Forskningsrådet

Horizon 2020 Energy

Secure, clean and efficient energy

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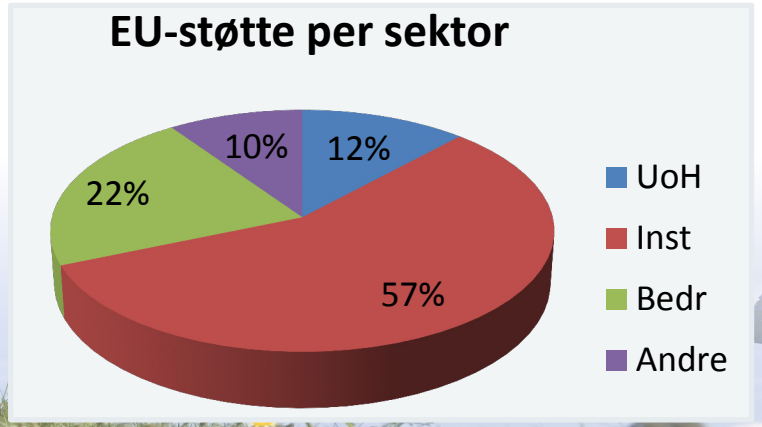
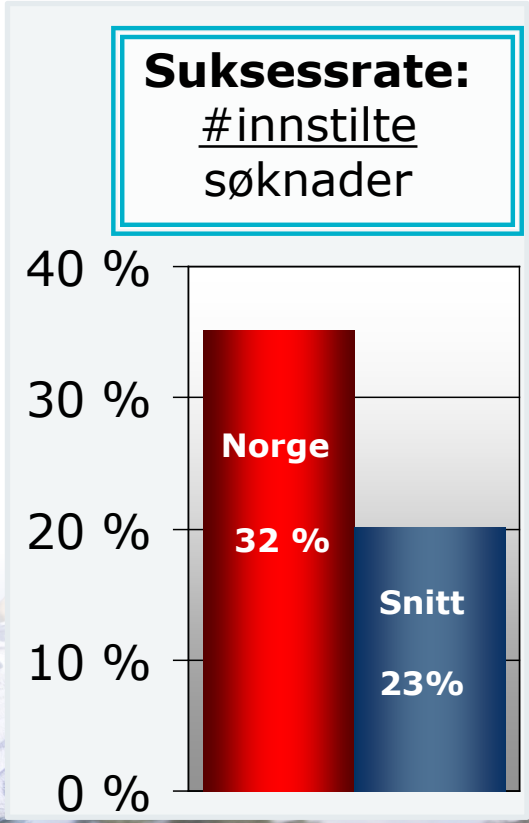
Energy storage seminar, 2014-10-21

Motivation
- example from FP7 Energy

- Very good Norwegian participation
  - Involved in 74 projects (129 participants)
  - 13 projects with Norwegian coordinator
  - More than 500 mill. kr in EU-funding + 120 mill. kr from FCH JU.
  - Economic return approx. 3,3 %
  - Involved in projects with a total funding of more than 3,4 bill. kr.
- Too few Norwegian actors involved





Work as expert for the Commission?

Year	Cooperation / Energy		
	NO	Tot	% NO
2007	3	104	2,9
2008	4	327	1,2
2009	3	294	1,0
2010	0	66	0,0
2011	4	157	2,5
2012	2	128	1,6
2013	1	162	0,6
Sum navn	17	1 238	1,4 %

- The Framework Programme for Research and Innovation
- Period: 2014 – 2020
- Approx. € 79.4 billion funding (current prices)
- Work Programme 2014-2015
  - 2015 Calls open
- Work Programme 2016-2017
  - Current status: Scoping paper

Horisont 2020

(FP7: 50,5 billion EUR)

Horizon 2020 – Different from FP7

- A strong challenge-based approach, considerable freedom for applicants to come up with technological solutions
- Broader topics, less prescription of technology options, strong emphasis on expected impact
- Addressing the whole innovation chain : integration of research and innovation by providing coherent funding from idea to market
- A strategic programming approach: strategic programming exercise
- Work programmes with 2 year duration
- Leitmotif of this first work programme: contribution of Horizon 2020 to tackle the economic crisis and the path to sustainable growth
- Key drivers : competitiveness, innovation and growth, leverage of industry, access to finance, new knowledge and skills, enabling technologies....

