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FINAL REPORT

Energy Theme; Grant Agreement No 308794

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Document History

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EXECUTIVE SUMMARY

The METER-ON final report contains a summary of the work and main conclusions.

The main objective is to provide all stakeholders with a comprehensive overview of the project results, the activities planned for the exploitation of the results and the expected impact of the project. Stakeholders are also invited to access to the individual documents published on the project website (www.meteron.eu) for further details.

After a brief introduction, a description of the approach adopted to reach the project objectives is provided, focusing on the specific steps:

- Collection of data from 23 smart metering projects (21 European and two from Brazil),
- Per-project analysis, covering the different aspects involved in such initiatives: Technology solutions, compliance with the European Commission (EC) ten minimum functionalities, boundary conditions (regulatory framework and market model), smart grids solutions enabled and analysis of the economic/financial information.
- Cross topic analysis, aiming at a comparison of different experiences in order to identify relevant patterns (some of them are likely shared among different projects and implications between boundary conditions, external forces and project choices), describing how a given factor (or a set of factors) impacts on the final outcome of a projects.

A final set of lessons learned and recommendations in the field of smart metering is presented with the aim of providing decision-makers and stakeholders with a useful toolbox of technical and non-technical recommendations to foster the deployment of smart metering in Europe, helping the EU to meet the 2020 targets.

Exploiting the expertise in the consortium, the project adopted a “neutral” approach in the delivery of the recommendations, based on the information from distribution system operators (DSO) carrying out smart metering projects. In order to regularly inform stakeholders about the content of the preliminary and final recommendations, presentations have been made in several official events during the last year of the project and shared with the members of the project Advisory Board (AB). In addition, reports targeting different stakeholders (regulators, DSOs and policy makers) is being prepared, with the aim to consider the points of view of different stakeholders.

1 FINAL PUBLISHABLE SUMMARY REPORT

1.1 Summary description of project context and objectives

Meter-ON is a coordination and support action to steer the implementation of smart metering solutions throughout Europe, by effectively collecting the most successful experiences in the field, highlighting the conditions that enabled their development. On the basis of lessons learned, the goal of Meter-ON is to provide to any stakeholder an open information platform with clear recommendations on how to tackle the technical barriers and the regulatory obstacles endangering the uptake of smart metering technologies and solutions in Europe.

The overall project's aim is mapped onto a set of objectives. According to the abovementioned project aim, the set of objectives follows a common pattern of knowledge-sharing: data are firstly collected, then analysed and finally recommendations are provided. Hence, Meter-ON consists of the following objectives:

- O1: COLLECT a comprehensive set of smart-metering projects in order to allow a deep analysis based on a large experience, set under different geographical, technical, regulatory and economic conditions
- O2: ANALYSE smart metering projects on cross-project topics (e.g. technological, economic, social, and legal topics) studying different characteristics of the addressed initiatives, also considering boundary conditions (applicable technical regulations, country economies, and regulatory framework)
- O3: RECOMMEND feasible technological patterns, business models and policy frameworks to foster smart metering deployment, highlighting related applicability and replicability characteristics
- O4: SHARE the gained knowledge and project results among the European smart metering community and relevant stakeholders, so that the learning curve for smart metering technologies and infrastructures is accelerated and optimised.

The directive on the Internal Energy Market for electricity and gas (2009/72/EC for electricity and 2009/73/EC for gas), highlights the importance to ensure the implementation of intelligent metering system, which has been subject to an economic assessment of all the long-term costs and benefits to the market and the individual customer or which form of intelligent metering is economically reasonable and cost-effective and which timeframe is feasible for the distribution. Member States (MS) are required to ensure the implementation of smart metering under the EU energy market legislation in the Third Energy Package. The directive also says that whether the assessment is positive, MS are required to ensure that 80% of the involved consumers are equipped with intelligent metering system by 2020.

Provided that most of the smart metering experience in Europe is at the stage of pilot/large-scale demonstration projects, there is a huge potential and added value in exchanging information and best-practices among stakeholders active in the field of smart metering.

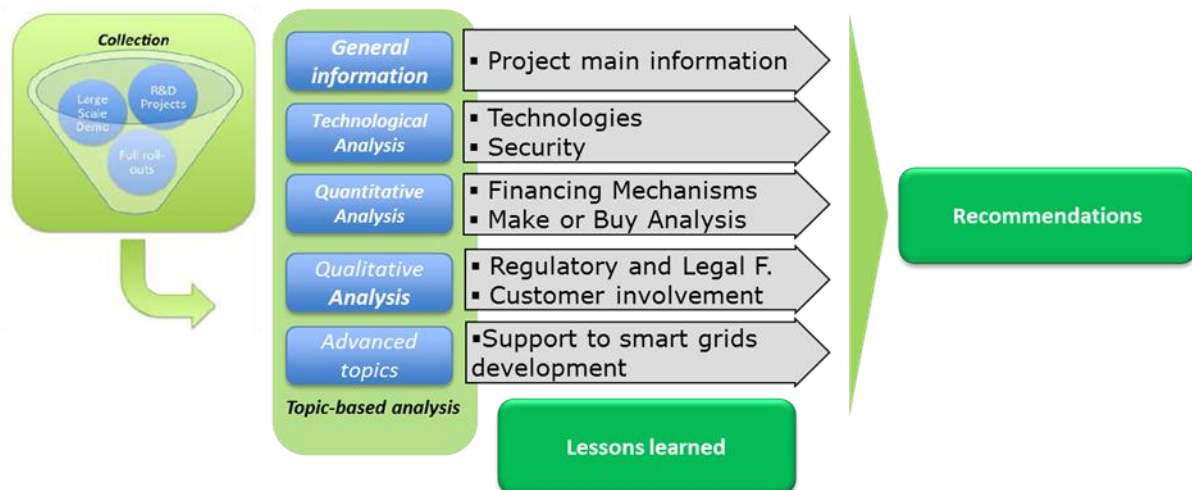
Meter-ON will contribute by providing the glue and filling the missing information to:

- Collect lessons learned
- Provide recommendations in order to push large scale demonstrators and roll-outs
- Interact with stakeholders and the smart metering community.

1.2 Description of the main S&T Results/foregrounds

The Meter-ON approach is based on the experience gained through completed, on-going and planned smart metering projects, consisting of three steps:

- i) Collection of smart metering projects
- ii) Per-project and cross topic analysis according to the identified set of information domains
- iii) Recommendations on the way forward, based on the lessons learned from the most successful smart metering experiences.



This iterative process (collection – analysis – recommendations) has been repeated three times during the project to benefit from the inputs received from internal (project analysts, AB members) and external stakeholders, with the aim of increasing the quality of the analysis and respond to ad-hoc requests.



1.2.1 Collection

In order to gather information on smart metering projects (leveraging on the third parties of the project, the contacts provided by EDSO and external stakeholders), a data collection template was elaborated, based on the inputs of the METER-ON analysts and DSOs directly involved in the project. This template (publicly available on the project website - www.meteron.eu) addresses the most relevant topics for every considered smart metering project, including contextual information, e.g. regarding regulatory frameworks, legal aspects, information on the initiatives carried out to improve customer acceptance and ongoing smart grids developments.

Three data collection campaigns have been carried out over the course of METER-ON.

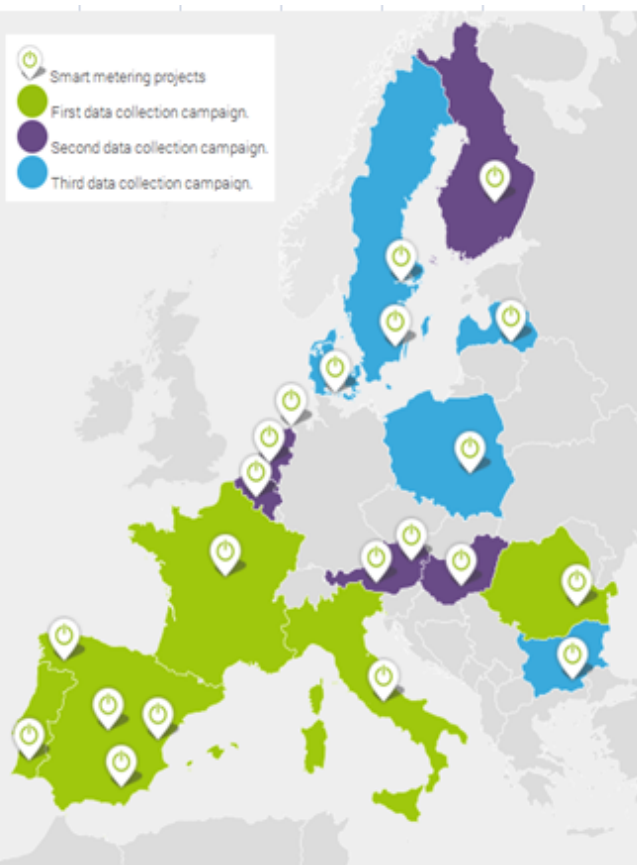
| Data Collection | |
|--|---------------|
| Action | Delivery Date |
| First version of the template delivered | January 2013 |
| First data collection campaign completed • 8 projects information collected | April 2013 |
| Second version of the template delivered | April 2013 |
| Second data collection campaign completed • Additional 7 projects information collected • Updated information received from the projects in the first data collection campaign | August 2013 |
| Third data collection campaign completed • Additional 8 projects information collected | July 2014 |

The smart metering projects participated on a voluntary basis. For this reason, participants have been able to indicate the level of confidentiality for the information provided. In order to ensure uniform quality of the information from all the projects, the consortium interacted continuously with the participants to ensure a common minimum set of public information and a subset of confidential information to be used for the analysis.

