

EVENT REPORT

Interconnections for a Sustainable Energy System: How Can Europe and the United States Make Their Energy Infrastructure Fit for the Future?¹

Renewables and energy efficiency are key to both tackling climate change and reducing energy dependence. Cross-border electricity grids and smart technologies increase the stability and flexibility of the energy system that incorporates a growing share of renewables. Interconnections are thus vital for building an Energy Union with a forward-looking climate policy. The US has considerably advanced on the development of smart appliances and currently explores ways to improve its energy infrastructure with its first-ever “[Quadrennial Energy Review](#)”.

To boost energy security and to avoid stranded investments, the EU and the US must accelerate future-oriented smart infrastructure projects. Therefore, energy infrastructure planning needs to go hand in hand with the decarbonisation of the energy system. At the same time, sustainable energy infrastructure investments provide a great opportunity for growth in the EU and the US.

In Europe, projects of common interest and regional cooperation initiatives such as in the Baltic, in South West Europe and with the North Sea Grid can be a pertinent step towards a more interconnected sustainable Energy Union. In the US, a new dynamic of regional cooperation has also emerged as part of President Obama’s Clean Power Plan. How can the transatlantic exchange help to make energy infrastructure compatible with a transition to a low-carbon energy system? What new opportunities arise from investments in smart energy infrastructure? Which governance options can provide for effective, coherent and democratic energy infrastructure planning and what role can regional cooperation play in this regard?

The Expansion and Modernisation of the Grid: Which Role for Public and Private Actors?

Both Europe and the United States have an aging infrastructure and need to invest into the construction of new energy infrastructure, especially in the electricity sector. Interconnections are crucial since they will help to manage the flexibility of renewables and to integrate renewable energy sources effectively into the system. Being able to waste less energy by increasing the number of potential buyers will considerably improve the profitability of renewables and therefore reduce the need for public subsidies. The decarbonisation of our energy system implies a decreasing and decentralised consumption pattern as well as a more climate-resilient infrastructure.

Even if a large majority of stakeholders agrees with these issues on both sides of the Atlantic, it remains unclear how this shall be done. Since the European Commission launched the project of an Energy Union, the reform of the electricity market design based on a more renewables-based energy system and the financing of new interconnections have taken centre stage on the political agenda. Should the planning and financing of new grids be steered by private or public actors? A valid option seems to be a

¹ This event took place on 7 May 2015. Guest speakers were: Rolf Nordstrom, President and Chief Executive Officer of the Great Plains Institute, Brendan Devlin, Advisor to the European Commission at the General Directorate for Energy and Jonathan Gavena, Associate Director at E3G. The debate was moderated by Klaus Linsenmeier, Director of the Heinrich-Böll-Stiftung European Union. The discussion was held under Chatham House rule. The opinions expressed do not necessarily represent the opinions of the Heinrich-Böll-Stiftung.

“pre-planned private” solution. In other words, public stakeholders should be in charge of infrastructure planning in line with long-term policy objectives while the construction should also be made attractive for private investors in light of the high investment needs of our aging infrastructure on both sides of the Atlantic. In the United States, for instance, the amount of investment needed to modernise the grid is estimated between one and three trillion dollars.

Nowadays, the European model of grid development is based on bilateral contracts between states and private companies, and each country is responsible for its own energy infrastructure and generation. The European Network of Transmission System Operators for Electricity (ENTSO-E) is responsible for the development of pan-European network plans. The EU has so far maintained rather neutral when it comes to how countries should generate energy. Member States can thus decide on their respective energy mix, depending on their political priorities as well as technological and natural resources and with respect to the EU climate and environmental regulations. Instead of local particularism, the Energy Union tries to embrace a European approach that entails benefits for energy security across Europe. Even though countries are flexible on their energy mix and can delegate grid development to private companies, the planning of infrastructure should rest in public hands and should be guided by a European perspective. Thus, when a private company such as ENTSO-E assumes a public role, this might result in certain incentive problems that ought to be addressed. For example, TSOs tend to underestimate the potential of renewables. As interests of private companies do not always coincide with public interests, the grids should be planned by public stakeholders at EU level or regional level, but could be built and run by private companies.

The US faces similar problems of conjoint planning between different states and between divergent interests. Some regions like the Midwest try to deal with these asymmetries by creating a dialogue between all stakeholders. Before the actual construction work can begin, state governments, private companies, TSOs and environmental NGOs have to agree on the planning, particularly on the allocation of costs and benefits. This method of open and transparent dialogue has been proven successful and helped to limit the extra time and money expenses that often come along with such projects. Europe needs more cooperation between TSOs, particularly in transnational regions, and could learn from such initiatives. For example, this method could be applied to the North Sea Grid, as this project must bring TSOs and other stakeholders together.

Planning for an Uncertain Future

With the incredible speed of innovation in the renewable energy sector and other technologies such as smart grids and storage, it will remain highly difficult to predict what the next ten years will bring. But even with such an unpredictable future we know that delaying strategic decisions is not a beneficial option, as has become obvious with lessons learned from climate change. Decision makers should avoid any lock-in strategies which favour short-term over long-term considerations, particularly regarding the build-out of infrastructure for an energy system that is based on fossil fuels.

Many institutions make plans for a fixed and non-evolving future, which is a mistake and is likely to trigger even more mistakes. For example, there were signs of change on the gas market since 2008 but they were not taken into account seriously by stakeholders. The same situation occurred with the cost of photovoltaic energy, which decreased strongly over the past five years, proving many predictions wrong.

