Horizon 2020 – The Framework Programme for Research and Innovation

A EURELECTRIC response paper

March 2012

The **Union of the Electricity Industry–EURELECTRIC** is the sector association representing the common interests of the electricity industry at pan-European level, plus its affiliates and associates on several other continents.

In line with its mission, EURELECTRIC seeks to contribute to the competitiveness of the electricity industry, to provide effective representation for the industry in public affairs, and to promote the role of electricity both in the advancement of society and in helping provide solutions to the challenges of sustainable development.

EURELECTRIC's formal opinions, policy positions and reports are formulated in Working Groups, composed of experts from the electricity industry, supervised by five Committees. This "structure of expertise" ensures that EURELECTRIC's published documents are based on high-quality input with up-to-date information.

For further information on EURELECTRIC activities, visit our website, which provides general information on the association and on policy issues relevant to the electricity industry; latest news of our activities; EURELECTRIC positions and statements; a publications catalogue listing EURELECTRIC reports; and information on our events and conferences.

EURELECTRIC pursues in all its activities the application of the following sustainable development values:

Economic Development
Growth, added-value, efficiency

Environmental Leadership
Commitment, innovation, pro-activeness

Social Responsibility
Transparency, ethics, accountability

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Horizon 2020 - The Framework Programme for Research and Innovation

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"Research to Deliver"

EURELECTRIC welcomes the regulation proposing *Horizon 2020 - The Framework Programme for Research and Innovation (2014-2020)* and with it the undertaking to link research and innovation to the EU's overall Europe 2020 strategy. EURELECTRIC also welcomes the fact that a number of our comments and concerns on the Green Paper '*From Challenges to Opportunities: Towards a Common Strategic Framework for EU Research and Innovation Funding'* have been taken into account.

EURELECTRIC sees a clear added value of an EU approach to research and innovation: this value added includes leverage for additional public and private investments, sharing best practices across member states, and setting up the European Research Area (ERA) as a necessary complement to the European single market.

At the same time, EURELECTRIC is missing a clear statement regarding the fostering of a European supply chain for innovative energy technologies. In order to achieve the overarching goals of generating jobs and GDP through innovation, as outlined in the Europe 2020 Strategy and the Innovation Union, emphasis should be placed on a European value chain from laboratory to the market.

I. Five Key Issues

In order to meet the ambitious energy and climate objectives laid out in the Europe 2020 Strategy, research, development and demonstration (RD&D) need to be significantly expanded and coordinated. This applies particularly to the field of energy, which has been neglected in the previous Framework Programmes (FPs). We fully subscribe to the following key issues identified in the Horizon 2020 proposal:

1. Increase funds for energy related RD&D

The priorities set out in the Europe 2020 strategy clearly pinpoint electricity as a key vehicle for the transition towards a low-carbon economy. The European electricity sector is determined to play its role, but the right policy framework should be provided. **EURELECTRIC therefore believes that the share allocated to energy and climate policies in the new EU multiannual financial framework (MFF) 2014-2020 must adequately reflect those targets.**

Energy is the backbone of society, and the decarbonisation challenge requires an unprecedented innovation effort. It is therefore crucial that large policy initiatives such as Horizon 2020 support the sector in reaching the goals for 2020 and beyond. To realistically achieve this, energy research must play a central role in European funding for research and innovation.

The share of energy-related real RD&D spending has actually decreased in previous framework programmes. Under FP 6 (2002-2006) €810m were spent on sustainable energy systems, out of a €16bn budget – a share of 5%. Under the current FP7, this share actually decreased to 4.6%, with energy only receiving €2.3bn (excluding nuclear research under Euratom) out of a total budget of over €50bn. EURELECTRIC therefore welcomes Horizon 2020's proposed budget increase, which foresees €6.5bn dedicated to energy-related research. However, given Horizon 2020's ambition to support large-scale demonstration and energy pilot projects, the increase in budget will struggle to match the increase in aspirations.

EURELECTRIC believes that RD&D support should focus on technologies with the greatest potential for reaching market viability before 2020 and which can result in significant and substantially increased contributions to the three major energy policy objectives of competitiveness, security of supply and sustainable development (notably through reducing greenhouse gas emissions).

