solar cells will be pushed from ~21% towards 25% by a consortium with multidisciplinary expertise. The key limiting factors in state-of-the-art CIGS solar cells are the non-radiative recombination and light absorption losses. Novel concepts will overcome major recombination losses: combinations of increased carrier life time in CIGS with emitter point contacts, engineered grain boundaries for active carrier collection, shift of absorber energy bandgap, and bandgap grading for increased tolerance of potential fluctuations. Innovative approaches will be applied for light management to increase the optical path length in the CIGS absorber and combine novel emitter, front contact, and anti-reflection concepts for higher photon injection into the absorber. Concepts of enhanced cell efficiency will be applied for achieving sub-module efficiencies of >20% and industrial implementation strategies will be proposed for the benefit of European industries.</p>	

Topic LCE-11 – Projects:

Acronym: Photofuel	
Title: Biocatalytic solar fuels for sustainable mobility in Europe	
Starting date: 01.05.2015	Starting date: 01.05.2019
Total cost: 5,998,251.50 €	Total cost: 5,998,251 €
Type of Action: RIA	
Coordinator: Volkswagen AG (DE)	
Participants: <ul style="list-style-type: none"> ▪ Centro Ricerche Fiat SCPA; ▪ Volvo Technology AB; ▪ Uppsala Universitet; ▪ Syncom Forschungs- und Entwicklungsberatung GmbH; ▪ Karlsruher Institut fuer Technologie; ▪ Universita degli Studi di Firenze; ▪ Neste Oil Corporation; ▪ Imperial College of Science Technology and Medicine; ▪ Universitaet Bielefeld; ▪ A4F Algafuel SA; ▪ IFP Energies nouvelles 	
Countries: IT; SE; DE; FI; UK; PT; FR	
Objectives: <p>Photofuel studies and advances the biocatalytic production of alternative liquid transportation fuels, which require only sunlight, CO₂ and water. Microbial cells directly excrete hydrocarbon and long chain alcohol fuel compounds to the medium from which they are separated, without the need to harvest biomass. This significantly improves the costs and energy balances as only a minimum of nutrients is required for self-replication of the biocatalyst, whilst cell harvesting, drying and lipid extraction is omitted. Such minimum-input systems are compatible with operation on degraded or desert land which avoids the pitfalls of most of the currently available biofuel technologies. The products are drop-in fuels that fully or partially replace their fossil counterparts without the need for new infrastructure. To set a benchmark for alternative solar fuels, three research groups will collaborate in the advancement of the biocatalysts from TRL 3. The best biocatalytic system(s) will be up-scaled and operated outdoors in photobioreactors modified for direct fuel separation at a scale of several cubic meters (TRL 4-5). The identification of optimal future fuel blends with a fossil fuel base and Photofuel biofuels as additives, as well as the analysis of performance and emissions in car or truck engines, will be evaluated by the oil- and automotive-industry partners. The entire pathway will be assessed for environmental and economic performance as well as social acceptance of large scale production in rural communities and by the consumer. All results will be combined to a business development plan, which clearly identifies the opportunities but also the challenges prior to an economic fuel production in compliance to the EC Fuel Quality Directive.</p>	

Acronym: ButaNexT	
Title: Next Generation Bio-butanol	
Starting date: 01.05.2015	Starting date: 01.05.2018
Total cost: 4,599,414 €	Total cost: 4,599,414 €
Type of Action: RIA	
Coordinator: Green Biologics Ltd. (UK)	
Participants:	
<ul style="list-style-type: none"> ▪ Fundacion Cener-Ciemat; ▪ Vlaamse Instelling Voor Technologisch Onderzoek N.V.; ▪ E4TECH (UK) LTD; ▪ DYADIC Nederland BV; 	<ul style="list-style-type: none"> ▪ C-Tech Innovation Limited; ▪ Zabala Innovation Consulting S.A.; ▪ Tecnicas Reunidas SA; ▪ Universidad De Castilla - La Mancha
Countries: ES; BE; UK; NL	
Objectives:	
<p>Biobutanol is an attractive commodity chemical and advanced biofuel with superior properties but the 1st gen process suffers from technical and economical constraints. ButaNexT project aims to overcome some of those technical barriers through a novel combination of innovations. Individual stages of the process supply chain will be developed, validated and optimized at lab-scale and then integrated and demonstrated at pilot scale. A holistic approach is proposed to produce cost-competitive biobutanol from 3 types of lignocellulosic biomass and waste in a sustainable way being flexible to accommodate regionally specific feedstocks. Project exploitable outputs include:</p> <p>(1) novel low CAPEX two-step pretreatment process that releases hemicellulose and cellulose from recalcitrant feedstocks for further enzymatic and/or fermentation processing,</p> <p>(2) new tailored enzyme cocktail yielding highly fermentable sugars at low enzyme dosages and lower cost,</p> <p>(3) superior clostridial strains with enhanced production characteristics i.e. butanol and inhibitor tolerance,</p> <p>(4) high productivity fermentation process including a novel in-situ product recovery step.</p> <p>Technology advances allow sustainable feedstock diversification, improve conversion yields and efficiency, reduce energy requirements, and water usage. We expect significant reductions in cost (target \$800/T which equates to 50% of current 1st gen solvent production in China) as well as enhanced energy balances and reduced GHG emissions vs 1st gen biofuel production (target a 85% reduction).</p> <p>The project output (a technically and economically-validated process) will provide the EU with a tremendous opportunity to build an advanced biofuel business from sustainable feedstocks. This is strategically important to contribute to the European 10% target for renewable transportation fuels for 2020.</p> <p>The proposed project fits into the topic "Developing next generation technologies for biofuels and sustainable alternative fuels" (LCE-11-2014)</p>	

Topic LCE-15 – Projects:

Acronym: STEPWISE	
Title: SEWGS Technology Platform for cost effective CO ₂ reduction the in the Iron and Steel Industry	
Starting date: 01.05.2015	Starting date: 01.05.2019
Total cost: 12,988,996.25 €	Total cost: 12,968,371.25 €
Type of Action: RIA	
Coordinator: Stichting Energieonderzoek Centrum Nederland (NL)	
Participants: <ul style="list-style-type: none"> ▪ Johnson Matthey PLC; ▪ Amec Foster Wheeler Italiana SRL; ▪ Politecnico di Milano; ▪ SSAB Emea AB; ▪ Tata Steel UK Consulting Limited; ▪ Kisuma Chemicals BV; ▪ Universitatea Babes Bolyai; ▪ Swerea Mefos AB 	
Countries: UK; IT; SE; NL; RO	
Objectives: <p>STEPWISE is a solid sorption technology for CO₂ capture from fuel gases in combination with water-gas shift and acid gas removal. The main objectives of the proposed STEPWISE project is to scale up the technology for the CO₂ capture from Blast Furnace Gases (BFG) with three overall demonstration goals in comparison to state-of-the-art amine-based technologies:</p> <ul style="list-style-type: none"> • Higher carbon capture rate – i.e. lower carbon intensity, 85% reduction • Higher energy efficiency – i.e. lower energy consumption for capture (SPECCA), 60% reduction • Better economy – i.e. lower cost of CO₂ avoided, 25% reduction <p>The STEPWISE project will achieve this by the construction and the operation of a pilot test installation at a blast furnace site enabling the technology to reach TRL6 as the next step in the research, development and demonstration trajectory. Hence further reducing the risk of scaling up the technology.</p> <p>The STEPWISE project has the potential to decrease CO₂ emissions worldwide by 2.1Gt/yr based on current emission levels. The conservative estimate is that by 2050, a potential cost saving of 750 times the research costs for this project will be realized each year every year, with a much larger potential. The overall objective is to secure jobs in the highly competitive European steel industry, a sector employing 360 thousand skilled people with an annual turnover of €170 billion.</p>	

Acronym: CEMCAP	
Title: CO ₂ capture from cement production	
Starting date: 01.05.2015	Starting date: 01.11.2018
Total cost: 10,030,120.75 €	Total cost: 8,778,701 €
Type of Action: RIA	
Coordinator: Sintef Energi AS (NO)	
Participants:	
<ul style="list-style-type: none"> ▪ European Cement Research Academy GmbH; ▪ Norcem AS; ▪ Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek TNO; ▪ Agencia Estatal Consejo Superior de Investigaciones Cientificas; ▪ Alstom Power Sweden AB; ▪ VDZ gGmbH; 	<ul style="list-style-type: none"> ▪ IKN GmbH; ▪ C.T.G. SPA; ▪ Thyssenkrupp Resource Technologies GmbH; ▪ Eidgenoessische Technische Hochschule Zuerich; ▪ HeidelbergCement AG; ▪ Politecnico di Milano; ▪ Alstom Carbon Capture GmbH; ▪ Universitaet Stuttgart
Countries: DE; NO; NL; ES; SE; IT; CH	
Objectives:	
<p>The European cement industry has committed itself to contributing to climate protection measures and therefore to curbing its CO₂ emissions. CO₂ capture technologies, although an essential part of all CO₂ reduction scenarios, are not yet ready for large-scale deployment in the cement industry. Hence, the primary objective of CEMCAP is</p> <p>To prepare the ground for large-scale implementation of CO₂ capture in the European cement industry</p> <p>To achieve this objective, CEMCAP will</p> <ul style="list-style-type: none"> - Leverage to TRL 6 for cement plants the oxyfuel capture technology and three fundamentally different post combustion capture technologies, all of them with a targeted capture rate of 90%. - Identify the CO₂ capture technologies with the greatest potential to be retrofitted to existing cement plants in a cost- and resource-effective manner, maintaining product quality and environmental compatibility. - Formulate a techno-economic decision-basis for CO₂ capture implementation in the cement industry, where the current uncertainty regarding CO₂ capture cost is reduced by at least 50%. <p>For successful large-scale deployment of CO₂ capture in the cement industry, technologies must be developed beyond the current state of the art. In order to bring the most high-potential retrofittable CO₂ capture technologies to a higher TRL level and closer to implementation, CEMCAP will</p> <ul style="list-style-type: none"> - Describe the routes for the development required to close technology gaps for CO₂ capture from cement and assist technology suppliers along the related innovation chains. - Identify and follow up minimum five potential innovations springing from CEMCAP research. <p>Technologies suitable for CO₂ capture retrofit are focused on in CEMCAP, because cement plants typically have a lifetime of as long as 30-50 years. However, the results from CEMCAP will enable looking beyond this horizon. Therefore, CEMCAP will</p> <ul style="list-style-type: none"> - Create pathways for the low to near-zero CO₂ emission cement production of the future. 	

Topic LCE-16 – Projects:

Acronym: ShaleXenvironmenT	
Title: Maximizing the EU shale gas potential by minimizing its environmental footprint	
Starting date: 01.09.2015	Starting date: 01.09.2018
Total cost: 3,399,201.75 €	Total cost: 2,999,201.25 €
Type of Action: RIA	
Coordinator: University College London (UK)	
Participants: <ul style="list-style-type: none"> ▪ Association pour La Recherche et Le Developpement des Methodes et Processus Industriels; ▪ Consorzio Interuniversitario per Lo Sviluppo dei Sistemi a Grande Interfase; ▪ Geomecon GmbH; ▪ The University of Manchester; ▪ Universidad de Alicante; ▪ Ustav Fyzikalni Chemie J. Heyrovskeho AV CR, v. v. i.; ▪ Helmholtz Zentrum Potsdam Deutsches Geoforschungszentrum; ▪ Ustav Chemickych Procesu AV CR, v. v. i.; ▪ National Center for Scientific Research Demokritos; ▪ Halliburton Manufacturing and Services Limited 	
Countries: FR; IT; DE; UK; CZ; EL; ES	
Objectives: <p>Securing abundant, affordable, and clean energy remains a critical scientific challenge. Fortuitously, large shale formations occur within Europe. As the conventional gas production in Europe peaked in 2004, European shale gas could become a practical necessity for the next 50 years. However, the exploitation of shale gas remains challenging. Further, its environmental footprint is at present poorly quantified. Great care is needed to assess and pursue this energy resource in the safest possible way for the long-term future of Europe whilst protecting the European diverse natural environment.</p> <p>With this in mind, ShaleXenvironmenT assembled a multi-disciplinary academic team, with strong industrial connections. A comprehensive approach is proposed towards ensuring that the future development of shale gas in Europe will safeguard the public with the best environmental data suitable for governmental appraisal, and ultimately for encouraging industrial best practice.</p> <p>The primary objective is to assess the environmental footprint of shale gas exploitation in Europe in terms of water usage and contamination, induced seismicity, and fugitive emissions. Using synergistically experiments and modeling activities, ShaleXenvironmenT will achieve its objective via a fundamental understanding of rock-fluid interactions, fluid transport, and fracture initiation and propagation, via technological innovations obtained in collaboration with industry, and via improvements on characterization tools. ShaleXenvironmenT will maintain a transparent discussion with all stakeholders, including the public, and will suggest ideas for approaches on managing shale gas exploitation, impacts and risks in Europe, and eventually worldwide.</p> <p>The proposed research will bring economical benefits for consultancy companies, service industry, and oil and gas conglomerates. The realization of shale gas potential in Europe is expected to contribute clean energy for, e.g., the renaissance of the manufacturing industry.</p>	

Acronym: SHEER	
Title: SHale gas Exploration and Exploitation induced Risks	
Starting date: 01.05.2015	Starting date: 01.05.2018
Total cost: 2,680,470 €	Total cost: 2,601,720 €
Type of Action: RIA	
Coordinator: Amra - Analisi e Monitoraggio del Rischio Ambientale Scarl (IT)	
Participants:	
<ul style="list-style-type: none"> ▪ Instytut Geofizyki Polskiej Akademii Nauk; ▪ University of Glasgow; ▪ University of Keele; ▪ Univerisity of Wyoming; 	<ul style="list-style-type: none"> ▪ Koninklijk Nederlands Meteorologisch Instituut-Knmi; ▪ Helmholtz Zentrum Potsdam Deutsches Geoforschungszentrum; ▪ RSKW Ltd
Countries: PL; UK; US; NL; DE	
Objectives:	
<p>The objective of SHEER is to develop best practices for assessing and mitigating the environmental footprint of shale gas exploration and exploitation. The consortium includes partners from Italy, United Kingdom, Poland, Germany, the Netherlands, USA. It will develop a probabilistic procedure for assessing short and long-term risks associated with groundwater contamination, air pollution and induced seismicity. The severity of each of these depends strongly on the unexpected enhanced permeability pattern, which may develop as an unwanted by-product of the fracking processes and may become pathway for gas and fluid migration towards underground water reservoirs or the surface. An important part of SHEER will be devoted to monitor and understand how far this enhanced permeability pattern will develop both in space and time. These hazard may be at least partially inter-related as they all depend on this enhanced permeability pattern. Therefore they will be approached from a multi-hazard, multi parameter perspective. SHEER will develop methodologies and procedures to track and model fracture evolution around shale gas exploitation sites and a robust statistically based, multi-parameter methodology to assess environmental impacts and risks across the operational lifecycle of shale gas. The developed methodologies will be applied and tested on a comprehensive database consisting of seismicity, changes of the quality of ground-waters and air, ground deformations, and operational data collected from past case studies. They will be improved by the high quality data SHEER will collect monitoring micro-seismicity, air and groundwater quality and ground deformation in a planned hydraulic fracturing to be carried out by the Polish Oil and Gas Company in Pomerania. Best practices to be applied in Europe to monitor and minimize any environmental impacts will be worked out with the involvement of an advisory group including governmental decisional bodies and private industries.</p>	

Acronym: M4ShaleGas	
Title: M4ShaleGas: Measuring, monitoring, mitigating managing the environmental impact of shale gas	
Starting date: 01.06.2015	Starting date: 01.12.2017
Total cost: 2,999,648.75 €	Total cost: 2,999,647.50 €
Type of Action: RIA	
Coordinator: Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek TNO (NL)	
Participants:	
<ul style="list-style-type: none"> ▪ Sintef Petroleum AS; ▪ Cardiff University; ▪ Karlsruher Institut fuer Technologie; ▪ The University of Warwick; ▪ Instituto Geológico y Minero de España; ▪ Stichting Energieonderzoek Centrum Nederland; ▪ Instytut Nafty I Gazu; ▪ Natural Environment Research Council; ▪ Uniwersytet Im. Adama Mickiewicza W Poznaniu; 	<ul style="list-style-type: none"> ▪ Helmholtz Zentrum Potsdam Deutsches Geoforschungszentrum; ▪ University of Durham; ▪ IFP Energies nouvelles; ▪ Panstwowy Instytut Geologiczny - Panstwowy Instytut Badawczy; ▪ University of Newcastle Upon Tyne; ▪ Laboratorio Nacional de Energia e Geologia I.P.; ▪ Geological Survey of Denmark and Greenland; ▪ Ceska Geologicka Sluzba
Countries: NO; UK; DE; ES; NL; PL; FR; PT; DK; CZ	
Objectives:	
<p>The accelerated development of shale gas is accompanied by growing public concern regarding the safety of shale gas extraction and its impact on human health and the environment. For the US, shale gas exploitation proved very successful in changing the energy landscape in terms of security of domestic supply and increased contribution of gas in the energy mix. For Europe, shale gas exploitation could increase our resources and production of natural gas; a critical fuel for the transition to a low carbon energy system. However, there are a number of important gaps in our present understanding of shale gas exploration and exploitation, and a strong need for independent, science-based knowledge of its potential impacts in a European context. The M4ShaleGas program focuses on reviewing and improving existing best practices and innovative technologies for measuring, monitoring, mitigating and managing the environmental impact of shale gas exploration and exploitation in Europe. The technical and social research activities will yield integrated scientific recommendations for 1) how to minimize environmental risks to the subsurface, surface and atmosphere, 2) propose risk reduction and mitigation measures and 3) how to address the public attitude towards shale gas development. The 18 research institutes from 10 European Union Member States that collaborate in the M4ShaleGas consortium cover different geopolitical regions in Europe, including Member States that are at the forefront regarding shale gas exploration and exploitation in Europe as well as Member States where shale gas exploitation is not yet being actively pursued. The project governance ensures proper integration of all research activities. Knowledge and experience on best practices is imbedded by direct collaboration with US and Canadian research partners and input from representatives from the industry. During the project, results will be public and actively disseminated to all stakeholders.</p>	

