



# TradeRES

New Markets Design & Models for  
100% Renewable Power Systems

## NEWSLETTER



### TradeRES 1st year achievements

The TradeRES project has reached one year of activity. During this period, and according to the activities foreseen in the workplan, monthly meetings took place within the work packages to enable a wide discussion of the strategies to develop the activities towards the goals of each task.

Some key achievements were already attained in TradeRES project that aims to develop and test innovative electricity market designs that can meet society's needs of a (near) 100% renewable power system while empowers market participants to explore the landscape of future market designs by providing comprehensive high-level open-access tools.

The project is divided into 8 work packages and in the next paragraphs, the work developed in the past months is presented highlighting the activities of the work packages that are undergoing since month 1 of the project. These are mainly WP2 - *Optimal electricity trading with ~100% RES: Generation of a reference power system, scenarios and input market data*, WP4 - *Development of Open-access Market Simulation Models and Tools* and WP7 - *Dissemination and Exploitation of Results*. Besides these WPs, deliverables related with WP8 - *Ethics and requirements* were completed and delivered, reporting the documentation and regulations related with ethics requirements in this project,

following European Commission legal regulations. In February 2020 the kickoff meeting took place in Lisbon at LNEG's installations in Lumiar. It was the first and the last physical meeting in this project, until now! We hope to be back to conventional meetings very soon!

### Scenarios for a new market design

One of the most important issues foreseen in **WP2** is the identification of the most adequate data to be used. In this sense, several iterations took place in order to identify the existing databases and sectorial goals established for each member state in the 2030 National Climate and Energy Plans and 2050 Carbon Neutrality Roadmap. To complement this information, scenarios and assumptions from other relevant institutions (e.g., ENTSO-E) were considered. Thus, four central scenarios based on 100 % RES (or near) were established being classified as "S1 - Conservative", "S2 - Flexible", "S3 - Variable" and "S4 - Radical", Figure 1.





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<p><i>High sector coupling</i></p> <p>Much flexible demand from direct and indirect electrification of industry/mobility/heating</p>	<p><b>Scenario – S2 (“flexible”)</b></p> <ul style="list-style-type: none"> <li>- Some thermal power capacity</li> <li>- Thermal power can set the electricity price</li> <li>- High sector coupling</li> <li>- Many new electricity loads due to electrification</li> <li>- Much flexible demand</li> </ul>	<p><b>Scenario – S4 (“radical”)</b></p> <ul style="list-style-type: none"> <li>- No thermal capacity (except nuclear)</li> <li>- Electricity price based only on demand</li> <li>- High sector coupling</li> <li>- Many new electricity loads due to electrification</li> <li>- Much flexible demand</li> </ul>
<p><i>Low sector coupling</i></p> <p>Little flexible demand from direct and indirect electrification of industry/mobility/heating</p>	<p><b>Scenario - S1 (“conservative”)</b></p> <ul style="list-style-type: none"> <li>- Some thermal power capacity</li> <li>- Thermal power can set the electricity price</li> <li>- Low sector coupling</li> <li>- Few new electricity loads</li> <li>- Little flexible demand</li> </ul>	<p><b>Scenario – S3 (“variable”)</b></p> <ul style="list-style-type: none"> <li>- No thermal capacity (except nuclear)</li> <li>- Electricity price based only on demand</li> <li>- Low sector coupling</li> <li>- Few new electricity loads</li> <li>- Little flexible demand</li> </ul>
	<p><i>Some thermal capacity</i></p> <ul style="list-style-type: none"> <li>- 80-90% VRE + hydro (+ nuclear)?</li> <li>- Peak load fossil*</li> <li>- Peak load bio</li> <li>- Power to methane</li> </ul>	<p><i>No thermal capacity</i></p> <ul style="list-style-type: none"> <li>- 100% VRE + hydro (+ nuclear)?</li> <li>- Loss-of-load probability</li> </ul>

Figure 1. TradeRES scenarios specifications.

The partners working on this WP have already gathered a large set of information and developed the first version of the database to use in the project. The database include: common data on policy scenarios, commodity prices, projected cost and technical parameters of energy conversion technologies and transmission connections, biomass, wind and solar potential as well as initial generation and transmission capacities in the scenarios. More details can be found in TradeRES deliverable' D2.1 - Database of TradeRES scenarios publicly available on the project website. Currently, generation and consumption time-series data are being collected by the partners, which are the last step need to feed the existing planning models from the consortium – Backbone and Competes.

## A Toolbox of Models

This work aims at developing a toolbox of models to handle the collected data and deliver the results to the end-users, and it is integrated in WP4. A careful review was conducted on the characteristics of the pre-selected platforms to perform data handling and the linking of models, as

well as the main challenges foreseen in the WP.

One of the main decisions was the selection of the Spine Toolbox, a platform under development from the Horizon 2020 Spine project will be used as the data management and model coupling tool.

In order to discuss the options available and the strategies to perform the linkage of the models, workshops took place with the participation of most

of the consortium partners and other participants from each institution that were able to contribute for the work developed until now. Despite more workshops are foreseen during the project duration to brainstorm until final results are consolidated, the first approach to integrate the different models was already established, Figure 2.

These workshops contribute to discuss the advantages and disadvantageous of current individual optimization and agent-based models and their possible integration and upgrade by considering new market products, actors and rules.

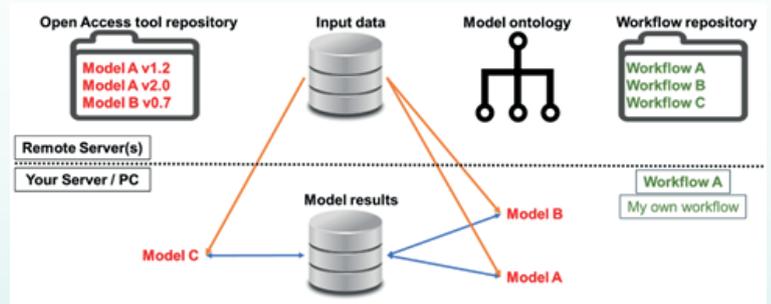


Figure2. Deployment architecture of the electricity market tool (extracted from D4.3.2- Principles and usage of a multi-simulation electricity market tool.



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## Dissemination of the projects activities

As in any other R&D project the dissemination and exploitation activities are of outmost importance. TradeRES has developed a dissemination strategy to bring the most important results to the community and end-users and also an exploitation plan to improve and value the projects final products. These actions were published in two deliverables in the first semester of 2020 and are available in the project's web page.

## The Projects Image

During the first year of the project, the image of the project was developed – Logo, templates, Web site – and other support documentation relevant for the dissemination of the project results to the public and end-users.

The creation of the logo and image went through a set of processes and trials until the final form was reached. The building process accounted for the need to include the relevant elements of the project in the logo, and make it dynamic, appealing and easy to recognize and associate to the project and its goals.



The TradeRES project will develop and test innovative electricity market designs that can meet society's needs of a (near) 100% renewable power system. The market design will be tested in a sophisticated simulation environment in which real-world characteristics such as actors' limited foresight into the future and risk aversion are included.

## The Meetings

In the last two months of 2020, two important meetings took place – the 2nd plenary meeting 2-3rd November and the Advisory Board meeting - 2nd December.

Due to the actual pandemic situation, all the meetings took place remotely using the available platforms.



The Advisory Board showed to be very interested and contributed with a set of valuable suggestions for the work to be developed. In this sequence some cooperation with other projects is on the tables, and we will have some good news very soon.



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**Start date**  
1 February 2020

**End date**  
31 January 2024

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