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Smart Grids: from innovation to deployment

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1. INTRODUCTION

The EU2020 agenda comes across with a clear message for Europe. The EU's future economic growth and jobs will increasingly have to come from innovation in products and services for Europe's citizens and businesses. Innovation will also contribute to tackling one of the most critical challenges Europe is facing today, namely ensuring the efficient and sustainable use of natural resources. The development of our future energy infrastructure must reflect this thinking. Without serious upgrading of existing grids and metering, renewable energy generation will be put on hold, security of the networks will be compromised, opportunities for energy saving and energy efficiency will be missed, and the internal energy market will develop at a much slower pace.

Smart Grids[1] could be described as an upgraded electricity network to which two-way digital communication between supplier and consumer, intelligent metering and monitoring systems have been added. Intelligent metering is usually an inherent part of Smart Grids. To advise on policy and regulatory directions for the deployment of Smart Grids in Europe, the Commission has set up a Smart Grids Task Force, which has issued a report outlining expected services, functionalities and benefits. These are largely agreed by industry[2]/[3]/[4], public authorities[5] and consumer organisations[6] and are described in the attached Staff Working Paper.

The benefits of Smart Grids are widely acknowledged. Smart Grids can manage direct interaction and communication among consumers, households or companies, other grid users and energy suppliers. It opens up unprecedented possibilities for consumers to directly control and manage their individual consumption patterns, providing, in turn, strong incentives for efficient energy use if combined with time-dependent electricity prices. Improved and more targeted management of the grid translates into a grid that is more secure and cheaper to operate. Smart Grids will be the backbone of the future decarbonised power system. They will enable the integration of vast amounts of both on-shore and off-shore renewable energy and electric vehicles while maintaining availability for conventional power generation and power system adequacy. Moreover, the deployment of Smart Grids provides an opportunity to boost the future competitiveness and worldwide technological leadership of EU technology

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1 The European Smart Grid Task Force defines Smart Grids as electricity networks that can efficiently integrate the behaviour and actions of all users connected to it — generators, consumers and those that do both — in order to ensure an economically efficient, sustainable power system with low losses and high quality and security of supply and safety.http://ec.europa.eu/energy/gas_electricity/smartgrids/doc/expert_group1.pdf.

2 Eurelectric, May 2009,www.eurelectric.org/Download/Download.aspx?DocumentID=26620.

3 ORGALIME, July 2010, at http://www.orgalime.org/positions/positions.asp?id=358.

4 GEODE, October 2010, at http://www.geode-eu.org/.

5 ERGEG, position paper on Smart Grids. Ref. No. E10-EQS-38-05. 10 June 2010 http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_ERGEG_PAPERS/Electricity/2010/E10-EQS-38-05_SmartGrids_Conclusions_10-Jun-2010_Corrige.pdf.

6 Joint BEUC and ANEC, (http://www.anec.org/attachments/ANEC-PT-2010-AHSMG-005final.pdf).

providers such as the electrical and electronic engineering industry, consisting mostly of SMEs.[7] Finally, Smart Grids provide a platform for traditional energy companies or new market entrants such as ICT companies, including SMEs, to develop new, innovative energy services while taking due account of data protection and cyber-security challenges. That dynamic should enhance competition in the retail market, incentivise reductions in greenhouse gas emissions and provide an opportunity for economic growth.