The resulting database consists of 23 projects covering 15 European countries and two Brazilian projects.

The table below shows the list of projects involved.

| # | Project | Country |
|------------------------|---------------------------|-------------|
| First campaign | | |
| 1 | EDP distribuc ao | Portugal |
| 2 | Enel Distribu ie | Romania |
| 3 | ERDF | France |
| 4 | Gas Natural Fenosa | Spain |
| 5 | HC Distribu ion Electrica | Spain |
| 6 | Iberdrola Networks | Spain |
| 7 | Endesa | Spain |
| 8 | Enel Distribu ione | Italy |
| Second campaign | | |
| 9 | Eandis CVBA | Belgium |
| 10 | EDF D EM SZ | Hungary |
| 11 | Enexis BV | Netherlands |
| 12 | EVN AG | Austria |
| 13 | Caruna (ex Fortum) | Finland |
| 14 | Liander | Netherlands |
| 15 | Energie Steiermark | Austria |
| Third Campaign | | |
| 16 | Vattenfall | Sweden |
| 17 | Sundsvall | Sweden |
| 18 | NRGi | Denmark |
| 19 | Energa Operator | Poland |
| 20 | Latvenergo | Latvia |
| 21 | EVN Bulgaria | Bulgaria |
| 22 | Ampla | Brazil |
| 23 | EDP Bandeirante | Brazil |



1.2.2 Topic based analysis

The analysts have performed a so-called topic-based analysis of all the projects included in the METER-ON database, addressing specific sets of information domains:

- Technological analysis: focuses on the different technologies involved in smart metering

- Quantitative analysis: focusing on the financing mechanisms, cost-benefit analysis and the “make or buy” approach adopted by each company
- Qualitative analysis: focuses on the regulatory and legal frameworks in each country and in Europe, and on the analysis of initiatives carried out to involve end consumers
- Advanced topics: investigating the possible applications of smart metering as a pillar of smart grid functionalities.

The result is a 360 degree investigation of the analysed projects, available to all stakeholders and published on the project website, www.meteron.eu.

Below are the main conclusions from the “per project” analysis described. For additional details please refer to D2.1, D2.2 and D2.3: <http://www.meter-on.eu/project-progress-results/official-project-deliverables/>, where an exhaustive analysis of each project is provided.

1.2.2.1 Communication technology

In the following table, the summary of the communication technologies and protocols adopted in each analysed project is presented, highlighting the three main communication paths (home <-> meter, meter <-> concentrator, concentrator <-> data collector).

| PROJECT NAME | PROJECT SCALE | COMMUNICATION PATH | | |
|--------------|---------------|---|--|--------------------------------------|
| | | home <-> meter | meter <-> concentrator | concentrator <-> data collector |
| EANDIS | Pilot/Test | RS-485 or ETH | Technology: PLC-PSK ETH Protocol: DLMS TCP-IP | Technology: GPRS Protocol: TCP-IP |
| EDF | Pilot/Test | RS-232/485 | Technology: G3-PLC Protocol: DLMS-COSEM | Technology: GPRS Protocol: TCP-IP |
| | | | Technology: GPRS Protocol: DLMS-COSEM | |
| EDP | Demo | RS-485/MODBUS to connect to an external communication | Technology: PLC GPRS | Technology: GPRS |

| | | | | |
|--------------------|------------|--|---|--|
| | | module | Protocol: DLMS-COSEM TCP-IP | Protocol: TCP-IP |
| ENDESA | Roll out | / | Technology: PLC-BPSK Protocol: METERS and MORE | Technology: GPRS Protocol: TCP-IP |
| ENEL | Roll out | optical pulse output (1 pulse per kWh) | Technology: PLC Protocol: telegestore protocol | Technology: GPRS Protocol: TCP-IP |
| ENEL MUNTENIA | Pilot Test | optical pulse output (1 pulse per kWh) | Technology: PLC Protocol: telegestore protocol | Technology: GPRS Protocol: TCP-IP |
| ENEXIS | Roll out | P1 port | Technology: G3-PLC Protocol: DLMS-COSEM | Technology: GPRS Protocol: TCP-IP |
| | | | Technology: GPRS Protocol: TCP-IP | |
| ERDF | Roll out | numerical local interface (TIC) | Technology: G3-PLC Protocol: / | Technology: GPRS Protocol: / |
| EVN | Pilot/test | ZigBee | Technology: GPRS Protocol: TCP-IP | |
| CARUNA (EX FORTUM) | Roll out | Optical pulse output (1 to 1000 pulse per kWh) | Technology: PLC Protocol: chelone | Technology: 3G Protocol: GPRS |
| HC | Roll out | / | Technology: PLC Protocol: PRIME | Technology: G3 or LAN Protocol: FTP |
| IBERDROLA | Roll out | / | Technology: PLC | Technology: PLC, GPRS or ADSL |

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| | | | Protocol: PRIME | Protocol: IEC 60870-5 |
| LIANDER | Roll out | P1 port | Technology: GPRS (and CDMA 450mhz in near future) Protocol: DLMS- COSEM (application layer) and TCP-IP | |
| STROMNETZ | R&D | local customer interface | Technology: PLC Protocol: / | Technology: GSM, GPRS or LAN Protocol: / |
| | | | Technology: GSM Protocol: / | |
| GNF | Roll out | / | Technology: PLC Protocol: PRIME | Technology: 3G or GPRS Protocol: / |
| EVN Bulgaria | Roll out | None | Technology: PLC-S-FSK Protocol: IPv4 | Technology: GPRS Protocol: TCP-IP |
| NRGi | Roll out | HAN interface M-bus interface | Technology: PLC Protocol: OSGP | Technology: GPRS Protocol: TCP-IP |
| LATVENERGO AND SADALES TIKLS | Pilot | Optical interface, RS-485 to connect to an internal swappable data modem, M-bus interface | Technology: PLC GPRS Protocol: DLMS-COSEM | Technology: GPRS/3G Protocol: TCP-IP |
| ENERGA OPERATOR SA | Pilot/Test | Optical interface, wired/wireless bus, USB interface | Technology: PLC Protocol: DLMS | Technology: 3GPP Protocol: TCP-IP |
| SUNDSVALL ELNAT AB | Roll out | In-Home-display | Technology: PLC RF Protocol: / | Technology: GPRS Protocol: TCP-IP |
| VATTENFALL ELDISTRIBUTION AB | Roll out | None | Technology: PLC Protocol: OSGP (lon talk) | Technology: GPRS Protocol: IP |

| | | | | |
|------------------|------------|--|--|---|
| EDP BANDEIRANTE | Pilot/Test | ZigBee for HAN and NAN, serial port for cutting relay, serial port for future applications | Technology: ZigBee Protocol: / | Technology: GPRS/3G/WiFi, WiMAX Protocol: TCP-IP |
| AMPLA ENERGIA SA | Pilot | / | Technology: PLC Protocol: Meters & More | Technology: Optical fiber Protocol: TCP-IP |

The mostly used communication technology between the meter and the concentrator is based on the PLC technology, while GPRS/GSM is the mostly used communication technology between the concentrator and the data collector as well as between the data collector and the meter. This is due to the fact that both the PLC and GSM/GPRS technologies are well known, robust and relatively simple to implement thanks to the existing infrastructure. It should be emphasised that in the case of GSM/GPRS, the DSO is normally dependent of a telecommunication provider, while in the case of PLC, the DSO is independent of third-parties.

