

## The Renewables-Grid-Initiative

### Note to DG Budget 20 July 2010

#### Summary

The mission of the Renewables-Grid-Initiative (RGI) is to promote effective integration of 100% electricity produced from renewable energy sources. RGI was launched in July 2009 by a coalition of Transmission System Operators (TSO's) and Non-Governmental Organizations (NGO's). RGI's members originate from a variety of European countries, as it consists of TSO's from Belgium (Elia), UK (National Grid), France (RTE), Germany (50Hertz), Netherlands (TenneT), and NGO's such as WWF International, Germanwatch and the Royal Society of the Protection of Birds (UK partner of Birdlife International). RGI advocates national and EU authorities to strive for an efficient, sustainable, clean and socially accepted development of the European network infrastructure for both decentralised and large-scale renewable energies.

The increasing share of renewable energies in Europe's generation mix that are required to meet Europe's twin objectives of energy and climate security, have shown the need for expanding Europe's current interconnectors' capacity. This note's purpose is to demonstrate the need for EU public (co)funding for grid infrastructure over the next 10 years that would foster the integration of large-scale and decentralised renewable energies. ***RGI's position is that the purpose of public funding for grid infrastructure is to facilitate the decrease of the risk profile of such investments.*** Additionally, RGI stresses the urgent need of developing European harmonized regulatory conditions while developing new financing tools particularly directed at projects of European relevance and in particular at pilot projects testing new technologies.

Two main approaches for public (co)funding are suggested; ***regulated assets*** and ***public/private partnerships***. Both approaches should be aimed at projects that serve EU-wide interests and demonstrate their strategic long-term importance towards decarbonisation of the power sector.

#### The current status of Europe's energy and climate commitments

After a long debate, the EU Heads of States in December 2008 agreed on the joint "European Climate And Energy Package" which included a comprehensive Directive on Renewable Energies. At the core this Directive includes 20% gross final renewable energy consumption by 2020.

This target implies approximately up to 35% renewable energy share for the electricity sector. The Directive, though focusing on *consumption* and not *production* of renewables, would however only allow direct physical renewable import from outside the EU and not 'virtual' expansion of renewables (for instance via offsets) elsewhere. In addition, the Directive demands priority grid access for renewable energy sources compared to all other energy supplies.

Starting from about 19% today, such a 35% renewable electricity supply by 2020 will certainly impact substantially on the various performances, investment plannings and policies of the overall European electricity sector and its companies involved. In particular, because no one expects that renewable

energy expansion and growth will level off post-2020. Long-lasting infrastructure investments planned and executed today to meet the 2020 targets need to take account of the post-2020 development as well.

According to IPCC's 4<sup>th</sup> Assessment report, in order to limit global warming to around 2 °C, it has been shown that the world needs to reduce its total greenhouse gas emissions to probably below zero after 2050. Hence, based on equity and income criteria industrialised countries are probably due to fully decarbonise their economy by 2050 *if* this target is going to be met with a comparably high probability. In this context, EU Heads of States agreed in October 2009 that industrialised countries as a group need to reduce their GHG emissions by up to 95% by 2050 below 1990 levels. The EU, as the largest economic and trading block globally, is an integral part of this industrialised group of countries.

As demonstrated by various studies across Europe<sup>1</sup>, this requires the decarbonisation of the power sector and even greater penetration of renewable energy sources to Europe's electricity mix in the coming decades until 2050. The challenges that lie ahead are immense, but not insurmountable. A core element towards achieving these targets is the ability to transmit electricity cross-border for long distances through interconnectors.

### **The need for an European approach for the expansion of transit grids and interconnectors**

A vital aspect of reaching a high penetration of renewable energy sources in the electricity mix, lies in the ability to smoothly integrate a variety of renewable sources into the grid. However, the grid Europe currently has, was not built to integrate or handle large shares of fluctuating renewable energy sources. Massive upgrading and expansion of the grid are deemed necessary<sup>2</sup>. Already today, with the current level of renewable penetration, the intermittent nature of some renewable energy sources poses significant operational problems to the Transmission System Operators (TSOs). This problem is going to increase over time with new projects coming on-grid and the need to further expand the share of renewables for meeting the climate and energy security targets.

This operational obstacle could be overcome by utilizing the benefits of the geographical dispersion of renewable energy potentials. Strategic interconnections between Member States and neighbouring countries with which renewable electricity is being traded to optimise the economic use and cost-effectiveness of renewable power (including but not limited to Norway, Switzerland, Turkey, the Balkan and the MENA region), would unlock the full potential of renewable energy and mitigate a significant part of their intermittent nature. Also, the potential pitfalls of variable wind power are likely to compensate for the variability of solar power. Both renewable energy supply curves are 'negatively' correlated – simply, when the wind blows in the North, there is less sun in the South and vice versa.

This property of geographical dispersion of renewable energy sources can have a significant impact on back-up requirements of generation mixes dominated by high percentage of renewables. It has been estimated that the EU-wide benefits of reserve sharing can reduce up to 40% the total reserve requirements<sup>3</sup>. Therefore, we need to build a grid which is capable of transmitting electricity over long distances, from generation centres to consumption and storage areas; i.e. a Supergrid. Similarly, as it has been demonstrated by various studies, back-up capacity requirements can be substantially reduced up to

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<sup>1</sup> European Climate Foundation: Roadmap 2050, PriceWaterhouseCoupers et al: 100% Renewable electricity, Roadmap to 2050 for Europe and North Africa, Greenpeace: Energy [R]evolution, Friends of the Earth Europe: Europe's Share of the Climate Change, Eurelectric: Power Choices

<sup>2</sup> ENTSO-E: Ten-Year Network Development Plan

<sup>3</sup> European Climate Foundation: Roadmap 2050

15%<sup>3</sup> through demand side management. Europe needs to build a grid which is capable of transmitting not only electricity but also information, capable of integrating a myriad of dispersed decentralised generation units and enable full scale demand management and energy conservation at the point of consumption (Smart Grid). By combining these two elements a Super/Smart Grid can be achieved.

