

Report D4.1-IT, March 2016

# Auctions for Renewable Energy Support in Italy: Instruments and lessons learnt



HORIZON 2020

## Short about the project

### **Auctions for Renewable Energy Support: Effective use and efficient implementation options (AURES)**

This project helps assessing the applicability of different auction types to renewable support under different market conditions. It also explores which auction types and design specifications suit particular requirements and policy goals in European countries. By establishing best practices and a knowledge sharing network, we contribute to informed policy decision-making and to the success of auction implementations across Europe.

**Target-oriented analysis:** Through analysis of empirical experiences, experiments and simulation, we will create a flexible policy support tool that supports policy makers in deciding on the applicability of auction types and certain design specifications for their specific situation.

**Capacity building activities:** We undertake specific implementation cases to derive best practices and trigger knowledge sharing amongst Member States. We strive to create a strong network with workshops, webinars, bilateral meetings, newsletters, a website that will serve as capacity building platform for both policy makers and market participants (including project developers, auctioneers, etc.). Wherever required, we can set up specific bilateral and multilateral meetings on specific auction issues and facilitate cooperation and knowledge sharing. Additionally, we offer sparring on specific implementation options, drawing from insights gained during the first phases of the project (empirical analysis of previous auctions in Europe and the world), conceptual and theoretical analysis on the applicability of specific designs in certain market conditions and for certain policy goals issues and facilitate cooperation and knowledge sharing. Additionally, we offer sparring on specific implementation options, drawing from insights gained during the first phases of the project (empirical analysis of previous auctions in Europe and the world), conceptual and theoretical analysis on the applicability of specific designs in certain market conditions and for certain policy goals.

**Project consortium:** eight renowned public institutions and private firms from five European countries and combines some of the leading energy policy experts in Europe, with an impressive track record of successful research and coordination projects.

## **Auctions for Renewable Support in Italy:**

### An overview

Italy supports RES except photovoltaics with a fixed feed-in tariff for plants with a capacity below 1 MW and a sliding feed-in premium for plants with a capacity above 1MW.

Since 2012, the access to the support is regulated by three distinct mechanisms:

- 1) Direct access: Small plants may apply for receiving support after being commissioned. As long as there is budget available, the plant will receive the administratively set feed-in-tariff ( <60 kW wind, < 50 kW hydro (except in some special cases), <200 kW biomass, <100 kW biogas)
- 2) Registry: Medium plants have to apply in the planning stage after receiving the building authorisation (RES that exceed the threshold for the Direct Access but those capacity is below or equal to 5 MW (except hydro  $\leq$  10 MW and geothermal  $\leq$  20 MW)). They are ranked and evaluated according to predefined criteria such as the date when they received the authorisation. Successful projects may continue the project planning and receive an administratively set, technology specific feed-in-tariff or premium.
- 3) Lowest Bid Auctions: Large plants ( $\geq$  5 MW, except hydro > 10 MW and geo > 20 MW) have to submit an offer that states reductions from the base tariff. If the projects meet the qualification criteria, the projects are ranked on price-only basis.

The three mechanisms were introduced by the Ministerial Decree of 6 July 2012. Its validity ends in the end of 2015. It is expected to be prolonged with minor changes until the end of 2016. The system that may become effective from 2017 onwards is not yet under preparation.

The following discussion does not touch upon the Direct Access but focuses on the Registry and the Lowest Bid Auction.

The report contributes to the first and second of three tasks in work package 4 of the AURES project:

T4.1 Providing a characterisation of the different auctions

T4.2 Making an assessment of auctions and case-specific lessons learnt

T4.3 Interpreting and summarise the general lessons learnt and resulting and thereby outline specific recommendations

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Auctions for Renewable Support in Italy: Instruments and lessons learnt

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Project deliverable:

WP4 - Empirical aspects of auctions for RES-E: Learning from real experiences.

