



Summary of the Expert Group Meeting on

TELECOM & ENERGY

Collaborating to Power the Smart Grids for Digital Growth

28 February 2017

Introduction

The vision of modernized and efficient electricity distribution enabled by the latest information and communication technologies (ICT), has been identified by governments and policy makers around the world as a way of addressing global warming and energy independence. This vision includes the roll out of sustainable energy, smart grids and smart meters, amongst other. Collaboration of telecommunications and energy providers can play a crucial role in fostering the development of sustainable energy by encouraging a cross sectoral approach. While the potential for cost reduction, for example by sharing infrastructure, is obvious, in practice there are only few examples of actual collaboration visible.

Relevant ICT related activities can be developed and ICT tools can be used to support the effective deployment of sustainable energy and smart grids (and other relevant technologies) within the context of the UN sustainable development goal (SDG) number 7 namely “**Affordable and clean Energy: Ensure access to affordable, reliable, sustainable and modern energy for all**”. In this context, Telecommunication Development Bureau (BDT) of the International Telecommunication Union (ITU), in collaboration with Energise , organised an Expert Group Meeting for Telecom and Energy stakeholders on **Collaborating to Power the Smart Grids for Digital Growth** within the framework of the ITU Regional Initiative for Europe on **Development of broadband access and adoption of broadband** adopted by the World Telecommunication Development Conference (WTDC-14). The meeting will take place in ITU Headquarters, Geneva on 28 February 2017.

This document presents the discussions held and the next steps proposed.

ITU Actions and ENERGISE

The ITU engages in the subject of smart grids for digital growth at various levels, ITU-D ICT Applications as well as Regulatory and Monitoring teams, ITU-R Study Group 1 Spectrum Management and Study Group 5 Terrestrial Services, ITU-T Study Group 15 Networks, Technologies and Infrastructures for Transport, Access and Home, are at the heart of the effort to develop collaboration between sectors to power Smart Grids. The necessity of unified standards which are compatible with all devices is addressed by the working group ITU-T. The findings of the ITU-R groups related to smart grids show that there applications are in place at low to medium powerline and that spectrum availability will not be affected by their deployment. ITU-D work will focus on how to develop impactful regulatory guidelines national policies & strategies complemented by relevant ICT applications, to achieve SDG 7 – **ICT for Energy**.

The EU Horizon 2020 project ENERGISE has investigated the question of sector collaboration in the deployment of smart grids. Hence a toolkit has been developed to address the collection of empirical data in order to develop a common



understanding and best practice examples for such collaboration. It presents an orientation and evidence base for policy makers as well as decision-making tool for energy and telecommunication sector players. The toolkit represents a central information hub of the main findings gathered during the two years project, including 55 case studies in 16 European countries. The final toolkit including all project outcomes will be published on the ENERGISE website in April 2017. Each case study illustrates the business and regulatory environment as well as company specific conditions leading to certain cooperative solutions between the telecommunication and energy sector when realizing smart grid deployment. In the course of the research project critical differences in the understanding of both sectors as well as divergences in their business models hindering collaboration were identified.

Regulatory and Policy Frameworks for Smart Grids -Telecom and Energy Working Together

When discussing the regulatory and policy framework for smart grids participants agreed that a greater collaboration between the telecommunication and energy sectors is beneficial to the development of smart grids. In order to foster collaboration the first step should be to develop a common understanding of the current status of sector cooperation at the regulatory level as well as at business level. This information is one of the major contribution of ENERGISE.

Cross sectoral platforms are considered a key to realize sector collaboration. This goal can be simultaneously reached by taking a top-down and bottom-up approach. On the one hand ministries and regulators should engage in the ongoing progress of sector collaboration. On the other hand best practice models can be developed through pilot projects by the industry.

Telecom Regulators Perspective on Collaboration with Energy Sector

The differences of the regulatory and policy framework between the countries and the telecommunication and energy sector influence the current cooperation between the two sectors and future business cases. Therefore, it is important to get an overview over the different regulatory and policy approaches to sector collaboration for smart grids in the European countries to develop a global understanding. On the subject of smart grids it emerged from the discussion that experiences differ greatly between the European countries. The participants engaged in a fruitful exchange of experiences.