2. Simplify programmes to enhance their attractiveness for key stakeholders

EURELECTRIC welcomes the proposal's emphasis on simplified application procedures and administration of research programmes. This should allow all related processes to become more transparent. **The proposed simplification measures have the potential to finally increase the programmes' attractiveness to companies, a fundamental shortcoming in previous FPs.** It is vital to implement these methodological improvements successfully and to encourage industry participation.

3. Cover the whole innovation cycle, including market uptake

RD&D support needs to be available for technologies throughout the entire innovation cycle.[1] Promising technologies close to market deployment require support in overcoming the final hurdle before entering the market. The early stages of the innovation cycle require 'technology push measures': policies that support research so that the technology can be developed and deployed. The final steps of the innovation cycle then require policies which pull technologies into the market once they have been demonstrated and early commercial market uptake is taking place. These stages are decisive for going 'from promise to practice', but are financially risky and have not received the appropriate attention in previous support programmes. The development of new technologies must go hand in hand with effective regulation that enables advances in our energy system through 'market pull measures'.

4. Share the risk

Developing and commercialising strategically significant technologies comes with big financial risks, which utilities and equipment manufacturers cannot shoulder alone. We therefore welcome the introduction of a risk sharing facility and the recognition that there is a need for appropriate risk sharing among industry participants, EU member states and the European Commission in financing energy technologies.

5. Empower the SET Plan

The SET Plan has performed well in aligning European and national research agendas/priorities up to this point. Given the vast amounts of money necessary to make this plan a success (about €8bn p.a.), pushing it to the next level through joint financing systems between the member states and the European Commission will be crucial. EURELECTRIC strongly believes this has to be done as soon as possible, not only to underline the EU's committed focus on energy research and innovation, but also to avoid a marginalisation of the SET Plan as the new European working arrangement in energy RD&D.

[1] EURELECTRIC is currently undertaking an assessment of needs by technologies, and has already done this for renewable energy sources (RES) in its paper *How to Foster Research, Development and Deployment of RES-E Technologies.*

II. Comments on the Proposed Methodology

1. Emphasis on simplification welcomed

EURELECTRIC welcomes the proposal's emphasis on simplified application procedures and administration of research programmes. This should allow all related processes to become more transparent. It could nevertheless be questioned if the envisaged strong role for the EIT is reasonable within the simplification logic, or if it actually adds an additional administrative step. Horizon 2020 shows a clear intention of bringing down administrative costs. However, creating a framework of this magnitude will inevitably require an extensive administrative apparatus with corresponding costs.

In addition EURELECTRIC suggests improving the European Commission's Cordis website, thus setting up a single, simple and user-friendly platform presenting the whole range of EU RD&D programmes.

2. Involve all stakeholders: programming

As for the programming in detail, EURELECTRIC very much welcomes the approach laid out in chapter II, namely to take advice of independent high-level experts into account and to consult on the process of programming. This has previously often been left to the member states and their 'national interest', rather than the concern with a European approach and a European value added. The proposed simplification measures have the potential to finally increase the programmes' attractiveness to companies, a fundamental shortcoming in previous FPs. It is vital to implement these methodology improvements successfully and to encourage industry participation.

3. Monitoring and evaluation

As for the assessment of Horizon 2020 – and of the EIT and the JRC – at an intermediary stage in 2017 as well as after 2020, EURELECTRIC welcomes the methodology as laid out in chapter IV. We believe that a parallel consultation and survey on public opinion on the EU added value in RD&D should be carried out.

Regarding the programme's evaluation, we believe that counting the number of new patents could serve as a means to measure the impact and success of Horizon 2020. In that context, the potential of the yet to be approved EU patent should not be forgotten.

4. Strive towards synergies & coherency

EURELECTRIC believes that the full potential for synergies between RD&D at national and EU level has not yet been exploited. As the Commission itself writes in its Horizon 2020 proposal, "more than 95% of national R&D budgets are spent without any coordination across the Union, a formidable potential waste of resources at a time of shrinking funding possibilities"2. EURELECTRIC thus welcomes those actions proposed under Horizon 2020 which aim at promoting coordination and synergies with national activities, especially under the specific objective "Inclusive, innovative and secure societies" (Point 6.3 of Part III of Annex 1)3. We support the initiative that work programmes under this objective should contain information on how coordination with national research and innovation funding is ensured, making it an

[2] See COM(2011) 809 final , p. 74

[3] See COM(2011) 809 final p. 74 – 77

element of discussion in the programme committees. However, we would like to see this principle apply to all three priorities of Horizon 2020 and would also welcome more concrete proposals from the Commission on how to reach this objective. Leverage can certainly be one way forward, meaning the complementary use of funds once priorities have been set. One could also imagine that national RD&D agendas take the common EU policies much more into account than is currently the case.