As such, Smart Grids can make an important contribution to the new strategy for smart, sustainable and inclusive growth, including the objectives proposed under the flagship initiative for a resource-efficient Europe and Europe's energy and climate goals, which are at the heart of the internal market for energy. The Third Package provisions and especially Annex I.2 of the Electricity Directive (2009/72/EC) explicitly oblige Member States to assess[8] the roll-out of intelligent metering systems as a key step towards the implementation of Smart Grids and to roll out 80% of those that have been positively assessed. Smart Grids are also identified as a way for Member States to meet their obligations to promote energy efficiency[9]. In addition, the Energy End-Use Efficiency and Energy Services Directive (2006/32/EC), for which the Commission is currently analysing the need for revision[10], calls for metering that accurately reflects the final customer's actual energy consumption and provides information on actual time of use. The European Council of February 2011 recognised the important role of Smart Grids and invited Member States, in liaison with European standardisation bodies and industry, 'to accelerate work with a view to adopting technical standards for electric vehicle charging systems by mid-2011 and for smart grids and meters by the end of 2012'.[11] Over the long term, the Commission's Communication on a Roadmap for moving to a competitive low-carbon economy in 2050[12] identifies Smart Grids as a key enabler for a future low-carbon electricity system, facilitating demand-side efficiency, increasing the shares of renewables and distributed generation, and enabling electrification of transport.

In Europe, over €5.5 billion[13] has been invested in about 300 Smart Grid projects during the last decade. An overview is presented in Picture 1. Around €300 million has come from the EU budget. The EU is still in the early stages of the actual deployment of Smart Grids.[14] Today, only around 10% of EU households have some sort of smart meter installed, although most do not necessarily provide the full scale of services to consumers. Nonetheless, those consumers with smart meters have reduced their energy consumption by as much as 10%.[15]

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7 'ELECTRA', COM(2009) 594 final.

8 Where no economic assessment is made, at least 80% of all consumers have to be equipped with intelligent metering by 2020.

9 Article 3(11) Directive 2009/72/EC.

10 Energy Efficiency Plan 2011, COM(2011) 109 final.

11 Conclusions of the European Council of 4 February 2011, available at: http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/119175.pdf.

12 COM(2011) 112/4.

13 European Commission, A view on Smart Grids from Pilot Projects: Lessons learned and current developments. JRC, to be issued in June 2011.

14 For comparison, the US government has launched a 100 Smart Grid Investment Grant Programme with funding totalling $3.4 billion; this programme builds on $4.7 billion in commitments from private industry, cities and other partners. The Chinese government is also investing in Smart Grids projects and has so far earmarked $7.3 billion for stimulus loans and grants in 2011. Australia and New Zealand are opening their energy markets to competition in order to attract private capital for Smart Grid transformation.

15 Vincenzo Cannatelli, ENEL Telegestore Project IS ON TRACK, page 4. Available at: http://www.greey.ca/RelatedFiles/1/ENEL%20Telegestore%20Project%20IS%20ON%20TRACK.pdf.

Some pilot projects suggest that actual energy savings can be even higher.[16] Other pilot projects have indicated that Smart Grids can make a major contribution to CO_2-emission reduction. The Smart 2020[17] study, measuring the global impact of Smart Grids, estimates a 15% reduction in CO_2-emissions, while the EPRI study[18] reports a reduction of nearly 9% in the total domestic carbon emissions generated by the US power sector in 2006. The European Bio Intelligence study[19] concludes that Smart Grids could reduce the annual primary energy consumption of the EU energy sector by almost 9% by 2020. Smart Grids are expected to generate new jobs and bring additional economic growth.[20] The smart household appliances market is projected to grow globally from $3.06 billion in 2011 to $15.12 billion in 2015.[21] It is further estimated[22] that expected investments are roughly 15% for smart metering deployment and 85% to upgrade the rest of the system.

At present, there is a considerable gap between current and optimal investment in Europe, which can only partly be explained by the current economic downturn. Grid operators and suppliers are expected to carry the main investment burden. However, unless a fair cost sharing model is developed and the right balance is struck between short-term investment costs and long-term profits, the willingness of grid operators to undertake any substantial investment might be limited.

Investors are still struggling to find the optimal model for sharing costs and benefits along the value chain. Neither is there clarity on how to integrate the complex Smart Grids systems, how to choose cost-effective technologies, which technical standards should apply to Smart Grids in the future, and whether consumers will embrace the new technology.