Issues discussed regarding the regulatory framework included:

- Lack of knowledge sharing between countries on collaboration strategies
- Blurring of sectors requires unified legislation for collaboration: e.g. telecommunication companies entering energy market
- Diverging approaches to smart grids based on public or private ownership of infrastructure
- Multisector vs. single sector regulation agencies
- Interoperability of smart grid networks and related business models
- Availability of smart grids in rural vs. urban areas
- Quality of service: e.g. lack of private sector investment in infrastructure overall and smart grids
- Licensing procedures hindering smart grid deployment
- Data and supply security concerns, e.g. data privacy vs. potential benefit of data analysis
- Competitive markets: e.g. monopolies/lock-in effect if single smart metering hardware is rolled out
- Consumer protection: e.g. metering tariffs, social benefits of smart grid strategies



Considering examples from the participating countries, Bulgaria has currently no experience in smart grid deployment and Romania is in its early stage, which is mostly market driven. In addition, there are many varying solutions on the European market. Telecommunication and cable providers are entering the Distribution System Operators' (DSO) business and vice versa. The energy market in Romania is opening up for competition. Italy has already developed substantial experience due to its national smart meter rollout. As far as possible public communication networks are being used for smart grids. In Luxembourg, which has a multi sector regulator, its state-owned dark fiber network is open for third parties. In addition, the utilities are very reluctant to give access to their ducts. In general there is a reluctance to cooperate because of uncertainty. This is why DSOs deploy their own ICT which leads to the fact that most buildings in Luxembourg are connected to roughly four fibers.

Although the regulatory framework between the countries differs, some challenges for implementing smart grids are the same. Interoperability was identified as a problem when it comes to smart grid deployment. Romania for example has no technical standards that allow the coexistence of power and fiber in the same tube. This results in long and unsuitable initiation processes for such business models. There are good pilot projects in high density areas but not in rural areas due to the lack of coordination regarding sharing the infrastructure. On a local level telecommunications providers in Albania are interested in using the electricity network but up till now it is not allowed to put telecommunication lines on electricity poles. This refers to the different laws for telecommunication and electricity. These laws should be unified to make cooperation possible. Italy encourages DSOs to make their choices on their own but recommends using radio to avoid interference with the power line.

Security is another problem appearing with regards to smart grids. Data collection is a challenge as regulators need to understand the balance between privacy and potential benefits of data collection and analysis. Cybersecurity is one of the most important topics for smart grid implementation that transcends regulators and ministries. Smart Metering and its usage by third parties could interfere with the protection of the customer's privacy.

Other challenges identified included, for example, national roaming which is perceived to be an issue by DSOs in some countries. 50% of the failures in telco network in Romania are driven by power outages. Another problem in Romania is to find funding from the banks. Even if there is a business case, banks are unwilling to support operators because of unclear cooperation agreements and possible liability and responsibility issues. Technology oligopolies should be avoided. The deployment of smart grid will have high costs in the short term which will be transferred to the consumer. None the less the consumer will have benefits in the long term. Albania suggests a mandated smart grid deployment to have social benefits of investment in the long term.

In Switzerland, there is intense ongoing work between both ministries – telco and energy. A new legislation is under preparation with technical recommendations. The “Digital Switzerland” strategy aims at a common view on the issues at hand across governmental bodies so that all actors have a coherent and concurrent approach. Bulgaria plans to establish a multisector agency like Luxembourg that plans full smart meter roll out by 2020. Smart grid will be deployed in medium and low voltage level.

Customer empowerment should be at the centre of development of smart grid in Italy. Therefore a common platform is required. Each single customer should be able to choose his device and no monopolist DSO should decide on devices. Next month a solution will be approved. This includes separated band on powerline communication and further options for communication between smart meters and devices. Although the knowledge is in the companies and they are the most informed, the protection of customers is a very important issue. The second generation approach to cost



regulations will change to TotEx (a combination of CapEx and OpEx) stabilizing metering tariffs. The same should be applied on smart grid. On top of that regulation has to remain technology neutral.

Telecom and Energy Operators' view

Since the telecom and energy sector are driven by different business models, their views on collaboration and joint business activities vary substantially. While the main objective of DSOs is security of supply, the telecommunication business is mainly customer driven.

The following issues were addressed in the discussion:

- Liability and lack of trust: SLAs are often not met by telecommunication providers
- Diverging life cycles of telco and energy infrastructure
- Unmet coverage and penetration
- Net neutrality: separation of DSOs data-traffic and commercial data-traffic
- New requirements of M2M communication due to emergence of Internet of Things (IoT)
- Standardisation: joint development of technological solutions by energy and telco sector

The DSOs see their main duty in "keeping the lights on" and therefore have high requirements which are usually not met by telecommunication providers at costs that are acceptable for DSOs in their regulatory environment. Although they show some willingness to share infrastructure they hesitate because of unclear liability and responsibility. The biggest issue for DSOs is the missing trust in telcos.