We also appreciate that "Horizon 2020 shall contribute to the strengthening of public-public partnerships where actions at regional, national or international level are jointly implemented within the Union," in particular through the use of the ERA-NET instrument, as mentioned in Article 20 of the proposal. The instrument of pooling resources, 'public-public' cooperation on the basis of at least two member states plus additional support from the Commission looks promising.

Furthermore, EURELECTRIC welcomes the willingness of the European Commission, as per Article 17 of the proposal, to maximise the impact of Horizon 2020 by developing close synergies with other Union programmes in areas such as education, energy, environment, competitiveness, but also with the Cohesion Policy funds, which can specifically help to strengthen national and regional capabilities.

5. Strengthen the leverage effect of EU RD&D

Given the role the electricity sector will have to play and the huge financial investments necessary to meet the 2020 targets, EURELECTRIC believes that there is a clear need to radically refocus and substantially increase European and national RD&D spending on a new intelligent energy economy. EU funding for RD&D is key and should be exploited for leverage purposes, not as a substitute for existing or planned national or private funding. Instead, the EU budget should act as a leverage to attract additional financing from the private and the banking sector in order to adequately complement existing private sector spending.

In this perspective, and as already mentioned in this paper, we welcome the fact that Horizon 2020 will support approaches aimed at pooling and leveraging other sources of funding through a simplified ERA-NET scheme, providing support from coordination of national programmes up to the co-funding of joint calls for proposals.

As outlined above, energy-related RD&D funds have actually decreased in previous programmes. The reversal of the trend is due to the merger of the three formerly separate programmes, and we very much welcome these economies of scale, as well as moving forward with the SET Plan through joint financing systems between the member states and the European Commission. The question nevertheless remains how the various instruments interact in reality (Horizon 2020, SET Plan within the Horizon 2020, but also Euratom ITER outside of it) and how coherence – for example between climate and energy policies – is ensured.

6. The SET Plan – a natural energy pillar in Horizon 2020

The SET Plan as the natural energy pillar within Horizon 2020 stands for a long-term agenda. Industrial initiatives represent the active elements implementing the SET Plan. Formalising them under Horizon 2020 could make best use of the potential synergies between Horizon 2020 and the SET Plan. The chosen approach is promising and has to be realised with the support and engagement of all relevant stakeholders.

7. A new risk-sharing approach at EU level is crucial to bring key technologies on the market

EURELECTRIC also welcomes the access to debt and equity facilities (Annex 1, Part II, point 2), which are key to improve the financing and risk profiles of the RD&D activities on an EU level. Risk sharing is indeed the key element in bringing promising and strategically important technologies like smart grids or CCS to the commercial stage. Easing access to loans, guarantees and other forms of risk finance for utilities and equipment manufacturers increases the willingness of the private sector to invest in innovation projects. In the words of the Commission, "the demand for RSFF loan finance has been high since the launch of the facility in 2007. In the first phase (2007-2010), its take-up exceeded initial expectations by more than 50% in terms of active loan approvals." Those figures are clear proof of the huge demand in this area. We thus welcome the allocation of €3.8bn to the access to risk finance, which is a clear increase compared to FP7 (€1bn from FP7 + €1bn from the EIB).4

8. Enhance the visibility of the JRC & EIT and strengthen their cooperation with the industry

Although important funds have been allocated to the JRCs and the EIT, their visibility remains rather limited. We believe there is a mismatch between the funds allocated to the EIT and its visibility. This could be improved through direct cooperation with European industry or associations, but also through better marketing of the projects, more exchange, more workshops including all stakeholders, and other, similar activities.

The main value added by the JRC is that it provides neutral scientific background information for the use of the Commission as a scientific basis for new legislation. Closer collaboration with the industry would be beneficial. EURELECTRIC also questions the current set-up whereby the JRC is able to apply for research funds despite being closely connected to the European Commission. This set-up seems rather opaque from our perspective.

EURELECTRIC considers it key to prioritise RD&D for the entire energy system, including generation, transmission, distribution and storage, and not merely for isolated elements.