Acronym: FracRisk	
Title: Furthering the Knowledge Base For Reducing the Environmental Footprint of Shale Gas Development (FracRisk)	
Starting date: 01.06.2015	Starting date: 01.06.2018
Total cost: 2,939,998 €	Total cost: 2,939,998 €
Type of Action: RIA	
Coordinator: The University of Edinburgh (UK)	
Participants: <ul style="list-style-type: none"> ▪ Universitaet Stuttgart; ▪ Politecnico di Milano; ▪ Bundesanstalt fuer Geowissenschaften und Rohstoffe; ▪ Heriot-Watt University; ▪ E.W.R.E. Ltd; ▪ Universitat Wien; ▪ Centre National de La Recherche Scientifique; ▪ Georg-August-Universitaet Goettingen Stiftung Oeffentlichen Rechts; ▪ Jung-Geotherm UG; ▪ Agencia Estatal Consejo Superior de Investigaciones Cientificas; ▪ Uppsala Universitet 	
Countries: DE; IT; UK; IL; AT; FR; ES; SE	
Objectives: <p>FrakRisk further develops the knowledge base for understanding, preventing and mitigating the potential impact of the exploration and exploitation of shale gas reserves found throughout Europe. This will include international experience, state of the art process understanding, state of the art modelling techniques and the further development of fully accepted risk assessment tools for site screening, selection and management specifically for shale gas exploitation. FracRisk focuses on key knowledge gaps identified from the literature, research and industrial experience. Central to the project is the modelling of six exemplary scenarios selected to represent the highest risk environmental impact scenarios identified as generally of most concern. The modelling of the scenarios is directed by the aim to reduce the uncertainty and assess the risk of different events during shale gas exploration and exploitation. Using an iterative modelling and risk reduction approach, cost effective data density requirements to limit uncertainty will be evaluated. The modelled scenarios will be validated against existing data from several sites within the EU and in the USA. Effective monitoring procedures and applicable mitigation techniques will be determined and evaluated. Scientific recommendations will be formulated and legislative refinement suggested. Public concerns about the management of risk related to fracking operations will be addressed. A firm scientific basis and demonstrable data to validate recommendations will be provided. The technological readiness level from a number of multidisciplinary approaches and applications will be noticeably improved. FrakRisk will lead to a more focused, coherent and scientifically founded approach that can be useful to member states willing to enable and regulate the shale gas industry.</p>	

CALL: H2020-LCE-2014-2

Topic	Title	Number of funded projects	Total EU-contribution [€]
LCE-03	Demonstration of renewable electricity and heating/cooling technologies	7	63,569,751.70
LCE-12	Demonstrating advanced biofuel technologies	2	30,192,059.70
LCE-19	Supporting coordination of national R&D activities	1	787,700.00
LCE-20	The human factor in the energy system	4	13,507,574.70
Total		14	108,057,086.10

Topic LCE-03 – Projects:

Acronym: Riblet4Wind	
Title: Riblet-Surfaces for Improvement of Efficiency of Wind Turbines	
Starting date: 01.06.2015	Starting date: 01.12.2018
Total cost: 4,031,852.50 €	Total cost: 3,307,171.75 €
Type of Action: IA	
Coordinator: Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV (DE)	
Participants: <ul style="list-style-type: none"> ▪ Muehlhan A/S; ▪ Mankiewicz Gebr. & CO. GmbH & CO KG; ▪ Bionic Surface Technologies GmbH; ▪ E.ON Climate & Renewables UK Limited; ▪ Eltronic A/S; ▪ Universitat de Barcelona 	
Countries: DK; DE; AT; UK; ES	
Objectives: <p>The main objective of Riblet4Wind is the transfer of a technology that has already demonstrated its capacity for increasing the energy efficiency in the aeronautics sector, to the wind energy industry.</p> <p>Application of functional coatings with riblet structure will improve the drag to lift ratio of rotor blades significantly. Wind tunnel experiments have proven the capability of this riblet-coating technology to increase the efficiency of wind turbines by up to 6%.</p> <p>This direct effect will allow gaining the same amount of electrical energy with smaller rotor blades. Indirect effects will increase the benefit to approximately more than 10%:</p> <ul style="list-style-type: none"> • The improved drag to lift ratio will allow operation at lower wind speeds. The earlier cut-in of the WTG will improve the facility to balance in the electrical grid system. • The riblet structure improves the stall and turbulence behaviour of the rotor blades thus allowing also operation at higher wind speeds and/or operation in less optimum wind conditions, e.g. changing wind directions or gusts. • The improved drag to lift ratio will reveal design options due to changes of the design loads. • The riblet structure will also result in a substantial reduction of noise emissions. <p>It is expected that the interaction of direct and indirect effects will contribute significantly to the targets of the European Wind Energy Technology Platform (TPWind) as declared in the new Strategic Research Agenda / Market Deployment Strategy (SRA / MDS) : a reduction of levelised costs of energy (LCoE) by 20% (onshore) respectively 50% (offshore) until 2028 (LCoE reference 2008).</p> <p>Beyond the focus of the topic H2020-LCE3-2014 the riblet-paint technology can also be applied on existing rotor blades, thus supporting retrofitting of existing wind turbines and maximising the benefit.</p> <p>In total Riblet4Wind aims at demonstrating the successful transfer of the riblet-coating technology and the semi-quantitative assessment of the direct and indirect effects.</p>	

Acronym: Cheap-GSHPs	
Title: Cheap And Efficient Application Of Reliable Ground Source Heat Exchangers And Pumps	
Starting date: 01.06.2015	Starting date: 01.06.2019
Total cost: 5,804,847.50 €	Total cost: 4,844,652 €
Type of Action: IA	
Coordinator: Consiglio Nazionale delle Ricerche (IT)	
Participants:	
<ul style="list-style-type: none"> ▪ Geo Green; ▪ R.E.D. SRL; ▪ Energesis Group SL; ▪ Societatea Romana Geoexchange; ▪ Universita degli Studi di Padova; ▪ Fundacion Tecnalia Research & Innovation; ▪ Centre for Renewable Energy Sources and Saving Fondation; ▪ Aner Sistemas Informaticos SL; ▪ Galletti Belgium; 	<ul style="list-style-type: none"> ▪ SLR Environmental Consulting (Ireland) Limited; ▪ United Nations Educational, Scientific And Cultural Organization -Unesco; ▪ Scuola Universitaria Professionale della Svizzera Italiana (SUPSI); ▪ Pietre Edil SRL; ▪ Friedrich-Alexander-Universitaet Erlangen Nuernberg; ▪ Rehau AG+CO; ▪ Hydra SRL
Countries: BE; IT; ES; RO; EL; IE; FR; CH; DE	
Objectives:	
<p>To reduce the total cost of low enthalpy geothermal systems by 20-30 % the project will improve actual drilling/installation technologies and designs of Ground Source Heat Exchangers (GSHE's). This will be combined with a holistic approach for optimum selection, design and implementation of complete systems across different underground and climate conditions. The proposal will focus on one hand on the development of more efficient and safe shallow geothermal systems and the reduction of the installation costs. This will be realized by improving drastically an existing, innovative vertical borehole installation technology of coaxial steel GSHE and by developing a helix type GSHE with a new, innovative installation methodology. These GSHE's will be installed to a depth of 40 – 50 meters ensuring improved safety and faster permitting. On the other hand, the proposal will develop a decision support (DSS) and other design tools covering the geological aspects, feasibility and economic evaluations based on different plant set-up options, selection, design, installation, commissioning and operation of low enthalpy geothermal systems. These tools will be made publicly available on the web to users, including comprehensive training to lower the market entry threshold. Given that drilling and GSHE technologies are mature but costly, this holistic approach is included in the proposal to bring the overall cost of the total project down, i.e. not just the cost of the GSHE itself but the avoidance of ground response tests, the engineering costs for the design of the GSHE and the integration of heat pumps with building heating and cooling systems. Also the use of novel the heat pumps for higher temperatures developed within the project will reduce the costs in the market for retrofitting buildings. The developments will be demonstrated in six sites with different undergrounds in different climates whilst the tools will be applied to several virtual demo cases.</p>	

Acronym: CEFOW	
Title: Clean energy from ocean waves	
Starting date: 01.06.2015	Starting date: 01.06.2020
Total cost: 24,717,113.75 €	Total cost: 16,998,022.13 €
Type of Action: IA	
Coordinator: Fortum OYJ (FI)	
Participants:	
<ul style="list-style-type: none"> ▪ Wave Hub Limited; ▪ University of Plymouth; ▪ Fortum Energy Ltd; ▪ The University of Exeter; 	<ul style="list-style-type: none"> ▪ Green Marine (UK) Ltd; ▪ Uppsala Universitet; ▪ Mojo Maritime Limited; ▪ Wello OY
Countries: UK; SE; FI	
Objectives:	
<p>The most advanced wave power demonstrations today have showed the feasibility of power generation with single device deployments and MW-scale performance within several testing periods of several years. The next step beyond this is to deploy multiple wave energy converters in MW-scale with improved power generation capability and demonstrate that they are able to survive rough sea conditions over a period of several years. Clean Energy From Ocean Waves (CEFOW) project has an exceptionally good starting point. It has an existing site reservation in a wave power testing centre called Wave Hub, with all the needed infrastructure, including grid connection already in place. In addition, the wave energy converter technology to be deployed in the project has already been tested and proven in real conditions in Scotland.</p> <p>The ultimate purpose of the CEFOW is to increase the speed of wave power development, decrease the levelised cost of ocean energy by improving technical solutions used for multiple device system, and create an efficient supply chain to support larger wave power projects in the future. To reach these targets, the CEFOW consortium will improve the wave energy converter performance by 50% and raise its availability to 70%; develop new types of dynamic mooring and electrical connections suitable for multi-device deployment and deploy 3MW (three 1MW units) wave energy converters in real world offshore conditions in a grid-connected testing environment. In addition, CEFOW will study the feasibility of on-board and on-shore storage solutions and conduct thorough multi-year environmental, health and safety studies.</p> <p>The consortium spans the full value chain from research organisations to wave converter technology developers, marine service providers and a large multinational utility company as the operator.</p>	

Acronym: PreFlexMS	
Title: Predictable Flexible Molten Salts Solar Power Plant	
Starting date: 01.06.2015	Starting date: 01.06.2018
Total cost: 17,793,224.75 €	Total cost: 14,362,193.25 €
Type of Action: IA	
Coordinator: Alstom Power Systems SA (FR)	
Participants:	
<ul style="list-style-type: none"> ▪ Universidade de Evora; ▪ Universitaet Stuttgart; ▪ S.T.F. Salvatore Trifone e Figli SPA; ▪ Akademia Gorniczo-Hutnicza Im. Stanislawa Staszica W Krakowie; ▪ Emerson Process Management Power and Water Solutions SP ZOO; ▪ Politecnico di Milano; 	<ul style="list-style-type: none"> ▪ ESE Engineering Services for Energy S.R.L.; ▪ Fundacion Cener-Ciemat; ▪ Deutsches Zentrum fuer Luft - und Raumfahrt eV; ▪ Geomodel Solar SRO; ▪ Agencia Estatal de Meteorologia; ▪ Alstom Renewable (Schweiz) AG; ▪ EC Systems SPZOO
Countries: PT; DE; IT; PL; ES; SK; CH	
Objectives:	
<p>Predictability and flexibility are key enablers to increase CSP penetration in the energy mix by a) increasing dispatchability b) making CSP less/not reliant on subsidies c) supporting stable grid operation d) enabling operators to access new revenue streams (electricity trading, ancillary services). Today CSP plants with molten salt storage only partly achieve these objectives. Key enabling technologies to be demonstrated and introduced in the market are 1) design and operation of molten salt once-through steam generator – This will allow fully flexible plant operation; 2) design and implementation of integrated weather forecasting and dispatch optimization – This will allow optimal management of the energy storage to maximize revenues while respecting constraints/commitments (e.g. to the grid). Towards 1), an innovative design approach is proposed, integrating process and equipment design with dynamic simulation of the system. Proven technologies in separate fields (molten salt ; once-through steam generator ; optimum control) will be for the first time integrated and demonstrated. Towards 2), different approaches to DNI forecasting (direct; mesoscale models) will be integrated to extend geographical coverage and improve reliability. Dispatch optimization under conditions of uncertainty (weather forecast) and perturbations (e.g. grid support requests) will be developed. Furthermore, automatic plant performance characterization by machine learning will be implemented to ensure a real optimum is achieved. For succesfull market introduction, a down-scale pilot will be realized. Here, integrated operation of once-through steam generator, weather forecast and dispatch optimization will be demonstrated. CSP will undergo large growth in developing markets, where grid constraints and market liberalization will play a role. Developint these key-enabling technologies will put european industries in the position to compete at the forefront in the market worldwide.</p>	

Acronym: ORC-PLUS	
Title: Organic Rankine Cycle - Prototype Link to Unit Storage	
Starting date: 01.05.2015	Starting date: 01.05.2019
Total cost: 7,297,148.75 €	Total cost: 6,339,316 €
Type of Action: RIA	
Coordinator: Agenzia Nazionale per Le Nuove Tecnologie, L'energia e Lo Sviluppo Economico Sostenibile (IT)	
Participants:	
<ul style="list-style-type: none"> ▪ Euronovia; ▪ Centro de Investigacion Cooperativade Energias Alternativas Fundacion; ▪ Enerray SPA; ▪ Laterizi Gambettola SRL; 	<ul style="list-style-type: none"> ▪ Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV; ▪ Institut de Recherches en Energie Solaire et Energies Nouvelles;
Countries: FR; ES; DE; MA; IT	
Objectives:	
<p>In line with the call H2020- LCE-03-2014, ORC-PLUS focuses on increasing the technological performance of renewable energy systems, reducing costs and improving dispatchability. The aim is to develop an optimized combination of innovative Thermal Energy Storage- TES (specialized for CSP scale 1-5 MWe) and engineering solutions to improve the number of production hours of an existing small CSP plant, located in a desert area and coupled with an ORC system. With an optimized TES solution, it is possible to extend periods of energy production of a CSP plant (also during non-solar radiation), eliminating or minimizing the need to burn fossil or renewable fuels in hybrid or back-up systems. Nowadays, efforts are being devoted to R&D on TES for large-scale plants, though large potential for small/medium-scale CSP installations exists.</p> <p>ORC-PLUS is in the spectrum of “large scale prototype to pre-commercial scale demonstration”. The technology proposed is based on a solar field, using a thermal oil as Heat Transfer Fluid and ORC power unit coupled with an innovative TES. Experimental demonstration of two different industrial prototypes of TES systems will be performed in relevant environment (TRL 6). For each prototype, a simulation model of the pilot processes will be developed, with prototypes of TES systems. The models will be optimized on the basis of the characteristics of the site and power load, to determine conditions and relevant parameters of the real scenarios for each application and to select the TES technology best fitting the needs of the targeted sector. Final result will be an industrial pilot plant used to validate the technology in a real operational environment and to demonstrate its feasibility (TLR7). Validation includes an analysis of the techno-economic viability and environmental impact, and of the replicability of the pilot plant final design. This proposal is supported by three support letters of ESTELA, ANEST and Green Energy Park (Morocco).</p>	