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16 In the UK, the AlertMe project allows customers to turn off appliances by web interface or mobile; in 8 months, residents have saved roughly 40% electricity. In Spain, the forecasts by the GAD project show that a normal consumer could save 15% of total energy consumption. In the US, Smart Grid City, a pilot project to understand the potential impacts of a range of 'smart grid' technologies, including OpenGrid software allowing two-way communications on the grid, led to a 90% reduction in voltage problems, which in turn reduced overall power requirements by 3-5% in a city of 100 000 people.

17 GeSI SMART 2020, http://www.gesi.org/LinkClick.aspx?fileticket=tbp5WRTHUoY%3D&tabid.

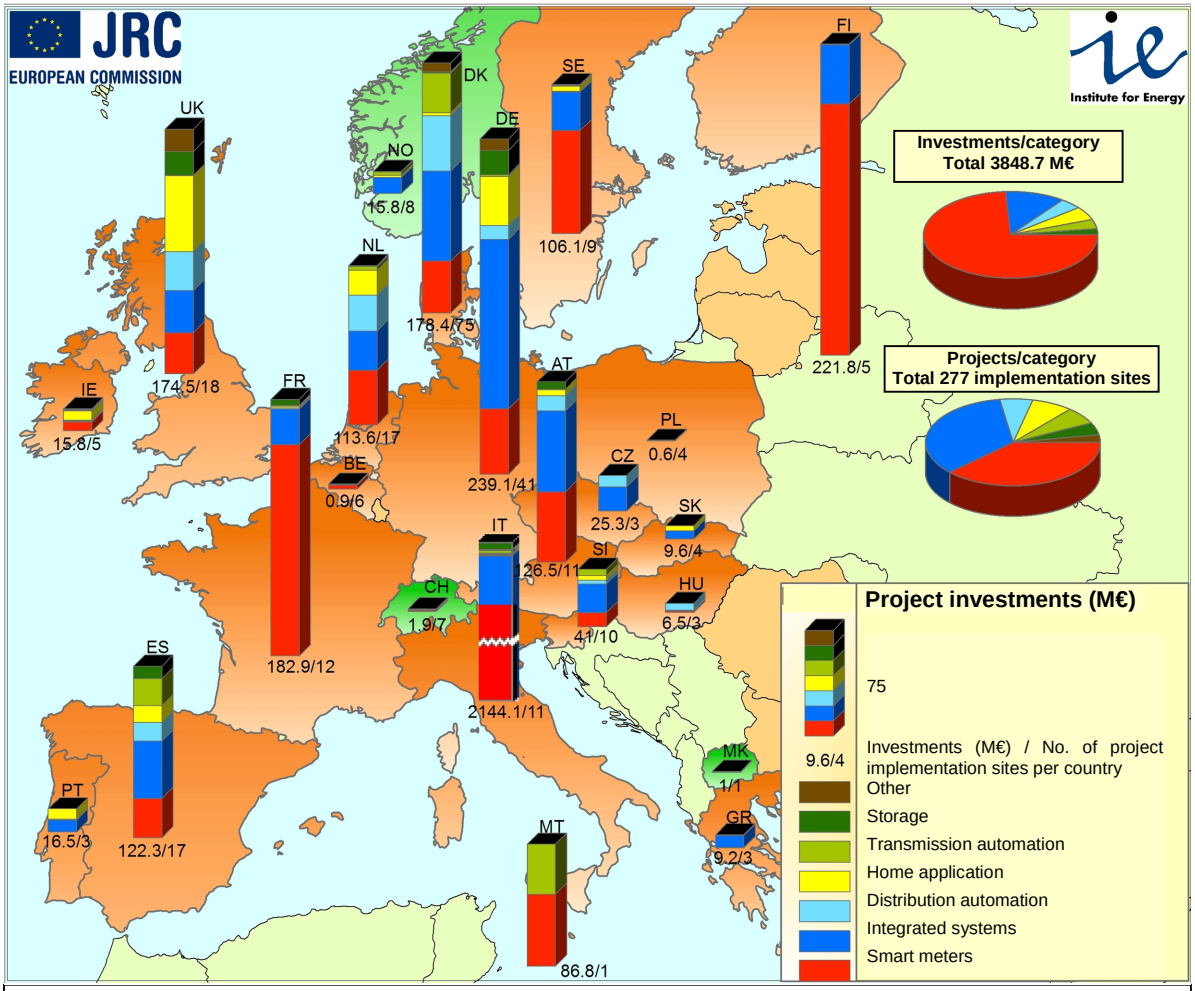
18 EPRI2008. Electric Power Research Institute (EPRI). The green grid: Energy savings and carbon emissions reductions enabled by a smart grid. Palo Alto, California, United States. http://www.smartgridnews.com/artman/uploads/1/SGNR_2009_EPRI_Green_Grid_June_2008.pdf.