Technology Readiness Level - TRL

- TRL 0: Idea
- TRL 1: Basic Research
- TRL 2: Technology formulation
- TRL 3: Applied Research
- TRL 4: Small Scale Prototype Development Unit (PDU)
- TRL 5: Large Scale Prototype Development Unit
- TRL 6: Prototype System
- TRL 7: Demonstration System
- TRL 8: First of the kind commercial System
- TRL 9: Full commercial application

See also:

- *Rules for Participation: OECD definitions*
- *A European strategy for Key Enabling Technologies – A bridge to growth and jobs, COM(2012) 341, 2012-06-26*

Types of action

- **Research and innovation actions (RIA)**
  Action primarily consisting of activities aiming to establish new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service or solution. For this purpose they may include basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment.
  Funding rate: 100 %
- **Innovation actions (IA)**
  Action primarily consisting of activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services. For this purpose they may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication.
  Funding rate: 70 % (non-profit legal entities: 100 %)

Ref: General Annexes, part D

Types of action (2)

- **Coordination and support actions (CSA)**
  Actions consisting primarily of accompanying measures such as standardisation, dissemination, awareness-raising and communication, networking, coordination or support services, policy dialogues and mutual learning exercises and studies, including design studies for new infrastructure and may also include complementary activities of strategic planning, networking and coordination between programmes in different countries.
  Funding rate: 100 %

Ref: General Annexes, part D

EE-02–2015: Buildings design for new highly energy performing

- Call: H2020-EE-2015-1-PPP
- Type of action: Innovation Actions (IA)
- TRL: Implemented at TRL 5-7.
- Deadline: 2015-02-04
- Budget: 3-5 mill. euro per project

Scope: Projects should focus on development and demonstration of solutions which significantly reduce the cost of new buildings with at least 'nearly zero-energy' performance levels, whilst accelerating significantly the speed with which these buildings and their systems are taken up by the market. The focus should lie on solutions for appropriate indoor air quality and comfort, design adapted to local climate and site, passive solutions (reducing the need for technical building systems which consume energy) or active solutions (covering a high share of the energy demand with renewable energies), building energy management systems (where appropriate), highly efficient Heating, Ventilation and Air-Conditioning (HVAC, e.g. low temperature systems, solar cooling), electric and/or thermal energy storage of renewable energy onsite and nearby. Projects should also provide solutions for automated and costeffective maintenance of the installed equipment, and assess differences between predicted and actual energy performance. Such differences should be documented and minimized.

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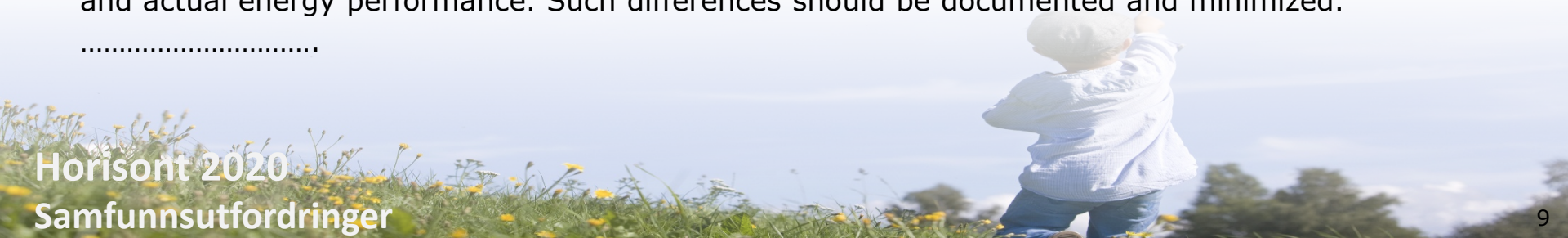

EE-06–2015: Demand response in blocks of buildings

- Call: H2020-EE-2015-2-RIA
- Type of action: Innovation Actions (IA)
- TRL: Implemented on TRL 6-7.
- Deadline: 2015-06-04
- Budget: 3-5 mill. euro per prosjekt

Scope: At the level of a block of buildings, the focus should be on real time optimisation of energy demand, storage and supply (including self-production when applicable) using intelligent energy management systems with the objective of reducing the difference between peak power demand and minimum night time demand, thus reducing costs and greenhouse gas emissions. Cost-effective and interoperable solutions that do not compromise the comfort of occupants should be demonstrated for a block of buildings consisting of at least 3 different buildings in real life operating conditions. Solutions should be compatible with smart grids and open international standards and with the distribution network infrastructure.