Acronym: GEOTeCH	
Title: Geothermal Technology for Economic Cooling and Heating	
Starting date: 01.05.2015	Starting date: 01.05.2019
Total cost: 9,025,458.75 €	Total cost: 7,136,662.88 €
Type of Action: IA	
Coordinator: Solintel M&P SL (ES)	
Participants:	
<ul style="list-style-type: none"> ▪ Hiref SPA; ▪ Katholieke Universiteit Leuven; ▪ Armengol & Ros Consultors I Associats; ▪ De Montfort University; ▪ Fundacion Tecnalia Research & Innovation; ▪ D'appolonia SPA; ▪ Stuwa Konrad Stukerjurgan GmbH; 	<ul style="list-style-type: none"> ▪ Alma Mater Studiorum - Universita di Bologna; ▪ Emte S.L.U.; ▪ Universita degli Studi di Padova; ▪ Conrad Stanen BV; ▪ Groenholland Geo Energiesystemen BV; ▪ Universitat Politecnica de Valencia; ▪ Geothex B.V.
Countries: IT; BE; ES; UK; NL; DE	
Objectives:	
<p>The Drilling technology that is currently used for installation of vertical borehole heat exchangers requires capital-intensive equipment that is expensive to mobilize, leads to deteriorated working conditions and requires experienced teams of specialist operatives. Drilling operations also often require significant quantities of drinking quality water and dispose of dirty water and mud. GEOTeCH will employ a different drilling concept that is based on dry auger methods that requires less capital-intensive equipment, enhances safety and avoids the environmental risks, complexity and costs of dealing with water supplies and contaminated waste.</p> <p>Another key concept of GEOTeCH will be a better integration between heat exchange elements during installation by developing an innovative heat exchanger allowing to achieve high levels of thermal performance with low pressure loss. This device employs a co-axial configuration and spiral fluid flow pathways to achieve low thermal resistance compared to conventional U-tube devices.</p> <p>Furthermore, GEOTeCH aims to implement cost-effective geothermal systems by alleviating the costs associated with drilling boreholes in large size buildings. The GEOTeCH's approach seeks the maximum use of the foundation structures that are otherwise required, exclusively, for structural and geotechnical purposes in tertiary buildings. Foundation structures such as piles, screen walls and basement slabs will become effective geothermal heat exchangers in GEOTeCH.</p> <p>GEOTeCH will develop optimized hybrid solutions that will integrate the different geothermal systems in small and large buildings market. The optimization of geothermal system operation will be achieved with the Energy Management System and the development of a dual source heat pump capable of making optimal use of ground and/or air environmental heat sources. The GEOTeCH's geothermal heating and cooling standard will be more attractive to design professionals and construction companies.</p>	

Acronym: EcoSwing	
Title: EcoSwing - Energy Cost Optimization using Superconducting Wind Generators - World's First Demonstration of a 3.6 MW Low-Cost Lightweight DD Superconducting Generator on a Wind Turbine	
Starting date: 01.03.2015	Starting date: 01.03.2019
Total cost: 13,846,593.75 €	Total cost: 10,591,733.64 €
Type of Action: IA	
Coordinator: Envision Energy (Denmark) APS (DK)	
Participants:	
<ul style="list-style-type: none"> ▪ Jeumont Electric SAS; ▪ Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV; ▪ Universiteit Twente; ▪ Germanischer Lloyd Industrial Services GmbH; 	<ul style="list-style-type: none"> ▪ Sumitomo (SHI) Cryogenics Of Europe Limited; ▪ ECO 5 GmbH; ▪ Delta Energy Systems GmbH; ▪ Theva Duennschichttechnik GmbH
Countries: FR; DE; NL; UK	
Objectives:	
<p>EcoSwing aims at world's first demonstration of a superconducting low-cost, lightweight drive train on a modern 3.6 MW wind turbine.</p> <p>EcoSwing is quantifiable: The generator weight is reduced by 40% compared to commercial permanent magnet direct-drive generators (PMDD). For the nacelle this means a very significant weight reduction of 25%. Assuming series production, cost reduction for the generator can be 40% compared to PMDD. Finally, reliance on rare earth metals is down by at least two orders of magnitude.</p> <p>This demonstration is enabled by the increasing maturity of industrial superconductivity. In an ambitious step beyond present activities, EcoSwing will advance the TRL from 4-5 to 6-7. We are shifting paradigms: Previously, HTS was considered for very big, highly efficient turbines for future markets only. By means of cost-optimization, EcoSwing targets a turbine of great relevance already to the present large-scale wind power market. The design principles of EcoSwing are applicable to markets with a wide range of turbine ratings from 2 MW to 10 MW and beyond.</p> <p>Despite technological successes in superconductivity, turbine manufacturers and generator suppliers are hesitant to apply HTS into the wind sector, because of real and perceived risks. The environment inside a wind turbine has unique requirements to generators (parasitic loads and moments, vibration, amount of independent hours of operation). Therefore, a demonstration is required.</p> <p>The consortium represents a full value chain from materials, over components, up to a turbine manufacturer as an end-user providing market pull. It features competent partners on the engineering, the cryogenic, and the power conversion side. Also ground-based testing before turbine deployment, pre-certification activities, and training are included.</p> <p>EcoSwing can become tangible: The EcoSwing demonstrator will commence operation in 2018 on an existing very modern 3.6 MW wind turbine in Thyborøn, Denmark.</p>	

Topic LCE-12 – Projects:

Acronym: STEELANOL	
Title: Production of sustainable, advanced bio-ethANOL through an innovative gas-fermentation process using exhaust gases emitted in the STEEL industry	
Starting date: 01.05.2015	Starting date: 01.11.2018
Total cost: 14,560,736.75 €	Total cost: 10,192,515.73 €
Type of Action: IA	
Coordinator: Arcelormittal Belgium NV (BE)	
Participants:	
<ul style="list-style-type: none"> ▪ E4TECH (UK) Ltd; ▪ Lanzatech UK Ltd; 	<ul style="list-style-type: none"> ▪ Arcelormittal Maizieres Research SA; ▪ Primetals Technologies Austria GmbH
Countries: UK; FR; AT	
Objectives:	
<p>The proposed STEELANOL project is based on producing bioethanol via an innovative gas fermentation process using exhaust gases emitted by the steel industry. The proposal addresses the specific topic “Demonstrating advanced biofuel technologies” (LCE-12– 2014), under the call for competitive low-carbon energy in Horizon2020.</p> <p>The BF/BOF gaseous emissions are an unavoidable residue from the steelmaking process and are currently used for electricity production or being flared. Nevertheless, they can be advantageously used to produce bioethanol, thereby reducing the usage of fossil fuel molecules and thus significantly reducing GHG emissions. The bio-ethanol production would have a GHG impact that is over 65% lower compared to oil derived fuels STEELANOL’s main objective is to demonstrate the cost-effective production of sustainable bioethanol, with the purpose of assessing the valorisation of this ethanol biofuel as a fuel derivative for the transport sector. A demonstration plant of approximately 25,000 tons/ethanol per year will be built; the first of its kind in Europe, and the largest facility built to date utilizing this technology globally. ArcelorMittal is the lead partner of this project and proposal. The gas fermentation technology will be supplied by LanzaTech, the engineering work will be performed by Primetals, and E4Tech will develop the Life Cycle Assessment of the produced fuels. Several key players in the transport sector, Boeing, Virgin Atlantic, Mitsui, have expressed their strong interest and support for the project.</p>	

Acronym: 2G BIOPIC	
Title: Second Generation Bioethanol sustainable production based on Organosolv Process at atmospheric Conditions	
Starting date: 01.05.2015	Starting date: 01.05.2018
Total cost: 35,195,225 €	Total cost: 19,999,544 €
Type of Action: IA	
Coordinator: Compagnie Industrielle de La Matiere Vegetal CIM V (FR)	
Participants:	
<ul style="list-style-type: none"> ▪ Bio Base Europe Pilot Plant VZW; ▪ Institut National des Sciences Appliquees de Toulouse Insat; ▪ Rolkem; 	<ul style="list-style-type: none"> ▪ Taurus Energy AB; ▪ Dyadic Nederland BV; ▪ Institut National De La Recherche Agronomique
Countries: BE; FR; SE; NL	
Objectives:	
<p>The purpose of the 2G BIOPIC project is to demonstrate the performance, the reliability and the sustainability, of the whole value chain of production of bioethanol from agricultural residues and wood. 2G BIOPIC aims to design, construct and optimize a second generation (2G) demonstration plant with a capacity of 1 T of biomass/h. This 2G plant is based on the scale-up and optimization of bioethanol production from an already validated pilot plant scale (50Kg/h) achieved in a previous project (FP7 BIOCORE).</p> <p>The innovative patented concept proposed by 2G BIOPIC consists of cleanly deconstruct lignocellulosic biomass before converting its components into high value products. Thanks to optimized process conditions, the polysaccharides fractions are free from degradation products and inhibitors, allowing a very high ethanol yield using a low amount of enzymes and yeasts. By combining this technology with advanced strains for enzymes and a production of yeast able to ferment more than 90% of C5 and C6 sugars of the biomass, the 2G BIOPIC technology will result in i) higher bioethanol yield per ton of biomass process (20% more compared to competing technologies), ii) multi-feedstocks interoperability, iii) higher profitability of the process through the production of a high value bio-based co-product: the Biolignin™ .</p> <p>All critical steps of the value chain will be integrated to optimize bioethanol production (yield and production costs) and the high commercial value of the co-product (Biolignin™) will be demonstrated in the business case. Risk management will cover the all project, identifying potential risk and implementing mitigation plans. The data and experience generated during the project will demonstrate the technical viability, environmental, social and economical sustainability of the 2G BIOPIC technology and produce the knowledge necessary for the future scale-up to a flagship plant.</p>	

Topic LCE-19 – Project:

Acronym: GATEWAY	
Title: Developing a Pilot Case aimed at establishing a European infrastructure project for CO ₂ transport	
Starting date: 01.05.2015	Starting date: 01.05.2017
Total cost: 787,700 €	Total cost: 787,700 €
Type of Action: CSA	
Coordinator: Sintef Energi AS (NO)	
Participants: <ul style="list-style-type: none"> ▪ Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek TNO; ▪ University of Leeds; ▪ Forschungszentrum Julich GmbH; ▪ Progressive Energy Limited; ▪ Ecofys Netherlands BV 	
Countries: NL; UK; DE	
Objectives: <p>The OBJECTIVES of this proposal are as follows</p> <p>a) to define a subsequent initiative, referred to as the Pilot Case, providing a model for establishing a European CO₂ infrastructure project, targeting a gateway transferring CO₂ from source to sink. The gateway will form the first leg of a cross-border network, allowing multiple sources and multiple sinks.</p> <p>b) to make profound assessments of the substantial funding needs and available resources.</p> <p>c) to solicit strong actions by the partners involved (member states of the EU and other countries) with a three-step approach (Berlin model).</p> <p>The objectives will be ACHIEVED by acquiring commercial and legal input from various sources, such as industries, research alliances and institutes, investors and funding agencies, and engage industries capable of providing the knowledge of how to initiate the first gateway(s) of a future European CO₂ transport system. This will include</p> <ul style="list-style-type: none"> - knowledge gathering, involving structured intelligence processes, - outline strategies, - assessment of lead times, - scenario building, - consideration of funding synchronization issues. - assessing the economic potential(s), timing, and organisation towards the deployment of CCS within Europe, and gradually increase the deployment so that it applies to Europe as a whole, thus providing a Pan-European infrastructure for CO₂ transport, - the initiation of a strict planning of the infrastructure, including the handling of specific policy issues and regulatory requirements. <p>These objectives demonstrate a clear RELEVANCE to the H2020 Work Programme, calling for proposals for a pilot case addressing areas and challenges targeted in the competitive low-carbon energy call. This proposal pursues activities that support 'the use of research outcomes by industry of a project resulting from synchronised funding processes by at least three Member States', as addressed in the LCE-19 call.</p>	

Topic LCE-20 – Projects:

Acronym: BioEnergyTrain	
Title: BioEnergyTrain	
Starting date: 01.05.2015	Starting date: 01.05.2019
Total cost: 3,697,580 €	Total cost: 3,697,578.75 €
Type of Action: CSA	
Coordinator: European Sustainable Energy Innovation Alliance - ESEIA, Verein fuer Forderung der Europaischen Innovation fuer Erneuerbare Energien (AT)	
Participants:	
<ul style="list-style-type: none"> ▪ Kompetenzzentrum Holz GmbH; ▪ KIC Innoenergy SE; ▪ Universiteit Twente; ▪ Univerza V Ljubljani; ▪ Elektro-Slovenija D.O.O.; ▪ Asociatia Green Energy; ▪ Landesenergieverein; ▪ Technische Universitaet Graz; ▪ Bergischer Abfallwirtschaftsverband; 	<ul style="list-style-type: none"> ▪ Technische Universitaet Hamburg-Harburg; ▪ Laboratorio Nacional de Energia e Geologia I.P.; ▪ Universitatea Transilvania Din Brasov; ▪ Eco World Styria Umwelttechnik Cluster GmbH; ▪ BRP-Powertrain GmbH & CO KG
Countries: AT; NL; SI; RO; DE; PT	
Objectives:	
<p>The development and adoption of renewable and sustainable energy has become a top priority in Europe, and is Horizon 2020's most prominent theme. Research into new energy methods required to reduce humanity's carbon footprint is an urgent and critical need, and is reliant upon a flow of newly qualified persons in areas as diverse as renewable energy infrastructure management, new energy materials and methods, and smart buildings and transport. Bioenergy is a particularly important field in this respect as it is at the cross-roads of several important European policies, from the Strategic Energy Technology Plan Roadmap on Education and Training (SET-Plan) to the European Bioeconomy Strategy to European Food Safety and Nutrition Policy. European development in this prioritised field is stalled due to a lack of qualified personnel, a lack of cohesion and integration among stakeholders, and poor linkage between professional training and industry needs. To address these problems, BioEnergyTrain brings together fifteen partners from six EU countries to create new post-graduate level curricula in key bioenergy disciplines, and a network of tertiary education institutions, research centres, professional associations, and industry stakeholders encompassing the whole value chain of bioenergy from field/forest to integration into the sustainable energy systems of buildings, settlements and regions. The project will foster European cooperation to provide a highly skilled and innovative workforce across the whole bioenergy value chain, closely following the recommendations of the SET-Plan Education Roadmap.</p>	

Acronym: ENTRUST	
Title: Energy System Transition Through Stakeholder Activation, Education and Skills Development	
Starting date: 01.05.2015	Starting date: 01.05.2018
Total cost: 3,476,394.59 €	Total cost: 3,476,394.58 €
Type of Action: RIA	
Coordinator: University College Cork, National University of Ireland, Cork (IE)	
Participants:	
<ul style="list-style-type: none"> ▪ Liverpool John Moores University; ▪ Integrated Environmental Solutions Limited; ▪ Redinn SRL; 	<ul style="list-style-type: none"> ▪ Enerbyte Smart Energy Solutions SL; ▪ LGI Consulting SARL; ▪ Stam SRL
Countries: UK; IT; ES; FR	
Objectives:	
<p>ENTRUST provides mapping of Europe's energy system (key actors & their intersections, technologies, markets, policies, innovations) and an in-depth understanding of how human behaviour around energy is shaped by both technological systems and socio-demographic factors (esp. gender, age and socio-economic status). New understandings of energy-related practices and an intersectional approach to the socio-demographic factors in energy use will be deployed to enhance stakeholder engagement in Europe's energy transition.</p> <p>The role of gender will be illuminated by intersectional analyses of energy-related behaviour & attitudes towards energy technologies, which will assess how multiple identities and social positions, combine to shape practices. These analyses will be integrated within a transitions management framework which takes account of the complex meshing of human values and identities with technological systems. The third key paradigm informing the research is the concept of energy citizenship, with a key goal of ENTRUST being to enable individuals overcome barriers of gender, age and socio-economic status to become active participants in their own energy transitions.</p> <p>Central to the project will be an in-depth engagement with 5 very different communities across the continent, who will be invited to be co-designers of their own energy transition. The consortium brings a diverse array of expertise to bear in assisting and reflexively monitoring these communities as they work to transform their energy behaviours, generating innovative transition pathways and business models capable of being replicated elsewhere in Europe.</p> <p>Deliverables will include a policy tool-kit incorporating contemporary best practice in promoting energy transitions at a Europe-wide level; a suite of innovative transition pathways and community engagement tools designed to stimulate dialogue and break down barriers to behaviour change and the adoption new technologies at a community level.</p>	

Acronym: INPATH-TES	
Title: PhD on Innovation Pathways for TES	
Starting date: 01.05.2015	Starting date: 01.05.2018
Total cost: 4,301,072.66 €	Total cost: 4,301,072.66 €
Type of Action: CSA	
Coordinator: Universidad de Lleida (ES)	
Participants:	
<ul style="list-style-type: none"> ▪ University of Ulster Royal Charter; ▪ User Feedback Program SL; ▪ Technische Universiteit Eindhoven; ▪ Centre National de La Recherche Scientifique; ▪ AIT Austrian Institute of Technology GmbH; ▪ Universitat de Barcelona; ▪ Politechnika Warszawska; ▪ Rigas Tehniska Universitate; ▪ Abengoa Solar New Technologies SA; ▪ Institut National des Sciences Appliquees de Lyon; ▪ Universita degli Studi di Perugia; ▪ University of Cukurova; 	<ul style="list-style-type: none"> ▪ Deutsches Zentrum fuer Luft - und Raumfahrt eV; ▪ Consorzio Per Il Lavoro E Le Attivita' Innovative E Formative; ▪ Arcelik A.S.; ▪ Ben-Gurion University of the Negev; ▪ Universita della Calabria; ▪ Universidade do Minho; ▪ The Provost, Fellows, Foundation Scholars & The Other Members of Board of The College of The Holy & Undivided Trinity of Queen Elizabeth Near Dublin; ▪ KIC Innoenergy SE; ▪ Universiteit Gent
Countries: UK; ES; NL; FR; AT; PL; LV; IT; TR; DE; IL; PT; IE; BE	
Objectives:	
<p>Following the EC SET-Plan Education and Training Roadmap, the concept of this proposal is to develop a joint PhD programme between universities and research centres, on the topic of Thermal Energy Storage (TES). The goal of INPATH-TES is to create a network of universities and research institutes to implement a joint PhD programme on TES technologies. The final result of such a network is to educate professionals on these technologies for the European research and industry institutions. The consortium includes 14 universities that will implement the joint PhD programme, two research institutions (AIT and PROMES-CNRS), three companies and two SME (Arcelik, Abengoa Solar NT, KIC InnoEnergy, UFP and LAIF), that will cooperate in defining the programme and in its implementation and deployment. The specific objectives of the project will lead to the qualification of professionals for the European research and industry institutions, bringing Europe to continue being leaders in these technologies. The partners in the proposal will be the core of a future larger network of excellent R&D institutions, and industries for co-funding and industrial placement, sharing infrastructure capacities, and enhancing mobility of students. The overall approach of the project involves a work plan divided in six work packages, being either coordination or support activities. Coordination activities: WP1 – Management and coordination; WP3 – Developing, maintaining and updating a PhD programme in TES; and WP4 – Implementation of the PhD programme in TES. Support activities: WP2 – External communication and dissemination; WP5 – Stakeholder involvement and extension of partnerships; and WP6 – Framework for monitoring and evaluation of INPATH-TES as well as IPR and regulatory issues.</p>	