The great variation of available interfaces that can be noted in table, is due to the fact that it has not yet, at EU level, been well defined which data and must be exchanged from the meter to the home's energy management system, and how it must be exchanged. Thus, every DSO uses its preferred technology.

1.2.2.2 Compliance to ten EU minimum functionalities

The EC smart metering benchmarking report¹, published on the 17th of June 2014, assessed from a national government perspective, the smart metering roll-out plans presented by MS, highlighting the costs and benefits expected from the roll-out at national level as well as providing an evaluation of the compliance of metering solutions to the minimum functionalities.

The table below summarises the compliance of metering solutions assessed at country level² (only the countries covered in the METER-ON compliance analysis are listed).

¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:073:0009:0022:EN:PDF>

² Source: Cost-benefit analyses & state of play of smart metering deployment in the EU-27 – European Commission

| Member states rolling out smart meters (SM) | SM MinFun (a) | SM MinFun (b) | SM MinFun (c) | SM MinFun (d) | SM MinFun (e) | SM MinFun (f) | SM MinFun (g) | SM MinFun (h) | SM MinFun (i) |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Austria | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Denmark | YES | Partly | YES | YES | YES | YES | YES | YES | YES |
| Finland | YES | Partly | YES | YES | YES | YES | YES | YES | YES |
| Italy | YES | Partly | YES | YES | YES | YES | YES | YES | YES |
| Netherlands | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Poland | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Portugal | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Romania | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Spain | YES | NO | YES | YES | YES | YES | YES | YES | YES |
| Member States NOT rolling out Smart Meters (SM) yet | SM MinFun | SM MinFun | SM MinFun | SM MinFun | SM MinFun | SM MinFun | SM MinFun | SM MinFun | SM MinFun |
| Latvia | YES | YES | YES | YES | YES | YES | YES | YES | YES |

In order to provide the DSO's point of view to this regard and for a better understanding of the overall European scenario, a detailed analysis of the functionalities provided by metering solutions is provided in deliverable D2.3 ("Analysis of smart metering projects – update 2) which is publicly available on the project website, www.meteron.eu. Thirteen projects were analysed on a voluntary basis, providing a comprehensive description of the functionalities enabled by their metering solution.

1.2.3 Cross topic analysis

The results from the topic-based analysis were fed into a cross-topic analysis. The dissemination of lessons learned and recommendations to be provided for future smart metering projects (also in terms of applicability and replicability) requires a step forward in the analysis, which should:

- Identify and analyse the most relevant relationships and interactions among the information domains and implications between boundary conditions, external forces and project choices

- Where the “conceptual” relationship differs from the experience in specific projects, feedback from real projects has been used to review the relationships
- Identify for each information domain, common relevant patterns (i.e. approaches, choices, strategies) among the smart metering projects participating in the data collection campaign – 50 relevant patterns have been identified and analysed.

The result of the analysis is:

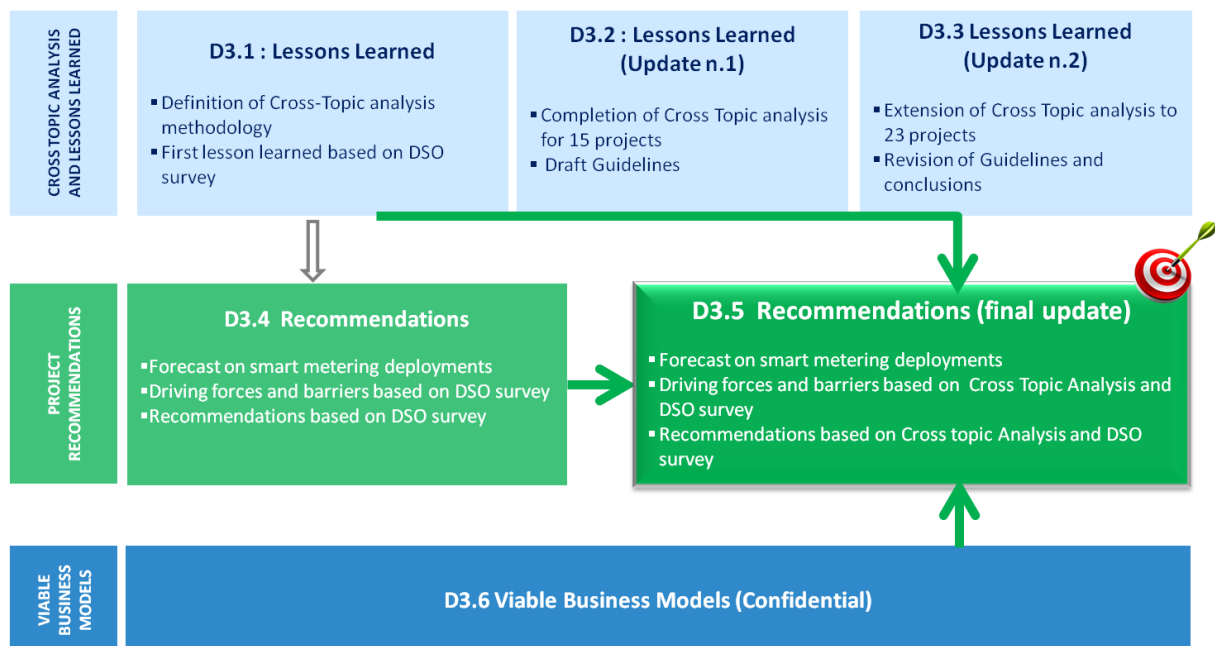
- For each project (single case analysis), contextual elements and DSO’s choices that facilitate the patterns confirmation and that influence their development has been identified (for more information please refer to D3.3 RESULTS OF CROSS TOPIC ANALYSIS AND LESSONS LEARNED - UPDATE 2)
- Evaluation of patterns’ performance among different projects (cross case analysis) – The majority of the patterns have been confirmed in the (20) cases studied: almost 60% of them confirm the theoretical model – A portion of the patterns (18%, from 58% to 76%) represent projects till in progress and it is foreseen that they will work in near future; this evolving scenario underlines a still unclear understanding of the dynamics that drive a smart metering project and indicates the needs to identify guidelines that should be followed to improve their performance.



1.2.4 Final Recommendations

The results of the projects' analyses are the main input for the delivery of the final Recommendations, which incorporate

- The results of the cross-topic analysis and lessons learned for the 20 projects (see D3.3 for more information)
- The main conclusions from the cost benefit analysis performed in deliverable D3.6
- The input, experience from the different smart metering projects, already completed or in progress, through a surveying process. In most of cases the information was confirmed twice through the cross topic and cost benefit analyses. A summary table is also added at the end of the document, indicating the actors interested in each of the recommendations presented.



1.2.4.1 Final list of recommendations

Conclusions from the cross topic analysis

- Thanks to the “obligation” of implementing the smart metering technology in the countries, a set of minimum functionalities are achieved, hence, government mandate is the main driving factor in the requirements fulfilment (**recommendation #1**)
- In most of the cases, there are no relevant initiatives from the national regulatory authority (NRA) or the government to educate or involve the customers in the smart metering project (**recommendation #2**)

- There should be an appropriate mechanism in place to give detailed and frequent information to the final customer, in order to ensure energy efficiency and savings (**recommendation #3**)
- Opt-out activation has negative consequences. As the opt-out option increases, the expected savings from smart metering deployments decrease. In addition, benefits associated with reliability and outage response are compromised. In order to reduce the desire for the opt-out option, the utilities should, with the support of the NRA, consider taking initiatives to addressing the opt-out implications by educating, via multiple channels, the consumer on all the steps of the smart metering implementations and its features (for example stressing how the grid is secured, transmissions are encrypted, the people handling the data is properly trained), thus lessening the misconceptions and creating a more trustful relationship (**recommendation #4**)
- For the data communication most projects have decided to encrypt and authenticate the communications with standard algorithms, in order to ensure a high level of security. Nonetheless, in a few cases, the DSOs were not able to achieve high levels of data security in the first phase of their project: the chosen technology did not support encrypted data communication, or did not prove to work properly. Appropriate encryption and authentication mechanisms should be a priority from the starting point for all projects to guarantee data security (**recommendation #5**)
- In many projects, NRAs do not consider all costs of the smart metering deployments. Moreover, benefits of smart metering are beyond the bound of DSOs, why NRAs could consider a more fair distribution of costs among all the players in the energy market (retailers, TSOs, ESCOs, generators and customers) to ensure the DSO's business plan (**recommendation #6**)
- NRAs and Governments should provide stable and clear regulatory/legal frameworks in order to lay the basis for a cost-efficient roll-out (**recommendation #7**)
- For many projects, no public funds are addressed to smart metering development, making it more difficult to get acceptable results. Higher public financial availability would also allow to develop advanced technology, thus increasing the service level for the customers (**recommendation #8**)
- The involvement of a high number of, and both residential and industrial, customers in a smart metering project allows for better results, for the DSO, the customers and worldwide benefits: i.e. the wide diffusion of smart equipment will increase the possibility for efficient energy use and positive impact on the climate. EU policy makers could promote the involvement of a larger number of customers in the smart metering projects, enabling an increase of the benefits for the whole society (**recommendation #9**)
- The benefits for the DSO are usually low during the pilot phase and the first stage of the roll-out projects, and for this reason many patterns result are unconfirmed; a lack of adequate return on investment or the use of very few functionalities due to immaturity are

often the reasons behind it. The NRA should take into consideration that some benefits will only be available when a massive deployment is done, or even later after the complete roll-out (**recommendation #10**).

