

European Commission Public Consultation on “Towards a new Strategy for Europe 2011-2020”

2nd July 2010

T&D Europe¹ welcomes the preparation by the European Commission of a new Energy Strategy for the years 2011-2020, with, in mind, the 2050 perspective of a low carbon energy system, at a time of further profound changes in the perspectives, challenges and opportunities facing the European Union in the area of energy.

T&D Europe has carefully read and analysed the stock taking document published by the European Commission as basis for its public consultation on “Towards a new Strategy for Europe 2011-2020”. As the industry association representing the manufacturers of equipment and providers of services for the transmission and distribution of electricity, our contribution² will focus on the development of an intelligent (or “smart”) electricity grid, particularly from a technology point of view.

We particularly welcome and support the statement on the stocktaking document (page 13), according to which “for increasing the production and use of carbon-free energy, a key area will be electricity supply (...)”. Indeed only with a massive expansion and modernization of the ageing European electricity grid can the European Union achieve its overall goal of ensuring safe, secure, sustainable and affordable energy for all (companies and final consumers), and reach each of the three 20/20/20 targets.

This effort should be seen as a contribution to environment protection and climate change fight, but also as a huge opportunity to strengthen the development of the T&D equipment and services industry, a strategic sector of the European industry, which provides high qualified jobs and is very active on global markets.

Generally speaking, T&D Europe would like to point out that T&D equipment manufacturers and service providers are the experts of the high-tech aspects in such areas as power generation, transmission storage and refining, and that it is of utmost

¹ T&D Europe (www.tdeurope.eu) is the European association of the electricity transmission and distribution equipment and services industry, which members are the European national associations representing the interests of the electricity transmission and distribution equipments manufacturing and derived solutions. The companies represented by T&D Europe account for a production worth over € 25 billion EUR, and employ over 200,000 people in Europe.

² This contribution builds on T&D Europe’s participation in the Electra project, previous position papers adopted since June 2008, and our study on “Criteria for the quantification of how modern T&D systems help accomplish the EU 20/20/20 targets” (later on referred to as “Criteria/Quantification Study”
See <http://www.tdeurope.eu/data/file/TD-europe-general-report-rev-2-2-executive-summary.pdf>

importance that our sector is actively involved from the earliest phase on in all discussions between the stakeholders

The European electricity grid has to undergo massive adaptations, both for transmission and for local regional distribution, in order to cope with the following challenges:

- Growing obsolescence of the electricity grid, which was built to a large extent shortly after WWII
- New, environment- and climate change-related demands for electricity (e.g. electric vehicles)
- Need to connect it with and expand it in the new EU Member States of Central and Eastern Europe, where electricity demand is fast increasing, and to develop transnational networks in Europe (also in the Western part)
- Need to integrate power generation at new locations, development of onshore and offshore wind and solar energy power stations, expansion of decentralised, especially renewable power generation
- As a consequence of this integration, need to secure network stability and to regulate a growingly fluctuating flow of energy
- Need to improve the energy efficiency of production, transmission and distribution of electricity till the end-user customers.
- Need to manage bi-directional energy flows with integration of distributed generation in the field of renewable, adapting the grid to the exigencies of the prosumers (producers and consumers)

In order to build this renewed grid, the key is investment, and particularly investment in technologies. As stated in the conclusions of the stocktaking document (page 17), “greater emphasis is needed on investments. Billions of Euros will need to be invested in new technologies, infrastructure, energy efficiency improvements, low carbon power generation and public education and skills to make the low carbon transformation happen”.

In the following developments, T&D Europe will comment on the key issues for the new energy strategy analysed in the stocktaking document, and on the proposed five priority areas. As a matter of fact, T&D Europe members are already highly investing in R&D and technical solutions to support the process.

1. A strong focus on implementing agreed policies

With regards to the completion of the electricity internal market, T&D Europe fundamentally supports the deregulation of power supply and welcomes the further legislative step achieved with the adoption in 2009 of the third energy package. This legislation has now to be fully transposed and implemented in all Member States, and those who have not fully transposed the second energy package should proceed without any further delay.

