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MISSION-BASED INNOVATION FOR CLIMATE AND ENERGY:

MISSION DESIGN AND GOVERNANCE

SIMON SKILLINGS, LEA PILSNER & JOSEPH DUTTON

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EXECUTIVE SUMMARY

The EU is currently debating new proposals for the research and innovation programme that will be implemented in 2021 (Horizon Europe). It has committed to using 'mission-oriented policy making' as a key tool to help improve the effectiveness of research and innovation investment. There is a strong alignment between the political goals of the mission process and the policy challenge of decarbonising the energy system. The EU must grab this opportunity and set out missions related to this objective. However, it must recognise that success will depend on being open-minded about the need for regulatory change, creating a robust learning governance process, and the provision of adequate funding.

Missions represent a new departure for the EU research and innovation programme, and it is important to have clarity over what they are intended to deliver and how these outcomes are best achieved. A key political goal is that they capture the public imagination and engage citizens.

Delivery of the Paris Climate Agreement will depend critically on the rapid decarbonisation of the economy including the energy system and this, in turn, will involve the mass deployment of measures that change the amount of energy people consume and the way they consume it. This will not happen unless the deployment process improves people's lives and developing the necessary consumer 'pull' represents the key innovation challenge. Whilst there are aspects of decarbonising the economy that will require technology innovation, this is not about huge amounts of public money or clever new technology. Instead, it is about accelerating deployment and making it more predictable and appealing to consumers.

There is a clear overlap between the aims of the mission process and the needs of climate and energy policy. Grabbing this opportunity will require a new approach to research and innovation, increasing focus on exploring different regulatory and market solutions. It also requires a robust learning governance process that will deliver process efficiency and appropriate democratic accountability, ensure individual projects succeed in delivering learning, consolidate and process the learning, and provide recommendations for changes to the regulatory and market framework that will support mass deployment.

The core functions that the governance structure must deliver are decision making, individual project support, learning and stakeholder management. This paper sets out how the governance process might be structured and what the various functions should entail.

1. MISSION-BASED INNOVATION

The EU has committed to using 'missions' as a key tool to help improve the effectiveness of research and innovation investment. This is a new departure for the EU and it is important to have clarity over what they are intended to deliver and how these outcomes are best achieved.

The EU is currently debating new proposals for the research and innovation programme that will be implemented in 2021. This so-called 'Horizon Europe' programme involves €100 billion of investment and the proposals were made as part of the next EU long-term budget, the multiannual financial framework (MFF).

One key new feature of the Horizon Europe proposals is the adoption of a 'mission-oriented approach to policy making'. The European Commission defines missions as 'an approach to policy-making which means setting defined goals, with specific targets and working to achieve them in a set time'.
It is not only intended to help maximise the impact of investments by setting clearer targets and expected impact when addressing global challenges, but it is also hoped that it will make it easier for citizens to understand the value of investments in research and innovation.

Whilst these proposals build on earlier work, notably a review of the current Horizon 2020 framework by a high-level group chaired by Pascal Lamy[a], and a report by Professor Mazzucato based on her research into this topic and the results of a consultation process[b], the details of how the EU will adopt a mission-based approach remain to be defined. As part of the trialogue discussions between the Commission, Council and Parliament, several 'mission areas' are being debated with the expectation that these will be used as the basis for defining specific missions before Horizon Europe is due to be implemented. Proposals for a mission budget are also being discussed.

Capturing the public imagination and engaging citizens represents the key political goal. However, the process for implementing missions will need to fulfil other objectives if it is to obtain broad political support. It will need to ensure that expenditure is contained, and well-managed, economic benefits must be apparent and fairly spread across the EU, and the process must be robust to being captured by industrial lobbies and other vested interests.

This paper argues that the adoption of a mission-based approach to research and innovation represents a huge opportunity to drive forward one of the key policy challenges facing the EU – the need to decarbonise the energy system.

[a] **https://ec.europa.eu/research/evaluations/index.cfm?pg=h2020evaluation**

[b] **https://publications.europa.eu/en/publication-detail/-/publication/5b2811d1-16be-11e8-9253-01aa75ed71a1/language-en**

2. THE CLIMATE AND ENERGY CHALLENGE

The EU has set the ambitious goal of decarbonising the economy in line with the Paris Climate Agreement. This cannot be achieved without major changes in the way society operates, including in the way energy is produced and used. Decarbonisation of the energy system needs mass deployment of measures that change the amount of energy people consume and the way they consume it. Whilst the technology largely exists, we don't know how to deploy it at the necessary scale – innovation in governance, markets and regulation is required so that deployment is more predictable and appealing to consumers.