19 Bio Intelligence Service. Impacts of Information and Communication Technologies on Energy Efficiency, Final Report. September 2008. ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/sustainable-growth/ict4ee-final-report_en.pdf.

20 The low-carbon energy industry has to date generated 1.4 million jobs in Europe. Research in the USA has indicated that that up to 280 000 new direct jobs could be created in the USA by Smart Grids deployment, with more than 140 000 direct jobs retained beyond the deployment phase.

21 http://www.zpryme.com/SmartGridInsights/2010_Smart_Appliance_Report_Zpryme_Smart_Grid_Insights.pdf.

22 ESMIG, at http://www.scribd.com/doc/35826660/LandisGyr-Whitepaper-IDIS and SAP, Smart Grids for Europe at: http://www.scribd.com/doc/47461006/12036-NM-Smart-Grids-for-Europe-En.



Picture 1: Overview of Smart Grid investment and implementation across the EU (source: JRC, IE). Projects represented can span over more than one country and can include more than one category. Three projects are not represented in this Picture: Kriegers Flak project, a Super Grid between Germany and Denmark, total investment of 507 M€; Smart Meter Roll-out and AMI in UK, estimated investment of 11897 M€; and Smart Meter Roll-out in Sweden, spanning in approx. 150 projects and amounting a total investment of approx.1500 M€.

These challenges need to be tackled as soon as possible in order to accelerate Smart Grid deployment. The Commission proposes to focus on:

(1) developing technical standards;

(2) ensuring data protection for consumers;

(3) establishing a regulatory framework to provide incentives for Smart Grid deployment;

(4) guaranteeing an open and competitive retail market in the interest of consumers;

(5) providing continued support to innovation for technology and systems

2. ADDRESSING CHALLENGES — POLICY INITIATIVES ENABLING SMART GRID DEPLOYMENT IN EUROPE

2.1. Developing common European Smart Grids standards

The conclusions of the European Council of 4 February 2011 confirm the urgent need to adopt European standards for Smart Grids.

The work already started in March 2009, when, based on the Measuring Instruments Directive (2004/22/EC) and the Energy Service Directive, the Commission issued a mandate[23] to the European standardisation organisations CEN, CENELEC and ETSI (ESOs) to establish European standards for the interoperability of smart utility meters (electricity, gas, water and heat), involving communication protocols and additional functionalities, such as assuring interoperability between systems to provide secure communication with consumer's interfaces and improve the consumer's awareness to adapt its actual consumption. The ESOSs were to provide European standards for communication in March 2010 and complete harmonised solutions for additional functions by December 2011, but the deliverables are accumulating almost one year of delay. The Commission has since intervened to clarify the scope of the mandate in line with intermediate findings by the Smart Grid Task Force and to avoid further delays. The first deliverables for European standards for smart meters are expected by the end of 2012.

In June 2010, the Commission issued a mandate[24] to ESOs to review existing standards and develop new standards so that a European harmonised approach could be adopted in 18 months for the interoperability of chargers for electric vehicles with all types of electric vehicles and with electricity supply points. This harmonisation will allow users to use the same charger for a range of electric vehicles and ensure that such chargers can be connected and operated throughout the EU. There is a wide consensus that Europe urgently needs such standards.