Task 4.1 - Characteristics of auctions



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# 1. Characteristics of auctions in Italy

Table 1. Characteristics of auctions in Italy

Characteristics	Description
<b>Country characteristics</b>	Italy is required to source 17% of its final energy consumption from renewable energy sources by 2020. According to Italy's National Renewable Energy Action Plan, the country is targeting 26.4% of electricity from renewable sources by 2020. According to the latest projections and the 2013 National Energy Strategy (NES), Italy is going to reach its target of 17% of final energy consumption covered by renewable energy sources (RES). The public spending on RES-E support has been €6.5 billion in the past. Under the new scheme the total annual budget available for incentivizing RES (except solar-PV) is set to €5.8 billion since 2013 (Personal Communication, 2014) <sup>1</sup> .
<b>Market characteristics</b>	According to the latest country profiles of the Single Market Progress report by the EC, "a new national energy strategy ( <i>Strategia energetica nazionale</i> , SEN) was approved at the beginning of 2013 and confirmed by the latest Italian government. Infrastructure development, import reduction and further integration into the European single market are among the primary goals for the electricity sector." <sup>2</sup>
<b>Name of auction scheme</b>	There is no official name for the scheme, but it is referred to as DM 06/07/12 (Ministerial Decree 6 July 2012).
<b>Objectives</b>	The main objective is to comply with the European State Aid Guidelines.
<b>Contracting authority</b>	<i>Gestore dei Servizi Energetici</i> (GSE - Energy Services Operator)
<b>Main features</b>	There are two types of auctions, "The Registry" and "The Lowest Bid Auction". The Registry, in which medium size plants can participate, can be considered as a multi-criteria auction that evaluates bids based on qualitative criteria only. The Lowest Bid Auction is for large plants and can best be characterised as a reverse auction. In this case the "base tariff" acts as a maximum tariff given that only those bids falling below it qualify for a tariff. Bids are ranked and contracts awarded based on the

<sup>1</sup> Personal Communication, Erika de Visser and Niccolò Cusumano

<sup>2</sup> Country profile Italy 2014 as part of the Single Market Progress Report by the EC, available at [https://ec.europa.eu/energy/sites/ener/files/documents/2014\\_countryreports\\_italy.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2014_countryreports_italy.pdf)

<b>Characteristics</b>	<b>Description</b>																					
	offered reductions on the base tariff. Both the auction mechanisms and the base tariff are technology-specific.																					
<b>Year of introduction</b>	The auction scheme was introduced in 2012 and became effective on January 1 <sup>st</sup> , 2013. The scheme replaces the quota obligation scheme with Tradable Green Certificates ( <i>Certificati Verdi</i> ).																					
<b>Technology focus and differentiation</b>	The auction differentiates between technologies and project size.																					
<b>Lead time before auction</b>	<p>30 days before opening of the tender, GSE publishes a notification</p> <p>Time table of the tendering process:</p> <ul style="list-style-type: none"> <li>• t(0) GSE publishes a notice for the coming tender</li> <li>• 30 days from t(0) = opening of the tender</li> <li>• From 30 to 90 days from t(0) = tendering process</li> <li>• From 90 days to 150 days from t(0) = evaluation process</li> <li>• At 150 days from t(0) = publication of ranking</li> </ul> <p>From 150 days to 165 days from t(0) = GSE returns surety deposit</p>																					
<b>Min. / max. size of project</b>	<table border="1"> <thead> <tr> <th>Technology</th> <th>Registry</th> <th>Lowest Bid Auctions</th> </tr> </thead> <tbody> <tr> <td>Wind onshore</td> <td>60 kW – 5 MW</td> <td>&gt; 5 MW</td> </tr> <tr> <td>Wind offshore</td> <td>-&gt;1 kW – 5 MW</td> <td>&gt; 5MW</td> </tr> <tr> <td>Geothermal energy</td> <td>-&gt;1 kW – 20 MW</td> <td>&gt; 20 MW</td> </tr> <tr> <td>Biogas</td> <td>100 kW – 5 MW</td> <td>&gt; 5 MW</td> </tr> <tr> <td>Hydro</td> <td>50 kW (in some cases 250 kW) – 10 MW</td> <td>&gt; 10 MW</td> </tr> <tr> <td>Biomass</td> <td>200 kW – 5 MW</td> <td>&gt; 5 MW</td> </tr> </tbody> </table> <p>There is no upper limit for the plant size under the Lowest Bid Auctions.</p>	Technology	Registry	Lowest Bid Auctions	Wind onshore	60 kW – 5 MW	> 5 MW	Wind offshore	->1 kW – 5 MW	> 5MW	Geothermal energy	->1 kW – 20 MW	> 20 MW	Biogas	100 kW – 5 MW	> 5 MW	Hydro	50 kW (in some cases 250 kW) – 10 MW	> 10 MW	Biomass	200 kW – 5 MW	> 5 MW
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<b>What is auctioned?</b>	Capacity																					
<b>Budgetary expenditures per auction and per year</b>	The Decree caps the cumulative cost for the three support mechanisms at €5.8 billion per year. The volume for the Registry and for the Lowest Bid Auction are set according to a price estimate. If the Lowest Bid Auctions result in significant price reductions, the remaining budget may be used for the Direct Access Mechanism.																					
<b>Frequency of auctions</b>	Once a year before March 31																					

