



Publishing date: 07/10/2016

Document title: ACER Opinion 11-2016

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**OPINION OF THE AGENCY FOR THE COOPERATION OF ENERGY  
REGULATORS No 11/2016**

**of 4 October 2016**

**ON THE ENTSO-E RESEARCH AND INNOVATION ROADMAP 2017-  
2026**

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 Regulators<sup>1</sup> (hereinafter referred to as the “Agency”), and, in particular, Article 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 1228/2003<sup>2</sup>, and, in particular, Article 9(2) thereof,

HAVING REGARD to the favourable opinion of the Board of Regulators of 14 September 2016, delivered pursuant to Article 15(1) of Regulation (EC) No 713/2009,

WHEREAS:

- (1) On 28 June 2016, the European Network of Transmission System Operators for Electricity (‘ENTSO-E’), pursuant to Article 8(3)(a) of Regulation (EC) No 714/2009, released the Research, Development and Innovation Roadmap 2017-2026<sup>3</sup> (“the Roadmap”) and submitted it to the Agency on 7 July 2016.
- (2) Pursuant to Article 6(3)(b) of Regulation (EC) No 713/2009, the Agency has to provide an opinion to ENTSO-E in accordance with the first subparagraph of Article 9(2) of Regulation (EC) No 714/2009 on relevant documents referred to in Article 8(3) of Regulation (EC) No 714/2009. Point (a) of Article 8(3) of Regulation (EC) No 714/2009 refers to ‘research plans’ to be adopted by ENTSO-E. Regulation (EC) No 714/2009 does not require a specific content or scope for such research plans.
- (3) In formulating the present Opinion, the Agency has also taken into account other ENTSO-E’s relevant research, development and innovation activities, such as the ENTSO-E R&D Monitoring Report 2015<sup>4</sup> and the ENTSO-E Research and Development (R&D) Application Report 2014<sup>5</sup>.

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<sup>1</sup> OJ L 211, 14.8.2009, p.1

<sup>2</sup> OJ L 211, 14.8.2009, p.15

<sup>3</sup> <https://www.entsoe.eu/publications/research-and-development-reports/rd-roadmap/Pages/default.aspx>

<sup>4</sup> <https://www.entsoe.eu/publications/research-and-development-reports/rd-monitoring-report/Pages/default.aspx>

<sup>5</sup> <https://www.entsoe.eu/publications/research-and-development-reports/rd-application-report/Pages/default.aspx>

## HAS ADOPTED THIS OPINION:

### 1. General Remarks

The Roadmap presents the planned Research and Innovation (R&I) activities for the next ten years, from 2017 to 2026. These activities are presented as clusters, which are further detailed into specific functional objectives. Such a structure provides a good overview of the envisaged R&I efforts, with individual clusters covering both technical and economic aspects of R&I.

The Agency welcomes the preparation of the Roadmap three years after the ENTSO-E R&D Roadmap 2013-2022<sup>6</sup>, in line with a recommendation made by the Agency in its Opinion No 11/2013<sup>7</sup>.

The Agency notes that the previously used term Research and Development (R&D) has been replaced by the term Research and Innovation without explanations. The Agency infers from that and from the fact that references are often made to the “R&I Application Report” and “R&I Monitoring Report”, seemingly referring to the R&D Application report 2014 and the R&D Monitoring Report 2015, that ENTSO-E considers the two terms as equivalent. However, to avoid confusion, the Agency decided to use within this Opinion the abbreviation “R&D” when referring to the past reports and activities, and “R&I” when referring to the Roadmap and future activities.

ENTSO-E states<sup>8</sup> that they have moved from a task-based approach to a challenge-based approach when structuring the activities. However, the descriptions of the clusters do not provide enough insight and quantification of the challenges the power system is foreseen to encounter. The Agency thus recommends ENTSO-E to describe within the future R&I Roadmaps and Implementation Reports, the foreseen state of the transmission system and the potential challenges awaiting it, elaborating on the need for new and innovative approaches in tackling them.

In particular, since most of the R&I activities planned in the Roadmap focus on system changes due to the increasing amount of Renewable Energy Sources (RES), ENTSO-E should explain the challenges faced due to these developments and quantify them where possible. An identification of a breaking-point, when the amount of RES generation would, for example, bring difficulties in managing system frequency with the current technologies, could be determined. Through such quantification and elaboration of challenges, the need for R&I would be further emphasised and reinforced.

The Agency deems that the Roadmap meets the objective of non-discrimination, effective competition and the efficient and secure functioning of the internal market in electricity<sup>9</sup>. More specifically, the non-discrimination objective is covered adequately by the open consultation

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<sup>6</sup> [https://www.entsoe.eu/publications/research-and-development-reports/Documents/121217\\_ENTSO-E\\_R\\_D\\_Roadmap\\_2013\\_2022.pdf](https://www.entsoe.eu/publications/research-and-development-reports/Documents/121217_ENTSO-E_R_D_Roadmap_2013_2022.pdf)

<sup>7</sup>

[http://www.acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Opinions/Opinions/ACER%20Opinion%2011-2013.pdf](http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Opinions/Opinions/ACER%20Opinion%2011-2013.pdf)

<sup>8</sup> Roadmap, p.9

<sup>9</sup> Article 6(3)(b) of Regulation (EC) No 713/2009

procedure used for forming the Roadmap; by the assignment of a significant part of R&I activity to the research community through open calls for R&I project proposals and by the publicity and dissemination of results of R&I projects. The objectives of effective competition and efficient and secure functioning of the internal market are covered through the inclusion in the Roadmap of research areas (clusters) for power system economics and efficiency, as well as for power system modernisation, security and system stability.