On 1 March 2011, the Commission issued a mandate to ESOs for Smart Grids[25] to develop standards facilitating the implementation of high-level Smart Grid services and functionalities by the end of 2012. As the mandate builds on the consensus achieved among the stakeholders participating in the Task Force and the ESO Joint Working Group on Smart Grids, this should ensure a smooth and fast process.

To ensure that the 2012 deadline set by the European Council of February 2011 is met, a monitoring system will be set up. If progress in the course of 2011 is not sufficient, the Commission will intervene to ensure that the deadline is met and the necessary standards are set, for example by defining a network code.

Furthermore, the Commission will continue reviewing European standardisation policy by following up its White Paper 'Modernising ICT standardisation in the EU — The way forward'[26] as well as the global standardisation developments.

1.	**Actions on Smart Grids standards**

[23] M441 on 12 March 2009, http://www.cen.eu/cen/Sectors/Sectors/Measurement/Pages/default.aspx.
[24] M468 on 29 June 2010, http://ec.europa.eu/energy/gas_electricity/smartgrids/taskforce_en.htm.
[25] M490 on 1 March 2011, http://ec.europa.eu/energy/gas_electricity/smartgrids/taskforce_en.htm.
[26] Modernising ICT Standardisation in the EU — The Way Forward — COM(2009) 324.

– With the help of the Task Force, the Commission will monitor the implementation of the work programme established in the mandate with a view to ensuring timely adoption of the standards. If progress in the course of 2011 is not sufficient, the Commission will intervene to ensure that the deadline is met and the necessary standards are set, for example by defining a network code.

– The Commission will also follow the development of ICT standards at the European and international level to facilitate the implementation of Smart Grids.

2.2. Addressing data privacy and security issues

Developing legal and regulatory regimes that respect consumer privacy in cooperation with the data protection authorities, in particular with the European Data Protection Supervisor, and facilitating consumer access to and control over their energy data processed by third parties is essential for the broad acceptance of Smart Grids by consumers.[27] Any data exchange must also protect the sensitive business data of grid operators and other players, and enable companies to share Smart Grids data in a secure way.

Directive 95/46/EC on the protection of personal data[28] constitutes the core legislation governing the processing of personal data. The Directive is technology-neutral and the data processing principles apply to the processing of personal data in any sector, so also cover some Smart Grids aspects. The definition of personal data[29] is particularly relevant, as the distinction between personal and non-personal data is of outmost importance for further Smart Grids deployment. If the data processed are technical and do not relate to an identified or identifiable natural person, then Distributed System Operators (DSOs), smart meter operators and energy service companies could process such data without needing to seek prior consent from grid users. While the European data framework is appropriate and does not need to be extended, some adaptations might be needed in the specific national legal frameworks in order to accommodate some Smart Grids foreseen functionalities. With the wide deployment of Smart Grids, the obligation to notify national data protection authorities of the processing of personal data is naturally likely to increase. Member States will have to ensure, when setting up Smart Grids and more particularly when deciding on the division of roles and responsibilities regarding ownership, possession and access to data, that this is done in full compliance with the EU and national data protection legislation.[30]

The Smart Grids Task Force has agreed that a 'privacy by design' approach[31] is needed. This will be integrated in the standards being developed by the ESOs.

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27 http://www.beuc.org/Content/default.asp?pageId=1120&searchString=smart%20grids.

28 Directive 95/46/EC of 24 October 1995 of the European Parliament and of the Council on the protection of individuals with regard to the processing of personal data and on the free movement of such data, OJ L 281, 23.11.1995, p. 31.