Acronym: NATCONSUMERS	
Title: NATural Language Energy for Promoting CONSUMER Sustainable Behaviour	
Starting date: 01.05.2015	Starting date: 01.05.2017
Total cost: 2,048,278.75 €	Total cost: 2,032,528.75 €
Type of Action: CSA	
Coordinator: Ariosz Szolgaltato Informatikai Estanacsado Korlatolt Felelossegu Tarsasag (HU)	
Participants:	
<ul style="list-style-type: none"> ▪ Fundacion para el Progreso del Soft Computing; ▪ Vaasaett LTD AB OY; ▪ Strategic Design Scenarios SPRL; ▪ Draxis Environmental S.A.; ▪ Valor Desarrollo e Innovacion SL; 	<ul style="list-style-type: none"> ▪ The Energy Saving Trust Ltd by Guarantee; ▪ Statens Institutt for Forbruksforskning; ▪ Associazione Italiana Difesa Consumatori ed Ambiente; ▪ Ricerca Sul Sistema Energetico - RSE SPA
Countries: ES; FI; BE; EL; UK; NO; IT	
Objectives:	
<p>Residential energy consumption represents the 28% of all EU consumption and if commercial buildings are also considered this percentage increases to 40% (36% of EU CO2 emissions). In this context, is clear that the reduction of consumption in the residential sector should play an important role in energy efficiency programmes and policies as is stated in the recent Energy Efficiency Directive 2012/27/EU.</p> <p>Most energy efficiency measures implemented in Europe involved technological interventions. In contrast, everyday energy-consuming behaviours are largely habitual and therefore the potential of energy savings at home with actions focused in consumer behaviour is really promising. In this context the provision of feedback to consumers has resulted in really promising results, achieving savings in the range of 5-20%. But some limitations exists. The aim of this project is to fill the gaps and advanced in this context, being an essential preparatory activity for the future large scale demonstration of feedback methodologies.</p> <p>The key aim of this project is to develop an advanced and integral user-centred framework for the implementation of efficient energy feedback programmes in the domestic area. Our approach relies in the complete characterisation of the EU energy consumer, and the design of specific personalised actions tailored to each consumer pattern detected based on the use of natural language and emotional contents. NATCONSUMERS will set the scenario to allow strengthening the dialogue between the EU energy system stakeholders in order to define robustness methodologies exploiting to the maximum the potential of energy feedback approaches, filling the existing gaps not still covered by previous pilots and experiments.</p> <p>NATCONSUMERS consortium brings together representatives of all stakeholders and areas involved in the project. A concise dissemination and awareness programme is proposed to reach the target communities and increase the impact of the project.</p>	

CALL: H2020-LCE-2014-3

Topic	Title	Number of funded projects	Total EU-contribution [€]
LCE-04	Market uptake of existing and emerging renewable electricity, heating and cooling technologies	6	10,515,607.00
LCE-07	Distribution grid and retail market	10	58,019,010.40
LCE-08	Local / small-scale storage	6	66,177,999.40
LCE-10	Next generation technologies for energy storage	1	6,492,262.00
LCE-14	Market uptake of existing and emerging sustainable bioenergy	6	9,627,481.75
LCE-18	Supporting Joint Actions on demonstration and validation of innovative energy solutions	3	33,091,033.60
Total		32	183,923,394.15

Topic LCE-04 – Projects:

Acronym: RiCORE	
Title: Risk Based Consenting of Offshore Renewable Energy Projects	
Starting date: 01.01.2015	Starting date: 01.07.2016
Total cost: 1,393,532.50 €	Total cost: 1,393,532.50 €
Type of Action: CSA	
Coordinator: The Robert Gordon University (UK)	
Participants: <ul style="list-style-type: none"> ▪ Fundacion Azti - Azti Fundazioa; ▪ E-Cube Strategy Consultants; ▪ Wavec/Offshore Renewables - Centro de Energia Offshore Associacao; ▪ University College Cork, National University of Ireland, Cork; ▪ Marine Scotland 	
Countries: ES; FR; PT; IE; UK	
Objectives: <p>The consenting of offshore renewable energy is often cited as one of the main non-technical barriers to the development of this sector. A significant aspect of this is the uncertainty inherent in the potential environmental impacts of novel technology. To ensure consents are compliant with EU and national legislation, such as the Environmental Impact Assessment and Habitats Directive, costly and time consuming surveys are required even for perceived lower risk technologies in sites which may not be of highest environmental sensitivity. It is therefore the aim of the RiCORE project to establish a risk-based approach to consenting where the level of survey requirement is based on the environmental sensitivity of the site, the risk profile of the technology and the scale of the proposed project. RiCORE will study the legal framework in place in the partner Member States to ensure the framework developed will be applicable for roll out across these Member States and further afield.</p> <p>The next stage of the RiCORE project is to consider the practices, methodologies and implementation of pre-consent surveys, post-consent and post-deployment monitoring. This will allow a feedback loop to inform the development of the risk-based framework for the environmental aspects of consent and provide best practice. The project will achieve these aims by engaging with the relevant stakeholders including the regulators, industry and EIA practitioners, through a series of expert workshops and developing their outcomes into guidance.</p> <p>The impact of the project will be to improve, in line with the requirements of the Renewable Energy Directive specifically Article 13 (1), consenting processes to ensure cost efficient delivery of the necessary surveys, clear and transparent reasoning for work undertaken, improving knowledge sharing and reducing the non-technical barriers to the development of the Offshore Renewable Energy sector so it can deliver the clean, secure energy</p>	

Acronym: AURES	
Title: Auctions for Renewable Energy Support: Effective use and efficient implementation options	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 1,552,600.75 €	Total cost: 1,552,600.75 €
Type of Action: CSA	
Coordinator: Danmarks Tekniske Universitet (DK)	
Participants:	
<ul style="list-style-type: none"> ▪ Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV; ▪ TAKON GmbH - Spieltheoretische Beratung; ▪ Technische Universitaet Wien; 	<ul style="list-style-type: none"> ▪ Agencia Estatal Consejo Superior de Investigaciones Cientificas; ▪ The University of Exeter; ▪ Concito; ▪ Ecofys Germany GmbH
Countries: DE; ES; UK; DK; AT	
Objectives:	
<p>Auctions, as a competitive and market-based mechanism, are on the verge of becoming a prevailing feature in support policies for renewable energy in Europe. A comprehensive assessment of auctions and their suitability for renewable support in Europe is urgently needed to facilitate their successful design and cost-efficient implementation. Auctions have the potential to significantly improve the performance of renewable electricity support in Europe, but there are potential pitfalls and difficulties to be avoided. AURES combines dedicated, detailed and target-oriented analysis of auctions and their interactions with other energy policy mechanisms and markets with capacity building of policy makers and market participants. The project will identify and evaluate suitable auction design options and their effects under different market conditions using tailored theoretical, empirical, experimental, and model-based approaches, and so develop best practices and policy recommendations for future auction design. Building on worldwide experiences with auctions in energy policy and other industries and on close cooperation with ongoing auction implementation cases in Europe, a strong knowledge base will be developed, enabling policy makers and market participants to make informed decisions. This knowledge base will be processed in a flexible policy support tool that provides policy makers with tailor-made information suited to their specific situation and policy preferences. By facilitating an intense and continuous stakeholder dialogue and by establishing a knowledge sharing network via workshops, webinars, bilateral meetings, and expert consultations, the project will serve as capacity building platform. The project consortium consists of eight renowned public institutions and private firms representing seven European countries and includes some of the leading energy policy experts in Europe, with an impressive track record of successful research and coordination projects.</p>	

Acronym: progRESsHEAT	
Title: Supporting the progress of renewable energies for heating and cooling in the EU on a local level	
Starting date: 01.03.2015	Starting date: 01.11.2017
Total cost: 1,728,305.60 €	Total cost: 1,728,305 €
Type of Action: CSA	
Coordinator: Technische Universitaet Wien (AT)	
Participants:	
<ul style="list-style-type: none"> ▪ Mesto Litomerice; ▪ EE Energy Engineers GmbH; ▪ O.Oe. Energiesparverband; ▪ Energy Cities/Energie-Cites Association; ▪ Agentia Pentru Management Ul Energiei Si Protectia Mediului Brasov; ▪ Gate 21; 	<ul style="list-style-type: none"> ▪ IREES GmbH - Institut fuer Ressourceneffizienz und Energiestrategien; ▪ Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV; ▪ Danmarks Tekniske Universitet; ▪ Instituto de Engenharia Mecanica e Gestao Industrial
Countries: CZ; DE; AT; FR; RO; DK; PT	
Objectives:	
<p>The RED, the EED and the EPBD (recast) require member states to develop ambitious policies for sustainable heating and cooling. The objective of this project is to assist policy makers at the local, regional, national and EU-level in developing and implementing integrated, effective and efficient policy strategies achieving a fast and strong penetration of RES and EE in heating and cooling. This will include the analysis of cross-sectoral effects between RES and EE measures in industry, buildings and DHC as well as the link to the electricity system.</p> <p>The core part of the proposal is the communication and capacity building process with policy makers, administrative staff and other stakeholders at the local, regional and national level including the set up of policy group meetings, expert consultations, experience sharing and capacity building workshops as well as webinars. The process will focus on 6 target countries and regions. Together with the authorities heating and cooling strategies will be developed through a profound analysis of their specific situation including barriers & drivers and a model based assessment of policy intervention in scenarios up to 2050. progRESsHEAT will assist national policy makers in implementing the policies published in the national heating and cooling plans in an effective and efficient way by the means of a model-based quantitative impact assessment of local, regional and national policies up to 2050. Data, scenarios and recommendations will be provided for the target countries. Dissemination activities will transfer results to other countries and the EU-level.</p> <p>Policy makers and other stakeholders will be strongly involved in the process, learn from the experience in other regions and gain deep understanding of the impact of policy instruments and their specific design. This will provide the ground for favourable, stable conditions for increasing the efficiency and the penetration of renewable heating and cooling in Europe.</p>	

Acronym: IndustRE	
Title: Innovative Business Models for Market Uptake of Renewable Electricity unlocking the potential for flexibility in the Industrial Electricity Use	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 1,897,227.50 €	Total cost: 1,897,227.50 €
Type of Action: CSA	
Coordinator: Wirtschaft und Infrastruktur GmbH & CO Planungs KG (DE)	
Participants: <ul style="list-style-type: none"> ▪ Vlaamse Instelling Voor Technologisch Onderzoek N.V.; ▪ Societa Energie Rinnovabili S.P.A.; ▪ Imperial College of Science Technology and Medicine; ▪ Universidad Pontificia Comillas; ▪ European Copper Institute; ▪ Becker Buttner Held Partnerschaft; ▪ SCM Group SPA 	
Countries: BE; IT; UK; ES; DE	
Objectives: <p>The flexibility of the industrial electricity demand has been identified as a potential that through innovative business models can facilitate further growth of variable renewable energy, while reducing the industrial electricity costs and contributing to the European energy policy goals. In this project the large industry is working with the renewable energy community to identify and implement business models for supplying variable renewable electricity to industrial users with flexibility in their demand, creating win-win situations. Several variations of the business models will be described covering different options like on and off-site renewable energy production. The business models will be adapted to 5 industrial sectors (Chemicals, non-ferrous metals, cold storage, steel, and water treatment) and 6 target countries (Belgium, France, Germany, Italy, Spain and UK). Tools will be developed to facilitate adoption of the business models: Model contracts adapted to the target countries and the different business models and a methodology that assesses the flexibility in industrial units and its value within the business models. The methodology will be transferred to third parties and will be applied in 6 case studies covering all target sectors and countries. Recommendations for improvements in the regulatory and market framework will be formulated and promoted. A top-down and a bottom-up methodology will be used to quantify the potential for further cost-effective grid integration of variable renewable electricity by the exploitation of the industrial electricity demand flexibility. The use of a sophisticated power system model and detailed analysis will provide reliable data on the impact the policy recommendations could have. An ambitious campaign will be carried out for engaging the target groups in direct action implementing the business models and informing the interested actors about the project activities and results.</p>	

Acronym: CrowdFundRES	
Title: Unleashing the potential of Crowdfunding for Financing Renewable Energy Projects	
Starting date: 01.02.2015	Starting date: 01.02.2018
Total cost: 1,992,552.50 €	Total cost: 1,893,002.50 €
Type of Action: CSA	
Coordinator: Wirtschaft und Infrastruktur GmbH & CO Planungs KG (DE)	
Participants:	
<ul style="list-style-type: none"> ▪ Green Crowding GmbH; ▪ Renewable Energy Generation Limited; ▪ Valorem SAS; ▪ Lumo; ▪ Osborne Clarke Anwaltssozietat; ▪ Stichting One Planet Crowd Nederland; ▪ Youris.Com; 	<ul style="list-style-type: none"> ▪ Association Europeenne de La Petite Hydraulique AISBL; ▪ BNRG Renewables Limited; ▪ Global 2000 Umweltschutzorganisation; ▪ European Crowdfunfind Network; ▪ Abundance NRG Ltd; ▪ University of Dundee
Countries: DE; JE; FR; NL; BE; IE; AT; UK	
Objectives:	
<p>We are currently seeing a deceleration of renewable energy growth in Europe. This is partly attributed to the challenges for financing renewable energy projects. Reduced access to conventional financing options over the past few years has triggered innovative financing schemes to emerge, with crowdfunding attracting a lot of attention.</p> <p>CrowdFundRES recognises the vast potential of crowdfunding for financing renewable energy projects. The project has been developed for and in cooperation with the three target groups:</p> <ol style="list-style-type: none"> 1) Renewable energy project developers whose access to financing is getting more challenging 2) The part of the public that has an interest in investing even very small amounts of their savings in renewable energy projects 3) Crowdfunding platforms who act as intermediaries facilitating the financial transaction between the public and the project developers. <p>The overall objective of the proposed project is to contribute to the acceleration of the renewable energy growth in Europe by unleashing the potential of crowdfunding for financing renewable energy projects. In order to achieve this, the work has been structured for achieving the following objectives:</p> <ol style="list-style-type: none"> 1. Gain a deep understanding of the public's perception of crowdfunding 2. Analyse the challenges faced by the application of crowdfunding for renewable energy projects in Europe 3. Develop guidelines that support easier, more effective and wider accepted practices in crowdfunding renewable energy projects 4. Apply the guidelines and review them based on practical experience 5. Improve the market and regulatory framework 6. Promote the crowdfunding concept and its advantages among those who could contribute or raise funds 	

Acronym: PV FINANCING	
Title: PV FINANCING	
Starting date: 01.01.2015	Starting date: 01.07.2017
Total cost: 2,050,938.75 €	Total cost: 2,050,938.75 €
Type of Action: CSA	
Coordinator: Bundesverband Solarwirtschaft e.V. (DE)	
Participants:	
<ul style="list-style-type: none"> ▪ Solar Trade Association Limited; ▪ Ambiente Italia S.R.L.; ▪ Eclareon GmbH; ▪ Allianz Climate Solutions GmbH; ▪ Observatoire Energie Renouvelables; ▪ Comite Europeen de Coordination de L'Habitat Social AISBL; ▪ Creara Consultores SL; 	<ul style="list-style-type: none"> ▪ Uluslararası Güneş Enerjisi Topluluğu Türkiye Bolumu Dernegi; ▪ Rescoop EU ASBL; ▪ European Photovoltaic Industry Association; ▪ Frankfurt School of Finance & Management Gemeinnützige GmbH; ▪ Photovoltaik Austria Bundesverbandverein
Countries: UK; IT; DE; FR; BE; TR; ES; AT	
Objectives:	
<p>Feed-in tariffs (FITs) have been the fuel for successful solar PV growth stories in basically every one of today's large solar markets. First in Europe, now in China and Japan. The US is the only exception – backed by tax credits and net-metering, leasing has become a key means of financing residential solar systems there.</p> <p>With many European countries phasing out FITs, the simplicity of selling solar power will be gone; and without safe and fair returns, real estate and homeowners will not invest in PV anymore. In post-FIT times, solar companies and/or electric utilities in partnership with financial institutions will have to come up with new business models and financing schemes for PV investors in order to continue the success story of the FIT era.</p> <p>The German Solar Industry Association as project coordinator is driven by the mission to successfully evolve those business and financing models, to disseminate them among stakeholders and to shape the necessary policy framework and to remove barriers that prevent those models from realization.</p> <p>Consequently, the goal of PV Financing is to help stakeholders from specific application segments with the implementation of PV projects based on new PV business models while applying innovative equity and debt financing schemes. The availability of financing for PV projects based on the new business models shall be increased and the transaction costs shall be decreased by educating investors, commercial banks and insurance companies on the PV business models and their risks.</p>	