Conclusions from analysis of Viable Business Models

- According to the results of the model designed, an additional income is needed to cover the project cost per customer for pilot and roll-out projects, which means that from a DSO perspective the smart metering projects generally are not self-financed by the savings obtained (**recommendation #11**)
- The sensitivity analysis shows that the main influencing variables on the viability of the project are, in order of importance:
 - Project cost per customer
 - WACC
 - Meter average life
 - The savings and benefits per customer
 - The number of years of roll-out
 - The percentage of OPEX from the total project budget.

In the majority of the projects, the project cost is the most impacting variable on the additional income. The relation between the variables is positive, which means that an increase in the project cost brings an increase in the additional income needed to make the project economically feasible.

The next most sensitive variable is the WACC. The relation between the variables is also positive which means that an increase in the WACC brings an increase in the additional income needed to make the project economically feasible.

Meter average life, savings and extra income per customer and percentage of OPEX from the total project budget have a negative relation with the extra income needed to make the project economically feasible, which means that an increase of these three variables brings a decrease in the extra income needed.

On the other hand, the number of years of roll-out has a positive relation with the additional income needed to make the project economically feasible (**recommendation #12**)

- After the different analysis performed, it also seems that the project scale does not influence the project cost per meter in large roll-out projects, once the amount of devices installed is over a certain threshold, but does influence the savings and benefits obtained. However, in the case of pilot projects, the analysed information allows establishing a

direct link between the project scale and the project cost per customer (**recommendation #13**)

- The analysed information does not allow establishing a direct link between the project cost per customer and the number of functionalities in the roll-out projects. On the contrary, the analysed information allows establishing a direct link between the savings per customer and the number of functionalities, so the projects that accomplish more functionalities are the ones with higher savings per customer in the roll-out projects (**recommendation #14**)
- In pilot projects, economies of scale are observed so that the analysed information allows establishing a direct link between the project scale and the project cost per customer (**recommendation #15**)
- The main benefits are, in order of importance (**recommendation #16**):
 - Reduction of network losses, including technical and commercial losses
 - Reduction of meter-readings cost
 - Reduction in operational and maintenance costs.
- After comparing the results obtained from the roll-out and the pilot projects, the analysis shows coherent results: the additional income needed is higher in pilots projects; as the former projects generally have a higher cost per customer and the potential savings are usually under estimated (**recommendation #17**)
- In addition, many other parameters affect the viability and results of the projects such as (**recommendation #18**):
 - Initial conditions in the area where the project is deployed
 - Local labour costs for the specific area under analysis
 - Geographical configurations; i.e.: dispersion of the supply points
 - Advanced features beyond the minimum set of functionalities
 - Global scenarios, discount rates and assessed periods considered.

Conclusions from surveying process

Subchapter **¡Error! No se encuentra el origen de la referencia.** considers the knowledge from the different utilities that participate in the Meter-ON project, which have provided information based on the experience they got from their complete or ongoing smart metering projects, through a surveying process. Most of the information provided was confirmed twice through the cross topic analysis and the viable business model. In the present sub clause, the twice confirmed information will be marked with an “√” symbol.

Recommendations have been separated in the five domains described below:

Incentives, cost distribution, market model and regulation

- Benefits of smart metering are beyond the boundaries of DSOs. NRAs should consider a fair distribution of costs among all agents of the energy market (retailers, TSOs, DSOs, ESCOs, generators, customers) to achieve a balance between the inclusion of stakeholders' needs and ensuring the DSO's business plan (**recommendation #19**) ✓
- The NRA should take into consideration that some benefits will be available at the time of the rollout, but others will appear later. In order to make the most of smart metering systems, NRAs must standardise the procedures and allow new functionalities (**recommendation #20**) ✓
- It is necessary to establish regulatory incentives to promote the installation and operation of solutions to manage and control the grid in order to support further smart grid extensions. Smart metering technology and the development of smart grids will modernise the electrical system to be stronger, smarter and more efficient. It is the gateway to increased energy efficiency and integrated renewable energy sources, while supporting a new generation of intelligent appliances and plug-in electric vehicles that customers will benefit from (**recommendation #21**) ✓
- The NRA should take into consideration that viable business models, in some cases, need a longer timeframe for the return of the investment (15 to 20 years). Once a mass roll-out of smart metering has started, regulatory stability must be assured with regards to functionalities, market model, roles and responsibilities (**recommendation #22**) ✓
- A stable and predictable regulatory environment for networks is the foundation of cost-efficient investments. A faulty and changing energy policy has a very negative impact on the economy as a whole, governments should focus on defining a clear energy policy (**recommendation #23**) ✓
- The cost benefit analysis (CBA) needs to take into consideration the regulatory framework in place, the involved actors, source of funding, financial and economic ratios, macroeconomics variables and it needs to clearly define the functionalities of the smart metering infrastructure. A project is admissible if the present value is positive, the discount rate can lead to different conclusions about the project's opportunity; as DSOs of different countries are involved, cross comparison needs particular attention in the fields of forward-looking economic assessment and risk management (**recommendation #24**) ✓
- More detailed guidelines should be given to perform a CBA, in order to harmonise the framework conditions and make the comparison among different results easier. Especially the assumptions that are made as a starting point for a CBA should be harmonised. For example, the expected individual and societal benefits of potential energy saving should

be coordinated. Furthermore, when estimating costs and benefits of smart metering, and when developing the necessary standard for accomplishing those benefits, the potential application and benefits in utility markets other than electricity must be considered, for example the water or gas utility market. Efforts should be done in order to let the private sector projects evaluation be comparable with projects in partnership as well as public sector ones. Besides consistently with the EC recommendation (2012/148/EU), detailed formulas for quantification of benefits are desirable (**recommendation #25**) ✓

- NRAs should require the DSOs to implement at least those functionalities that contribute to the positive outcome of the CBA (**recommendation #26**) ✓
- Market mechanisms (tariffs and prices schemes, incentives, etc.) need to be in place in order to make use of the functionalities provided by smart metering, thereby providing the means for energy savings and load shifting (**recommendation #27**)
- NRAs should establish the framework in which the access to and benefits from additional functionalities should be fairly distributed amongst customers, suppliers and grid operators. Suppliers and grid operators can have conflicting interests. Suppliers e.g. could on a given moment want to stimulate higher demand for purposes of frequency balancing or load shifting within their control area, while at the same time the grid operator could want to reduce the demand locally to maintain voltage quality at a given grid cable. Demand side management initiated by the DSO is an alternative for ensuring the quality of service (providing voltage control or optimising the network investment) compared to investing in reinforced grid infrastructure to obtain the same result (**recommendation #28**).

Data flows, security and privacy issues

- When defining the required level of data and information security, the corresponding investments must be taken into account, provided that the maximum level of security quickly evolves over time. Reasonable security levels are feasible with the technologies currently being rolled-out. There is a strong relationship between improvements of the level of data security and the overall costs (**recommendation #29**) ✓
- There is a need for a common European framework which sets the guidelines for privacy and data protection issues. This will enable common specifications for smart meters, regarding data flows and data security. This will enable the establishment of technical standards for smart meters, which will lower the overall roll-out price due to economies of scale for meter manufacturing.

