



D2.1 Opportunities, Challenges and Risks for RES-E Deployment in a fully Integrated European Electricity Market

Hans Auer, Bettina Burgholzer

February, 2015

Version 1.2

Dissemination level: Public

Agreement n.:

IEE/13/593/SI2.674874

Duration

April 2014 – September 2016

Co-ordinator:

SINTEF Energi AS

Supported by:



Co-funded by the Intelligent Energy Europe
Programme of the European Union



LEGAL DISCLAIMER

The sole responsibility for the content of this report lies with the Market4RES consortium. It does not necessarily reflect the opinion of the European Union. Neither the EASME nor the European Commission are responsible for any use that may be made of the information contained herein.



Executive Summary

The work presented in this report (Deliverable D2.1) significantly contributes to the foundation for work carried out in the Market4RES project. Moreover, this report elaborates on the theoretical and regulatory analysis of the European ‘energy-only’ market model as well as on several relevant policy instruments having been implemented to promote the accelerated market integration of RES-E generation technologies.

The major aim of this report is to understand the historical development of the European electricity market and the background as well as driving forces of the currently existing European ‘Target Model’ discussion, notably as far as the so-called ‘Capacity Remuneration Mechanisms (CRM)’ are addressed. Doing so, it is important to understand and study the major shortcomings of electricity market design and market distortions, on the one hand, but also the achieved electricity market benefits in a system with high shares of RES-E generation in an inter-temporal context over the last decade, on the other hand.

The inter-temporal aspects of the analysis in this report is important insofar, as well-designed structures and instruments of an electricity market in the early phase of electricity market liberalisation not necessarily match with the criteria of sustainable electricity market operation and development at a later stage, e.g. at the presence of significant shares of variable RES-E generation having been integration into the market based on financial support instruments.

Based on the knowledge compiled in this report, a better understanding of the challenges ahead in terms of electricity market amendment shall be available. In that sense, the major lessons learned in this report can be mainly summarized as follows:

- In the early phase of European electricity market liberalisation the design of market structures and policy instruments have been perfectly fitting to meet the intended policy objectives and expected market developments.
- Even more, the enormous efforts to promote the accelerated integration of RES-E generation technologies has been a success story, knowing that the financial support (subsidies) is enormous and this support is a market intervention apart from the forces of the electricity market itself.
- In the course of time, however, adverse effects of significant RES-E penetration have been occurring in terms of low average wholesale electricity prices in general and extremely volatile, partly negative prices in particular.
- Subsequently, this has led to the situation that conventional electricity generation technologies have become difficulties to cover their costs while financial support instruments (subsidies) further stimulate investments into wind and PV generation. This has led to increasing profitability risks of many of these conventional generation technologies. Some of them already have been – or are expected to be – mothballed.
- Although the importance to promote Demand Side Management implementation into the electricity market has been discussed for a long time, up to now there do not exist significant and promising best-practise cases qualified to be scaled up.



Against the background of the above mentioned challenges, a couple of years ago already a European discussion emerged on how to further improve the market design contributing to the mitigation of the currently existing “missing money” problem of conventional and RES-E generation, on the one hand, and how to foster European electricity market integration with high shares of RES-E generation in general, on the other hand.

Starting from the explanations of the historical development, this report highlights the driving forces of the currently existing European ‘Target Model’ discussion, notably as far as the so-called ‘Capacity Remuneration Mechanisms (CRM)’ is addressed.

It neither elaborates on the diagnosis of the currently existing European energy market discussion in detail, nor provides already some conclusions and/or recommendations to overcome several of the challenges the European electricity market is facing at present. This will be done in subsequent reports of work package 2 (Deliverable D2.2 and D2.3) and also remaining work packages (underpinned with modelling exercises and results) of the Market4RES project.