29 Article 2(a) of Directive 95/46/EC.

30 The Article 29 Working Party on the protection of individuals with regard to the processing of personal data (set up under Article 29 of Directive 95/46/EC to advise the Commission) is currently working on an opinion to highlight the relevant data protection issues for smart grids and make recommendations for solutions.

31 Privacy by Design is an approach whereby privacy and data protection compliance is designed into systems holding information right from the start, rather than being bolted on afterwards or ignored, as has too often been the case. See http://www.ipc.on.ca/images/Resources/7foundationalprinciples.pdf.

Finally, developing and maintaining a secure network is essential for continuity of resources and the safety of consumers. It is important to ensure the security and resilience of the infrastructures supporting Smart Grids deployment in Europe. To this end, the Commission has launched a multi-stakeholder group for high-level discussions on the security, including cyber security, and resilience challenges of Smart Grids.

2.	**Actions on data privacy and security of data in Smart Grids**
–	The Commission will monitor the provisions of national sectoral legislation that might apply to take into account the data protection specificities of Smart Grids.
–	The ESOs will develop technical standards for Smart Grids taking the 'privacy by design' approach.
–	The Commission will continue bringing together the energy and ICT communities within an expert group to assess the network and information security and resilience of Smart Grids as well as to support related international cooperation.

2.3. Regulatory incentives for Smart Grids deployment

Smart Grids deployment should first and foremost be market-driven. Network operators are key beneficiaries of Smart Grids deployment and will likely be the main investors in Smart Grids. Natural drivers for investment are the possibilities to enhance network efficiency and improve overall system operation through better demand response[32] mechanisms and cost savings (remote operation of meters, lower reading costs, avoiding investment in peak generation, etc.). Households and companies should have simple access to consumption information so they can keep their energy costs down. In addition, for energy suppliers, service companies and ICT providers (or combinations of these), the use of ICT solutions associated with Smart Grids allows the large-scale integration of variable renewables within networks while maintaining the overall reliability of the system. A precondition for this is that such solutions remain open, business-model neutral and inclusive, and also allow SMEs to participate fully. Above all, Smart Grids are a necessary enabler for providing added-value services to customers.

There is wide agreement among investors that the regulatory framework needs to be conducive to investment in Smart Grids. The Electricity Directive and the Energy Services Directive provide a mix of obligations and incentives to Member States to establish such a framework. Regulatory incentives should encourage a network operator to earn revenue in ways that are not linked to additional sales, but are rather based on efficiency gains and lower peak investment needs, i.e. moving from a 'volume-based' business model to a quality- and efficiency-based model. Article 10(1) of the Energy Services Directive obliges Member States to remove such volume-based incentives. If evaluation of the implementation of the Directive shows that this provision is insufficient or inadequate, the Commission will consider whether to amend it in the upcoming revision of the Directive or to complement it by a Network Code on Tariffs, to be drafted as part of the Third Package.

[32] Demand response mechanisms manage customer consumption in response to supply conditions, for example by inducing end-users to consume less electricity at times of high wholesale market prices or when system reliability is jeopardised.

Annex I.2 of the Electricity Directive requires Member States to define, no later than 3 September 2012, an implementation plan and timetable for the roll-out of smart metering systems. Given the relationship between Smart Grids and smart meters, such implementation plans would also need the development of Smart Grids, and should thus address the required regulatory incentives for the implementation of Smart Grids. The European Commission will actively monitor Member States' progress, and provide guidelines on key performance indicators by the end of 2011. If insufficient progress is being made in the course of 2012, the Commission will consider introducing stricter regulation for the implementation of Smart Grids.

In designing national incentive regimes, it is important to ensure that they do not diverge to an extent where trade and cooperation across national borders becomes difficult. For the same reasons, Smart Grids deployment in the Member States should also proceed at a similar pace. Large differences between national energy infrastructures would prevent businesses and consumers from reaping the full benefits of Smart Grids. Permitting procedures for the construction and renewal of energy grids have to be streamlined and optimised, and regional regulatory barriers and resistances must be tackled. In this context, the EU-wide ten-year network development plans[33] (TYNDP) as well as the Regional Initiatives[34] (RI) can play a major role.