## **2. Specific remarks**

### **2.1 Transparency and stakeholder consultation**

Appendix 2<sup>10</sup> and the chapter ‘Roadmap Update/Revision’<sup>11</sup> provide an overview of the consultation process. According to ENTSO-E, the consultation process is run firstly amongst the TSO community and within different ENTSO-E committees, followed by the involvement of other stakeholders and the general public. Although the Agency welcomes the commitment of ENTSO-E when conducting the consultation on the Roadmap, an overview of the duration of each stage of the consultation process, together with minutes of individual consultation meetings, would further enhance the transparency of the stakeholder consultation.

### **2.2 Funding, resources and regulatory framework**

The Roadmap presents several aspects of R&I funding, from the budget estimate to the sources of financing and the regulatory incentives. The budget needed to conduct the R&I defined in the Roadmap is estimated at 1 billion €. According to ENTSO-E, this estimate is derived from a bottom-up approach, summing up the estimates for the individual functional objectives. However, no additional explanation is provided on how these estimates were achieved. The Agency thus reiterates the request, already formulated in its Opinion No 11/2013, that ENTSO-E provides the assumptions underpinning the budget estimates, detailing the budget per individual functional objective.

According to ENTSO-E, in most cases TSOs experience a lack of incentive to conduct R&I. This lack of incentive is considered by ENTSO-E the result of national regulatory policies, which supposedly hinder R&I through non-stimulating tariff structures. The Agency has started to investigate this potential issue and will report its findings within its Opinion on the forthcoming ENTSO-E’s R&I Implementation report. Nevertheless, the Agency reiterates<sup>7</sup> its request that ENTSO-E highlights actual situations where lack of regulatory incentives jeopardised potential R&I projects.

ENTSO-E states that the average TSO budget for R&I is limited to 0.3% of its total revenues<sup>12</sup>. This statement may provide a wrong perception that the TSOs’ budget for R&I is limited to a specific percent of its total revenues by external factors. The relatively low percentage of average R&I expenses is most likely a result of various factors, including TSOs’ own decisions. The Agency recommends that ENTSO-E investigates and clarifies how the potential lack of

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<sup>10</sup> Roadmap, p.91

<sup>11</sup> Roadmap, p.18, Fig.5

<sup>12</sup> Roadmap, p.107

TSO's own resources could influence the fulfilment of the required R&I, taking into account other R&I funding mechanisms (national programs, EC funding schemes and other incentives).

### **2.3 Assessing results of R&D activities**

The monitoring and assessment of R&I efforts, detailed in the ENTSO-E R&D Monitoring Reports and the ENTSO-E R&D Application Report, are touched upon also in the Roadmap. The last Monitoring Report focused on 71 projects of the R&D Roadmap 2013-2022, deemed relevant by the TSOs and performed within Europe<sup>13</sup>. The Report monitored the status of the projects, indicating them as completed, ongoing, proposed or not started. A noticeable improvement regarding the completion of clusters/functional objectives was observed since the last Monitoring Report, with an average completion rate of 38% (ranging from 13% for Cluster 5 – Asset Management to 67% for Cluster 1 – Grid Architecture). Although ENTSO-E identified Asset Management, Joint TSO/DSO activities and Market Design as R&I clusters which require more attention, no concrete recommendation was made on how stakeholders could be stimulated to focus on these under-developed clusters.

Although the Roadmap provides an overview of the use of results of completed projects as a summary of the R&D Application Report, it does not investigate on the benefits gained through R&I, nor does it try to monetise or quantify them. Reporting on R&I achievements is an important aspect of the R&I process, since positive feedback from the TSO community on the implementation of R&I stimulates stakeholders to undertake further projects. However, to reach their objective of reviewing the results of implemented R&I projects, the future R&I Monitoring Reports and R&I Application Reports should focus on the effectiveness of R&I and try to quantify or even monetise it.

The Agency thus recommends ENTSO-E in the future to report on the effectiveness of concluded R&I projects, perhaps utilising the 'Return on Research Capital' to depict the benefits gained by specific projects. Besides clearly depicting benefits of R&I to the stakeholders, these reports would also steer researchers and TSOs towards result-driven R&I.

In addition, the Agency recommends to go beyond the current scope of reporting on research projects and to focus the R&I Monitoring Reports and the R&I Application Reports also on the deployment of innovative technologies and innovative solutions in real networks.

### **2.4 Dissemination of R&I results**

The Agency reaffirms its recommendation to ENTSO-E and its TSO members to ensure dissemination of the results and lessons learned from innovation projects to all interested parties, including other network operators and market participants, in case these projects are (co-)financed by grid tariffs or from public funds.

Done at Ljubljana on 4 October 2016.

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<sup>13</sup> Roadmap, p.46

For the Agency:

  
Alberto Pototschnig  
Director



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