Topic LCE-07 – Projects:

Acronym: P2P-SmarTest	
Title: Peer to Peer Smart Energy Distribution Networks (P2P-SmartTest)	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 3,866,215 €	Total cost: 3,496,141.50 €
Type of Action: IA	
Coordinator: Oulun Yliopisto (FI)	
Participants: <ul style="list-style-type: none"> ▪ Instrumentacion y Componentes SA; ▪ Regenera Levante SL; ▪ Centre Tecnologic de Telecomunicacions de Catalunya; ▪ Katholieke Universiteit Leuven; ▪ University of Bath; ▪ Endesa SA; ▪ Fundacion Cener-Ciemat; ▪ Cardiff University 	
Countries: ES; BE; UK	
Objectives: <p>P2P-SmartTest project investigates and demonstrates a smarter electricity distribution system integrated with advanced ICT, regional markets and innovative business models. It will employ Peer-to-Peer (P2P) approaches to ensure the integration of demand side flexibility and the optimum operation of DER and other resources within the network while maintaining second-to-second power balance and the quality and security of the supply. The proposed project will built upon extensive experience of the consortium on Information and Communications Technologies (ICT), especially ICT for the Energy Sector, Smart Grids including Distributed Energy Resources (DER) integration, MicroGrids, CELLS, Virtual Power Plants etc., power system economics, electricity markets and business models. The project comprises of 7 work packages (WP), of which 5 are technical WPs. Apart from project management (WP1) and dissemination and exploitation (WP7) the P2P-SmartTest project defines and demonstrates the suitable business models (WP2) for peer-to-peer based distributed smart energy grids, quantify the value from significantly increased system interaction and integration, and assess the required development in ICT and power networks in conjunction with commercial and regulatory frameworks to enable P2P trading realising its full potential. WP3 shall develop and demonstrate the distributed wireless ICT solutions capable of offloading the required traffic of different applications of energy trading, network optimization, AMR data and real-time network control to name a few. In WP4 the optimization mechanisms of energy flows in P2P context shall be defined, as well as market design solutions. To properly operate distributed network, WP5 shall integrate the necessary network operation functions for resilient distribution system operation. The results of WPs 2-5 will be integrated to demonstration and validation environment in WP 6 to provide real-life results of distributed energy system designs.</p>	

Acronym: UPGRID	
Title: Real proven solutions to enable active demand and distributed generation flexible integration, through a fully controllable LOW Voltage and medium voltage distribution grid	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 15,653,828.25 €	Total cost: 11,937,258 €
Type of Action: IA	
Coordinator: Iberdrola Distribucion Electrica, S.A. (ES)	
Participants:	
<ul style="list-style-type: none"> ▪ EDP Distribuicao Energia SA; ▪ Ente Vasco de La Energia; ▪ Asociacion Instituto Tecnologico de La Energia; ▪ Atende Spolka Akcyna; ▪ Imperial College of Science Technology and Medicine; ▪ Politechnika Gdanska; ▪ INESC Porto - Instituto de Engenharia de Sistemas e Computadores do Porto; 	<ul style="list-style-type: none"> ▪ Energa Operator SA; ▪ Vattenfall Eldistribution AB; ▪ Instytut Energetyki; ▪ ZIV Metering Solutions SL; ▪ Universidad Pontificia Comillas; ▪ Fundacion Tecnalia Research & Innovation; ▪ Schneider Electric Industries SAS; ▪ IGE Energy Services (UK) Limited; ▪ Withus - Inovacao e Tecnologia LDA; ▪ Powel AS; ▪ Nos Comunicacoes SA
Countries: PT; ES; PL; UK; SE; FR; NO	
Objectives:	
<p>Unlike the control and observability put in service in HV/MV, LV networks are still being substantially managed as usual: no visibility of power and voltage or grid components status, poor knowledge of connectivity, manual operation of switches or few tools for worker support. The LV grid characteristics (radial topology, exposition to local disturbances, local accumulation of distributed generation, technical and no-technical loses, aging heterogeneous, etc.) limit the construction and refurbish of LV electric infrastructure and the integration on it of grid remote monitoring and operation and automation resources, bringing to difficulties in the implementation of the LV Smart Grid and the integration of Distributed Generation Resources and Active Demand Management (ADM).</p> <p>Smart metering deployment Mandates offer an opportunity to maximize the gains derived from the obliged functions to be deployed related to smart metering, developing and integrating additional innovative grid and ICT infrastructure, functions, services and tools improving grid operation performance and quality and paving the way for benefits and business opportunities for the involved actors (DSOs, customers, retailers and ESCOs).</p> <p>The project aims to develop, deploy and demonstrate innovative solutions (grid systems, functions, services and tools) for advanced Operation and Exploitation of LV/MV networks in a fully smart grid environment improving the capacity of that networks as enablers for Distributed Generation, ADM, Customer empowering and business opportunities.</p> <p>The project proposes 4 real pilots in Portugal, Poland, Spain and Sweden covering: Smart grid monitoring and operation, advanced grid maintenance, DER and ADM integration and active Consumer awareness and participation with cost efficiency. Also proposes specific WPs to maximize the socioeconomic impact of results, especially for their market uptake, business opportunities triggering and society awareness on the smart grid benefits</p>	

Acronym: EMPOWER	
Title: Local Electricity retail Markets for Prosumer smart grid pOWER services	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 6,120,486.25 €	Total cost: 4,429,808.12 €
Type of Action: IA	
Coordinator: Schneider Electric Norge AS (NO)	
Participants:	
<ul style="list-style-type: none"> ▪ Universitaet St. Gallen; ▪ Fredrikstad Energi Nett AS; ▪ Newen Projects GmbH; ▪ Esmart Systems AS; 	<ul style="list-style-type: none"> ▪ Universitat Politecnica De Catalunya; ▪ Smart Innovation Ostfold AS; ▪ Malta Intelligent Energy Management Agency
Countries: CH; NO; DE; ES; MT	
Objectives:	
<p>The aim is to explore and develop an integrated ICT solution to support the development of an electricity local market place and innovative business models, including operational methods to encourage micro-generation with renewable resources and participation of consumers and prosumers. The creation of incentives for all players would allow for exploiting the latent flexibility of the user-side of the electricity distribution net. This would greatly enhance the benefits of distributed renewable resources and enhance the impact and sustainability of demand-response programs. A local electricity market approach supported by innovative ICT platforms can operate effectively in a synchronized way with the overall energy system and market. The solution will create a shared engagement of local supply alleviating the traditional DSO's need to invest in centralized sourcing.</p> <p>The proposal's integrated ICT real-time platform would be able to manage trading, metering and management of electricity flow according to the transactions completed within the local market and beyond its boundaries. EMPOWER follows a micro-grid approach where energy flow is controlled by devices that are managed by a cloud-based management module. The management module also supports the trading that is handled by customizable software agents. Aggregation of contributions from the user community, metering, credit assignments, predictions and strategy maintenance would be aligned to different business models. A real-time communication module links the management part with the micro-grid control and household devices assigned to an integrated demand-response regime.</p> <p>EMPOWER will be tested at three representative locations across Europe, to prove that a ICT-supported local market approach would be accepted by consumers and prosumers, ensuring the required engagement and benefits to establish a highly efficient self-adaptive market solution able to balance supply and demand effectively at local level.</p>	

Acronym: NOBEL GRID	
Title: New Cost Efficient Business Models for Flexible Smart Grids	
Starting date: 01.01.2015	Starting date: 01.07.2018
Total cost: 13,864,941.25 €	Total cost: 11,725,973.15 €
Type of Action: IA	
Coordinator: Etra Investigacion y Desarrollo SA (ES)	
Participants:	
<ul style="list-style-type: none"> ▪ Engineering - Ingegneria Informatica SPA; ▪ European Distributed Energy Resources Laboratories e.V.; ▪ AIT Austrian Institute of Technology GmbH; ▪ Uninova - Instituto de Desenvolvimento de Novas Tecnologias; ▪ SICS Swedish ICT AB; ▪ Suministros Especiales Alginetenses S.COOP.V.; ▪ Institute of Communication and Computer Systems; ▪ Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV; ▪ Finnovaregio; 	<ul style="list-style-type: none"> ▪ Athens University of Economics and Business - Research Center; ▪ The Society for the Reduction of Carbon Limited; ▪ Ecro SRL; ▪ Hypertech (Chaipertek) Anonymos Viomichaniki Emporiki Etaireia Pliroforikis Kai Neon Technologion; ▪ Fundacio Privada Barcelona Digital Centre Tecnologic; ▪ Goodwolfe Energy Limited; ▪ The University of Manchester; ▪ ASM Terni SPA; ▪ Ecopower; ▪ KEMA Nederland BV; ▪ Surtel Electronica SL
Countries: IT; DE; AT; PT; SE; ES; EL; BE; UK; RO; NL	
Objectives:	
<p>NOBEL GRID will develop, deploy and evaluate advanced tools and ICT services for energy DSOs cooperatives and medium-size retailers, enabling active consumers involvement –i.e. new demand response schemas – and flexibility of the market – i.e. new business models for aggregators and ESCOs.</p> <p>Through the dual-use of telecommunication networks, and validating the integration of renewable generation presence and demand response systems, NOBEL GRID will offer advanced services to all actors in the retail markets of the electricity system in order to ensure that all consumers will benefit from cheaper prices, more secure and stable grids and low carbon electricity supply.</p> <p>The project results will be demonstrated and validated in real world environments with active involvement of all the actors, and based on the new business models defined during the project.</p>	

Acronym: FLEXICIENCY	
Title: energy services demonstrations of demand response, FLEXibility and energy efficiency based on metering data	
Starting date: 01.02.2015	Starting date: 01.02.2019
Total cost: 19,115,935.65 €	Total cost: 13,946,741 €
Type of Action: IA	
Coordinator: Enel Distribuzione S.P.A. (IT)	
Participants:	
<ul style="list-style-type: none"> ▪ Joule Asset Europe AB OY; ▪ Endesa SA; ▪ Univerza V Ljubljani; ▪ Vattenfall Eldistribution AB; ▪ Vaasaett LTD AB OY; ▪ Fundacion Circe Centro de Investigacion de Recursos y Consumos Energeticos; ▪ Agencia Municipal de La Energia de Malaga; ▪ SAP SE; 	<ul style="list-style-type: none"> ▪ Siemens SPA; ▪ Verbund AG; ▪ Cybergrid GmbH; ▪ Enel Energia SPA; ▪ European Distribution Systems Operators for Smart Grids AISBL; ▪ Vattenfall AB; ▪ Endesa Distribucion Electrica S.L.; ▪ Kiwi Power LTD; ▪ Electricite Reseau Distribution France SA
Countries: FI; ES; SI; SE; IT; AT; BE; UK; DE; FR	
Objectives:	
<p>Four major Distribution System Operators (in Italy, France, Spain and Sweden) with smart metering infrastructure in place, associated with electricity retailers, aggregators, software providers, research organizations and one large consumer, propose five large-scale demonstrations to show that the deployment of novel services in the electricity retail markets (ranging from advanced monitoring to local energy control, and flexibility services) can be accelerated thanks to an open European Market Place for standardized interactions among all the electricity stakeholders, opening up the energy market also to new players at EU level. The proposed virtual environment will empower real customers with higher quality and quantity of information on their energy consumptions (and generation in case of prosumers), addressing more efficient energy behaviours and usage as through advanced energy monitoring and control services. Accessibility of metering data, close to real time, made available by DSOs in a standardized and non-discriminatory way to all the players of electricity retail markets (e.g. electricity retailers, aggregators, ESCOs and end consumers), will facilitate the emergence of new markets for energy services, enhancing competitiveness and encouraging the entry of new players, benefitting the customers. Economic models of these new services will be proposed and assessed. Based on the five demonstrations, while connecting with parallel projects funded at EU or national levels on novel services provision, the dissemination activities will support the preparation of the Market Place exploitation strategies, as well as the promotion of the use cases tested during the demonstration activities.</p>	

Acronym: ENERGISE	
Title: ICT-based ENERGY Grid Implementation – Smart and Efficient	
Starting date: 01.01.2015	Starting date: 01.04.2017
Total cost: 998,000 €	Total cost: 998,000 €
Type of Action: CSA	
Coordinator: TUEV Rheinland Consulting GmbH (DE)	
Participants:	
<ul style="list-style-type: none"> ▪ WIK Wissenschaftliches Institut fuer Infrastruktur und Kommunikationsdienste GmbH 	
Countries: DE	
<p>Objectives:</p> <p>ENERGISE sets out to facilitate the efficient deployment of smart grid solutions by offering to all relevant stakeholders – telecommunication providers; industry associations in the telecommunications and utility sectors; energy suppliers; energy industry associations; national regulatory agencies; ministries of Member States; other players being active in the relevant fields – a toolkit that supports their decision-making process as regards the use of telecommunication infrastructure for existing or projected business cases. Based on existing experience the consortium can deliver a particularly suitable toolkit that is based upon a broad survey of actual use cases. Concretely, the ENERGISE toolkit addresses the following issue.</p> <p>Smart grid solutions hold immense opportunities for both European businesses as well as society as a whole and contribute substantially to achieving the objectives of a low carbon economy. Telecommunication infrastructure constitutes a vital part of any smart grid solution. Given the penetration of telecommunication infrastructure in Europe, it is likely that significant synergies can be achieved in the process of implementing smart grid solutions if existing telecommunication infrastructure can be used.</p> <p>Identifying specific cases or business models, where shared infrastructure use is beneficial, is difficult for all stakeholders. ENERGISE sets out to solve this issue by providing energy suppliers and telecommunication providers as well as policy makers with a decision-supporting toolkit.</p> <p>This toolkit will be able to account for all relevant framework conditions and will deliver useful advice to relevant stakeholders based on a broad survey of and exchange about existing use cases for smart grid solutions including a thorough cost-benefit analysis. Insights gained from the toolkit will enable a more evidence-based appreciation of innovative business for both innovators in the private sector and research and innovation policy makers.</p>	

Acronym: SmarterEMC2	
Title: Smarter Grid: Empowering SG Market Actors through Information and Communication Technologies	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 3,751,891.25 €	Total cost: 3,072,655 €
Type of Action: IA	
Coordinator: Intracom SA Telecom Solutions (EL)	
Participants:	
<ul style="list-style-type: none"> ▪ Aydem Elektrik Dagitim Anonim Sirketi; ▪ Elektrik Dagitim Hizmetleri Dernegi Baskanligina; ▪ Institute of Communication and Computer Systems; ▪ Aalborg Universitet; ▪ University of Durham; ▪ Inesc Porto - Instituto de Engenharia de Sistemas e Computadores do Porto 	<ul style="list-style-type: none"> ▪ Hellenic Telecommunications Organization S.A. - OTE AE (Organismos Tilepikoinonion Tis Ellados OTE AE); ▪ Diacheiristis Ellinikou Diktyou Dianomis Elektrikis Energeias AE; ▪ Thales Italia SPA; ▪ Fujitsu Laboratories of Europe Limited;
Countries: TR; EL; DK; UK; IT; PT	
Objectives:	
<p>Power systems undergo massive technological changes due to the ever increasing concerns for environmental and energy sustainability. The increase of RES and DG penetration is one of the main goals in Europe in order to meet the environmental targets. However these goals will require new business cases and must be based on innovative ICT tools and communication infrastructure. On parallel, following the M/490 EU Mandate, CEN, CENELEC and ETSI proposed a technical report describing the Smart Grid Reference Architecture and the Smart Grids Architecture Model (SGAM) framework. A key objective of new Research and Innovation projects should be to provide solutions and ICT tools compatible with the SGAM and the standardization activity in Europe. Such new projects should also support the standardization activity by proposing additions or changes related to their objectives. Another key issue to address is whether the existing telecommunication infrastructure is sufficient to support in mass scale the new business cases and Smart Grid services. SmarterEMC2 implements ICT tools that support Customer Side Participation and RES integration, and facilitate open access in the electricity market. These tools take into account the SGAM as well the future structure of the Distribution Network as described by the relevant EU bodies and organizations. The project supports standardization activity by proposing adaptation to data models of market-oriented standards (IEC 62325-351) and field level standards (IEC 61850). Moreover, the project is fully dedicated towards achieving a maximum of impact. To validate the proposed technologies, the project includes 3 real-world pilots and large-scale simulation in 3 laboratories. The former will demonstrate the impact of Demand Response and Virtual Power Plants services in the real world settings, while the latter will reveal the ability of the communication networks to support massive uptake of such services.</p>	