[4] http://www.euroris-net.eu/dotAsset/4958.pdf

III. How is Energy Addressed in Horizon 2020?

Horizon 2020 is split into three major priorities, with the third point, 'societal challenges', being allocated the lion's share. 'Secure, clean and efficient energy' is allocated roughly 1/5 (€6.5bn) of the budget for this priority, while other points within this priority cover 'green transport' and 'climate action, resource efficiency and raw materials'. It is decisive to clearly draw the borders between these three points, with the support of all stakeholders and independent exports and with the 'European value added' in mind, while at the same time ensuring coherency between these three points and the underlying policy approach. EURELECTRIC acknowledges that in previous initiatives the coordination of projects spanning energy, transport and/or climate change have proven difficult to coordinate.[5] However, the Commission needs to make the coordination of these points a priority in order to minimise the risk of duplication without artificially separating the different sectors.

We subscribe to the identified broad lines of activities and find the inclusion of robust decision-making and public engagement of major importance. There is a clear need to consider non-technological challenges like public acceptance for the uptake of new technologies.

Specific comments on 'a single, smart European electricity grid'

The proposal envisions a stronger focus on the demonstration of new grid technologies, including storage, systems and market designs to plan, monitor, control and safely operate interoperable grids. Indeed, smarter European grids will not be rolled out in a single all-encompassing deployment. Grid development is an incremental and continuous step-by-step learning process, characterised by different starting points and projects throughout Europe, leveraging ongoing advances in technology and expertise.

Smart grid stakeholders must therefore bring results of research and demonstration projects to the national and European level. The dissemination of information, results, best practices and lessons is vital to inform effective development and integration of optimal solutions. In addition, smart grid development can be a catalyst for future partnership and action on a larger scale. EURELECTRIC encourages the dissemination of success criteria and realistic business cases based on intensive pilots. They are vital to shape views and raise awareness of smart grid investment needs among public and private stakeholders at the national and European level.

With respect to the inclusion of storage in smarter grids, we support the promotion of advanced storage technologies and materials as well as demonstration projects at distribution business level. They are necessary to gain field experience and to build industrial confidence. In this perspective, the focus should lie on identifying those technologies and systems that contribute to the integration of renewables and cost-efficient grid planning, to be done by distribution system operators.

EURELECTRIC therefore strongly supports the SET Plan, the European Electricity Grid Initiative (EEGI) and the European Energy Research Alliance (EERA), believing that gaining deeper knowledge of storage technologies, applications and capabilities to respond to grid needs is necessary from economic and technical viewpoints.

[5] E.g. the Smart Cities initiative, combining transport & energy

Specific comments on 'Smart, green and integrated transport'

The proposal calls for 'a radical change' and recognises that business as usual will not deliver the solutions that are needed for sustainable mobility. Involving stakeholders will be necessary to bridge the gap between results and deployment, which should be the main focus area for electrifying road transport. However, the Commission should also set an appropriate policy/regulatory framework because in a market-driven approach, the economic performance remains the main determinant. Unfortunately, without the right price incentives and binding goals, neither the industry nor the consumer will move towards sustainable (smart, green and integrated) mobility.

In the case of electric vehicles, as an example, the European car industry is still focusing R&D efforts on improving energy efficiency of internal combustion engine cars. With a stronger CO_2 target in place, equipment manufacturers would be inclined to shift R&D and market development efforts to electric vehicles instead. This is one of the key reasons why the electric vehicle market remains immature, with prices too high to attract a broad base of consumers.

The proposal also highlights the problem of congestion. Due to growing urbanisation and transport demand, the urban context presents a specific challenge (also underscored in the Commission's White Paper on Transport). Attractive public transport and other mobility solutions will have to emerge. Here as well electric vehicles can contribute to the solution by electrifying the last/first mile.

To turn Horizon 2020 into an effective tool for fostering research and innovation in transport, it must allocate resources and set an appropriate regulatory framework in such a way as to develop a market for e-mobility. This is needed to respond to the EU's energy and climate goals and to reduce Europe's oil dependence. It is also an opportunity to strengthen the EU's competitiveness in these new technologies and innovative markets.

Specific comments on 'climate action, resource efficiency and raw materials'

Reaching the EU's carbon reduction goals can only be achieved through functioning energy markets. Innovation and research is the key in bringing low-carbon technologies to a level at which they can compete successfully in such a market. This does not only apply to electricity generation technologies, but increasingly also to electricity storage, such as batteries for electric vehicles.

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