3. Actions to adjust the existing regulatory framework for Smart Grids

– The Commission will develop regulatory incentives for the deployment of Smart Grids, for example in the application and revision of the Energy Services Directive and/or through the development of a network code or implementing act on tariffs.

– The Commission will establish guidelines to define a methodology for the smart meter implementation plans of Member States, as well as for their (possible) cost-benefit analyses.

– Beyond the targets for smart meters in the Third Package, the Commission will request Member States to produce action plans with targets for the implementation of Smart Grids.

– Through its role in the Regional Initiatives and its involvement in ENTSO-E, the Commission will encourage and promote coordinated action towards the deployment of Smart Grids at European and regional level.

2.4. Smart Grids in a competitive retail market in the interest of consumers

The Electricity Directive requires Member States to create well-functioning and transparent retail markets (Article 41) and to facilitate access for new entrants, including energy service companies and ICT providers that can provide services to consumers allowing them to change their behaviour to their benefit. Furthermore, the Electricity Directive's obligations on Member States to facilitate switching within strict deadlines as well as to ensure consumer access to consumption and billing information are conducive to Smart Grids deployment. Their correct transposition in national legislation will be closely monitored. Promoting direct

[33] See Article 22 of the Directive 2009/72/EC and Article 6 of the Regulation 714/2009.

[34] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0721:FIN:EN:PDF.

feedback to consumers using, for example, in-home displays or other means can also be important. The upcoming review of the Energy Services Directive aims to further facilitate the development of a market for energy services through, among other things, support for advanced metering.

Developing Smart Grids in a competitive retail market should encourage consumers to change behaviour, become more active and adapt to new 'smart' energy consumption patterns. This is a crucial precondition for the successful transition towards the efficiency-based business model described above. Demand response is at the core of the new model. It requires (almost 'real-time') interaction between utilities and consumers' energy management and much wider use of time-differentiated electricity prices to ensure that consumers have a genuine incentive to adapt their consumption patterns.

With the introduction of Smart Grid technology, DSOs would obtain access to detailed information about consumers' consumption patterns, which could give DSOs a considerable competitive advantage over other market actors in offering tailor-made services to consumers. The regulatory setting will need to ensure that these risks are properly addressed. If transposition of the Third Package and the development of technical standards do not address this sufficiently, the Commission will consider further legislative action.

4.	**Actions to guarantee competitive Smart Grids services to customers**
–	The Commission will introduce, through revision of the Energy Services Directive, minimum requirements for the format and content of information provision for customers, and for access to information services and demand management (e.g. in-house control of consumption).
–	The Commission will monitor the implementation of the Third Package requirements needed to create a transparent and competitive retail market for the development of services (e.g. time-of-use pricing and demand response) based on Smart Grids and metering. If the requirements are not implemented or not effective, the Commission may take further action, possibly in its review of the Energy Services Directive.

2.5. Continuous support for innovation and its rapid application

The Commission has launched several initiatives for the modernisation of energy networks. These have shaped the Smart Grids vision, established the needs for technology R&D and prompted small-scale pilot projects to verify and demonstrate the functioning and benefits of Smart Grids. Over the last decade, about €300 million has been spent on these projects, financed mainly through Framework Programmes 5, 6 and 7.[35] In May 2005 the Commission launched the European Technology Platform for Smart Grids[36] with the aim of creating a joint EU vision and research agenda for Smart Grids.[37] A continued R&D effort towards advanced electricity network technology is necessary, and the Platform is expected to provide inputs for its agenda. Last June, the European Electricity Grids Initiative (EEGI) was established under the SET Plan to accelerate the deployment of smart grids technologies in view of the 2020

[35] http://www.smartgrids.eu/?q=node/162, http://intra.infso.cec.eu.int/ or http://cordis.europa.eu/fp7/energy/.