Expected impact: Proposals showing that demand response can be implemented at the level of blocks of buildings with the help of intelligent energy management systems and without unreasonable effort and complexity while triggering substantial energy and cost savings. Moreover, proposals that shed light on the added value of installing demand response facilities for building blocks instead of individual buildings and on the willingness of consumers to participate in demand response solutions. Impacts should be measured in energy and cost savings. Impacts should also be measured for the willingness and capability of consumers to participate in demand response solutions.

EE-13–2015: Technology for district heating and cooling

- Call: H2020-EE-2015-2-RIA
- Type of action: Research and Innovation Actions (RIA)
- TRL: Implemented on TRL 4-6.
- Deadline: 2015-06-04
- Budget: 1,5-2 mill. euro per project

Scope: Project proposals should address one or more of the following areas:

- Develop, demonstrate and deploy a new generation of highly efficient, intelligent district heating and cooling systems which are capable of integrating multiple efficient generation sources, including different kinds of renewable energy, cogeneration, waste heat from industrial or other sources and storage, and which can be operated at different temperature levels.

  ……..
- *Bring down heat distribution losses* and integrate storage through the use of innovative pipe and storage design, high performance insulation materials, reduced operating temperatures, intelligent, efficient system for fluid handling or intelligent metering, control and grid optimisation strategies, including from analysing smart meter data, consumer interaction and behaviour.
- Develop optimisation, control, metering, planning and modelling tools such as intelligent thermal agile controllers embedding self-learning algorithms which help to optimise the overall efficiency of technology-hybrid systems and IT supervision systems capable of delivering real-time performance indicators, which are likely to modify consumption behaviour.
- Develop new solutions for low temperature heat recovery and recirculation.

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

- Call: H2020-EE-2015-3 MarketcUptake
- Type of action: Coordination and Support Actions (CSA)
- Deadline: 2015-06-04
- Budget: 1,5-2 mill. euro per project

Scope:

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

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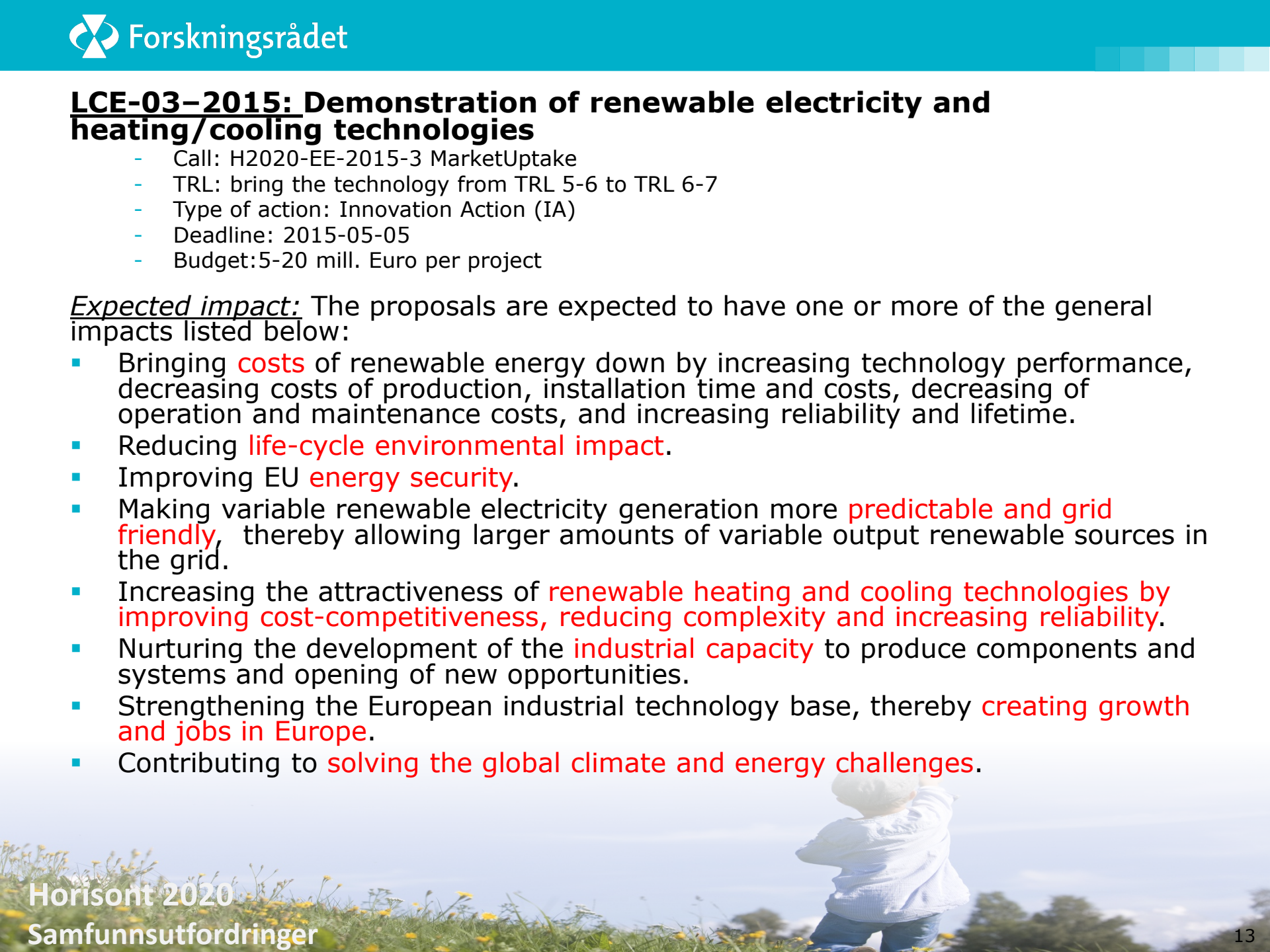
LCE-03–2015: Demonstration of renewable electricity and heating/cooling technologies