EU member states have committed to decarbonise their economies in line with ambitious goals set out in the Paris Climate Agreement. A core element of the decarbonisation challenge involves the energy system and it will not be possible to decarbonise the energy system unless consumers, individual and business, change the amount of energy they consume and the way they consume it.

There are many proven technological options to support this process and innovation in technology is not the main problem[c]. What is, however, unknown is how to deploy these measures at the necessary scale. Deployment at scale cannot be achieved unless it improves people's lives and significant 'consumer pull' emerges[d]. Decarbonisation of the energy system, therefore, represents an unusual innovation challenge. It is not about investing huge amounts of public money or developing breakthrough technology – it is about making deployment more predictable and appealing to consumers and, thereby, achieving a much higher rate of deployment of low carbon measures.

There are three core questions that need to be answered:

- How can deployment of low carbon measures improve citizens lives and create the necessary 'pull'?
- How is it possible to fund deployment with private sector capital?
- What changes in energy consumption arise from deployment of measures and how can this be used to create a valuable energy system resource?

Further research will be required into what it is that will make consumers want to install low carbon measures in their buildings. This will be driven by, amongst

[c] Technology innovation is still important. Not only to drive incremental improvements to existing solutions but to address those areas where credible and cost-effective solutions are not currently available (e.g. long cycle power storage to ensure inter-seasonal energy balance).

[d] 'Consumer pull' means that there is a demand for the deployment of necessary measures across all consumer segments and it is not necessary to mandate action.

other things, the technology products, the financial proposition, business models, social norms, the way that choices are presented and the relationship with the service provider. Once properties are upgraded, it will be necessary to understand how energy consumption has changed and the extent to which it can be controlled to offset costs elsewhere on the energy system.

It is likely that these factors will vary, not just between member states, but between regions, cities and rural areas within each country. This presents a challenge since research will be required across the EU if the insights are to be obtained that will enable deployment to be scaled-up to the levels required.

Whilst there is little requirement to develop new technological solutions, it will be necessary to innovate with energy system governance, markets and regulation and explore new frameworks that will support deployment at scale.

3. MISSIONS FOR CLIMATE AND ENERGY

Missions aim to engage citizens in the research and innovation process and increase the impact that innovation will have. It is critical that climate policy delivers a required outcome and the key step of decarbonising the energy system requires motivated and engaged consumers. There is a clear overlap between the aims of the mission process and the needs of climate and energy policy. One or more of the innovation missions should focus on this topic.

Accelerating the decarbonisation of the energy system provides an excellent opportunity to use missions as a vehicle to address a global policy challenge. Indeed, one of the mission areas that has been proposed by the European Commission relates to the creation of smart, low carbon cities which is highly relevant to this challenge[e]. The table below illustrates the alignment between the political objectives for missions and the requirements of energy system decarbonisation:

Political objectives for missions	**Energy system decarbonisation challenge**	**Synergies**
Capturing public imagination and engaging citizens	Develop consumer 'pull' through improving lives	Involves direct participation of many citizens
Contained and well-managed expenditure	Leverage private sector capital	Solutions will not be scalable unless they can be funded privately
Industrial benefits apparent and fairly spread across EU	Solutions will vary between and within member states	Evidence required from many locations across the EU
Robust to industry capture and vested interests	Solutions will vary between and within member states	Must be prepared to explore range of technologies and solutions

This suggests that an ideal application of mission-oriented policy would be to define a mission that leads to the deployment of low carbon energy measures in premises at scale. In this context, 'scale' should provide enough knowledge to lead directly to EU-wide mass deployment of such measures.

It must be accepted at the outset that a mission of this nature might lead to some radical changes to the current energy system regulatory and market framework. For example, incentivising the private sector to invest in buildings is

[e] A further mission area relating to land use is also hugely important from a climate perspective

likely to require long term relationships and this, in turn, would require a new basis for consumer protection that moves beyond the current 'switch and save' paradigm. It is, therefore, important that European energy regulators are directly involved in the mission process and open to the idea of innovation in regulation and markets.

This would represent an ambitious mission area that would be unlikely to succeed without a strong 'learning governance structure'. The governance structure should deliver process efficiency and appropriate democratic accountability, ensure individual projects succeed in delivering learning, consolidate and process learning, and provide recommendations for changes to the regulatory and market framework. A comprehensive governance structure will be essential to deliver the political confidence to invest in an ambitious mission since it provides the best chance of achieving a successful outcome.