Acronym: Flex4Grid	
Title: Prosumer Flexibility Services for Smart Grid Management	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 3,147,871.25 €	Total cost: 2,680,253 €
Type of Action: IA	
Coordinator: Teknologian Tutkimuskeskus VTT OY (FI)	
Participants:	
<ul style="list-style-type: none"> ▪ Institut Jozef Stefan; ▪ Energie- und Wasserversorgung Bonn/Rhein-Sieg GmbH; ▪ Bocholter Energie und Wasserversorgung GmbH; 	<ul style="list-style-type: none"> ▪ Smart Com Doo Informacijski In Komunikacijski Sistemi; ▪ Elektro Celje D.D.; ▪ Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV; ▪ SAE-Automation, S.R.O
Countries: SI; DE; SK	
Objectives:	
<p>The advent of distributed power sources, such as photovoltaics and windmill plants, gave rise to energy prosumers (producers-consumers), which generate and consume electrical energy. Energy demand and energy generation by prosumers are volatile and can impact the grid infrastructure and stakeholders, but they can be flexibly adapted to thwart those impacts.</p> <p>Flex4Grid aims at creating an open data and service framework that enables a novel concept of managing flexibility of prosumer demand and generation, utilising cloud computing for power grid management and, opening DSO infrastructure for aggregator services. The system will be built up from existing ICT components developed by the consortium partners over many years in research projects on IoT and Cloud computing. This high maturity allows Flex4Grid to aim for a system prototype of TRL 7 which guarantees a maximum impact and competitiveness in the area of the smart grid challenge.</p> <p>The Flex4Grid system will include a) a data cloud service with anonymised interface and advanced security and privacy mechanisms for data exchange and service management, b) prosumer generation and demand flexibility, and c) a more viable business model to accelerate the deployment. The major innovations are a) opening the market for new entrants by secure and privacy enabling third party cloud data and energy management services, b) actionable common and multilevel data management and analytics services for Smart Grids, and c) the use of co-creation to bring end users into the value creation process.</p> <p>System validation will be carried out in real-world pilots in three live electricity networks with different scenarios ranging from deployment during smart meter rollout and retrofitting to large scale operation and federated demonstration of multi-site pilots.</p>	

Acronym: AnyPLACE	
Title: Adaptable Platform for Active Services Exchange	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 2,974,263.75 €	Total cost: 2,534,389.25 €
Type of Action: IA	
Coordinator: Inesc Porto - Instituto de Engenharia de Sistemas e Computadores do Porto (PT)	
Participants:	
<ul style="list-style-type: none"> ▪ Technische Universitaet Wien; ▪ JRC -Joint Research Centre- European Commission; ▪ Bosch Termotecnologia SA; ▪ Kreis Lippe der Landrat 	<ul style="list-style-type: none"> ▪ Efacec Energia - Maquinas e Equipamentos Electricos SA; ▪ Hochschule Ostwestfalen-Lippe; ▪ Power Plus Communications AG
Countries: AT; BE; PT; DE	
Objectives:	
<p>The AnyPLACE (Adaptable Platform for Active Services Exchange) project intends to develop a modular smart metering platform. The targeted system aims to provide a bidirectional service exchange gateway that enhances the interaction between end users, market representatives, electricity network operators and ICT providers. The proposed solution will allow performing energy remote metering (electricity, gas, heating and cooling), exploiting electricity networks in a more efficient manner and turning end users in active energy markets players through their engagement in demand response programs. Moreover, the utilization of the AnyPLACE platform to actively manage and control electricity networks will also allow mitigating operational problems related with the variability of renewable based generation.</p> <p>To enable the development of an effective modular and flexible platform, an analysis to the different regulatory frameworks, energy/telecommunications standards, potential scenarios of deployment, technical requirements of the solution and technologies currently available will be performed. A modular and plug and play SW and HW platform will be developed in parallel with current and expected regulatory initiatives and standards. A cost-benefit analysis on different possible configurations will be developed, to ensure that appropriate configurations, or even retrofitted solutions, are designed for each context and their cost do not exceed 100€.</p> <p>A set of prototypes will be built with different combinations of modules to deal with different scenarios of application, which will be tested in a smart grid laboratory environment and in a field trial, providing a real-world assessment of their performance. Near-market prototype versions will be produced, accomplishing the project knowledge and technology transfer to industrial consortium partners as well as general industry and service providers.</p> <p>The AnyPLACE project will also address public acceptance of the designed solutions</p>	

Acronym: FLEXMETER	
Title: Flexible smart metering for multiple energy vectors with active prosumers	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 3,822,862.50 €	Total cost: 3,197,791.38 €
Type of Action: IA	
Coordinator: Politecnico di Torino (IT)	
Participants: <ul style="list-style-type: none"> ▪ Telecom Italia SPA; ▪ Institut Polytechnique de Grenoble; ▪ Alma Mater Studiorum - Universita di Bologna; ▪ Stmicroelectronics SRL; ▪ Universitatea Politehnica Din Bucuresti ▪ Rheinisch-Westfaelische Technische Hochschule Aachen; ▪ E.ON Sverige AB; ▪ Siveco Romania SA; ▪ Iren Energia SPA; ▪ JRC -Joint Research Centre- European Commission; 	
Countries: IT; FR; DE; SE; RO; BE	
Objectives: <p>The introduction of the electricity market, the widespread diffusion of distributed generation from renewable and non-programmable energy sources and the need for storage are quickly changing the problems that Transmission and Distribution system operators have to face in their activity and are requiring a “smarter” grid. A first step in this direction is the development and installation of a flexible smart metering architecture for multiple energy vectors. Up to now the smart meters that in some countries are being installed at the users are nearly only devoted to billing improvements. The new metering systems must go much further to provide their contribution to various objectives such as end-user affordability of electricity, energy and market efficiency improvement, CO2 emissions and pollutants reduction. In the FLEXMETER project a flexible, multi-utility, multi-service metering architecture will be designed and deployed in two demonstrators. Simple off-the-shelf meters will be placed at the users for electric, thermal and gas metering; they will communicate with a building concentrator, where the “smartness” of the metering system will reside. A central cloud system will collect data from the building concentrators and from MV/LV substation meters. Data collection, fusion and mining algorithms will be adopted. The proposed architecture will allow for innovative services for the prosumers (e.g. analysis of the energy consumption), for the Distribution System Operators (DSOs) (e.g. fault detection, network balancing and storage integration) and for the retail market. Also demand side management devices could be plugged into the system. In the FLEXMETER project two pilot applications in two different countries (Italy and Sweden), on real systems, with the involvement of the local DSOs and volunteer prosumers will be demonstrated. The results on the demonstrators will then be scaled up to the size of the cities in order to evaluate the advantages on a real scale.</p>	

Topic LCE-08 – Projects:

Acronym: ELSA	
Title: Energy Local Storage Advanced system (ELSA)	
Starting date: 01.04.2015	Starting date: 01.04.2018
Total cost: 13,144,250 €	Total cost: 9,861,612.50 €
Type of Action: IA	
Coordinator: Bouygues Energies & Services (FR)	
Participants: <ul style="list-style-type: none"> ▪ Engineering - Ingegneria Informatica SPA; ▪ ASM Terni SPA; ▪ Allgauer Oberlandwerk GmbH; ▪ Rheinisch-Westfaelische Technische Hochschule Aachen; ▪ Renault SAS; ▪ Gateshead College; ▪ Nissan West Europe SAS; ▪ United Technologies Research Centre Ireland, Limited; ▪ B.A.U.M. Consult GmbH 	
Countries: IT; FR; DE; UK; IE	
Objectives: <p>Integration of distributed small/medium size storage systems can allow operating distribution grids much more flexibly, thus realizing smart grid features like local demand-supply balancing, congestion relief, peak shaving and effective RES integration.</p> <p>However, few technologically mature decentralized storage systems are commercially available today at affordable prices, while both viable business models and the underlying legal and regulatory framework are lagging behind.</p> <p>As an answer ELSA will implement and demonstrate an innovative solution integrating low-cost second-life Li-ion batteries and other direct and indirect storage options, including heat storage, demand-side management, as well as use of intermittent RES.</p> <p>The core idea is to consider Storage as a Service towards building and district managers for local energy management optimization, and towards DSO for enhanced network operations. ELSA will adapt, build upon, and integrate close-to-mature (TRL\geq5) storage technologies and related ICT-based energy management systems for the management and control of local loads, generation and single or aggregated real or virtual storage resources, including demand response, in buildings, districts and distribution grids.</p> <p>Data models ensuring interoperability among building, districts and DSOs and novel business models enabled by energy storage “as-a-service” will be developed.</p> <p>Different configurations will be demonstrated along six test sites, where a set of different storage technologies will be integrated. Safety issues and social acceptance will be dealt with by communication and product reliability demonstration.</p> <p>A technical, economic and environmental validation, involving relevant stakeholders, will be carried out to nurture the European-wide replication of the ELSA concept, prepare the ground for a concrete roll out of the resulting TRL9 technologies and provide input for regulatory framework adaptation.</p>	

Acronym: RealValue	
Title: Realising Value from Electricity Markets with Local Smart Electric Thermal Storage Technology	
Starting date: 01.06.2015	Starting date: 01.06.2018
Total cost: 15,413,331 €	Total cost: 11,987,429.73 €
Type of Action: IA	
Coordinator: Glen Dimplex Ireland (IE)	
Participants:	
<ul style="list-style-type: none"> ▪ Glen Dimplex Deutschland GmbH; ▪ Intel Shannon Limited; ▪ SSE Airtricity Ltd; ▪ ESB Networks Ltd; ▪ The Chancellor, Masters and Scholars of the University of Oxford; ▪ Eirgrid PLC; 	<ul style="list-style-type: none"> ▪ Teknologian tutkimuskeskus VTT OY; ▪ MVV Energie AG; ▪ Rigas Tehniska Universitate; ▪ Deutsches Institut fuer Wirtschaftsforschung e.V.; ▪ University College Dublin, National University of Ireland, Dublin
Countries: DE; IE; UK; FI; LV	
Objectives:	
<p>RealValue aims to demonstrate how local small-scale energy storage, optimised with advanced ICT, could bring benefits to market participants throughout the EU. Smart Electric Thermal Storage (SETS) will be deployed in physical demonstration trials in 1250 homes in Germany, Latvia and Ireland but the analysis will also consider other storage technologies and energy vectors, including integration with district heating and micro-generation. SETS is a direct replacement for existing electric thermal storage heaters and water tanks with a combined load of 55GW across the EU. It can also replace direct electric resistance heaters with further connected load of 93GW. To validate the physical demonstrations at large scale RealValue will use modelling & virtual simulation to demonstrate the technical and commercial potential in millions of homes across representative EU regions. Thorough research studies are an integral part of RealValue and will include techno-economic and behavioural analysis that will be used to inform EU regulation and policy decision makers. RealValue will develop business models which quantify the potential of small-scale storage as an aggregated controllable load. It will provide system services or release value through price arbitrage within existing energy market structures, and highlight any barriers associated with integration into the electricity grid. The RealValue consortium is a truly cohesive partnership which has full participation and commitment from the whole energy supply chain. The consortium includes: technology developers (Glen Dimplex, Intel); energy system modelling specialists (UCD, DIW, RTU); energy market specialists (VTT); socio-economic experts (Oxford University); electricity network operators (ESBN, EirGrid) and energy utilities (MVV, SSE). RealValue is designed to accelerate innovation and develop business models necessary for small-scale storage, allowing it to form an integral part of the future EU energy landscape.</p>	

Acronym: SENSIBLE	
Title: Storage-Enabled Sustainable Energy for Buildings and Communities	
Starting date: 01.01.2015	Starting date: 01.07.2018
Total cost: 15,403,636.38 €	Total cost: 11,842,396.76 €
Type of Action: IA	
Coordinator: Siemens Aktiengesellschaft (DE)	
Participants:	
<ul style="list-style-type: none"> ▪ Siemens SA; ▪ greenpower technologies; ▪ Association pour La Recherche et Le Developpement des Methodes et Processus Industriels; ▪ Meadows Ozone Energy Services Ltd.; ▪ K & S GmbH Projektmanagement; ▪ Adevice Solutions S.L.; ▪ Empower IM OY; 	<ul style="list-style-type: none"> ▪ Indra Sistemas SA; ▪ Inesc Porto - Instituto de Engenharia de Sistemas e Computadores do Porto; ▪ The University of Nottingham; ▪ Universidad de Sevilla; ▪ Technische Hochschule Nurnberg Georg Simon Ohm; ▪ Labelec - Estudos, Desenvolvimento e Actividades Laboratoriais SA
Countries: PT; ES; FR; UK; DE; FI	
Objectives:	
<p>The project SENSIBLE addresses the call LCE-08-2014 by integrating electro-chemical, electro-mechanical and thermal storage technologies as well micro-generation (CHP, heat pumps) and renewable energy sources (PV) into power and energy networks as well as homes and buildings. The benefits of storage integration will be demonstrated with three demonstrators in Portugal, UK and Germany. Évora (Portugal) will demonstrate storage-enabled power flow, power quality control and grid resilience/robustness in (predominantly low-voltage) power distribution networks – under the assumption that these networks are „weak“ and potentially unreliable. Nottingham (UK) will focus on storage-enabled energy management and energy market participation of buildings (homes) and communities – under the assumption that the grid is „strong“ (so, with no or little restrictions from the grid). Nuremberg (Germany) will focus on multi-modal energy storage in larger buildings, considering thermal storage, CHP, and different energy vectors (electricity, gas).</p> <p>An important aspect of the project is about how to connect the local storage capacity with the energy markets in a way that results in sustainable business models for small scale storage deployment, especially in buildings and communities. SENSIBLE will also conduct life cycle analyses and assess the socio-economic impact of small-scale storage integrated in buildings distribution networks.</p> <p>By integrating different storage technologies into local energy grids as well as homes and buildings, and by connecting these storage facilities to the energy markets, the project SENSIBLE will have a significant impact on local energy flows in energy grids as well as on the energy utilization in buildings and communities. The impacts range from increased self-sufficiency, power quality and network stability all the way to sustainable business models for local energy generation and storage.</p>	

Acronym: NETFFICIENT	
Title: Energy and economic efficiency for today's smart communities through integrated multi storage technologies	
Starting date: 01.01.2015	Starting date: 01.01.2019
Total cost: 11,404,646.96 €	Total cost: 8,993,598.88 €
Type of Action: IA	
Coordinator: Ayesa Advanced Technologies SA (ES)	
Participants:	
<ul style="list-style-type: none"> ▪ Williams Grand Prix Engineering Limited; ▪ Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung eV; ▪ Powertech Systems; ▪ Schneider Electric GmbH; ▪ Steinbeis Innovation GGmbH; ▪ Wind Inertia Technologies S.L; 	<ul style="list-style-type: none"> ▪ Ayuntamiento de Santander; ▪ Swerea IVF AB; ▪ Centro di Ricerca, Sviluppo e Studi Superiori in Sardegna; ▪ Wirtschaftsbetriebe der Stadt Nordseeheilbad Borkum GmbH; ▪ Vandenborre Energy Systems NV; ▪ Universita degli Studi di Cagliari
Countries: UK; DE; FR; ES; SE; IT; BE	
Objectives:	
<p>The project will deploy and demonstrate local storage technologies which have reached TRL 5-6 in a real electrical grid, and will develop ICT tools to exploit the synergies between them, the smart grid and the citizens. The demonstration in this real environment will be driven by five use cases covering low voltage and medium voltage scenarios and a wide range of applications and functionalities. Viable business models will be defined for the cases, and proposal for changes in regulations will be made. Dissemination and exploitation activities will ensure these results drive market uptake of storage technologies.</p> <p>The expected outcomes of the project are:</p> <ul style="list-style-type: none"> - An energy management system to be used by the energy companies to manage the energy of their associates' storage devices. - Control systems to integrate management and decision support tools that enable the integration of renewable generation, forecasting and storage systems into the smart-grid. - Innovative storage solutions: <ul style="list-style-type: none"> • KESS (Kinetic Energy Storage System) • HESS (Hybrid Energy Storage System – KESS \ Li-ion batteries) • Second Life Electric Vehicle Batteries • Home Hybrid technologies (Super Capacitor \ Li-ion batteries) - Business models to allow easier deployment of energy storage technologies into the electricity market - Proposed changes to regulators in the social and economic areas in order to lower barriers to the deployment of distributed storage for the defined use cases. - Life Cycle Assessment / Life Cycle Cost of the storage systems used in the project <p>The project will achieve topic expected impacts and also environmental and socioeconomic impacts, like carbon emissions reduction and lowering the EU dependency of fossil fuels.</p> <p>The project gives Energy Services Companies (ESCO) a main role in the deployment and exploitation of storage solutions. The consortium foresees the creation of an ESCO to exploit demonstrated business models after the project.</p>	