- Call: H2020-EE-2015-3 MarketUptake
- TRL: bring the technology from TRL 5-6 to TRL 6-7
- Type of action: Innovation Action (IA)
- Deadline: 2015-05-05
- Budget:5-20 mill. Euro per project

Expected impact: The proposals are expected to have one or more of the general impacts listed below:

- Bringing costs of renewable energy down by increasing technology performance, decreasing costs of production, installation time and costs, decreasing of operation and maintenance costs, and increasing reliability and lifetime.
- Reducing life-cycle environmental impact.
- Improving EU energy security.
- Making variable renewable electricity generation more predictable and grid friendly, thereby allowing larger amounts of variable output renewable sources in the grid.
- Increasing the attractiveness of renewable heating and cooling technologies by improving cost-competitiveness, reducing complexity and increasing reliability.
- Nurturing the development of the industrial capacity to produce components and systems and opening of new opportunities.
- Strengthening the European industrial technology base, thereby creating growth and jobs in Europe.
- Contributing to solving the global climate and energy challenges.



LCE-09–2015: Large scale energy storage

- Call: H2020-LCE-2015-3
- Type of action: Innovation Actions (IA)
- TRL: systems that have reached TRL 5 and bring them to TRL 6-7
- Deadline: 2015-05-05
- Budget: 16-20 mill. Euro per project
- Type of project: Technology, marked, regulations.

The priorities are demonstration and validation of:

- pumped hydro storage in new locations such as underground storage concepts, storage using seawater or similar concepts addressing large scale applications aiming at GWh scale;
- storage with compressed air, liquid air, and similar concepts aiming at the large scale (ideally > 100 MWh scale if appropriate);
- retrofitting of existing hydro dams with pumped hydro or other storage to enable flexible operation, large scale balancing and storage, while applying environmentally friendly design and operation;
- integrated management of existing or retrofitted pumped hydro storage (with variable speed pumps/turbines) also across national borders (e.g. smart grid concepts across alpine (or other) borders and enclosing many existing facilities);
- linking such storage projects with the development of the Northern Seas, Mediterranean ring and other Trans-European grid infrastructure concepts may be envisaged.

SCC-01–2015: Smart Cities and Communities solutions integrating energy, transport, ICT sectors through lighthouse (large scale demonstration - first of the kind) projects

- Call: H2020-SCC-2015
- Type of action: Innovation Actions (IA)
- TRL: TRL 7
- Deadline: 2015-05-05
- Budget: 18-25 mill. Euro per project
- Type of project: Develop and demonstrate technology

Scope:

The proposals should address the following main areas:

- ***(Nearly zero) or low energy districts:*** through the integration and management of: i) the supply of energy with predominant exploitation of local resources (e.g. waste heat, renewables, storage) and the active participation of consumers (e.g. use of aggregators); ii) the cost-effective refurbishment of existing buildings without significant disruption for tenants (use of sustainable materials) with a special focus on residential buildings iii) the cross-cutting ICT solutions for the design and overall management of energy/ transport systems
- ***Integrated Infrastructures:*** through the integration of physical infrastructures such as core networks, street scenes, lighting, industrial sites etc to create new forms of value through re-use and repurposing. This should lead to quantifiable benefits such as reduction of capital /operational expenditure as well as reduced carbon / energy footprints. This might also imply exploitation of synergies between requirements for smart grids, broadband infrastructures and in general poly networks (eg district heating and cooling).
- ***Sustainable urban mobility:*** through the integration of energy/ fuelling infrastructure with vehicle fleets powered by alternative energy carriers for public and private transport, including logistics and freight-distribution. Implications on energy management, and in the case of electromobility, the impact on the electricity grid, of the deployment of high numbers of vehicles and/or the alternative fuel blends performance must be assessed.

