



Publishing date: 19/05/2014

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**OPINION OF THE AGENCY FOR THE COOPERATION OF ENERGY
REGULATORS No 11/2014**

of 16 May 2014

**ON THE ENTSO-E IMPLEMENTATION PLAN 2015-2017 OF THE
RESEARCH AND DEVELOPMENT ROADMAP 2013-2022**

THE AGENCY FOR THE COOPERATION OF ENERGY REGULATORS,

HAVING REGARD to Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators¹, and, in particular, Articles 6(3)(b) and 17(3) thereof,

HAVING REGARD to Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003², and, in particular, Article 9(2) thereof,

HAVING REGARD to the favourable opinion of the Board of Regulators of 8 May 2014, delivered pursuant to Article 15(1) of Regulation (EC) No 713/2009,

WHEREAS:

- (1) On 4 March 2014 the European Network of Transmission System Operators for Electricity ('ENTSO-E') published its Research and Development Implementation Plan 2015-2017 ('R&D Implementation Plan 2015-17')³. On 25 March 2014 ENTSO-E submitted the R&D Implementation Plan 2015-17 to the Agency for its opinion.
- (2) The R&D Implementation Plan 2015-17 is a research plan and, as such, referred to in point (a) of Article 8(3) of Regulation (EC) No 714/2009, for which the Agency has to provide an opinion to ENTSO-E pursuant to Article 6(3)(b) of Regulation (EC) No 713/2009 and the first subparagraph of Article 9(2) of Regulation (EC) No 714/2009.

¹ OJ L 211, 14.8.2009, p.1

² OJ L 211, 14.8.2009, p.15

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https://www.entsoe.eu/fileadmin/user_upload/library/publications/entsoe/R_D_Reports/140304_ENTSO-E_Implementation_Plan_2015-2017.pdf

- (3) The R&D Implementation Plan 2015-17 is based on ENTSO-E's R&D Roadmap 2013-2022 which was published in December 2012⁴ and on which the Agency issued its Opinion No. 11/2013⁵ on 28 May 2013.
- (4) On 31 January 2014 ENTSO-E released the 2013 Monitoring Report of the R&D Roadmap 2013-2022⁶ ('2013 Monitoring Report'). This type of monitoring report is issued on a yearly basis by ENTSO-E in order to assess the research and development work performed in various capacities by ENTSO-E and its member transmission system operators ('TSOs') within the overarching R&D Roadmap 2013-2022. It provides an outline of such R&D activities, indicating the extent to which each individual activity has progressed, and a basis for a gap analysis with regard to further prioritisation of specific R&D subject areas in the R&D implementation plans. In preparing the present Opinion the Agency has taken due account of the 2013 Monitoring Report,

HAS ADOPTED THIS OPINION:

1. General remarks

ENTSO-E, in the framework of its R&D roadmap, issues on a yearly basis an R&D implementation plan in order to specify research priorities for a horizon of three years. The R&D implementation plan serves as a background for developing calls for R&D project proposals by the European Commission⁷. The R&D Implementation Plan 2015-17 specifies research priorities for the horizon 2015-2017.

The Agency deems that the R&D Implementation Plan 2015-17 meets the objectives of non-discrimination, effective competition and the efficient and secure functioning of the internal market in electricity. More specifically, the non-discrimination objective is addressed adequately by the fact that the R&D Implementation Plan 2015-17 was publicly consulted before its finalisation⁸, by the assignment of a significant part of R&D activity to the research community through open calls for R&D project proposals and, finally, by the publicity and dissemination of the results of R&D projects⁹. The objectives of effective competition and efficient and secure functioning

⁴ ENTSO-E, Research & Development Roadmap 2013-2022.

https://www.entsoe.eu/fileadmin/user_upload/library/news/R_D_release/121217_ENTSO-E_R_D_Roadmap_2013_2022.pdf

⁵ Opinion of the Agency for the Cooperation of Energy Regulators of 28 May 2013 on the ENTSO-E Research and Development Roadmap 2013-2022 and the Implementation Plan 2014-2016 of the Research and Development Roadmap 2013-2022

http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Opinions/Opinions/ACER%20Opinion%2011-2013.pdf

⁶ ENTSO-E, "Monitoring report 2013 - Research & Development Roadmap 2013-2022"

https://www.entsoe.eu/fileadmin/user_upload/library/publications/entsoe/entsoe_mon_rep_2013_web.pdf

⁷ R&D Implementation Plan 2015-17, p.5

⁸ See also the section of the present Opinion on *The involvement of research parties and stakeholders*

⁹ See also the section of the present Opinion on *Monitoring and Evaluation of R&D fulfillment*

of the internal market are covered through the inclusion of research areas (clusters) for electricity markets design as well as for power technologies, network operation and network planning¹⁰ in the R&D Roadmap 2013-2022 which is the basis of the R&D Implementation Plan 2015-17.