However, liberalisation has occurred in an environment consisting of monopolies, and has been associated with an unbundling of previously integrated functions and a new regulation of the networks, leading to different, new and independent market roles. But the new intelligent network requires a stronger overview of the systems. For example, load management on the basis of dynamic tariffs, orientated for instance towards the power supply from uncontrollable wind energy, once again requires coordination between the independent market roles of network operation and power trading and sales. There is a need here for an optimum coordination of variable power generation and consumption overall and in response to market conditions, across all the stages of the value creation process.

Investments require a stable political and legislative framework, without which they are postponed or abandoned, due to difficulties to proceed with calculations or to too short break-even time for long-term investments, especially since network operators have been privatised. In this context, the integration of the 20/20/20 targets in the overall EU strategy “Europe 2020”, replacing the Lisbon Strategy, is a strong political signal which contributes to ensuring visibility, provided that all policy and technology consequences of such targets are clearly understood.

The legislative framework still needs to be completed by:

- The adoption of the regulation on investments notification
- Incentives to regulators on how to upgrade the network and the ageing structures, especially on T&D equipment
- The simplification of authorisation procedures for the construction of new infrastructure projects, particularly for trans-border interconnection projects, where cooperation between Member States has to improve. This may have to be completed by public awareness-raising and acceptance campaigns.
- A piece of legislation on smart grids, as announced in the Commission work programme for 2010 (see below, under point 3). Without such concrete legislation on smart grid, interconnecting efficiently actual and future renewable energy resources, the EU 20/20/20 targets get seriously at risk, not to be achieved
- A European standardisation aligned with international standards on smart grids and smart meters

However, as representative of equipment manufacturers in the high and medium voltage sector, T&D Europe underlines that the entire product-related legislation should comply with the concept of “better” or “smart legislation” put forward by the European Commission itself, and only be developed and implemented where necessary, namely where the market or industry initiatives are not delivering.

2. Full integration in the longer term perspectives

See below, under point 4

3. Modern integrated grids

T&D Europe shares the Commission analysis of the implementation of the TEN-E (Trans European Networks for Energy) and its shortcomings, looks forward to the presentation of a new proposal for an Energy Infrastructure Package by end 2010 and stresses that the issue of investments will have to be clearly addressed.

With regards to smart grids, T&D Europe has actively contributed to the task force put together by the European Commission, both at steering committee and at expert group levels. Referring to the position paper which T&D Europe has developed with Orgalime and other sectors in the electrical and electronic branch, we would like to recommend:

- The European Commission should assess different incentives to invest into smart grid technologies and applications with a profitable return and benefits for stakeholders (companies & consumers who invest in smart household appliances, smart e-vehicles, smart automation, etc.) and propose European guidelines and if required supporting directives.
- The European Commission should create framework conditions to increase all stakeholders' awareness, acceptance and behavioural changes notably for consumer integration into the energy markets especially for electricity. The implementation of real commercial projects is central to the elaboration of new power supply systems with special focus on municipalities and industrial co-generation plant integration.
- The design of the smart grids must reflect the need for data while at the same time ensuring system security and protection of private data of businesses and households. Consumers should remain able to decide who will have access to which kind of information in their "energy profile". For household appliances, for example, direct control of the appliances should not be imposed from outside the house if the user does not agree with it. However, users should be aware of the amount of green energy available over the grid so that they can choose to adopt more environmental friendly consumption behaviour. Considering it as a benefit for the environment and for society, users who voluntarily decide to participate would deserve an appropriate and clear incentive and reward for it. Adapted pricing should ensure that the economic benefits of such consumption choices are fairly shared with the users. It is thus important that dynamic tariff schemes are implemented.
- Research & development policies: Smart Grids technologies must be affordable and competitive. A clear R&D and Demonstration Policy is necessary to boost innovation and accelerate the deployment of these technologies. One example is the EU's approach through the European Industrial Initiatives (EII), under the scope of the SET-Plan. The investments of the different initiatives (Electricity Grid, Solar, Wind, Energy Efficiency-Smart Cities...) over 10 years should be kept and continued despite the current difficult financial situation in the European Union.
- T&D Europe welcomes the recent CEN/CENELEC initiatives for Smart Grid standardization with a clear goal to keep interoperability and open standards to allow for economies of scale. Orgalime would welcome that technologies for communication in particular should be based on open international standards so

as to ensure competitive, cost effective solutions which will enhance the interoperability of the systems and therefore their deployment.