Characteristics	Description
<b>Volume of the tender</b>	<p>Registry: 368 MW for 2013, 328 MW for 2014, 325 MW for 2015</p> <p>Lowest Bid Auction: 1710 MW for 2013 (1st round), 1494 MW for 2014 (2nd round) and 1349 MW for 2015 (3rd round).</p> <p>The volumes are further split into technology-specific volumes.</p>
<b>Auction design elements</b>	See Table 2.

## Design elements for the assessment of auction schemes for RES-E

*Table 2. Design elements of auction schemes in Italy*

Design elements	
<b>Single- or multiple-item auctions</b>	Multiple-item auction. Projects are selected until the technology specific auctioned volume is reached.
<b>Auction procedure</b>	<p>Registry: Medium plants apply in the planning stage. They are ranked and evaluated according to predefined, so called priority criteria. The priority criteria valid for all plant types include:</p> <ul style="list-style-type: none"> <li>- not being selected in previous auction</li> <li>- size of plants with a priority for smaller plants</li> <li>- date of authorisation with a priority for early authorisation</li> <li>- date of application with a priority for early application</li> </ul> <p>Plant type-specific criteria include:</p> <p>“Biomass and biogas: Farm-owned plants with capacity &lt; 600 kW, fuelled by biological sub-products; waste-fuelled: plants inside a regional waste management program; geothermal plants: plants with complete fluid reinjection; Hydropower plants: using existing channels and ducts, using discharge water, using part of the minimum vital flow<sup>3</sup>, using existing diversion weir.<sup>4</sup></p>

<sup>3</sup>The amount of water in a river that should be ensured to prevent damage to ecosystem functions

<b>Design elements</b>	
	<p>Lowest Bid Auction: Auctions are conducted as reverse auctions where operators bid on the amount of the deduction on the pre-defined base amount. In case that all projects bid on the same reduction the following criteria apply:</p> <ul style="list-style-type: none"> <li>- plants already in operation</li> <li>- for Biomass: plants inside a regional wastes management program</li> <li>- for Geothermal : plants with complete fluid reinjection</li> <li>- all plant types: earlier date of authorisation.</li> </ul>
<b>Pricing rules</b>	<p>Registry: uniform price (according to administratively set feed-in tariff or premium)</p> <p>Lowest Bid Auction: pay-as-bid</p>
<b>Ceiling price</b>	<p>In order to prevent projects from either under- or over-bidding in the reverse auctions, Italy has prescribed floor (-2%) and ceiling (-30%) deductions for all technologies.</p>
<b>Qualification criteria</b>	<p>Participating RES investors need to have a building permission and/or concession, a connection offer from the grid operator formally accepted by the plant owner, as well as a proof of their capacity to finance the project. Relating to this third requirement, participants have to show that they are financially and economically sufficiently solid to undertake the activities for which they are requesting incentives. Hereto, bidders have to hand in financial bid bonds (5% of the administratively estimated investment cost per technology upon application, increased to 10% after successful participation)<sup>5</sup>.</p>
<b>Penalties</b>	<p>Registry: For each month of delay, the feed-in-tariff is reduced by 0.5%; Deadlines: Wind onshore 16 month, wind offshore 22 month, hydro 28 month, geothermal 28 month, biomass and biogas 22 month, waste 28 month, sustainable bio-liquids 16 month, ocean energy 36 month. After a tolerance of 12 months, the FIT/FIP<sup>6</sup> is withdrawn.</p> <p>Lowest Bid Auctions: Investors have 28 months (onshore wind, bio-liquids) or 40</p>