It would, of course, also be necessary to ensure such a mission was appropriately funded. Apart from ensuring that the governance process is established, it would inevitably be necessary to provide some risk capital for ambitious projects.

Given the evident alignment between energy system decarbonisation and mission objectives, and provided that the EU is prepared to be open-minded about regulatory change, establish a learning governance process, and provide the necessary funding, work should now be devoted to identifying one or more missions designed to deliver this overall objective.

4. MISSION GOVERNANCE

Delivering the required mission outcomes will be challenging and success will not be possible without an appropriate governance structure to drive the process. The key tasks will be:

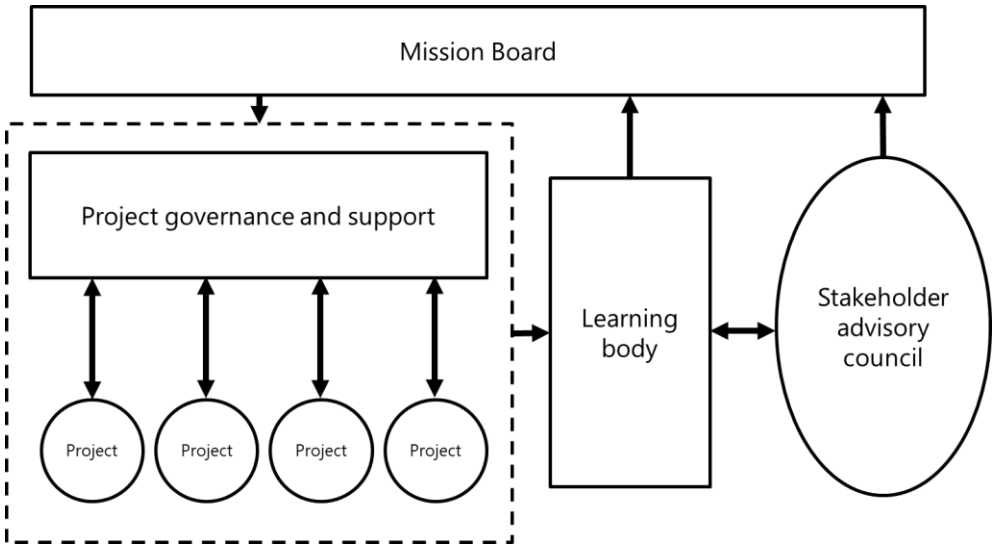
- Ensure public money is spent efficiently and effectively
- Create a multi-step learning process that informs policy decisions needed to deliver the mass roll-out of low carbons measures in buildings
- Ensure democratic accountability through the engagement of local politicians, consumer groups, other public interest bodies, and even directly with individual citizens.

Good delivery governance is also required to provide politicians with the confidence to invest in this mission area.

The European Commission has not yet shared proposals as to how missions should be governed. This section contains ideas for a governance structure that would be necessary to deliver a mission related to the decarbonisation of the energy system.

The core functions that the governance structure must deliver are decision making, individual project support, learning and stakeholder management. These are illustrated in Figure 1.

Figure 1: High level governance structure



Source: E3G

Mission Board

The key functions of the decision making body, or 'mission board', are to approve funding for governance process and individual learning projects, consider recommendations from the learning body for further projects and/or changes to regulatory and market framework to support delivery of mission, and to forward agreed recommendations for regulatory and market changes to the relevant European Commission directorate or member state government(s).

Ideally, the mission board would be chaired by a senior European Commission official and include representatives from member states and regulatory authorities. However, it is important to ensure that the board functions effectively and the number of members should remain at a manageable level (below ten).

Learning body

The objective of the learning body would be to identify targeted leaning projects and changes to regulatory and market framework that will be necessary to support delivery of mission goal and the 2050 vision for deep energy system decarbonisation. It would be tasked with answering the key questions set out in Section 2 and would need to remain in close contact with the various projects that are underway. It is important that the learning body is free from vested interests and it should be populated by a group of independent energy system experts and led by authoritative independent figure.

Stakeholder advisory council

The stakeholder advisory council would help provide democratic accountability for the mission process. It would contain local politicians alongside consumer and other public interest representatives. It may also be appropriate to include individual citizens.

The advisory council would need to engage directly with the learning body to help shape the recommendations it produces and to provide direct advice itself to the mission board. Whilst an advisory body cannot guarantee democratic accountability, regular, mandatory reporting from this group to the European Parliament might help reinforce the impact of the advice provided. It may even be appropriate to establish 'citizen juries' to provide feedback on the impact of the deployment programme to support the recommendations provided.