Acronym: STORY	
Title: STORY- Added value of STORAge in distribution sYstems	
Starting date: 01.05.2015	Starting date: 01.05.2020
Total cost: 15,414,394.49 €	Total cost: 12,484,339 €
Type of Action: IA	
Coordinator: Teknologian tutkimuskeskus VTT Oy (FI)	
Participants:	
<ul style="list-style-type: none"> ▪ Fundacion Cener-Ciemat; ▪ Vlaamse Instelling Voor Technologisch Onderzoek N.V.; ▪ Th!Nk E Bvba; ▪ Vlerick Business School; ▪ Hawker GmbH; ▪ Beneens Jozef En Zonen Bvba; ▪ Elektro Gorenjska Podjetje Za Distribucijo Elektricne Energije DD; ▪ UC Leuven; 	<ul style="list-style-type: none"> ▪ Joanneum Research Forschungsgesellschaft MbH; ▪ Prospex Institute VZW; ▪ Viessmann-Belgium; ▪ Actility SAS; ▪ Lopta Film GmbH; ▪ Univerza V Ljubljani; ▪ B9 Energy Storage Ltd; ▪ Exposicion y Conservacion de Alimentos SA; ▪ Basen OY
Countries: ES; BE; DE; SI; AT; FR; UK; FI	
Objectives:	
<p>The main objective of STORY is to show the added value storage can bring for a flexible, secure and sustainable energy system. This will be achieved by showing the inter-relations between technologies and stakeholders as well as the potential and impact of policy and regulation.</p> <p>The future European grid has to serve a diverse and mixed landscape of users in a situation of mixed rules and responsibilities depending on the policy and regulatory choices that will be made. Challenges include high penetration of renewables, bi-directional flows of different energy vectors, growing number of users and requirements for higher security. The European commission wants to strengthen the position of the EU energy industry, including those players active in producing solutions for security of supply, increased share of renewables and grid stability. The advances in ICT technology, intelligent control algorithms, inverter and storage technologies provide strong tools to cope with these challenges.</p> <p>Given this context, STORY focuses on providing relevant and wide-covering demonstrations that serve as input for a thorough and transparent analysis on what the impact of storage can be for the involved stakeholders. Storage is considered as a means, while not neglecting other competing technologies that could provide a similar or complementary functionality.</p> <p>The actions that the 18 members from 9 European countries in STORY consortium are going to take in a 5-year project bring a valuable contribution to turn these challenges into opportunities. They will not only develop the most viable storage and ICT solutions for the demonstration sites, but they will also analyse the impact of large penetration of the technologies through simulations, analyse the effect of policies and regulations to the business opportunities of storage related industry and communicate the findings to wider community through systematic strategies for impact creation.</p>	

Acronym: TILOS	
Title: Technology Innovation for the Local Scale, Optimum Integration of Battery Energy Storage	
Starting date: 01.02.2015	Starting date: 01.02.2019
Total cost: 13,992,160 €	Total cost: 11,008,622.50 €
Type of Action: IA	
Coordinator: Technological Educational Institute of Piraeus (EL)	
Participants:	
<ul style="list-style-type: none"> ▪ Schleswig-Holstein Netz AG; ▪ World Wide Fund for Nature Greece; ▪ Eunice Laboratories AE; ▪ Open Energi Limited; ▪ SMA Solar Technology AG; ▪ Rheinisch-Westfaelische Technische Hochschule Aachen; ▪ Younicos AG; ▪ Universite de Corse Pascal Paoli; 	<ul style="list-style-type: none"> ▪ Fiamm Energy Storage Solutions SRL; ▪ University of East Anglia; ▪ Kungliga Tekniska Hoegskolan; ▪ Diacheiristis Ellinikou Diktyou Dianomis Elektrikis Energeias AE; ▪ Instituto Tecnologico de Canarias, S.A.; ▪ Commissariat A L Energie Atomique et aux Energies Alternatives
Countries: DE; EL; UK; FR; IT; SE; ES	
Objectives:	
<p>TILOS aims to demonstrate the optimal integration of local scale energy storage in a fully-operated, smart island microgrid that will also communicate with a main electricity grid. The main objective of the project will be the development and operation of a prototype battery storage system, based on NaNiCl₂ batteries, provided with an optimum, real-environment smart grid control system and coping with the challenge of supporting multiple tasks, ranging from microgrid energy management, maximization of RES penetration and grid stability, to export of guaranteed energy amounts and provision of ancillary services to the main grid. The battery system will support both stand-alone and grid-connected operation, while proving its interoperability with the rest of microgrid components, including demand side management aspects and distributed, residential heat storage in the form of domestic hot water.</p> <p>At the same time, TILOS project addresses the high-priority area of the specific call concerning island regions. In doing so, apart from Tilos island, TILOS also engages the islands of Pellworm, La Graciosa and Corsica, aiming to create an island platform that will enable transfer of technological experience by making use of the smart grid system of Pellworm on the one hand, and by offering new case studies for the development of similar projects on the other. Elaboration of new case studies will be enabled by the development of an advanced microgrid simulating tool, i.e. the Extended Microgrid Simulator, offering the potential for the detailed examination of different battery technologies and microgrid configurations (stand-alone, grid connected and power market-dependent systems). Finally, by also addressing social issues, through public engagement, and by developing novel business models and policy instruments, TILOS puts emphasis on the market diffusion of the developed battery storage system and the integrated energy solution implemented on the island of Tilos.</p>	

Topic LCE-10 – Project:

Acronym: NAIADES	
Title: Na-Ion bAttery Demonstration for Electric Storage	
Starting date: 01.01.2015	Starting date: 01.01.2019
Total cost: 6,492,262.50 €	Total cost: 6,492,262 €
Type of Action: RIA	
Coordinator: Commissariat A L Energie Atomique et aux Energies Alternatives (FR)	
Participants: <ul style="list-style-type: none"> ▪ Chalmers Tekniska Hoegskola AB; ▪ Mast Carbon International Ltd; ▪ Estabanell y Pahisa Energia SA; ▪ Rhodia Operations; ▪ Agencia Estatal Consejo Superior de Investigaciones Cientificas; ▪ Centre National de La Recherche Scientifique; ▪ VDE Pruf- und Zertifizierungsinstitut GmbH; ▪ Saft SAS; ▪ Vlaamse Instelling Voor Technologisch Onderzoek N.V. 	
Countries: SE; UK; ES; FR; DE; BE	
Objectives: <p>Wide scale implementation of renewable energy will require growth in production of inexpensive, efficient energy storage systems. The extension of battery technology to large-scale storage will become necessary as intermittent renewable energy sources such as wind, solar and wave become more prevalent and integrated into electrical grid. Lithium-ion battery appears as quite mature for this application but its cost per mWh remains high in comparison to high temperature technology such as Zebra, which integrate low cost sodium base materials. Furthermore, as the use of large format lithium battery becomes widespread; increase demand for lithium commodity chemicals combined with geographically constrained Li mineral reserves will drive up prices. Based on the wide availability and low cost of sodium, ambient temperature sodium-based batteries have the potential for meeting large scale grid energy storage needs. In NAIADES we will demonstrate the feasibility of ambient temperature Na-ion battery from the knowledge and achievement that has been done at the laboratory scale, up to a module demonstration in a realistic application environment.</p> <p>Several European industrials, institutes and universities belonging to ALISTORE-ERI have decided to join their efforts to assess the Na-ion technology for stationary storage application through building a 1 kW modules system Na-ion cell which will serve as data base to demonstrate economical and public acceptance.</p> <p>These module prototypes will be developed to meet performances in a 1kW system in a cost-effective, sustainable and environmental-friendly manner. New energy policy will be developed to integer the Na-ion battery in the Smart Grid initiative and promote the penetration of renewable energy in the electric network.</p>	

Topic LCE-14 – Projects:

Acronym: greenGain	
Title: Supporting Sustainable Energy Production from Biomass from Landscape Conservation and Maintenance Work	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 1,829,390.50 €	Total cost: 1,829,390.50 €
Type of Action: CSA	
Coordinator: Fachagentur Nachwachsende Rohstoffe e.V. (DE)	
Participants: <ul style="list-style-type: none"> ▪ Sogesca S.R.L.; ▪ Comunita Montana-Associazione dei Comuni Trasimeno-Medio Tevere; ▪ Grupo de Accion Local Bajo Aragon-Matarrana; ▪ Syncom Forschungs- und Entwicklungsberatung GmbH; ▪ Landwirtschaftskammer Niedersachsen; ▪ CZ Biom - Ceske Sdruzeni Pro Biomasu; ▪ Fundacion Circe Centro de Investigacion de Recursos y Consumos Energeticos 	
Countries: IT; ES; DE; CZ	
Objectives: <p>The aim of greenGain is to strengthen the energy use of regional and local biomass from the maintenance of areas and landscape elements, which is performed in the public interest. The scope of the biomass used, will be any material predominantly produced from nature conservation and landscape management, but not from energy-crops.</p> <p>The main target groups are regional and local players, who are responsible for maintenance and conservation work and for the biomass residue management in their regions. Moreover, the focus will be on service providers - including farmers and forest owners, their associations, NGOs and energy providers and consumers.</p> <p>The project will show strategies to build up reliable knowledge on local availability of these feedstocks and know-how on issues from logistics to storage and sustainable conversion pathways for the transformation of these feedstocks to renewable energy (heat and energy products). Furthermore political, legal and environmental aspects will be addressed in model regions. Awareness raising, governance and public acceptance actions will be focussed on. General guidelines will be prepared to guarantee a wide dissemination to other regions in the EU. The regional partners will be actively supported by Technical Partners for the project measures' development and implementation.</p> <p>As a CSA, the project focal point will be the exchange between the model regions and other similar relevant players in the EU, by good practice exchange, a topic-specific website, several workshops and educational site visits in different regions as well as other standard public relations activities.</p> <p>The project team is carefully balanced between technical and scientific organisations and local demand side oriented players. Regions in northern Europe with a wide knowledge in this field are cooperating with European (south-west, middle, east) regions, having an untapped potential, that can be accessed through efficient knowledge transfer.</p>	

Acronym: Bin2Grid	
Title: Turning unexploited food waste into biomethane supplied through local filling stations network	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 709,468.75 €	Total cost: 709,468 €
Type of Action: CSA	
Coordinator: Zagrebacki Holding Doo (HR)	
Participants:	
<ul style="list-style-type: none"> ▪ Wirtschaft Und Infrastruktur GMBH & CO Planungs KG; ▪ Javno Soobrakajno Pretprijatje Skopje; ▪ Gussing Energy Technologies GmbH; ▪ City of Skopje; 	<ul style="list-style-type: none"> ▪ Observatoire Regional des Dechets D'ile de France; ▪ Sveuciliste U Zagrebu, Fakultet Strojarsva I Brodogradnje; ▪ Instituto Andaluz de Tecnologia
Countries: DE; MK; AT; FR; HR; ES	
Objectives:	
<p>The overall objective of Bin2Grid concept is to promote segregated collection of food waste as energy source, conversion to biogas, and its upgrading to biomethane and utilization in associated network of filling stations.</p> <p>To that end, accent will be given to defining strategies for establishing efficient network of food and beverage waste collection methods and practices. Also, whole range of food waste producers will be taken under consideration, i.e. manufacturing entities, catering/food services, retail stores.</p> <p>Since biological treatment (anaerobic digestion) is without an alternative for energy utilization of food waste and together with other raw materials creates a synergy for renewable energy production (biogas/biomethane). One of the biggest advantages of such a concept of energy production is having two issues covered at the same time: environmental protection with sustainable management of food waste and the production of renewable energy with its utilization as a biofuel.</p> <p>The existing technologies which are specific for this kind of raw materials will be explored. Having in mind that chemical energy of biogas is fully used when it has been upgraded to biomethane and used as a biofuel, particular attention will be given to advanced biogas to biomethane upgrading techniques for purification and technical requirements for its usage through local filling stations as a biofuel, in public transportation sector in particular (e.g. waste management trucks).</p>	

Acronym: BIOSURF	
Title: BIOMethane as SUstainable and Renewable Fuel	
Starting date: 01.01.2015	Starting date: 01.01.2018
Total cost: 1,872,912.50 €	Total cost: 1,872,912 €
Type of Action: CSA	
Coordinator: Istituto di Studi per L'integrazione dei Sistemi SC (IT)	
Participants:	
<ul style="list-style-type: none"> ▪ CIB-Consortio Italiano Biogas e Gassificazione; ▪ Fachagentur Nachwachsende Rohstoffe e.V.; ▪ European Biogas Association; ▪ Groupement Regional des Centres D Etudes Techniques Agricoles de L Ile de France Grceta; ▪ Fachverband Biogas eV; 	<ul style="list-style-type: none"> ▪ DBFZ Deutsches Biomasseforschungszentrum Gemeinnuetzige GmbH; ▪ Renewable Energy Association LBG; ▪ Magyar Biogaz Egyesulet; ▪ Arge Kompost und Biogas Osterreich Verein; ▪ AGCS Gas Clearing and Settlement AG
Countries: IT; DE; BE; FR; UK; HU; AT	
Objectives:	
<p>The objective of BIOSURF (BIOMethane as SUstainable and Renewable Fuel) is to increase the production and use of biomethane (from animal waste, other waste materials and sustainable biomass), for grid injection and as transport fuel, by removing non-technical barriers and by paving the way towards a European biomethane market.</p> <p>This objective will be achieved through the following founding pillars:</p> <ul style="list-style-type: none"> - National biomethane registries - Cooperation among the national biomethane registries - European mass-balancing system for biomethane - Free Market Biomethane Trade - Sustainable raw material supply - Methodology for entitlement to CO2 certificates - Regional specificities - Networking and Cooperation - Transferability of results beyond the project's countries. <p>BIOSURF relates, within the Work Program 2014-2015 on Secure, clean and efficient energy, to the Call COMPETITIVE LOW-CARBON ENERGY, namely the topic LCE 14 – 2014/2015: Market uptake of existing and emerging sustainable bioenergy.</p> <p>The qualifying ideas of BIOSURF are:</p> <ul style="list-style-type: none"> • To develop a value chain analysis from production to use depending on the territorial, physical and economic features (specified for different areas, i.e., biofuel for transport, electricity generation, heating & cooling); • To analyse, compare and promote biomethane registering, labelling, certification and trade practices in Europe, in order to favour cooperation among the different countries and cross border markets on the basis of the partner countries involved; • To address traceability, environmental criteria and quality standards, so aiming to reduce GHG emissions and indirect land-use change (ILUC), to preserve biodiversity and to assess the energy and CO₂ balance; to identify the most prominent drivers for CO₂-emissions along the value chain as an input for future optimization approaches; • To exchange information and best practices all along Europe concerning biomethane policy, regulations, support schemes and technical standards. 	

Acronym: Bioenergy4Business	
Title: Uptake of Solid Bioenergy in European Commercial Sectors (Industry, Trade, Agricultural and Service Sectors) – Bioenergy for Business	
Starting date: 01.01.2015	Starting date: 01.09.2017
Total cost: 1,540,713.75 €	Total cost: 1,540,713.75 €
Type of Action: CSA	
Coordinator: Osterreichische Energieagentur Austrian Energy Agency (AT)	
Participants:	
<ul style="list-style-type: none"> ▪ Romanian Association of Biomass and Biogas; ▪ Scientific Engineering Centre Biomass Ltd; ▪ Slovenska Inovacna A Energeticka Agentura; ▪ Energetski Institut Hrvoje Pozar; ▪ Krajowa Agencja Poszanowania Energii SA; ▪ Teknologisk Institut; 	<ul style="list-style-type: none"> ▪ Association europeenne pour la biomasse; ▪ DBFZ Deutsches Biomasseforschungszentrum Gemeinnuetzige GmbH; ▪ Motiva OY; ▪ Ministerie Van Economische Zaken; ▪ Centre for Renewable Energy Sources and Saving Foundation; ▪ Nacionalna Asociacia Po Biomasa
Countries: RO; UA; SK; HR; PL; DK; BE; DE; FI; NL; EL; BG	
Objectives:	
<p>A consortium led by the Austrian Energy Agency (AEA) developed the project 'Uptake of Solid Bioenergy in European Commercial Sectors (Industry, Trade, Agricultural and Service Sectors) – Bioenergy for Business' for the EU-Programme Horizon 2020's Call 2014 (LCE14). The project partners include a combination of energy agencies, national biomass associations and research-oriented partners with specialized knowledge on biomass from Northern, Southern, Central and Eastern Europe (Finland, Denmark, the Netherlands, European Biomass Association (AEBIOM), Germany, Austria, Slovakia, Croatia, Greece, Poland, Romania, Bulgaria and Ukraine).</p> <p>The goal of this project is to support and promote the (partial) substitution of fossil fuels (coal, oil, gas) used for heating, by available bioenergy sources (industrial wastes, forest biomass, straw and other agricultural biomass) in the partner countries and beyond. In this context, the project will contribute to increase much-needed security of energy supply through lower dependence on fossil fuels from politically volatile sources. Target groups are, on the one hand, owners and operators of industrial heating plants (for private or district heating). On the other hand, actors who play an important role with regard to the value chain and to framework conditions crucial for the use of bioenergy heat will also be involved.</p> <p>Activities will be tailored to the needs of actors relevant to promising market segments in the industrial, commercial, services and agriculture sectors. Results of the project will include information about market potentials, capacity building/training, decision-support tools and communication activities targeted at relevant stakeholder, tools to support the careful assessment, planning and implementation of such projects, and dissemination of "best-practice" business models. Additionally, information about "best practice" support measures and policies will be made available.</p>	