Upscaling the existing interconnectors' capacity and the construction of new strategic ones requires significant infrastructure investments over the next years. According to the Ten-Year Development Plan of ENTSO-E, 23 to 28 billion Euros are required over the next 5 years for projects of "European significance" which consist of cross-border and national projects that contribute to achieving European goals. These infrastructure investments are expected to be in the same range over the last 5 years until 2020. Given the time lag between planning, building and full operational capacity of the new infrastructure, these investments require careful and strategic planning. Mobilizing the right investments for interconnectors will play a key role towards enhancing energy security in Europe, decreasing import energy dependency, contributing to the decarbonisation of the power sector, and ultimately meeting Europe's climate commitments.

### **The need for EU public (co)funding**

Public (co)funding would speed up the much needed expansion of cross-border capacity and favour a higher level of market integration. It is of vital importance to be aware that the counterfactual of not using public (co)funding, could delay the realization of such strategic projects, and ultimately result to failure of meeting Europe's climate commitments. For infrastructure projects that have a clear EU focus, in order to leverage the much bigger share of private financing, public funding would be beneficial by reducing perceived or real risks towards a more speedy move to cross-border developments through transit grids and interconnectors, and realizing innovative integration of renewable energy to the grid. RGI's position is that the purpose of public funding for grid infrastructure is to facilitate the decrease of the risk profile of such investments. The component of public funding will essentially secure increased credibility to the project and mobilize private funding from other sources into such projects. However, careful consideration is needed when designing the allocation methodology of public (co)funding, to ensure that they will not result in distorting the investment's risk and lead to uneconomic investment decisions.

Large amounts of private funds are likely to be available in the presence of a harmonized, supportive investment model, a political framework that brings clarity and long-term stability for investors and which may provide a clear cost allocation model across member states. In any case, it should be clear that public funding cannot heal an insufficient regulatory frame. RGI stresses the urgent need to develop European harmonized regulatory conditions, while developing new financing tools particularly directed at projects of European relevance and in particular at pilot projects testing new technologies. However, a large variety of stakeholders would only consider public (co)funding legitimate and acceptable if the supported grid/infrastructure investment is driven by the priority of expanding renewable energy sources.

RGI does not view public funding as an additional financial burden on the consumer or as a deviation of important financial public sources. RGI's position is to use public (co)funding to support the visionary expansion of renewable electricity in a cost-effective manner for the European citizen.

### Funding approaches for grid infrastructure projects

Funding of strategic grid infrastructure projects should not be perceived in the context of either completely private funding or solely public funding. RGI views public (co)funding as a range of hybrid options entailing a combination of public vs. private shares (eg. Private Public Partnerships, interest-reduced and concessional loans, marginal cost coverage by public authorities, etc). Support for public (co)funding of joint infrastructure projects could come from a variety of sources including the EU budget, the European Investment Bank and possibly also from funds established by national authorities such as an EU-wide feed-in-tariff to bolster renewables.

Two main approaches to public (co)funding for strategic grid cross-border projects of European relevance could be considered; *regulated assets* and *public/private partnerships*. In regulated assets, public (co)funding is required to guarantee a regulated rate of return for investors during the first years of operation of the interconnectors in case this cannot be achieved through normal market operation. A support mechanism which guarantees a rate of return between 10-12% annually for the first years of operation should be considered. In public/private partnerships, the risk profile of projects is decreased by the presence of a public, even if minority, partner.

### Framework criteria for strategic grid infrastructure projects

Grid infrastructure investments need not be limited to large scale transit grids and interconnectors in the EU. They should include infrastructure that would enable the deployment of renewable energy sources and provide access to storage sites (eg. harbour infrastructure and vessels as a facilitator to foster off-shore wind development, decentralized distribution grids for solar or wind power, etc). Developers and utilities of such projects could cost the grid connections into their operational plans; thus enabling the prioritisation of public (co)funding for strategic long-term infrastructure projects.

It is not RGI's intention to use public (co)funding in all grid infrastructure projects, but rather on the type of projects that fulfil a set of fundamental criteria:

- Serve EU-wide interests as identified by the relevant European institutions and ENTSO-E for the expansion of renewable energy sources
- Demonstrate the importance of public (co)funding to the survival of the project (should public funding be absent, the development of the project would stall)
- Demonstrate the strategic importance in the long-term decarbonisation targets and in the 100% renewable energy supply debate (limit use of public (co)funding to serve only renewables and smart grids expansion)

RGI strongly urges that grid expansion and public (co)funding need to be consistent and coherent. A strong legislative framework agreed by the Council and the Parliament on harmonised grid and load management within the EU (including renewable energy imports such as from North Africa) is needed to create certainty for investors.

### Iconic Projects

Renewable electricity has been given priority access to the grid by the RES Directive. In order for the public (co)funding of these iconic projects to serve its overarching purpose of renewables expansion, this needs to be practically operationalised by implementing actors and a commitment between the operating and fund-receiving authority to drive renewable energies to high shares in the system. This

implies the need for a high level of coordination between the operating and fund-receiving authority on some key issues such as load and grid management.

RGI believes that discussions around a detailed methodology for choosing iconic projects need to be initiated and would welcome the opportunity in participating in such discussions. However, RGI would like to stress the substantial relevance of designing a harmonised model to link strategic generation areas like the North Sea to storage areas in the Alps and develop a cost-allocating model for multi-state projects.