Renewables Grid Initiative

Memorandum

Towards an expansion of electricity grids and deployment of innovative grid technology to enable maximum integration of renewables

An Economic, Energy and Climate Security Imperative

The promotion and rapid deployment of a highly efficient and clean energy supply investments into a new pan-European Grid yields a multitude of benefits. It addresses the physical need for the replacement of some ageing grid infrastructure and for new and highly efficient transmission facilities in a continuously merging European liberalised energy market. It addresses concerns on European border congestion of electricity trade and adds a high degree of supply and transmission efficiency. Such a Super and Smart Grid will allow for speedy and efficient implementation and dissemination of large-scale renewables, such as offshore wind from international European waters and large-scale solar from North Africa, into a still scattered national grid system. This is deemed necessary to meet the renewable energy targets set by the EU for 2020 and beyond by putting the EU on track for a maximum integration of renewable energy sources into the power supply system well before 2050[1].

A new grid architecture capable of fully integrating both centralised renewable energy supplies, such as concentrated solar power (CSP) and large-scale offshore wind, as well as localised, distributed renewable energy supplies will contribute to energy security as well as long-term climate security. Therefore, we believe that investments in the grid infrastructure to reinforce current lines, add new high-voltage direct current lines and equip the grid with smart technologies is an Economic, Energy and Climate Security Imperative.

Stimulating the economy

Since the beginning of the financial crisis, governments around the world have faced the challenge of stimulating the economy. Recent assessments have shown that governments have so far proposed fiscal stimuli of at least 2 trillion euro, almost 5 percent of global GDP.

These investments are meant to mitigate the impacts of the economic crisis. If properly tailored, they can address the challenges of energy and climate security and also deliver a long-term positive economic impact.

Securing energy supply

At the same time, the EU-Commission argues in the Green Paper[1] "Towards a secure, sustainable and competitive European Energy network" that *"Europe's energy networks are the arteries on which we all depend for the energy to fuel our homes, businesses and leisure. The EU's energy policy sets out clear goals and objectives for sustainable, competitive and secure energy. However, the EU will not achieve its ambitions unless its energy networks change considerably, and fast"*.

[1] COM (2008) 782.

Accelerating the transition to a low-carbon society

In the same spirit, the EU Commission states in the new Communication (January 28, 2009)[2], that actions to tackle the financial crisis "can help to use the narrow window of opportunity that remains to stay below a 2°C increase".

And the president of the EU Commission, José Manuel Barroso, stressed that investments should be "coherent" with the EU long- term objectives including fighting climate change[3].

Smart investments in these difficult times can accelerate a transition towards a low carbon economy, while creating jobs and further developing Europe's competitive advantage in clean technologies.

Expanding and upgrading our electric power transmission and distribution system is vital to renewing economic growth at all levels (global, European and in each Member State), strengthening national energy security, and addressing the threat of global climate change.

In this context, several Member States can play a key role in expanding the exploitation of their large renewable energy resources. However, the emerging consensus is that electricity transmission investments, including cross border interconnectors, need to have a higher degree of strategic co-ordination. This is necessary in order to deliver a rational European network supporting an efficient internal market, one that benefits consumers and enables carbon-efficient energy solutions to exist while also providing an economic stimulus. Additionally, the Commission is concerned that if "the EU continues on its present infrastructure course, none of the policy objectives for Europe will be met".[4]

It is critical that legislators, policy makers and regulators, in Brussels and in Member States, gain a clearer understanding of why investment in cross-border interconnection remains low, and why it is important that such investments are accelerated. Without changes to the current European energy regulatory regime, the prospects for stronger grid integration, wide deployment of Smart Grid strategies, an offshore Supergrid in the North Sea/Baltic and the importation of large amounts of renewable electricity from North Africa are looking increasingly remote[5]. If Europe wishes to ensure both future energy security and the transition to a low-carbon energy system, new cross-border grid investments must proceed expeditiously to connect new renewable supplies with the major centres of demand, and to connect both supply and demand to existing and new sources of energy storage (e.g., the Nordic and Alpine hydroelectric systems).

It is necessary to define a centrally coordinated framework that does not rule out innovators, breakthrough technologies or competitors where they are beneficial to the end consumers. Such a coordinated framework would also ensure that short-term grid solutions are not exploited to the detriment of long-term aims.