However, as already mentioned in its Opinion No. 11/2013 on ENTSO-E's R&D Roadmap 2013-2022, the Agency emphasises the importance of increasing the R&D activities supporting TSOs in performing their short-term duties in areas such as the preparation of network codes, network planning and the assessment of transmission and generation adequacy, and the importance for ENTSO-E to coordinate this work.

2. Specific remarks

2.1 On the methodology for the development of the R&D Implementation Plan 2015-17

The methodology for defining and updating the R&D priorities is provided in the R&D Implementation Plan 2015-17¹¹. The priorities and suggested R&D topics in the R&D Implementation Plan 2015-17 have been determined through a mix of top-down and bottom-up approaches on the basis of:

- The R&D Roadmap 2013–2022, which serves as a reference;
- Monitoring past and on-going projects and performing a gap analysis with respect to the R&D Roadmap 2013–2022 targets;
- The anticipated needs and resource limitations of TSOs;
- Input by external stakeholders (distribution system operators ('DSOs'), manufacturers, the Agency).

A further criterion introduced in the R&D Implementation Plan 2015-17 is that “concepts are initially identified that can potentially provide solutions in three to four years”¹². Such concepts evolve until they become specific R&D topics in subsequent implementation plans.

In its Opinion No. 11/2013, the Agency stressed the need for the strong involvement of TSOs in identifying the needs and priorities in the R&D roadmap and R&D implementation plan and noted that the justification for the selection of priorities made in the R&D Implementation Plan 2014-2016 ('R&D Implementation Plan 2014-16')¹³ was not immediately identifiable.

The Agency welcomes the introduction of a section on priority identification and acknowledges the fact that several stakeholders and TSOs were consulted in defining

¹⁰ R&D Roadmap 2013-2022 report, Appendix A, pp.38-71

¹¹ R&D Implementation Plan 2015-17, pp.4-5 and Fig.2

¹² R&D Implementation Plan 2015-17, p.4

¹³ ENTSO-E, “Implementation Plan 2014 -2016 / Research & Development Roadmap 2013-2022”.

https://www.entsoe.eu/fileadmin/user_upload/library/publications/entsoe/121220_ENTSO-E_Implementation_Plan_2014-2016.pdf

the priority topics of the R&D Implementation Plan 2015-17. Concrete information on which suggestions were provided by stakeholders and how they were taken into account by ENTSO-E would further promote transparency.

Further, the Agency emphasises the need to provide a more specific description of the suggested direction of research and desired results within each research topic in the R&D implementation plan and, where possible, precise and quantitative targets. In this respect, the Agency notes that the description of each research topic is reduced in comparison with the description provided in Appendix 3¹⁴ of R&D Implementation Plan 2014-16.

While acknowledging the ENTSO-E statement that “with 41 TSOs within ENTSO-E, it can be a challenge to find consensus on priorities for R&D projects and activities”¹⁵, the Agency calls on ENTSO-E to play the fundamental role of promoting consensus on R&D priorities, which is the intrinsic reason for having an ENTSO-E research plan.

Furthermore, the Agency acknowledges that, as suggested in its Opinion No. 11/2013, the functional objective(s) for each proposed R&D topic is(are) identified in the R&D implementation plan. The Agency suggests that ENTSO-E provides more information on priority R&D topics as follows:

- Indicate the part of a functional objective (as described in the R&D Roadmap) which is covered by a suggested R&D topic.
- Describe briefly the ‘state-of-the-art’ for each R&D topic, thus indicating potential ‘thresholds’ that R&D proposals should target to overcome.

2.2 On the involvement of research parties and stakeholders in the R&D Implementation Plan 2015-17

The Agency acknowledges the involvement of stakeholders in the R&D Implementation Plan 2015-17 through consultations¹⁶ and workshops¹⁸. However, as no information is provided with respect to the outcome of the consultation and the workshops, the Agency suggests, as in its Opinion No. 11/2013, that ‘*ENTSO-E, on a yearly basis, presents in the R&D Implementation Plan results from stakeholder informal consultations (e.g. discussions taking place in the EEGI), which contribute to the preparation of the R&D Implementation Plan. Links to relevant consultations*