- Real time grid sensing/monitoring and power flow recording especially in the distribution grid should become a regulatory issue for more transparency and better optimization of grid loading and grid efficiency to be reported by grid operators.
- The development of grid codes should be accelerated by establishing a neutral body related organization under the umbrella of the new regulatory agency (ACER) in order to develop further pan European grid operation standards especially in regard of renewable energy integration into the grid. It is highly recommended to involve also all grid participants and the relevant equipment manufacturers in this activity (such as small renewable installation industries).
- Enhanced grid efficiency reporting and improved incentive regulation should be developed under the guidance and control of ACER to extend the existing incentives methodology for grid operation and investment in order to reduce losses and waste of energy in the grid.

With regards to network resilience, electricity grids as widespread “critical infrastructure” have to be designed to withstand disruption by natural disasters (adaptation to climate change and expected extreme weather situations) or terrorist attacks. Furthermore, the grid has to be enhanced to strengthen the internal energy market allowing for a pan European balance of power generation and load.

The potential technical solutions include (to highlight just a few):

- New long distance transmission lines across Europe connecting bulk renewable generation and load centres in order to shape renewable generation variability on a large scale.
Either using HVDC technology or using Ultra High Voltage AC transmission technologies
- Extending the intermeshing of grids, internationally and with redundancy to allow for enhanced internal market power exchange capabilities
- Underground transmission lines (e.g. cables) instead of overhead lines, to obtain broader public acceptance for new transmission lines
- Improved monitoring and automation (e.g. rapid fault locating, fast reaction through remote switching, enhanced grid sensing etc.), to achieve faster restoration after faults and better information regarding grid loading, especially in the low voltage distribution grid
- Decentralised power generation with an opportunity and capability for islanding operation, to better integrate the numerous small renewable generation sites into the grid
- Innovative power electronic systems like FACTS³ and HVDC⁴ to improve system stability, transmission efficiency and enhancing energy savings
- Advanced Metering Integration Systems into the distribution grid to enhance optimization of grid operation including the consumption side

³ HVDC = High Voltage Direct Current Transmission

⁴ FACTS = Flexible AC transmission system, defined by the IEEE as "a power electronic based system and other static equipment that provide control of one or more AC transmission system parameters to enhance controllability and increase power transfer capability"

- Energy Management Systems for integration of buildings and large consumers of energy into the distribution grid to use buildings as an energy storage in the grid
- Infrastructure for electrical vehicles to deploy further the use of renewable energy

In our position paper of 10 April 2010 commenting the Ten Year Network Development Plan (TYNDP) of ENTSO-E, T&D Europe, while regretting the lack of a convincing long term vision (to 2050) for the future EU-transmission grid, put forward the following recommendations:

- A clear roadmap and timelines for Europe should be developed under the guidance of the EU Commission to develop the transmission-grid of the future
- Furthermore, allocation of power plants / bulk renewable generation plants as well as the role of decentralized generation sites should be defined much clearer to ensure planning and successful project development.
- A jointly developed master plan could be the framework that will integrate all grid participants including grid operators, generation companies, trading companies, system and product manufacturers, regulators and consumers. It will also stimulate investments and prioritize project activities across EU countries.
- Finally, the acceleration of project development and approval needs to be addressed, clearly stating the obstacles to be removed.

In the same conclusions, T&D Europe offered to support the debate by providing innovative ideas and technology solutions that may promote the efficient development of the transmission grid.

These ideas have been further developed in our “Criteria/Quantification T&D Europe Study”.

With regards to financing, we share the view expressed in the stocktaking document that “network investments should in the future continue to be financed mainly from tariffs paid by the users”, completed by public investments where the market cannot deliver alone. As our T&D Europe President stated in his inaugural speech on 3rd July 2008, “How can we foster a booming investment culture for the European grids? The answer lies in market attractiveness. In our case, this means ensuring investment security with sufficient return on investment - and eliminating existing investment barriers”.

4. Making progress towards a low-carbon energy system

The European Union has set two target dates to itself: 2020 to achieve 20% CO2 emissions reduction, 20% increase in energy efficiency and 20% in energy production from renewable; and 2050 to achieve the decarbonisation of its energy production and transportation.

The European T&D industry can provide state-of-the-art technologies to increase energy efficiency, as described in the ELECTRA report and in our “Quantification

Study”: HVDC lines, a stronger focus on power factor compensation as well as FACTS, a rise in voltage levels, the use of more energy-efficient products (such as new, low loss transformers), a reduction of balancing and reserve power resulting from intelligent network control (virtual power stations and load management), and an expansion of the grids, etc...