To deal with this issue, the EC has presented a proposal for a directive on the 7th of February, 2013, CONCERNING MEASURES TO ENSURE A HIGH COMMON LEVEL OF NETWORK AND INFORMATION SECURITY ACROSS THE UNION: "The aim of the proposed Directive is to ensure a high common level of network

and information security (NIS). This means improving the security of the Internet and the private networks and information systems underpinning the functioning of our societies and economies. This will be achieved by requiring the MS to increase their preparedness and improve their cooperation with each other, and by requiring operators of critical infrastructures, such as energy, transport, and key providers of information society services (e-commerce platforms, social networks, etc.), as well as public administrations to adopt appropriate steps to manage security risks and report serious incidents to the national competent authorities” **(recommendation #30)** ✓

- The costs of implementing opt-out options are significant and could affect all consumers. As the number of opt-out increases, the expected savings from smart meter deployments decreases, possibly affecting all bill payers. In addition to the economic impact, benefits of smart metering associated with reliability and outage response are also compromised with opt-out participation. In order to reduce the desire for the opt-out option the utilities should, with the support of the NRA, consider taking initiatives in addressing the opt-out implications by educating the consumer, via multiple channels, on all the steps of the smart metering implementations and its features (for example stressing how the grid is secured, transmissions are encrypted, people handling the data is properly trained) thus lessening the misconceptions and creating a more trustful relationship.

However, the DSO should be enabled to make the use of a smart metering mandatory in specific cases; at least for grid users with specific characteristics, such as grid users with own generation. In the same way, mandatory smart metering should be in place whenever the DSO needs data from smart meters in order to perform its tasks in a cost efficient manner, e.g. to monitor voltage quality and prevent grid congestion. The DSO performs these tasks both by adequately investing in reinforced grid infrastructure based on a full knowledge of the grid loading (which requires smart meter data over longer periods), as by enhancing customer involvement to provide ancillary services such as demand side response in order to prevent congestion **(recommendation #31)** ✓

- Information flows from an operator of AMI to other agents in the energy market, especially for value-added services and functionalities, need to be defined and corresponding standards should be established **(recommendation #32)**
- The right timing when requiring the provision of additional information from the smart meters to other market players is important, in order to avoid discrimination among suppliers and customers (e.g. customers with early provision of smart meters versus customers at the end of the roll-out program) **(recommendation #33)**
- Ensure consistent regulation, compatible with data protection and privacy laws (it is necessary to strike the right balance between the need to protect the data of the

customer and the need to provide the minimum functionalities) (**recommendation #34**).

Dissemination and customer involvement

- Ensure support from the authorities regarding dissemination and customer communication activities, in order to create awareness among customers and other stakeholders involved. At least the following aspects should be covered (**recommendation #35**) ✓:
 - Role of customers
 - Roll-out process
 - General benefits of smart metering
 - Particular benefits for the customers.
- Leverage on smart metering roll-outs to educate customers regarding energy in general, the possibilities of energy efficiency and savings in the long term (the drawback effect to be included in calculations and strategies), the positive impact on the environment and the evolution towards smart grids enabled by the smart meter. The NRA could commission studies related to different types of consumers and analyse where energy can be saved in their households (**recommendation #36**) ✓

Standardisation activities

- Existing technologies comply with EC requirements. No further regulation on the specificities of technologies is needed. However, an appropriate market, economic model and an adequate remuneration should be assured (**recommendation #37**) ✓
- Standards for future services and installations (EV infrastructures, micro-generation) need to assure compatibility with existing and on-going smart metering roll-outs (**recommendation #38**)
- A need of harmonised standards to protect CENELEC A-band PLC communication technologies. This affects both smart metering roll-outs and future smart grids applications. EC should issue a new mandate to the ESOs to solve this issue (**recommendation #39**)

- A need to standardise interfaces and information exchange at DSO boundaries (between DSO and supplier, between DSO and end customer, etc.) for information from smart meters (**recommendation #40**)

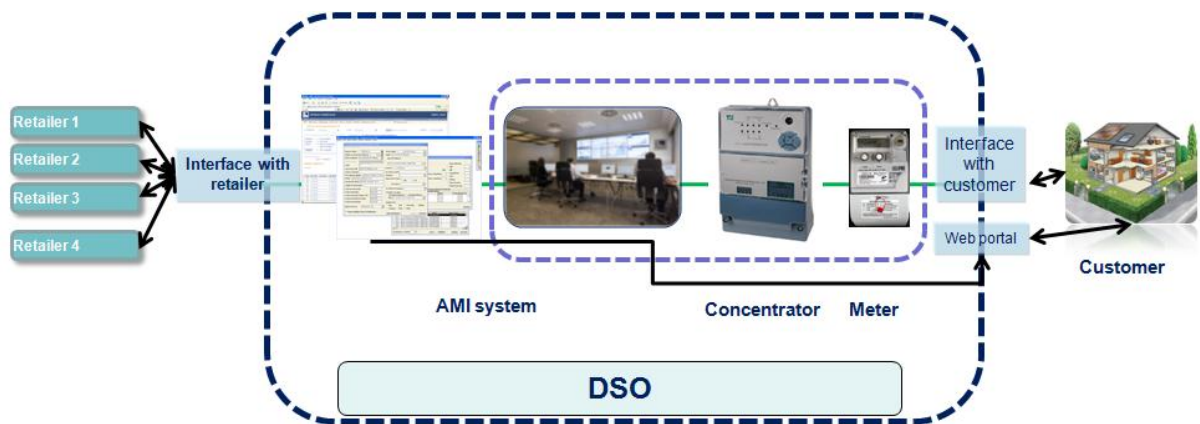


Figure 1 – DSO boundaries

1.2.5 Interested stakeholders

The following table 1 indicates actors interested in each of the recommendations presented in the previous subchapters. The stakeholders taken into consideration are:

- EU policy makers
- NRA
- DSO)
- Technology Providers
- Customer Associations.

The stakeholders that show more interest are, in order of relevance: NRA, DSO and EU policy makers:

| RECOMMENDATION # | | STAKEHOLDERS | | | | | |
|-------------------------------|----|------------------|-----|------------|-----|-----------------|-----------------------|
| | | EU POLICY MAKERS | NRA | GOVERNMENT | DSO | TECH. PROVIDERS | CUSTOMER ASSOCIATIONS |
| Cross topic analysis results | 1 | X | X | X | | | |
| | 2 | X | X | X | | | |
| | 3 | X | X | | | | X |
| | 4 | X | X | | X | | X |
| | 5 | X | X | | X | X | X |
| | 6 | | X | | X | | |
| | 7 | | X | X | X | | |
| | 8 | X | X | X | X | | X |
| | 9 | X | X | X | X | | X |
| | 10 | | X | | X | | |
| Viable Business Model results | 11 | | X | | X | | |
| | 12 | | X | | X | | |
| | 13 | | X | | X | | |
| | 14 | | X | | X | | |
| | 15 | | X | | X | | |
| | 16 | | | | X | | |

| | | STAKEHOLDERS | | | | | |
|---|--|------------------|-----|------------|-----|-----------------|-----------------------|
| RECOMMENDATION # | | EU POLICY MAKERS | NRA | GOVERNMENT | DSO | TECH. PROVIDERS | CUSTOMER ASSOCIATIONS |
| | 17 | | X | | X | | |
| | 18 | X | X | | X | | |
| Recommendations Incentives, cost distribution, market model and regulation | 19 | | X | | X | | |
| | 20 | | X | | X | | |
| | 21 | | X | | X | | |
| | 22 | | X | | | | |
| | 23 | X | X | X | X | | |
| | 24 | X | X | | | | |
| | 25 | X | X | | | | |
| | 26 | X | X | | X | | |
| | 27 | X | X | | | | |
| | 28 | | X | | X | | X |
| | Recommendations Data flows, security and privacy issues | 29 | X | X | | X | |
| 30 | | X | | | X | | X |
| 31 | | X | X | | X | | X |
| 32 | | X | X | | | | X |
| 33 | | X | X | | | | X |
| 34 | | X | X | | | | X |
| Recommendation Dissemination and customer involvement | 35 | | X | X | | | X |
| | 36 | | X | X | | | X |

| RECOMMENDATION # | | STAKEHOLDERS | | | | | |
|---|----|------------------|-----|------------|-----|-----------------|-----------------------|
| | | EU POLICY MAKERS | NRA | GOVERNMENT | DSO | TECH. PROVIDERS | CUSTOMER ASSOCIATIONS |
| Recommendation Standardisation activities | 37 | X | X | | X | | |
| | 38 | X | X | | X | X | |
| | 39 | X | X | | X | | |
| | 40 | X | X | | X | | |

Table 1: Interested stakeholders

2 USE AND DISSEMINATION OF FOREGROUND

2.1 Socio-economic impact achieved by Meter-ON

The aim of Meter-ON has been to prepare and foster large-scale deployment of smart metering infrastructures, motivating stakeholders and policymakers to tackle the actual technical and non-technical barriers by providing them with information on successful stories, lessons learned and framework conditions that enabled the most important smart metering experiences in Europe.