¹⁴ <http://www.smartgrids.eu/node/108>

¹⁵ R&D Implementation Plan 2015-17, p.6

¹⁶ https://www.entsoe.eu/fileadmin/user_upload/library/consultations/Implementation_Plan_2015-2017/131125_Implementation.Plan_2015-2017_public_consultation.pdf

¹⁷ The consultation was launched together with the consultation on the “Draft Implementation Plan 2015-2017” of the European Electricity Grid Initiative Research and Innovation Roadmap 2013-2022. Such implementation plan comprehensively addresses TSO, TSO-DSO and DSO research activities. <http://www.gridplus.eu/node/185>

¹⁸ In the R&D Implementation Plan 2015-17, p.6, a dedicated workshop for Eastern European TSOs is mentioned

should be provided in conjunction with the links to the relevant R&D plan documents of ENTSO-E’.

Furthermore, the Agency positively acknowledges the fact that, as already for the R&D Roadmap 2013-2022, TSOs plan to work on the R&D topics in collaboration with a variety of qualified partners such as universities, manufacturers and DSOs.

The Agency also positively acknowledges the coordination with DSO R&D priorities (and other activities for mapping results of R&D and for detecting gaps) performed through the GRID+ project¹⁹. The Agency notes that, according to Appendix 4 of the R&D Implementation Plan 2015-17, this project ends in September 2014. Therefore, the Agency calls on the European Commission and ENTSO-E to continue facilitating coordination of R&D at European level, including across transmission and distribution sectors. The Agency reaffirms its opinion that when R&D activities are not supported by calls for proposals, ENTSO-E and TSOs should pursue that the R&D they deem essential is directly undertaken by TSOs themselves²⁰.

2.3 On R&D resources, budget & financing strategies for the R&D Implementation Plan 2015-17

As in the R&D Implementation Plan 2014-16, resources of TSOs are mentioned as a critical parameter which limits the amount and size of R&D projects that can be implemented during the horizon of the R&D Implementation Plan 2015-17²¹. ENTSO-E members are discussing with regulators how to realise a suitable R&D scheme for TSOs to support strengthening competence and innovation process²².

ENTSO-E stresses (as in the R&D Implementation Plan 2014-16), that European and national funding is necessary in order to accomplish the R&D objectives of the R&D Roadmap 2013-2022²³. In addition, ENTSO-E notes²⁴ that with the current resource availability, TSOs will only be able to launch one large-scale demonstration and two to three collaborative R&D projects each year. ENTSO-E states that “the costs for R&D activities are not yet remunerated via electricity tariffs in almost [all?] countries”²⁵.

The Agency has doubt about such a statement, which is presently not supported by evidence. The Agency considers that:

- Regulatory frameworks with cost-of-service regulation for all transmission activities allow for recovery of R&D costs;

¹⁹ About GRID+, see also R&D Implementation Plan 2015-17, p.5

²⁰ This remark by the Agency is explicitly mentioned in the R&D Implementation Plan 2015-17

²¹ R&D Implementation Plan 2015-17, p.9

²² R&D Implementation Plan 2015-17, p.11

²³ R&D Implementation Plan 2015-17, p.11

²⁴ R&D Implementation Plan 2015-17, p.9

²⁵ This sentence is quoted directly from R&D Implementation Plan 2015-17. It may mean “almost all countries”

- Hybrid regulatory frameworks with cost-of-service regulation for capital expenditures and incentive regulation for operational expenditures allow for recovery of a significant part of R&D costs. Further, in such cases R&D costs may be considered as investment costs and therefore capitalised and depreciated over an appropriate time period²⁶;
- Regulatory frameworks with incentive regulation for all transmission activities may be complemented with a pass-through regime for pre-defined cost categories or with a separate incentive scheme for R&D²⁷.

In view of the above, the Agency calls on ENTSO-E member TSOs to strive for the effectiveness and efficiency of R&D activities, as best measure to facilitate them in the TSO-internal decision-making processes. Furthermore, the Agency reiterates (as in its Opinion No. 11/2013) that *'R&D expenses incurred by TSOs should be indicated separately in the TSOs accounts submitted to NRAs and made publicly available. ENTSO-E and its TSO-members are invited to highlight situations or regulatory regimes where, in their experience, R&D costs are not sufficiently covered by tariffs'*.

The R&D Implementation Plan 2015-17 provides for each R&D topic the budget estimates and a suggestion about the number of consortia to be involved. The Agency notes that the basis for the latter suggestion is not immediately identifiable. Further, as already mentioned in its Opinion No. 11/2013, the Agency welcomes the inclusion of budget estimates, but would appreciate reference to the main assumptions used for producing them.