Benchmarking of the networks and a prescription of energy efficiency in the grids are conceivable political steps: currently transmission losses in the grid are passed on to all consumers and there is therefore no sufficient incentive to deal efficiently with such losses. Instead, energy efficiency measures should be rewarded and promoted appropriately and taken into account in the regulation system. A clear demand to consider a life cycle approach, security of supply and energy efficiency for this kind of long term investments is needed, as it seems that, due to financial reasons (short break even, the advantages of equipment with higher investment costs and better energy efficiency (e.g. transformers) are not considered sufficiently. In this context, T&D Europe looks forward to the presentation of a revised Energy Efficiency Action Plan in the course of 2010.

T&D Europe concurs with the statement on page 10 of the stocktaking document “as certain elements of the longer term future are inevitably uncertain, such as possible technological breakthrough or failures, it is important to avoid lock-in”. This should, however, not be an excuse for postponing investments.

5. Leadership in technological innovation

T&D Europe regrets that so little developments are devoted in the stocktaking document to technological innovation, and particularly the means to finance them.

Over the years, the European T&D industry has constantly invested some 5% of its output into R&D. Only by maintaining this efforts was it able to maintain its international leadership.

However, R&D efforts have to continue to be developed, in particular in such areas as:

- Energy storage technologies
- Electric- or plug-in hybrid vehicles
- Superconductivity
- Innovative materials
- Smart grids (especially on distribution)

As a catalyst for focusing (topics) and boosting (financial means) R&D, the SET plan is a powerful instrument to foster coordinated efforts. With regards to the electricity grid, its implementation has already started with the launch of the European electricity Grid Initiative (EEGI) on 3rd June 2010. T&D Europe supports and industry will contribute to its deployment as well as of the KPIs (key performance indicators) to be used across the value chain of the smart grid investments. T&D Europe offers

its Criteria/quantification study to be used as a reference to reach the 20/20/20 targets.

6. A strong and coordinated external energy policy

The European T&D industry is considered as a global leader, with world champions and strong and innovative SMEs. T&D Europe therefore supports the ideas contained in the stocktaking document to strengthen the EU external energy policy and reinforce its coordination.

Efforts should focus on

- Developing and modernizing the electricity grid beyond the EU-27 towards Eastern Europe and the southern shore of the Mediterranean Sea, using every possible international or regional forum to cooperate on with countries in those areas and .
- Promoting European influence on the set up of international standards: the European T&D industry has always been extremely active at developing voluntary international technical standards at IEC level and expects the EU to share and support its strategy of setting the standards level-playing field at international level
- Keeping a strict balance between the need to comply with the EU's international engagements regarding technology transfer and the protection of intellectual property rights, using such organizations as the International Energy Agency of the OECD, the G20 and the WTO to secure and promote its industry's interests.

The promotion of trade opening initiatives for European sustainable and low-carbon products and technologies should not, as stated in the stocktaking document, be considered as a longer term, but as an immediate priority. Why wait? The European T&D industry constantly needs new markets to ensure its further development in a sector where it is competitive and can contribute to growth and employment in Europe as well as to the EU's international commitments in terms of climate change.

7. Protecting EU citizens

The European T&D industry is fully committed to guarantee citizens and businesses a safe and secure electricity transmission and distribution, and has been working since its beginning with the development of state-of-the-art international, European and national standards. We are convinced that an appropriate allocation of resources for investments as well as a properly completed and functioning energy internal market will massively contribute to maintaining an affordable price for electricity and energy in general.

The European T&D industry can also further expand in Europe and worldwide and therefore contribute to many interesting new employment and business opportunities. However, research into and development of new technologies, as well as the planning and implementation of projects are impossible without well trained

specialists and engineers. The attractiveness of university studies in technical subjects, particularly electrical engineering should be emphasised from the school stage onwards. Dealing with technology and technical challenges has to be integrated in the general education, by reference to technical matters in classical disciplines or by teaching technical subjects separately. Reference to success stories of European T&D companies actively providing solutions for protecting the environment and fighting climate change could be given.

In conclusion, T&D Europe would like to express its thanks to the European Commission for the opportunity offered to contribute to the consultation, and looks forward to further discussions during the preparation of the Strategy.