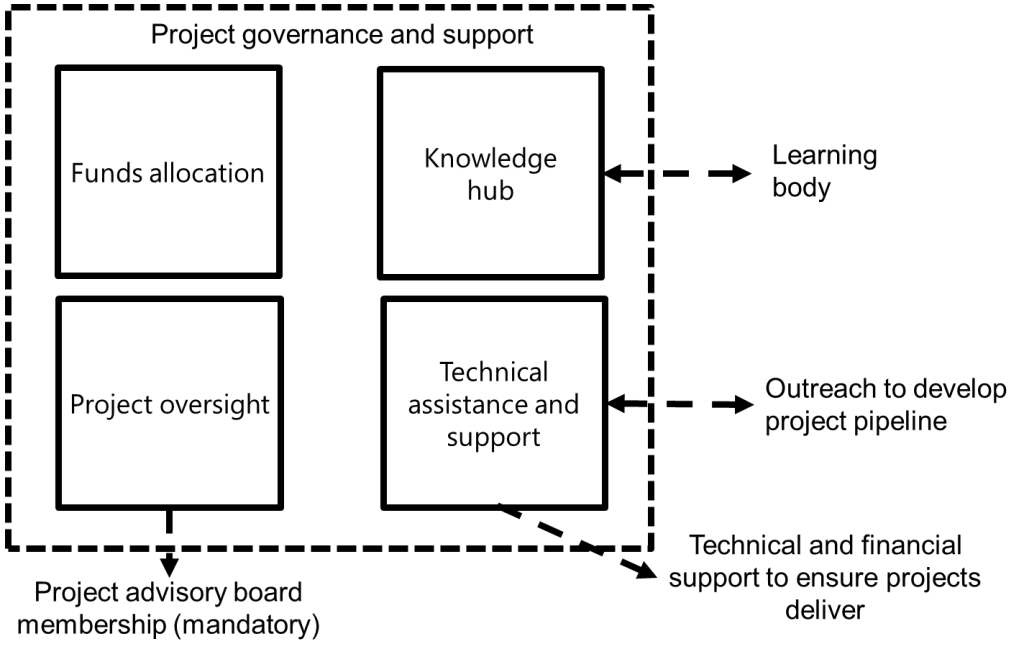
Project governance and support

Alongside the learning body, a robust project governance and support function will be necessary to ensure the overall innovation process succeeds in delivering

valuable learning and remains on-track to achieve the mission goals. This function would involve a range of technical activities and an overview of these functions is given in Figure 2 below.

A project oversight process would be charged with closely monitoring the progress of individual projects and would probably have mandatory membership of each individual project board. It would provide regular briefings on progress and lessons learnt and would ensure optimal use of the technical assistance and support that is available.

Figure 2: Project governance and support



Source: E3G

A 'knowledge hub' would involve recognised technical experts and would ensure projects have ready access to the latest best practise expertise on technical and regulatory issues, thereby ensuring that individual projects do not have to replicate this capability. It would be responsible for collating on-going learning from projects and ensuring that it is available to the learning body.

Technical assistance and support should be directly available to projects to ensure that they deliver the learning that is required and that risks to project delivery are quickly identified and addressed. This technical support function would also work with the knowledge hub to identify where further learning is required and would develop a pipeline of suitable projects.

The selection of individual projects and the process for dispersing funds would also have to be managed from within the project support and governance function, under the direction of the mission board.

5. CONCLUSION

There is a great practical and political opportunity to leverage the mission-based innovation process and drive forward energy system decarbonisation. Critically, this must put citizens at the heart of the process and make deployment of low carbon measures in buildings more predictable and appealing to consumers. However, we will not be able to grab this opportunity unless a new learning governance structure is established that is able to think creatively about the energy market and regulatory framework and propose ambitious reforms consistent with achieving climate and energy goals.

There are strong synergies between the political objectives of the mission process and the needs of climate policy, particularly related to the decarbonisation of the energy system. This opportunity should not be missed, and the European Commission should identify one or more missions related to this overall goal.

However, the EU must be prepared to be open-minded about regulatory change, establish a robust learning governance process, and provide the necessary funding, if the missions are to deliver their intended objectives. It is particularly important to quickly implement an appropriate governance structure, and this report has set out the key functions that must be involved. They are:

- Mission board
- Learning body
- Stakeholder advisory council
- Project support and governance