Acronym: BioRES	
Title: Sustainable Regional Supply Chains for Woody Bioenergy	
Starting date: 01.01.2015	Starting date: 01.07.2017
Total cost: 1,865,411.25 €	Total cost: 1,865,411.25 €
Type of Action: CSA	
Coordinator: Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ) GmbH (DE)	
Participants:	
<ul style="list-style-type: none"> ▪ National Biomass Association Serbia; ▪ Metsantutkimuslaitos; ▪ Nacionalna Asociacija Po Biomasa; ▪ Regionalna Energetska Agencija Sjeverozapadne Hrvatske; ▪ Centrales Agrar-Rohstoff-Marketing- und Energie-Netzwerk e.V.; 	<ul style="list-style-type: none"> ▪ Association europeenne pour la biomasse; ▪ Zavod Energetska Agencija Za Savinjsko Salesko In Korosko; ▪ Landeskammer fuer Land und Fortwirtschaft In Steiermark; ▪ Luonnonvarakeskus
Countries: RS; FI; BG; HR; DE; BE; SI; AT	
Objectives:	
<p>BioRES is proposed by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in cooperation with the European Biomass Association, the Agricultural Chamber of Styria/Austria, C.A.R.M.E.N marketing network for renewable resources (Germany), the Finnish Forest Technology Centre METLA, regional energy agencies in Croatia and Slovenia, and the national biomass associations in Bulgaria and Serbia.</p> <p>BioRES aims at introducing an innovative concept of Biomass Logistic and Trade Centres (BLTCs) in Serbia, Croatia, and Bulgaria on the basis of cooperation with technology leaders from Austria, Slovenia, Germany, and Finland. This will help increasing the demand for woody bioenergy products (processed fire wood, wood chips, wood pellets, and wood briquettes) in these countries and contribute to the achievement of EU targets set out in the RES Directive (2009/28/EC).</p> <p>BioRES identifies priority locations for new BLTCs, assesses regional potentials for the production and use of woody bioenergy products, and initiates local stakeholder dialogues involving both producers and potential users of woody bioenergy products (WP3). BioRES initiates the establishment of community-based investor groups, conducts feasibility studies and provides support for BLTC business plans as well as for sale agreements on supply and demand side, and helps for the start of operations of new BLTCs (WP4) on the basis of EU best practices (WP2). BioRES promotes local consumer information and awareness building (WP7) as well as the development (WP6) of local capacities at all stages along the regional supply chains for quality-controlled woody bioenergy products from sustainable forestry (WP5). Outcomes of BioRES will be exchanged with stakeholders in all EU28 Member States (WP8).</p> <p>The innovative concept for new BLTCs builds upon the results of numerous previous and on-going European programs, in particular BIOMASS TRADE CENTER II, FOROPA, SolidStandards and BIOREGIONS.</p>	

Acronym: SECURECHAIN	
Title: Securing future-proof environmentally compatible bioenergy chains	
Starting date: 01.04.2015	Starting date: 01.04.2018
Total cost: 1,809,586.25 €	Total cost: 1,809,586.25 €
Type of Action: CSA	
Coordinator: Internationales Institut fuer Wald Und Holz NRW eV (DE)	
Participants:	
<ul style="list-style-type: none"> ▪ Energikontor Sydost AB; ▪ B.T.G. Biomass Technology Group BV; ▪ Cluster Vioenergeias Lai Perivallontos Dytikis Makedonias; ▪ Ethniko Kentro Erevnas Kai Technologikis Anaptyxis; ▪ Mittetulundusuhing Tartu Regiooni Energiaagentuur; 	<ul style="list-style-type: none"> ▪ Fuer Bodenkultur Wien; ▪ Universitat Politecnica de Catalunya; ▪ DIN Certco Gesellschaft fuer Konformitaetsbewertung mbH; ▪ Climate Bonds Initiative; ▪ Centre Tecnologic Forestal de Catalunya
Countries: SE; NL; EL; EE; AT; ES; DE; UK	
Objectives:	
<p>SecureChain promotes a Sustainable Supply Chain Management (SSCM) that meets highest environmental quality standards and targets local biomass suppliers, energy producers and financial sector players to mobilise more biomass, maximise the share of sustainable bioenergy in the final energy consumption, and reduce the transaction costs for further market uptake of most efficient systems in six European model regions. An open call for SSCM pilot projects is launched encouraging market actors to mobilise and secure additional supplies of biomass from regional sources. Following a merit-based, objective competition, selected SMEs are awarded 15-20 Innovation Vouchers for the realisation of proposed SSCM pilot projects with the support of specialised advisors. Learning Labs for SME clusters support the implementation of most sustainable and energy efficient solutions in each model region. Tested quality assurance tools are readily installed in the pilots and SMEs receive proper training. A complete LCA of pilot supply chains evaluates their broader environmental and socio-economic impacts, ensuring that QA protocols meet eligible international sustainability standards for high efficiency and low carbon footprint. Suppliers are prepared for and ultimately acquire sustainability certification via independent audits. To facilitate critical financial proofs for market actors and financiers, a risk assessment of supply chains in line with a close mentoring of pilot teams by financial advisors is carried out. Roadshows promoting the pilots showcase that future-proof investment proposals can attract local to international capital for secured implementation and upscaling of efficient solutions. SecureChain exploits and disseminates a broadly transferable SSCM model for local bioenergy chains that fosters sustainable, environmentally compatible mobilisation of biomass sources and a proactive promotion of the market through conscious investments into the bioenergy sector.</p>	

Topic LCE-18 – Projects:

Acronym: DemoWind	
Title: DemoWind ERA-NET Cofund action - delivering cost reduction in offshore wind	
Starting date: 01.01.2015	Starting date: 01.01.2020
Total cost: 31,641,786 €	Total cost: 10,441,788 €
Type of Action: ERA-NET-Cofund	
Coordinator: The Department of Energy and Climate Change (UK)	
Participants: <ul style="list-style-type: none"> ▪ Fundacao para a Ciencia e a Tecnologia; ▪ Agenschap Voor Innovatie Door Wetenschap En Technologie; ▪ Ministerie Van Economische Zaken; ▪ Energistyrelsen; ▪ Centro para el Desarrollo Tecnologico Industrial. 	
Countries: PT; BE; NL; DK; ES	
Objectives: <p>DemoWind proposes to launch and implement a coordinated, collaborative, joint offshore wind technology demonstration Call worth in excess of €100m between 2015-19 under Horizon 2020 topic LCE 18 – 2014: Supporting Joint Actions on demonstration and validation of innovative energy solutions.</p> <p>Partners: Belgium, Denmark, the Netherlands, Portugal, Spain, and the United Kingdom, aim to pool their national resources of up to M€21.2, matched with M€10.4 of funding from the EC. DemoWind is focussed on enabling industry, through partnership, to push technologies through TRLs 5-6 to 6-7 in transnationally funded projects. We aim to connect existing and new European offshore wind demonstration opportunities, exchange knowledge and facilitate the acceleration of cost reducing innovative technologies to commercialisation.</p> <p>This action will contribute to European cost reduction targets for offshore wind, economic development of the European offshore wind sector and help to maintain the EU's internationally leading position in offshore wind. Reducing the technology cost is essential to increase the deployment of offshore wind making a significant contribution to the EU's climate change targets, replacing aging fossil burning power plant with affordable wind energy.</p> <p>DemoWind has 5 work packages which will be overseen by a Management Group, and coordinated by the UK Department of Energy and Climate Change. A Project Secretariat will support implementation and an Advisory Board will ensure that actions remain relevant to the needs of the offshore wind industry. Other work packages include:</p> <ul style="list-style-type: none"> • Preparation and launch of the transnational Call for proposals; • Proposal assessment and selection; • Monitoring of projects and evaluation of the overall programme and individual projects; • Communication, dissemination and exploitation to ensure that funded transnational projects deliver impact. 	

Acronym: ERANet SmartGridPlus	
Title: ERA-Net Smart Grids Plus: support deep knowledge sharing between regional and European Smart Grids initiatives	
Starting date: 30.01.2015	Starting date: 30.01.2020
Total cost: 44,563,055 €	Total cost: 13,511,432.22 €
Type of Action: ERA-NET-Cofund	
Coordinator: Bundesministerium fuer Verkehr, Innovation und Technologie (AT)	
Participants:	
<ul style="list-style-type: none"> ▪ Federal Department for Environment Transports Energy and Communication; ▪ Latvijas Zinatnu Akademija; ▪ Fond Za Zastitu Okolisa I Energetske Ucinovitost; ▪ Agentschap Voor Innovatie Door Wetenschap En Technologie; ▪ Forschungszentrum Juelich GmbH; ▪ Narodowe Centrum Badan I Rozwoju; ▪ Service Public de Wallonie; ▪ Statens Energimyndighet; ▪ Regione Lombardia; ▪ Ministerul Educatiei Nationale; ▪ Unitatea Executiva pentru Finantarea Invatamantului Superior, a Cercetarii, Dezvoltarii si Inovarii; 	<ul style="list-style-type: none"> ▪ Fundacao para a Ciencia e a Tecnologia; ▪ Energinet.DK; ▪ Turkiye Bilimsel Ve Teknolojik Arastirma Kurumu; ▪ Scottish Enterprise; ▪ Centro para el Desarrollo Tecnológico Industrial.; ▪ Oesterreichische Forschungsfoerderungsgesellschaft mbH; ▪ Norges Forskningsrad; ▪ Agence de L'environnement et de La Maitrise de L'energie; ▪ Ministrstvo za infrastrukturo; ▪ Innovaatorahoituskeskus Tekes; ▪ Nederlandse Organisatie Voor Wetenschappelijk Onderzoek
Countries: CH; LV; HR; BE; DE; PL; SE; IT; RO; PT; DK; TR; UK; ES; AT; NO; FR; SI; FI; NL	
Objectives:	
<p>From local trials to a European knowledge community'.</p> <p>The challenges of modernising the electricity grids in Europe lies in enabling an increased flexibility of the European power system, efficiently providing increased transfer capacity and enabling an active participation of users and new market actors (by providing the information, services, market architectures and privacy guarantees).</p> <p>To address these challenges, innovation is needed in system integration, interoperable technologies, services, tools, co-ordination schemes, business processes, market architectures and regulatory regimes to plan, build, monitor, control and safely operate end-to-end networks in an open, competitive, decarbonised, sustainable and climate-change resilient market, under normal and emergency conditions.</p> <p>The major challenge is now to overcome the fragmentation of knowledge and accelerate knowledge exchange between the already existing demonstration projects and R&D initiatives with the goal to enable them to develop European wide interoperable solutions, according to a common reference architecture. With this, critical masses shall be reached in the development of a European market for smart grids technology providers and smart grids service providers.</p> <p>This initiative does not intend to find the final specifications for smart grids, but to organise the learning down to regional Smart Grids stakeholders, beyond the demonstration phase towards implementation.</p> <p>The overall goal of the "ERA-Net Smart Grids Plus" is to support deep knowledge sharing between regional and European Smart Grids initiatives by financing 15-20 transnational projects on applied research, piloting and demonstration in the field of Smart Grids, taking a next step in Smart Grids development building on the knowledge base, R&D initiatives as well as research and demonstration facilities already in place at regional, national and European level. It will coordinate during 2015-19 national and regional RDD budgets of more than 30 M€</p>	

Acronym: ENSCC	
Title: ERA-NET Smart Cities and Communities	
Starting date: 01.12.2014	Starting date: 01.12.2019
Total cost: 29,871,593.49 €	Total cost: 9,137,813.36 €
Type of Action: ERA-NET-Cofund	
Coordinator: Bundesministerium fuer Verkehr, Innovation und Technologie (AT)	
Participants:	
<ul style="list-style-type: none"> ▪ Ministerul Educatiei Nationale; ▪ Federal Department for Environment Transports Energy and Communication; ▪ Statens Energimyndighet; ▪ Turkiye Bilimsel Ve Teknolojik Arastirma Kurumu; ▪ Verket För Innovationssystem; ▪ Norges Forskningsrad; ▪ Centro para el Desarrollo Tecnológico Industrial.; ▪ Service Public de Wallonie; ▪ Oesterreichische Forschungsfoerderungsgesellschaft mbH; 	<ul style="list-style-type: none"> ▪ Fundacao para a Ciencia e a Tecnologia; ▪ Fonds National de La Recherche Scientifique; ▪ Forskningsrådet För Miljö, Areella Näringar Och Samhällsbyggande; ▪ Unitatea Executiva pentru Finantarea Invatamantului Superior, a Cercetarii, Dezvoltarii si Inovarii; ▪ Nederlandse Organisatie Voor Wetenschappelijk Onderzoek; ▪ Research Promotion Foundation; ▪ Institut pour l'Encouragement de la Recherche scientifique et de l'Innovation de Bruxelles; ▪ Innovaatorahoituskeskus Tekes
Countries: RO; CH; SE; TR; NO; ES; BE; AT; PT; NL; CY; FI	
Objectives:	
<p>Smart Cities and Communities have been identified as key to achieving the energy efficiency targets for 2020 and 2050. The main objective of this ERA-NET is to stimulate successful practice and facilitate replicability within Smart Cities and Communities projects and also across projects in order to achieve a technological shift in the current energy system and provide smart and integrated solutions for technology, government and society. ERA-NET Smart Cities and Communities aims to create solutions in the form of projects, which demonstrate or at least constitute a decisive step towards implementations that</p> <p>(1) help cities deal with a long uncertain time horizon,</p> <p>(2) monitor ongoing experiences and implement change in the project when necessary, and</p> <p>(3) avoid pitfalls already encountered by others and facilitate collective learning of stakeholders embedded within a physical and social context.</p> <p>Additional activities within the planned ERA-NET are: (A) to work towards a joint call with China and (B) to align national R&D funding with Structural Funds. (A): A structured and systematic approach towards a joint call with China on smart city research will be developed making highest use of existing relations, activities and experience of European Funding Agencies with Chinese partners in order to develop a joint call with China. Beneficiaries of this call (mainly research organisations and companies) would be given a good starting position for further research and development projects. (B) The realisation of smart cities measures requires large investment volumes. Thus, the combination and clustering of different financing instruments is necessary. In line with the new 'smart specialization' strategy of the EC, the proposed additional activities should encourage and enable Member States, regions and their Managing Authorities to align their national R&D funding schemes with available Structural Funds (in particular ERDF, but also ESF resources).</p>	

CALL: H2020-LCE-2014-4

Topic	Title	Number of funded projects	Total EU-contribution [€]
LCE-22	Fostering the network of National Contact Points	1	1,500,000.00
Total		1	1,500,000.00

Topic LCE-22 – Project:

Acronym: C-ENERGY 2020	
Title: Connecting Energy National Contact Points in a pro-active network under Societal Challenge 3 'Secure, clean and efficient energy' in Horizon 2020	
Starting date: 01.12.2014	Starting date: 01.12.2018
Total cost: 1,500,000 €	Total cost: 1,500,000 €
Type of Action: CSA	
Coordinator: Agenzia per La Promozione della Ricerca Europea (IT)	
Participants: <ul style="list-style-type: none"> ▪ Luxinnovation GIE; ▪ Sihtasutus Eesti Teadusagentuur; ▪ Ethniko Idryma Erevnon; ▪ GIS-Transfcenter Foundation; ▪ Fundacao para a Ciencia e a Tecnologia; ▪ The Technology Strategy Board; ▪ Norges Forskningsrad; ▪ Agence de L'environnement et de La Maitrise de L'energie; ▪ Enterprise Ireland; ▪ Instytut Podstawowych Problemow Techniki Polskiej Akademii Nauk; ▪ Oesterreichische Forschungsfoerderungsgesellschaft mbH; ▪ Agence Bruxelloise pour L'entreprise; ▪ Research Promotion Foundation; ▪ Forschungszentrum Julich GmbH; ▪ Matimop, Israeli Industry Center for Research & Development; ▪ Centro para el Desarrollo Tecnologico Industrial.; ▪ Agencija Za Mobilnost I Programe Europske Unije 	
Countries: LU; EE; EL; BG; PT; UK; NO; FR; IE; PL; AT; BE; CY; DE; IL; ES; HR	
Objectives: <p>C-ENERGY 2020 is a 48 months Coordination and Support Action having the specific objectives to Ensuring high quality Energy NCP services for Horizon 2020 and related programmes applicants; Lowering entry barriers for Energy NCPs approaching EU Framework Programmes for R&I for the first time; Consolidating the network of Energy NCPs. C-ENERGY 2020 project will take into consideration the significant changes that Horizon 2020 has brought about the Energy NCP mandate. With its brand new approach to R&I Horizon 2020 demands Energy NCPs: a) to address their services to a wider target, b) to have specific multidisciplinary competences. C-ENERGY 2020, whose consortium is composed by experienced and less experienced Energy NCPs from 18 countries, will tackle these challenges building up the NCP capacity by organising benchmarking activities, at least 8 training sessions and 12 twinning schemes. The dialogue with energy participants will benefit of at least 2 enhanced cross-border brokerage events and 9 training sessions for stakeholders. The project will also take special care of outreaching activities by extending the collaboration with other NCP thematic networks, cooperating with EEN, working on partner search and cooperating on international relevant activities. Finally, communication within and outside the Energy NCP network and the dissemination of results will be ensured through the website, the development of promotion/information materials, the participation at major events and PR activities and an e-mail alert service/newsletter. Throughout the project special attention will be paid to the diversity of stakeholders in the energy sector, the gender dimension, as well as to establish links with other EU relevant initiatives, programmes and policies.</p>	