The telcos on the other side want to engage their customer but use their own infrastructure. Different lifecycles are an issue that hinders cooperation.

Costs will come down with new communication technologies – in particular 5G. Also the coverage and penetration will be better than with the existing system. The data-traffic of the DSO is transported independently from the commercial traffic. Possible solutions should be developed with the customer. There is an ongoing dialog between telco and DSO. Several use cases show that cooperation between telcos and DSOs is possible. There are standard cases such as infrastructure development (sharing ducts) as well as specific ones. Very often it is not about equipment but the personal relationship shared.

Due to the revolution caused by IoT, an objective should be an internet model that meets the requirements of M2M communication which differs from the ones of best effort. A platform as a service is an open software which underlies completely different rules than hardware development. It needs to be as generic as possible and this way will allow an open marketplace. Energy and Automation are asking for such platforms.

The 3GPP deploys 5G which will support the revolution of IoT. A set of technologies will be used in IoT. There is no optimal solution by now but in cooperation with telco operators the right solutions can be developed step by step. These may differ from region to region because of different requirements of local peculiarities. This is why standards should stay on a functional level.



Open discussion on identified issues

Focusing on Smart grid or Sustainable Energy?

The Sustainable development goals are a major driver of smart grid development. The environmental targets are driving smart grids in Europe. However there is no special agenda for sustainability on a national level.

Smart metering

The participants discussed the cost and benefits of smart metering, one of the main drivers of smart grid development. It can be used to give minimal vital service to non-payers and to reduce time after billing. In Italy it shows to be efficient 8 years after the rollout, later than originally expected. Till now DSOs don't see benefits from smart meters at all. Instead, the law for SM roll out constitutes undue and unsolicited burden for DSOs. DSOs have problems to communicate the benefit to customers. The only identified benefit comes from remote reading which leads to a more conscious consumption and therefore cost reduction.

Who will or should be the main driver for Smart Grid rollout?

While the private sector does drive smart grid deployment in certain countries, the participants agreed that regulation should be adjusted in order to foster its rollout. A clear direction for these changes could however not be identified concurrently by the experts at the workshop.

Is collaboration between the telco and energy sector well-functioning?

Collaboration is strongly depending on the involved parties. Examples of well-functioning cooperation between DSOs and telecommunication companies were exchanged. In general there is exchange between the sectors but very informal on a case by case basis and a lack of institutionalized exchange platforms such as associations was identified by actors from both sectors willing to collaborate. In addition, business driven collaboration was a main trend identified by participants. The telco and energy sectors are driven by completely different targets, which is why it is difficult to give common incentive for both sectors through regulation.

Post Meeting - Next Steps

The meeting was an eye opener on elements for energy and telecom stakeholders to further engage, share experiences, and examine mechanisms to strengthen collaboration at the various levels (business, policy, regulatory, infrastructure and technical).

Immediate

- ENERGISe project's concluding meeting will be held in Brussels in mid March and will be attended by ITU. A dialogue with all ENERGISe stakeholders will be held there to identify ways of furthering the work accomplished through ENERGISe to enlarge the scope in 2 ways – geographically to rope in non EU cases and become a global tool; and conceptually to focus on sustainable Energy at large.
- A paper on **ICT for Energy** will be prepared and submitted to the relevant ITU instance. This paper will highlight impactful ICT related activities to be developed and ICT tools to be used to support the effective deployment of sustainable energy and smart grids (and other relevant technologies) within the context of the UN sustainable



development goal number 7 namely “Affordable and clean Energy: Ensure access to affordable, reliable, sustainable and modern energy for all”.

Long term

- An overall framework for ICT for sustainable Energy covering different types of ICT Applications and Innovations such as Demand Side Management, Electric cars, Energy storage, etc. and how these applications relate to Energy sector objectives e.g., improving energy efficiency, access, sustainability, affordability, climate change, etc.
- Identify good practices to serve as a basis to develop guidelines on collaborative regulation between both sectors (mechanisms for collaboration, regulatory incentives, financing, security and reliability, etc.)
- A checklist for energy and ICT market players (TSO, DSO and other market players) of issues to consider when adopting collaborative approaches.
- A framework for collaborative and effective roll out for SDG goal 7 at national level, including aspects such as vision formulation, policy review, national strategizing and action planning.
- A set of criteria to consider when undertaking the vision formulation and the policy review for ICT for Energy at national level