<sup>4</sup> Negri, A. (2015) Auctions design for the Renewable Energy Aid: the Italian experience. Presentation at IRENA Workshop: Renewable Energy Auctions Design and Best Practice. 17 June 2015. Belgium, Brussels

<sup>5</sup> DM 06/07/12

<sup>6</sup> The following projects receive a FIP in Registry auctions: wind onshore, wind offshore, biogas and biomass projects between 1MW and 5MW, hydro projects between 1 MW and 10 MW, and geothermal projects between 1 MW and 20 MW

<b>Design elements</b>	
	months (all other RES) for the construction and commissioning of their RES project after publication of the tender results. If they fail to meet this deadline, the FIP will be reduced by 0.5% for each month of delay. After 24 months of delay, the FIP is withdrawn and the bid bond is withheld.
<b>Monitoring of realisation progress</b>	There are no explicit steps between the auction and the commissioning of the projects. After the commissioning the project's operator applies to the GSE for support.
<b>Exceptions from requirements for small plants/developers?</b>	None
<b>Support auctioned</b>	Capacity is tendered, electricity is remunerated
<b>Transferability of support right</b>	Not allowed.)

## 2. Evaluation criteria for the assessment of auction schemes for RES-E

*The following only evaluates the auction for technologies above 5 MW that is the competitive, price based auction. The Registry is left out of the analysis.*

### Policy effectiveness (effectiveness of auctions)

In Italy, projects above 5 MW have to successfully participate in a descending clock auction in order to be supported with a feed-in premium. The table below shows the result of the first three auction rounds. The offered volume varies by technology. Except for wind onshore, the number of bids was below the offered capacity. Hence, the overall effectiveness remains low. The relatively low capacity of wind onshore offered in the first round may be explained by a transitory arrangement according to which plants could still be partially constructed under the old system.

*Table 1 Results of 1st, 2nd and 3rd auction rounds. Source: Gestore dei Servizi Energetici – GSE Spa (Benedetti, 2014)<sup>7</sup>*

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<sup>7</sup> Benedetti, L. (2014) Italian experience in deploying renewable energy, presentation given at RES4MED DAYS "A step change in the deployment of RE and EE solutions in the Mediterranean", 16th September 2014, Rabat

	1st procedure		2nd procedure		3rd procedure	
	Available capacity	Bidding capacity	Available capacity	Bidding capacity	Available capacity	Bidding capacity
	MW	MW	MW	MW	MW	MW
Wind onshore	500	442	400	1086	356	1261
Wind offshore	600	30	620	0	650	0
Hydro	50	0	50	0	50	0
Geothermal	40	40	0	0		
Biomass	120	13	107	0	64	17
Waste	350	33	317	34	249	18

As for the efficiency of the wind onshore auction, one has to analyse the realisation rate of the successful bids. The graph below cumulates how much capacity of the first round has entered into operation by the end of May 2015: about 50%. According to interviews, another 25% is currently under construction and will eventually yet delay and by accepting a penalty enter into operation before May 2017. The realisation rates of the other rounds are not yet known.