Starting Meter-ON, the European smart metering scenario was rapidly evolving due to the regulatory changes in this field in Europe: according to the Third Energy Package MS should ensure the implementation of advanced metering systems to assist the active participation of consumers in the electricity market. The EC highlighted in the same document that at least 80% of European consumers should be equipped with smart meters by 2020. To comply with this target European utilities (both large and small) were (and still are) accelerating the planning of smart metering roll-outs as the 2020 deadline is approaching and massive smart metering deployments are complex projects requiring huge commitment of resources.

Within this context, it is clear that the **European Energy community (and especially the stakeholders responsible for the future smart metering roll outs) would considerably benefit from the exchange and sharing of the most relevant information and experiences derived from the smart metering projects carried out so far. The availability of this kind of information would facilitate and optimise the future smart metering deployments.** And this is precisely the main expected impact that Meter-ON has achieved:

Accelerating the learning curve for smart metering technologies and infrastructures

The acceleration of the learning curve for the adoption of any technology is always facilitated by adequately sharing, exchanging and enriching the available knowledge with the previous experiences. If the most representative experiences in the area are systematically gathered and exchanged, adequately analysed and compared, and effectively offered to the interested stakeholders, most probably the learning curve for the adoption of the technology will be accelerated and optimised. And this has been precisely the Meter-ON approach: the project constituted an initiative to coordinate and foster the exchange and interaction among the most representative projects carried out within the smart metering field in Europe, organised according to a methodology that ensured an effective work and usable results.

Both technical and non-technical issues have been carefully taken into account. A purely technical analysis (and the related lessons learned) would not provide enough decision elements to policymakers, and this analysis needed to be completed with other elements that concurrently contribute to the success of this kind of projects (starting from the economic

analysis of the technology to the regulatory and legislative framework allowing or not given applications). Hence, one of the most relevant impacts of Meter-ON was providing to smart metering stakeholders a bird-eye overview of how all these elements (beyond the purely technological analysis) are related and influence each other. This analysis provides many more decision elements to smart-metering stakeholders and policy-makers, resulting in greatest impact on the European smart metering deployment.

The consortium firmly believes that Meter-ON undoubtedly contributed to preparing, speeding up and optimising the adoption of smart metering technologies and infrastructures in Europe. The project work has materialised in concrete public deliverables and outputs, aimed to be a comprehensive guideline for any organisation involved (presently or in the future) in the deployment of smart metering solutions (along the whole smart metering value chain). These results will allow the interested stakeholders to benefit from the past experiences by speeding up the learning curve on smart metering solutions.

Establishing links between the European Smart metering stakeholders to ensure appropriate impact

Meter-ON carried out the necessary activities to establish links among the main smart metering stakeholders in Europe, which allowed to comprehensively collect and analyse the relevant information. A major difficulty for an initiative as Meter-ON was to have direct links with the organisations and people (or have been) involved in the most representative smart metering projects in Europe. And this was one of the Meter-ON's main strengths: the coordination of EDSO as coordinator of Meter-ON project, and the support of the rest of the partners provided Meter-ON the possibility to mobilise the main European stakeholders involved in smart metering activities, including also the involvement of the main European policy-makers: European DSOs, European smart metering industry representatives, European regulators' representatives, European policy makers.

The Meter-ON consortium believes that one of the long-term impacts of the project will be having contributed (together with other initiatives and stakeholders) to pave the way for a higher consistency in the global European strategy of deployment of smart metering systems.

Assuring project impact through dissemination activities

The impact of Meter-ON project greatly depends on the communication and dissemination activities and processes to be carried out. This is due to the fact that the project's main objective is providing the stakeholders of the field with an open information platform and clear recommendations on how to tackle the technical barriers and the regulatory obstacles hindering the uptake of smart metering technologies and solutions in Europe.

For this reason, in Meter-ON, dissemination was considered of capital importance to achieve the desired project impact. A whole Work Package was dedicated to dissemination and

feedback activities throughout the whole duration of the project, to ensure the continuous involvement of the smart metering community inside and outside of the consortium. Dissemination tasks were addressed right from the very beginning of the project directed towards different groups of target stakeholders:

- **European utilities responsible for the smart metering deployments** (Both EDSO and non-EDSO members)
- **European and national regulators** responsible for the regulation related to smart metering systems
- **Other political stakeholders** which have influence in the European regulation: they will be provided with the project results through the European Commission representatives and the Task force smart Grids
- **European smart metering industry:** Responsible for the manufacture of the smart metering products. It will be provided with the project results through ESMIG and European smart metering technology alliances (Prime, Meters and More, G3).
- **Other organisations** interested in the smart metering topic such as consumer associations.

The Meter-ON ambitious and vast dissemination goal was possible due to the relevance of the different members of its Consortium and the pro-active set of dissemination activities carried out. Each partner used its own dissemination networks to promote the project and ensure maximum impact on a regional, national and European level and, most important, there was a planned of comprehensive set of dissemination activities carried out by WP4, including:

- Dedicated project website (www.meter-on.eu)
- Active participation in the main European events related to smart metering
- Meetings and interaction with European institutions, associations, technology platforms and standardisation bodies
- Publication of articles, newsletters addressed to specific groups of stakeholders
- Organisation of dedicated conferences.

(the complete set of activities is summarised in chapter 2.2)

The Meter-ON consortium considers that the main project objectives in terms of dissemination have been achieved and that Mete-ON has reached a significant impact. To assess this, the next indicators have been considered:

Quantitative data on the total number of stakeholders reached through the Meter-ON activities:

- Number of stakeholders effectively involved in the data collection: 23 projects from 15 countries

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- Number of stakeholders effectively involved in the AB: 11
- Number of stakeholders reached through the project participation to events (presentations of the project made at conferences, workshops): +3.100
- Number of visitors to the Meter-ON website: +17.100 visits from +8.400 visitors
- Number of Meter-ON deliverables downloads: + 12.200 downloads
- Meter-ON contact requests: (includes contacts through the meter ON generic email and requests for subscriptions to the Meter-ON newsletter): +150

2.2 SECTION A: DISSEMINATION MEASURES

During the project execution, Meter-ON has made use of a variety of means to achieve the necessary visibility and impact at European level. The tools used have ranged from the project website to workshops, conferences, articles, newsletters, etc. These activities have already been adequately described in the periodic reports issued by the project.

Concerning the **dissemination measures after the project end**, the project has planned to make use of its best dissemination tool; the Meter-ON website (www.meter-on.eu), which is open to any interested stakeholder and where the Meter On results are offered to the metering community. After the project end, due to the importance that the project coordination team gives to the project results, the website will remain open and available during two years following the project end (until July 2016). The maintenance costs will be assumed by the project coordinator.

Additionally, although at the moment of issuing this report the project is already finished, there are three additional dissemination activities that the project will carry out. Despite the fact that they will not be covered by the project funding, the consortium decided to maintain them due to being considered important from a dissemination and impact achievement point of view. These activities are the next:

- **Publication of the 4th Meter-ON project newsletter:** Aimed at informing of the project closure and the publication of final results, this newsletter will be published at the end of September
- **Publication of an article in Metering international:** There is an agreement with the editors to have an article published in the next issue of this important publication. The article is currently under development and it will deal with the presentation of the final project recommendations
- **Presentation of Meter ON results at the European Utility Week 2014:** There will be a last participation of the project representatives to an important event such as this one.

The next tables provide the details of the main dissemination activities carried out by the Meter-ON consortium as well as the main publications related to the project:

Dissemination results

Section A2: Main list of dissemination activities

| TEMPLATE A2: LIST OF DISSEMINATION ACTIVITIES | | | | | | | | |
|---|---------------------------------|-------------|--|---------------|-----------|------------------|---|---------------------|
| NO. | Type of activities ³ | Main leader | Title | Date/Period | Place | Size of audience | Type of audience | Countries addressed |
| 1 | Workshop | RSE | CIGRE Session assemble -Meeting of the WG C6-21 | 26-31/08/2012 | Paris | 150-200 | Industry. People from utilities (transmission and distribution) | Europe |
| 2 | Conference | CEIT | Klimamobility | 20-22/09/2012 | Bolzano | 50 | Electrical engineers, researchers, industry representatives | Europe |
| 3 | Workshop | EDSO | The important role of DSOs in Smart Grids: Technical and regulatory issues and how R&D can help define future innovative solutions | 21/09/2012 | Frankfurt | | Industry. People from utilities (transmission and distribution) Regulators and policy makers | Europe |

³ A drop down list allows choosing the dissemination activity: publications, conferences, workshops, web, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters, Other.