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[2] COM(2009) 39 final: "Towards a comprehensive climate change agreement in Copenhagen".
[3] COM (2008) 800 final: "A European Economic Recovery Plan".
[4] COM(2006) 846 final: "Priority Interconnection Plan".
[5] Since the building of the Interconnector France-Anglais (IFA) in 1986, a limited number of the several projects proposed has progressed to construction phase (Skagerak, BritNed, NorNed). Together with the projects proposed these interconnectors can be seen as the foundation of a North Sea supergrid.

We recommend that National and European Parliamentarians adopt the following policies:

(1) A review of the regulatory regime across Europe that would clearly establish a framework among Member States that complements and encourages investment, rather than the strictly national regulatory frameworks that are often incompatible with each other. For example, an initiative to harmonise regulatory approaches to offshore transmission investment between the United Kingdom and Norway would enable the revival of the previously proposed interconnector between the two countries, a critical step to improving the value of offshore wind to the region's power systems.

(2) A re-alignment of the asymmetry of risk and reward that Member State legislation imposes on national and cross-border interconnections. Such a re-alignment must clearly continue to protect consumers, but it would also recognise the downside risks that investors face. It would provide regulators with a mandate to address investment downside risks and empower them to deploy mechanisms necessary to do so.

(3) The fast implementation of **transmission lines from the offshore wind parks in the North Sea and the Baltic Sea to the south of Germany.** In order to support an expansion of renewable electricity, these lines could be a cornerstone for the envisaged North Atlantic offshore grid (and) "should be developed to interconnect national electricity grids in North-West Europe together and plug-in the numerous planned offshore wind projects". This North Atlantic offshore grid "should become, together with the Mediterranean Ring and the Baltic Interconnection project, one of the building blocks of a future European Supergrid". (Green Paper "Towards a secure, sustainable and competitive European Energy network" from November 13, 2008)

(4) A massive expansion of transmission capacity along the main load flow direction from the wind parks in the north and northeast to the energy consumers in the south and southwest of Germany, such as the **"Thüringer Strombrücke"** transmission line project.
According to latest estimates by DENA experts, the total installed wind power in Germany will more than double from 23,.500 MW in 2008 to 48,.200 MW in 2020, largely due to the implementation of offshore wind parks in the North Sea and the Baltic Sea. The renewable energy produced cannot be consumed in the regions of production but needs to be transported into regions with high electricity demand in the south and southwest of Germany. The European Parliament and EU Commission regard this grid development as a European priority project.

(5) Develop instruments to support the **financing of different European offshore wind projects.** Financing is at risk as a result of the financial crisis. It is important to implement policies to overcome these difficulties.

(6) Support investments in **virtual power plant strategies.** Now that the concept has been demonstrated and can deliver positive results, financial support for investments in the development of the technology would be an important step to develop a business model for this pioneering approach.

(7) The financing of research, development and marketing of **advanced controls, information management systems and smart meters** to measure and manage flows across the network more efficiently.

(8) The financing of research and development of **storage technologies** and development of **storage sites** that could enhance dispatchability of renewable electricity.

(9) A clear commitment to strategies for the expansion of both renewable energy generation and transmission capacity, in order to stimulate the build up of the **supply chain** that will be required to support these activities.

(10) Investment **in education and training** to create the workforce we will need to build, manage and maintain the energy grid, and which can meet present and future needs.[6]

There are two critical investment directions: (1) Extra-high voltage interstate transmission networks to bring the massive domestic renewable energy resources currently stranded in Europe's remote areas, as well as massive renewable resources stranded in neighbouring regions, to the population centres that demand them, and to link them to available and readily expandable large-scale storage opportunities; and (2) Research, development and deployment of transmission and distribution networks and end-use interface technologies to make the grid more reliable, resilient, and secure, and to enable more efficient energy use, demand management and distributed generation by consumers and businesses. At a time of serious economic distress and mounting pressure to address the widespread environmental, economic, and geopolitical consequences of our excessive reliance on fossil fuels, the case for sustainable investments in the transmission grid as well as research and development has never been stronger.

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[6] EASAC policy report "Transforming Europe's Electricity Supply – An Infrastructure Strategy for a Reliable, Renewable and Secure Power System", May 2009.