Towards a Low Carbon Future
Status of the SET-Plan Integrated Roadmap

- Expected to be published at the SET-Plan Conference, 10-11 Dec. 2014 in Rome.
- **4 Integrated Challenges**
  - Active customer at the centre of the energy system
  - Demand focus – increasing energy efficiency across the energy system
  - System optimisation
  - Secure, cost-effective, clean and competitive supply
- **15 Themes** identifying key actions essential to the objectives
- Ongoing consultation with member states
- *Next step:* ***Action Plan***

WP 2016-2017 – tentative time plan

- Consultation with the Advisory Group
- Scoping paper
- Draft WP early 2015
- Adoption mid 2015 (or later)
- Will be published before 2016

Towards WP2016-2017

- **Some key policy documents:**
  - Europe 2002: A strategy for smart, sustainable and inclusive growth - COM(2010) 2020
  - A Roadmap for moving to a competitive, low carbon economy in 20150 – COM(2011) 885
  - Energy prices and costs in Europe, COM(2014) 21, 2014-01-22
  - A policy framework for climate and energy in the period from 2020 to 2030, COM (2014) 15, 2014-01-22
  - European Energy Security Strategy, COM(2014) 330, 2014-05-28
  - Towards a thriving data-driven economy, COM(2014) 442, 2014-07-2
  - Energy Efficiency and its contribution to energy security and the 2030 Framework for climate and energy policy, COM(2014) 520, 2014-07-23

Assistance from The Research Council National Contact Point (NCP)

- **Help and Assistance:**
  - Advice and help
  - Help with application
  - Strategic help
  - Technical guidance / evaluation
  - Network, contacts, partner search
  - "Mock evaluation" / "Pre evaluating"
  - Contact with the Commission
  - Workshops
  - …
- Infoletter
- "Prosjektetableringsstøtte" (PES) – Financial support for writing application
- "Medvirkningsordningen" (MVO) ENERGIX and CLIMIT – Support for strategic work