Furthermore, private investment is crucial to modernise energy infrastructure on both continents. But the private sector appears reluctant to invest in interconnections due to the high level of uncertainty of technological and regulatory developments. Due to the unpredictability of the future energy market, investors cannot base their expectations on a clear and reliable price signal. Public stakeholders need to

reassure private investors by drawing clear policy lines about how the costs and benefits of the grid modernisation will be allocated. Even with remaining doubts and uncertainties, Europe and the United States need to go ahead and plan a sustainable energy infrastructure while applying to the ability to not foresee the future. But which is the most adequate governance model to enact this planning?

Regional Cooperation: a New Dynamic?

In the United States, harmonisation and cooperation mostly occurred thanks to regional policies as states enjoy a strong autonomy toward the federal government. Indeed the state level seems to be more dynamic and more innovative than the federal one. Encouraging an innovative policy at the state level is a good strategy, as this policy will very likely spread to other states if the results are successful. If enough states join the tendency, then it may have a chance to be considered by the federal government as a valuable option. The same dynamic could be used in Europe through regional cooperation which has gained momentum in the course of the Energy Union discussions.

Another reason for the US to encourage regional cooperation in the energy sector is that the American grid is mostly decentralised. Since Congress is ruled by the Republican Party with a strong influence of the Tea Party movement – which always campaigned against monopolies and centralisation – it is most likely that the situation will not change any time soon. Regional cooperation has strongly increased in the US since the 1990s, with the creation of Regional Transmission Organisations in charge of managing the electricity market. These organisations have the same mandate like Independent System Operators but over large interstate areas. Regional Transmission Organisations introduced a system called “locational marginal pricing” which encourages buyers to pick the lowest-priced electricity source. Civil society groups also work closely with these regional organisations to help them get more precise estimates of the evolution of the share of renewables within the market. It is important to notice that these regional organisations are non-profit organisations and that their actions are very dependent on the local political willingness.

Similarly to the United States, the EU wants to build a single energy market under the umbrella of the Energy Union. A common European vision is important for this Union but it should not be omnipotent. Regional and sub-regional strategies could be a strong asset for a well-functioning market. An example is the North Sea Offshore Grid initiative which brings together different EU Member States and Norway to create an integrated offshore energy grid which links wind farms and other renewable energy sources across the northern seas of Europe.

National or European market rules should be designed in a way that local stakeholders and companies are granted a certain degree of flexibility. Furthermore, local players possess closer ties to the population and can thus be an important intermediary in the negotiations between central governments and opponents of the construction of new infrastructure projects. In the context of widespread Euroscepticism, such regional initiatives under a European umbrella can be a promising approach towards a more interconnected Europe that is fit for the future.

Acceptance Through Ownership: Empowerment of Citizens

In the transformation process towards a decarbonised energy system, the role of citizens is crucial. Citizens have become active players in the energy market through the ownership of renewable energy generators and demand-side management technologies. Many NGOs advocate for a deeper involvement of citizens and a more transparent process of decision making from both public and private stakeholders. The lack of transparency of some historical players in the energy market has led to a

certain level of mistrust and reluctance towards the acceptance of new infrastructure projects. Indeed, the construction of new grids is not an easy issue and it often faces fierce local opposition.

Europe and the US both face many so-called “NIMBY” movements (i.e. Not In My Backyard). Even in European countries with pro-active energy transition policies and a strong community energy base, stakeholders are confronted with reluctance from public opinion to accept the construction of new electricity interconnections. A case in point is the strong opposition to grid development in the Bavarian region in Germany.

The question of ownership can be a way to address this issue. For example, the cooperative model could ease this challenge, since it enables the local population to invest and to own shares of the project. The idea of ownership of energy grid and generators has even found resonance within the US Republican Party, where it is seen as a new freedom for entrepreneurship. Local communities should be involved in the planning of infrastructure, as they very often have long-term visions and interests, which can be quite divergent from national or private strategies. In the US, local cooperatives are a historical player, since many were created in the 1930s to electrify rural areas. Nowadays, they play a major role in infrastructure planning.

Despite the increase of citizen involvement and transparency, the issue of private data protection remains very sensitive for customers, particularly in Europe. There is still distrust toward the use of private data by companies. However, an efficient integration of renewable energy into the grid requires a complex “smart” grid and the digitalisation of consumption information. The current European framework is not sufficiently equipped to grant the safety of private data use and should be revised in order to address citizens’ preoccupations.

Conclusion

The US Government has recently released a “Quadrennial Energy Review” which analyses the challenges for the US infrastructures for energy transmission, storage, and distribution. Among the priorities of the government is the necessity of improving the transmission of electricity via better interconnections and better governance while pursuing a “no one size fits all” approach and taking into account both centralised and decentralised production patterns. A similar vision is present in the European Commission’s communication concerning the Energy Union. An upcoming own-initiative report from the European Parliament on the interconnectivity part of the electricity market can provide further answers to the European challenges for energy infrastructure planning, governance and financing. On both sides of the Atlantic, decision-makers evaluate potential governance and market design models that could be adopted in order to incentivise the build-out of interconnections that are fit for a low-carbon future. On the one hand, the decentralisation of the electricity grid appears to be an asset for the US, since it has enabled local players to take an important share in the organisation of their own infrastructure. On the other hand, both Europeans and Americans would benefit from more regional cooperation. As the energy generation sector is considerably changing thanks to the development of renewable energies, a new market design needs to be found that encompasses the vision of an integrated energy system and that provides different players, including energy cooperatives, with a level playing field in the market. While the important role of local and regional authorities should be acknowledged, the EU and the US Federal State have to guide the construction of the grid as well as the integration of all the different energy sources into a common market. The transatlantic exchange can help to advance towards a more sustainable, smart and integrated energy infrastructure in the EU and the US.



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