[36] European Technology Platform for the Networks of the Future, http://www.smartgrids.eu/.

[37] http://ec.europa.eu/research/energy/pdf/smartgrids_en.pdf.

targets. Its main emphasis is on innovation at system level, and it will clarify technology integration and business cases through large-scale demonstrations and R&D projects for Smart Grids. It also aims to prevent duplication of efforts through a wide-ranging knowledge sharing approach. In May 2010, the EEGI adopted a detailed implementation plan, setting priorities for the period 2010-2018 and indicating financing needs of about €2 billion.[38] The plan identifies the need for major upgrades to networks, particularly at distribution level, and the need for tight collaboration between distribution and transmission operators to ensure end-to-end delivery of electricity. This work is complemented by the necessary R&D investment in new ICT components, systems and services supported by public-private partnerships.[39]

In parallel to this industry-driven initiative, action has been taken at regional and local level in the form of the Covenant of Mayors initiative[40] and the upcoming SET Plan initiative Smart Cities and Communities.[41] The EEGI will contribute its results on Smart Grids to the Smart Cities and Communities initiative, which will focus on the integration of various energy supplies and uses (electricity, gas, heat and transport) to maximise energy efficiency.

These EU initiatives are expected to accelerate the deployment of Smart Grids in Europe, starting from a modest level. Government-level support for deployment has so far been limited, even when compared with other parts of the world. The SET Plan complements research actions with deployment-oriented actions, fully in line with the Energy 2020 strategy. Projects and investments must now aim for 'real life' demonstration and validation, solving system integration issues and demonstrating the business cases. They must also demonstrate how consumers can benefit most from the introduction of these systems. The EEGI and Smart Cities and Communities initiatives are a step in the right direction.

The roll-out of smart grid technologies is identified as a European infrastructure priority requiring particular attention in the Energy Infrastructure Package[42]. It outlines the necessary toolbox for the planning and delivery of the energy infrastructure, including through an instrument for EU financial support to leverage private and public funds. The Commission will also examine the possible use of other EU funding instruments, including the Structural Funds, to offer tailored financing solutions involving both grant support and repayable assistance[43], such as loans and guarantees, as well as support to innovative actions and technologies.

5. Actions to support innovation and rapid application

– During 2011, the Commission will propose additional new large-scale demonstration initiatives for rapid Smart Grids deployment, taking into account the needs identified in the EEGI. They will include new ways and means to leverage financing, in line

38 http://www.smartgrids.eu/documents/EEGI/EEGI_Implementation_plan_May%202010.pdf.

39 For example, in 2011–13 the Commission will be supporting six public-private partnerships for ICT in FP7 with a total funding of €1 billion and leveraging around €2 billion of private spending.

40 http://www.eumayors.eu/home_en.htm.

41 http://ec.europa.eu/energy/technology/set_plan/doc/2009_comm_investing_development_low_carbon_technologies_roadmap.pdf.

42 See e.g. section 5.4.2. in COM(2010) 677 final, adopted on 17th November 2010.

43 For example, within the current Cohesion Policy framework, urban development funds (established under the JESSICA initiative) are providing repayable assistance for sustainable urban infrastructure development: http://ec.europa.eu/regional_policy/funds/2007/jjj/jessica_en.htm.

with the Energy Infrastructure Package and as requested by the European Council of 4 February 2011

– The Commission will also launch the initiative Smart Cities and Communities in 2011.

3. THE WAY FORWARD

The Commission intends to promote a faster and wider deployment of Smart Grids in Europe through the above-mentioned actions. Based on the views expressed by the institutions and stakeholders on this Communication, the Commission intends to develop appropriate initiatives in the course of 2011. These initiatives will address the regulatory aspects identified in this Communication, in particular in the context of the Third Internal Energy Market Package, the forthcoming revision of the Energy Services Directive, the Energy Infrastructure Package and the mainstreaming of energy policy priorities in different EU funding programmes.