2.4 On monitoring and evaluation of R&D fulfillment, Key Performance Indicators (KPI), dissemination of R&D results

As mentioned in Section 2.1 of the present Opinion, monitoring of R&D projects is necessary in order for ENTSO-E to prepare the yearly R&D Implementation Plan. For the 2013 Monitoring Report a total of 38 R&D projects (19 National and 19 EU funded) were recorded²⁸.

The Agency notes positively that the 2013 Monitoring Report comprises a (brief) description of the achievements of these 38 R&D projects.

Further, with respect to dissemination of R&D results, which is of utmost importance for the maximum exploitation of their benefits, the Agency notes that the 2013

²⁶ According to information provided by AEEGSI, this is the solution applied in Italy, with a depreciation period of 5 years

²⁷ This is the solution applied in Great Britain. The solutions of Great Britain and Italy (and Denmark) were presented in the ENTSO-E R&D Roadmap 2013-22, p.29

²⁸ 2013 Monitoring Report, p.6: *'the topics of the R&D projects are rather disjointed and funding is fragmented at both the European and national levels. A more coherent approach is needed to increase the synergistic benefits of R&D work'*

Monitoring Report provides no information on the knowledge sharing data base mentioned in the ENTSO-E 2012 Monitoring Report²⁹.

As in Opinion No. 11/2013, the Agency highlights:

- the importance that an assessment of the quality of R&D results and of their impact on transmission activities of ENTSO-E and its TSO members is initiated as early as possible;
- the important role of ENTSO-E and TSOs, as the ‘ultimate evaluators’ of the results of R&D activities, in communicating them.

Finally, in view of ENTSO-E’s remark about the fragmentation of funding and the need of more coherent approach to R&D³⁰, the Agency suggests the exploitation of alternative mechanisms for R&D, towards an approach of ‘coordinated and targeted’ research. Under this paradigm, specific and pre-defined research services would be directly contracted to an appropriate R&D consortium by ENTSO-E and the interested TSOs. Part of the EU R&D budget might be allocated (under specific terms and conditions) to such ‘coordinated and targeted’ research³¹.

2.5 On specific topics of the R&D Implementation Plan 2015-17

The ENTSO-E R&D Implementation Plan 2015-17 focuses on three topics for 2015:

- Inertia, control and protection of large power systems with a large amount of inverter-based components;
- Methods and tools to optimise asset management; and
- Demonstration of power-load control mechanisms at TSO and DSO levels.

In addition, the following concepts are proposed for 2016-2017:

- Concept 1-2016: Realisation of ultra-high-voltage lines with partial underground cabling;
- Concept 2-2016: Ancillary services provided through DSOs and Aggregator Agents;
- Concept 1-2017: Data & information management for system operation and asset management;
- Concept 2-2017: Advance tools for new market models;
- Concept 3-2017: Improved defence and restoration plan;
- Concept 4-2017: Market modelling and system adequacy assessment for long-term planning.

²⁹ ENTSO-E, “Monitoring R&D Roadmap”, 7 July 2012, p.22.

https://www.entsoe.eu/fileadmin/user_upload/library/Key_Documents/120607_Monitoring_RD_Roadmap-Final.pdf

³⁰ 2013 Monitoring Report, p.10

³¹ In such a case, a competitive tender might be sought

The Agency notes that the concepts 2-2017 and 4-2017 seem to be postponed, as the R&D Implementation Plan 2014-16 included already in 2015 several activities on new tools, including a topic “T12: Tools and market mechanisms for ensuring system adequacy and efficiency in electric systems integrating very large amounts of RES generation”³².

The Agency appreciates that ENTSO-E more clearly targeted the planned activities on market modelling tools for long-term planning and continues focusing on the broad concept of system adequacy in the R&D Implementation Plan 2015-17.

On the other hand, the Agency does not see the rationale for a postponement of these activities, as:

- a new cost-benefit analysis methodology for long-term planning is being finalised soon, in line with Article 11 of Regulation (EU) No 347/2013³³;
- a methodology for adequacy is being prepared by ENTSO-E, which intends to launch a public consultation in June 2014.

As soon as each of these methodologies is fully developed and validated, the Agency sees the opportunity to integrate it through R&D efforts in a new common tool to be used, as far as possible, by all TSOs members of ENTSO-E.

Done at Ljubljana on 16 May 2014.

For the Agency:


Alberto Pototschnig
Director

³² R&D Implementation Plan 2014-16, p.8

³³ Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009. OJ L 115, 25.4.2013, p. 39



Publishing date: 19/05/2014

Document title:

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