Thank you for your attention

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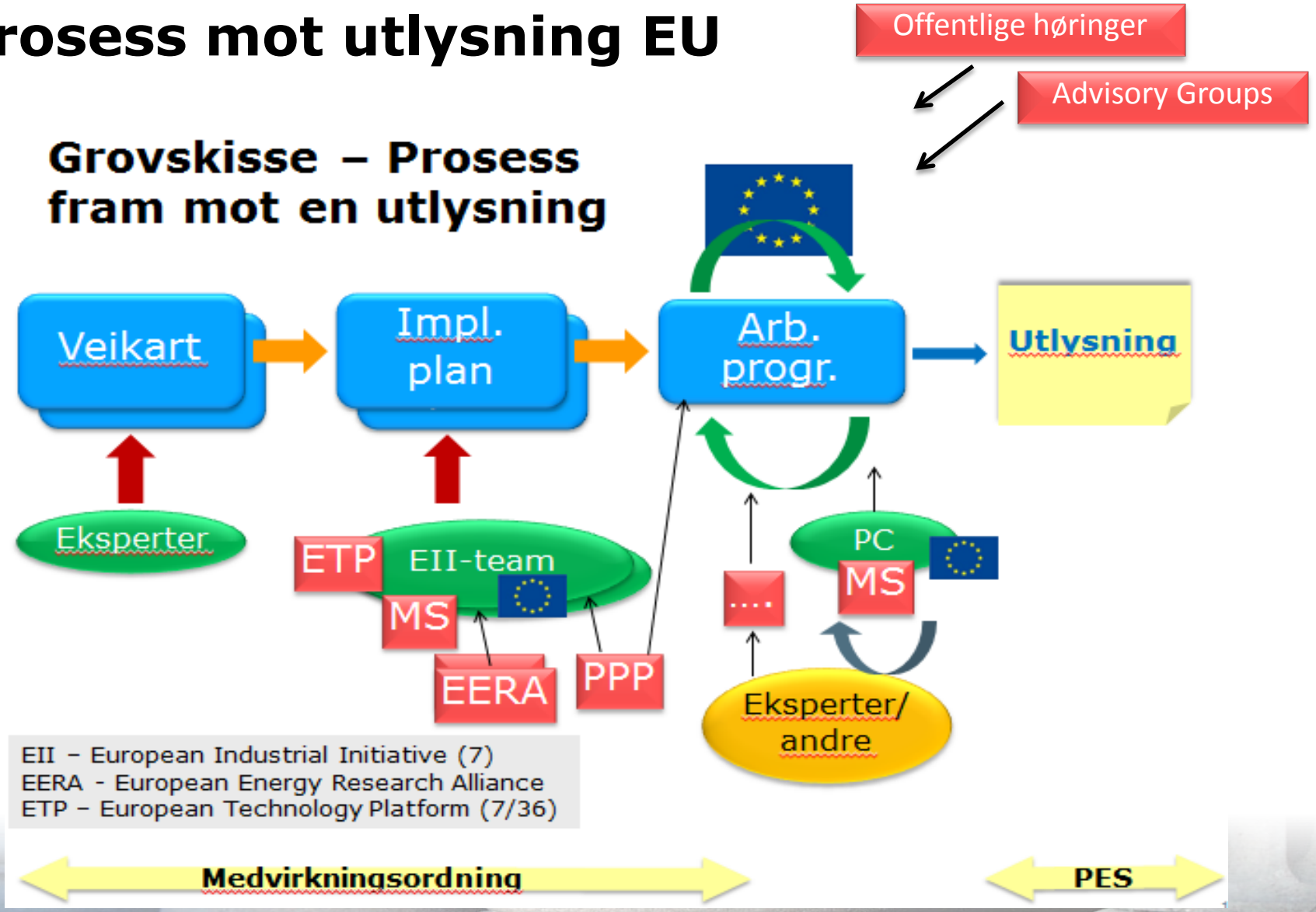
- **Horisont 2020 (EC)**
  ec.europa.eu/programmes/horizon2020/
- **Horisont 2020 (Norge)**
  forskningsradet.no/horisont2020
- **Deltakerportalen**
  ec.europa.eu/research/participants/portal/
- **Nyhetsbrev Horisont 2020 Energi**
  Arkiv: http://tinyurl.com/h2020-energi-nyheter
  Abonner: tie@forskningsradet.no

Prosess mot utlysning EU



Medvirkningsordningen: Støtte til strategisk arbeid inn mot EU og IEA

- Formålet med støtten
  - å fremme norske prioriteringer og forskningsagenda i det strategiske arbeidet som foregår
- Ordningen fremmer dette gjennom
  - koordinering av norske aktører inn mot strategiske prosesser
  - informasjon til og kommunikasjon med aktører som ikke deltar aktivt på EU- arenaen
  - norske aktørers deltagelse i relevante EU- og IEA - fora
- Indirekte effekt: aktørers egen posisjonering & nettverksbygging
- Neste søknadsfrist i høst 2015

Towards WP2016-2017

- **WP 2016-17 Scoping paper**
  - New EC President, Jean-Claude Juncker:
    develop a European Energy Union in order to 'diversify our energy sources and reduce the high energy dependency of several of our Member States', for the EU to be 'the world number one in renewable energies'.
  - A more systemic approach according to the SET-Plan Integrated Roadmap
  - Structured along 3 focus areas:
    - Energy Efficiency
    - Competitive Low-Carbon Energy Technologies
    - Smart Cities and Communities with Nature-based Solutions

Noen stikkord for å lykkes

Kompetanse og kvalitet
- Hva gjør deg attraktiv på EU-arenaen
- Kunnskap, produkter, tjenester, etc.
- Må synliggjøres

Forankring
- Ledelsesforankring
- Egen strategi og planer
- Langsiktighet
- Ressurser

Innsikt
- Utlysningsteksten
- Planer og bakgrunnsdokumenter
- Prosjekter og sentrale aktører

Nettverk
- Bygge og vedlikeholde
- Teknologiplattform, møteplasser, …
- Kollegaer, «gode hjelpere»
- Rekruttering

Mulighetsrom
- Identifisere
- Forstå
- Prioritere

Deltakelse
- Prosjekter, fora, etc.
- Bidra og vær synlig
- **Ekspert for Kommisjonen**

Medvirkning
- Forstå mulighetsrom
- Prioriter
- Bruk tilgjengelige kanaler
- Finn ditt ambisjonsnivå