| | | | | | | | | |
|---|------------|--------|---|---------------|-----------|-----|---|--------|
| 4 | Conference | EDSO | 2nd annual Telecoms for Smart Grids conference | 24-25/09/2012 | London | | Industry. People from utilities (transmission and distribution) and from telco companies and sector. | Europe |
| 5 | Conference | ENDESA | Metering & Billing/CRM Europe + Smart Homes 2012 + Smart Grids Europe | 9-11/10/2012 | Amsterdam | | Electrical sector professionals, smart meters and components manufacturers, multinational companies in the telecommunication sectors. | Europe |
| 6 | Workshop | ENDESA | Eurelectric- ESMIG workshop: Are the European Smart Meter roll-outs on Track? and What is the Approach taken to handle Privacy and Security? | 06/12/2012 | Brussels | 40 | Electrical sector professionals, smart meters and components manufacturers, multinational companies in the telecommunication sectors. | Europe |
| 7 | Workshop | CEIT | Green ICT for sustainable consumption | 17/01/2013 | Vienna | 40 | Researchers and engineers | Europe |
| 8 | Conference | ENDESA | Smart Metering UK and Europe 2013 | 24-25/1/2013 | UK | 150 | Electrical sector professionals, smart meters and components manufacturers, multinational companies in the telecommunication sectors. | Europe |
| 9 | Workshop | ZABALA | Innogrid 2020+ | 20-21/2/2013 | Brussels | 150 | Industry representatives, researchers and policy makers | Europe |

| | | | | | | | | |
|----|------------|---------------------------|--|---------------|-----------|-----|--|--------------------------|
| 10 | Conference | EDSO | EDSO for Smart Grids and Global Smart Grid Federation joint conference | 21-22/3/2013 | Brussels | | | Europe |
| 11 | Conference | EDSO | CIGRE symposia 2013 "Policy, Incentives and Regulation" | 24/04/2013 | Lisbon | | Industry , policy makers. | Europe |
| 12 | Conference | ENEL DISTRIBUTIE MUNTENIA | Romanian Conference on Smart Grids | 09/05/2013 | Lisbon | 100 | High level policy makers , politicians , industry leaders from universities or from other DSO's, representants of various solution providers for Power & ICT | Romania |
| 13 | Conference | ENEL DISTRIBUTIE MUNTENIA | SMARTUTILITIES Central & Eastern Europe 2013 | 14-15/05/2013 | Prague | 200 | Professionals of Power/ICT/Telecom | Central & Eastern Europe |
| 14 | Conference | ENEL DISTRIBUTIE MUNTENIA | ACER 2nd Annual Conference 'Energy Markets: 2014 and Beyond?' | 17/05/2013 | Ljubljana | 60 | EU level officials, researchers | Europe |
| 15 | Conference | CEIT | CORP conference: 18th International Conference on Urban Planning and Regional Development in the Information Society | 21-23/05/2013 | Rome | 50 | urban planners, architects, political representatives, engineers and researchers. Overall they are can be considered as consumers. During the 3 days conference we had | International |

| | | | | | | | | |
|----|---------------|---------------------------|---|---------------|-----------------|-----|---|--------|
| | | | | | | | <i>discussions with people that had no idea what SM is and also with people very involved in the topic.50</i> | |
| 16 | Conference | RSE - EDSO | CIREN 2013 | 10-13/06/2013 | Stocholm | 300 | <i>People and utilities working in distribution company and agencies.</i> | Europe |
| 17 | MeterON event | ZABALA | 1ST METER-ON WORKSHOP (PUBLIC CONSULTATION) - EUSEW 2013 | 26/06/2013 | Brussels | 150 | <i>Main energy stakeholders (industry, utilities, policy makers, associations, etc.)</i> | Europe |
| 18 | Conference | UFD | <i>Foro Tecnológico sobre La gestión Técnica del sistema bajo el ámbito de las redes inteligentes</i> | 22/10/2013 | Madrid | 100 | <i>DSO employees, and technological partners in R&D projects (universities and manufacturers)</i> | Spain |
| 19 | Conference | EDSO / ENDESA | <i>Metering, Billing/CRM Europe 2013 (European Utility Week)</i> | 15-17/10/2013 | Amsterdam | 500 | <i>Electrical sector professionals, smart meters and components manufacturers, multinational companies in the telecommunication sectors.</i> | Europe |
| 20 | Conference | RSE & EDSO | TELECONTROLLO | 6-7/11/2013 | Bologna (Italy) | 175 | <i>Utilities</i> | Europe |
| 21 | Conference | ENEL DISTRIBUTIE MUNTENIA | <i>"Contorizare Inteligenta". Romanian Smart Metering Conference.</i> | 14-16/11/2013 | Sibiu (Romania) | 100 | <i>Relevant people for Smart Meter / Smart grid from DSO's & TSO , representants of Romanian Regulator (ANRE) , technologies providers (ICT companies as HP - Siemens ,</i> | Europe |

| | | | | | | | | |
|----|----------------------------|---------------------------------|--|---------------|------------------|-----|---|--------|
| | | | | | | | <i>metering manufacturers as Echelon , AEM , Elster etc)</i> | |
| 22 | Conference | ENEL DISTRIBUTIE MUNTENIA | Smart Metering & Data Management Summit | 25-26/11/2013 | Berlin (Germany) | 50 | <i>Relevant (business or ICT managers) people for Smart Meter / Smart grid topic from DSO's & TSO / Sales & Trade companies</i> | Europe |
| 23 | Conference | CEIT | Smart Cities Week in Vienna | 27-29/11/2013 | Vienna | 100 | <i>experts in smart urban design, smart logistics, energy efficiency etc participated, accompanied by local politicians and policy-makers</i> | Europe |
| 24 | Presentation Networking | ENDESA | CEN-CENELEC-ETSI Smart Meters Coordination Group | 10/12/2013 | Brussels | 30 | <i>Electrical sector professionals, smart meters and components manufacturers, multinational companies in the telecommunication sectors.</i> | Europe |
| 25 | Conference | EDSO | Smart Metering UK & Europe Summit 2014 | 30-31/01/2014 | London | 50 | | Europe |
| 26 | Conference | ZABALA, EDSO | 3rd Annual InnoGrid2020+ | 25-26/03/2014 | Brussels | 100 | | Europe |
| 27 | Conference | ENEL | EEGI meeting | 20/05/2014 | Brussels | 30 | | Europe |
| 28 | Conference | ZABALA, EDSO | EUSEW 2014 - European Union Sustainable Energy Week 2014 | 23-27/06/2014 | Brussels | 100 | <i>European smart utility sector, policy makers, industry.</i> | Europe |

| | | | | | | | | |
|----|---|-----------|---|-----------------|---|----|--|--------|
| 29 | Workshop | ENERGYLAB | Energy Lab workshop | 10/07/2014 | Milan | | | Italy |
| 30 | Conference | EDSO | European Utility week 2014 | 04-06 Nov- 2014 | Amsterdam | | Companies in the Smart Energy Market, European smart utility sector | Europe |
| 31 | Workshop | EDSO | Meter-ON Advisory board Meeting | 27/06/2013 | Brussels | 20 | Meter-ON Consortium & Third Parties | Europe |
| 32 | Workshop | EDSO | Meter-ON Advisory board Meeting | 11/12/2013 | Brussels | 20 | Meter-ON Consortium & Third Parties | Europe |
| 33 | Workshop | EDSO | Meter-ON Advisory board Meeting | 04/06/2014 | Brussels | 20 | Meter-ON Consortium & Third Parties | Europe |
| 34 | Articles published in the popular press | ZABALA | Meter-ON project to steer development of AMI in Europe | 11/02/2013 | METERING.COM (INTERNET MAGAZINE) | | Scientific community (higher education, Research) - Industry - Policy makers | Europe |
| 35 | Articles published in the popular press | EDSO | EDSO for smart grid Meter-ON project: Paving the way for the roll-out of smart meters | 28/07/2012 | SMART ENERGY UNIVERSE (INTERNET MAGAZINE) | | Scientific community (higher education, Research) - Industry - Policy makers | Europe |
| 36 | Articles published in the popular press | ZABALA | 1st Meter-ON Conference: Smart Metering in Europe. Are We On Track? | 19/07/2013 | SMART ENERGY UNIVERSE (INTERNET MAGAZINE) | | Scientific community (higher education, Research) - Industry - Policy makers | Europe |

| | | | | | | | | |
|----|---|-----------|--|------------|--------------------------------------|-------|---|--------|
| 37 | Articles published in the popular press | RSE | PAN EUROPEAN NETWORKS: A necessary development | 19/07/2013 | PAN EUROPEAN NETWORKS | | Scientific community (higher education, Research) - Industry - Policy makers | Europe |
| 38 | Articles published in the popular press | ENERGYLAB | Contatori intelligenti per l'Europa. Il progetto Meter-On | 01/05/2013 | CITY LIFE MAGAZINE (Online Magazine) | 50000 | Scientific community (higher education, Research) - Industry | Italy |
| 39 | Articles published in the popular press | ZABALA | More investment needed for smart metering in Europe | 08/07/2013 | METERING.COM (INTERNET MAGAZINE) | | Scientific community (higher education, Research) - Industry - Policy makers | Europe |
| 40 | Articles published in the popular press | ZABALA | The roll out of smart meters in Europe – what we recommend | 10/03/2014 | METERING.COM (INTERNET MAGAZINE) | | Scientific community (higher education, Research) - Industry - Policy makers | Europe |
| 41 | Articles published in the popular press | EDSO | Meter-ON – steering the implementation of smart metering solutions in Europe | 01/03/2014 | SETIS MAGAZINE | | Scientific community (higher education, Research) - Industry - Policy makers | Europe |
| 42 | Articles published in the popular press | EDSO | A smart meter future | 19/07/2013 | PAN EUROPEAN NETWORKS | | Scientific community (higher education, Research) - Industry - Policy makers | Europe |
| 43 | Videos | ZABALA | Meter-ON participation to the EUSEW 2013: “Smart meter implementation in Europe. Are we on track?” | 27/06/2013 | video | | Scientific community (higher education, Research) - Industry - Civil society - Policy makers - Medias | Europe |

| | | | | | | | | |
|----|----------------|--------|---|------------|-------------------------|--|---|--------|
| 44 | Videos | ZABALA | Meter-ON participation to the EUSEW 2014: "Smart meter implementation in Europe. A year on" | 27/06/2014 | video | | Scientific community (higher education, Research) - Industry - Civil society - Policy makers - Medias | Europe |
| 45 | Press releases | EDSO | EDSO for smart grids launches the Meter-ON project | 19/07/2012 | Press Release | | Medias | Europe |
| 46 | Press releases | EDSO | Smart metering implementation in Europe: are we on track? | 27/06/2013 | Press Release | | Medias | Europe |
| 47 | Press releases | EDSO | Smart metering implementation in Europe: a year on | 27/06/2014 | Press Release | | Medias | Europe |
| 48 | Leaflet | EDSO | Meter-ON leaflet | 18/02/2013 | Dissemination materials | | Medias | Europe |
| 49 | Posters | ZABALA | Meter-ON Generic Poster for events | 18/02/2013 | Poster | | Scientific community (higher education, Research) - Industry - Policy makers | Europe |
| 50 | Posters | ZABALA | Meter-ON poster - Innogrid2020+ event | 18/02/2013 | Poster | | Scientific community (higher education, Research) - Industry - Policy makers | Europe |
| 51 | Posters | ZABALA | Meter-ON poster - 3rd Annual Conference. | 25/06/2014 | Poster | | Scientific community (higher education, Research) - Industry - | Europe |

| | | | | | | | | |
|----|-------------------|--------|----------------------------|-------------------|------------------------|--|--|--|
| | | | | | | | <i>Policy makers</i> | |
| 52 | <i>Newsletter</i> | ZABALA | <i>Newsletter Issue #1</i> | <i>01/06/2013</i> | <i>www.meter-on.eu</i> | | <i>Scientific community (higher education, Research) - Industry - Europe</i> <i>Policy makers</i> | |
| 53 | <i>Newsletter</i> | ZABALA | <i>Newsletter Issue #2</i> | <i>01/01/2014</i> | <i>www.meter-on.eu</i> | | <i>Scientific community (higher education, Research) - Industry - Europe</i> <i>Policy makers</i> | |
| 54 | <i>Newsletter</i> | ZABALA | <i>Newsletter Issue #3</i> | <i>01/06/2014</i> | <i>www.meter-on.eu</i> | | <i>Scientific community (higher education, Research) - Industry - Europe</i> <i>Policy makers</i> | |
| 55 | <i>Newsletter</i> | ZABALA | <i>Newsletter Issue #3</i> | <i>30/09/2014</i> | <i>www.meter-on.eu</i> | | <i>Scientific community (higher education, Research) - Industry - Europe</i> <i>Policy makers</i> | |

2.3 SECTION B: EXPLOITABLE FOREGROUND

Meter-ON is a Coordination and Support Action (CSA) and thus the project results are not products or services with a commercial exploitation path. The main results are recommendations and findings expressed in reports. For this reason, the exploitation activities in Meter-ON have been focused in facilitating the maximum possible use and exploitation of this information after the project end, by the different interested stakeholders. Taking these considerations into account, **the exploitable foreground of the project is in the form of general advancement of knowledge** and can be summarised in two types of documentation:

- **Official Meter-ON deliverables:** Those available in the project website. The main deliverables that can be considered the exploitable foreground of Meter-ON are:
 - D3.3 Results of cross-topic analysis and lessons learned (Lessons learned – Update 2)
 - D3.5 Final Recommendations to foster smart metering roll-outs
 - D3.6 Viable business models.
- Final set of Meter-ON documents: although project deliverables are made available through the website, the project is currently re-organising the main material available in a final collection of documents in a more user-friendly way. According to this, and based on deliverables D3.3, D3.5 and D3.6, a set of public project documents is being elaborated tailored on the needs of
 - The utilities and the smart metering industry
 - The political audience, the regulators and the public in general.

Each of these sets of documents has a specific dissemination strategy. Both will be made available through the website and additionally, the document targeting the utilities and the smart metering industry will follow a targeted marketing strategy to the EDSO and ESMIG members.

| Type of Exploitable Foreground ⁴ | Description of exploitable foreground | Confidential | Foreseen embargo date | Exploitable product(s) or measure(s) | Sector(s) of application ⁵ | Timetable, commercial or any other use | Patents or other IPR exploitation (licences) | Owner & Other Beneficiary(s) involved |
|---|---|--------------|-----------------------|--|---------------------------------------|--|--|---------------------------------------|
| General advancement of knowledge | Deliverable D3.3 Results of cross-topic analysis and lessons learned (Lessons learned – Update 2) | NO | - | Description of the lessons learned from the analysis of smart metering deployments | Electricity networks – smart metering | - | - | PUBLIC |
| General advancement of knowledge | Deliverable D3.5 Final Recommendations to foster smart metering roll-outs | NO | | Description of recommendations to foster smart metering roll-outs | Electricity networks – smart metering | - | - | PUBLIC |
| General advancement of knowledge | Deliverable “D3.6 Viable business models” | YES | | Description of viable business models in smart metering deployments | Electricity networks – smart metering | | | - |

⁴⁹ A drop down list allows choosing the type of foreground: General advancement of knowledge, Commercial exploitation of R&D results, Exploitation of R&D results via standards, exploitation of results through EU policies, exploitation of results through (social) innovation.

⁵ A drop down list allows choosing the type sector (NACE nomenclature) : http://ec.europa.eu/competition/mergers/cases/index/nace_all.html

| Type of Exploitable Foreground ⁴ | Description of exploitable foreground | Confidential | Foreseen embargo date | Exploitable product(s) or measure(s) | Sector(s) of application ⁵ | Timetable, commercial or any other use | Patents or other IPR exploitation (licences) | Owner & Other Beneficiary(s) involved |
|---|--|--------------|-----------------------|---|---------------------------------------|--|--|---------------------------------------|
| General advancement of knowledge | Final Meter ON summary for the utilities and the smart metering industry | NO | | Description of recommendations to foster smart metering roll-outs tailored for the indicated audience | Electricity networks – smart metering | | | PUBLIC |
| General advancement of knowledge | Final Meter-ON summary for the political audience, the regulators and the public in general for the second one | NO | | Description of recommendations to foster smart metering roll-outs tailored for the indicated audience | Electricity networks – smart metering | | | PUBLIC |

3 REPORT ON SOCIETAL IMPLICATIONS

(Answered in the online application).

4 Contact details

All the project deliverables (except for “D3.6 Viable Business Models”) are publicly available on the project website www.meteron.eu.

Contact persons:

| Name | Company | Role | Contact |
|------------------------|---------|----------------------|-------------------------|
| Mr. Per-Olof Granström | EDSO | Project Coordinator | pog@edsoforsmartgird.eu |
| Marco Baron | Enel | Project Manager | marco.baron2@enel.com |
| Aritz Goni | Zabala | Dissemination leader | AGoni@zabala.es |

Energy Theme; Grant Agreement No 308794

Title:
FINAL REPORT

Version: 1

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