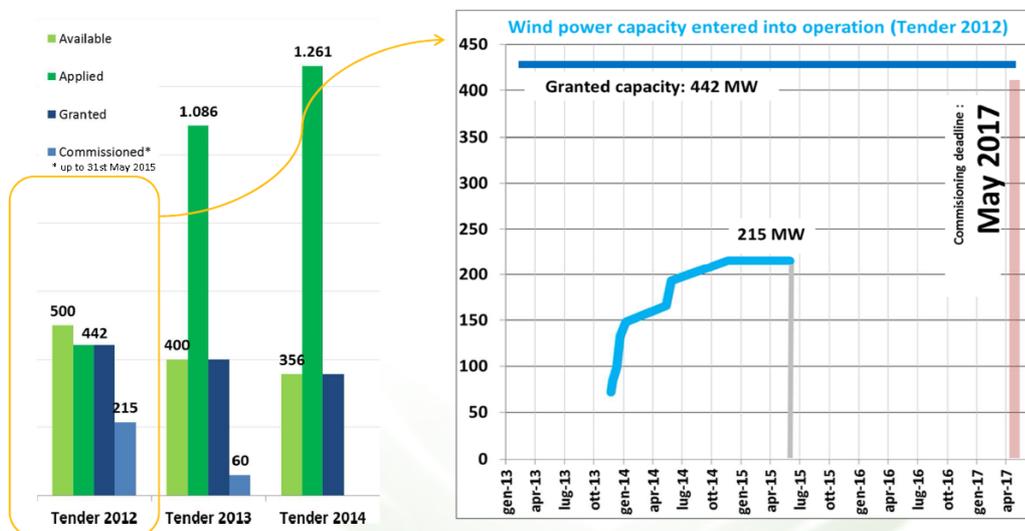


Figure 1: Realisation of projects that were successful in the first three auction rounds. Source: By courtesy of Gestore dei Servizi Energetici – GSE Spa (Negri 2015)<sup>8</sup>

Accordingly, the realisation rate of the first round is below 90% and thus the auction may not be regarded as effective. According to interviews, delays may be related to grid connection problems as well as financial prequalification criteria that were not reliable enough.

<sup>8</sup> Negri, A. (2015) Auctions design for the Renewable Energy Aid: the Italian experience. Presentation at IRENA Workshop: Renewable Energy Auctions Design and Best Practice. 17 June 2015. Belgium, Brussels

## Static efficiency or cost effectiveness (including transaction and administrative costs)

Competition is a prerequisite for static efficiency. There was no competition for any of the technologies except wind onshore, which means that the necessary condition for having an efficient auction scheme was not met. As for onshore wind, the offered capacity increased from 88.4% to 354% of the available power capacity. This in turn led to increasing tariff bid reductions, which can be seen on the reduced range between the first and the last accepted bid. The discounts of the winning bids were

- from 2.5% to 24.4% for the 1st procedure
- from 9.5% to 19.0% for the 2nd procedure
- from 26.4% to 30.0% for the 3rd procedure.

These tariff reductions mean that the auction for wind onshore led to efficiency gains. Compared to other countries, however, the levels of remuneration are still relatively high with average results of 11.8 cent/kWh in round 1, 11.1 cent/kWh in round 2, and 8.7 cent/kWh in round 3<sup>9</sup>.

## Actor diversity and social acceptability

Participants in the lowest bid auction are mainly large electricity companies and only a limited number of small and medium sized enterprises. A further analysis is required to investigate if the qualification criteria were prohibitively high and therefore led to a low effectiveness of the scheme.<sup>10</sup>

The low number of participating actors in the auction could either indicate that the base price was too low or that auctions are, in general, not an adequate mechanism to support the technologies mentioned in the table above (other than onshore wind). Further analysis would be required to come to investigate this point further.

While no in-depth research could be done, there are no signs of market domination by one party.

## Dynamic efficiency

The auction scheme differentiates according to technologies which may protect less mature technologies from the competition against other more advanced technologies. In theory, this may lead to dynamic efficiency gains as different technologies are developed further.

## Distributional effects & minimisation of support costs

Costs of the auctions are passed on to the consumer via the A3 component of the electricity bill. Additionally, plant operators must pay €0.05 per kWh which receives financial support to cover the administrative costs.

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<sup>9</sup> Negri, A. (2015) Auctions design for the Renewable Energy Aid: the Italian experience. Presentation at IRENA Workshop: Renewable Energy Auctions Design and Best Practice. 17 June 2015. Belgium, Brussels and DM 06/07/12 (available at [http://www.gse.it/it/Qualifiche%20e%20certificati/Incentivi\\_DM\\_06\\_07\\_2012/Pagine/default.aspx](http://www.gse.it/it/Qualifiche%20e%20certificati/Incentivi_DM_06_07_2012/Pagine/default.aspx))

<sup>10</sup> Fraunhofer ISI (2014) Auctions for renewable energy in the European Union. Questions requiring further information. Available from: [http://www.agora-energiawende.de/fileadmin/downloads/publikationen/Hintergrund/Ausschreibungsmodelle/Agora\\_Auctions-Paper\\_056\\_web.pdf](http://www.agora-energiawende.de/fileadmin/downloads/publikationen/Hintergrund/Ausschreibungsmodelle/Agora_Auctions-Paper_056_web.pdf)

Therewith a distribution of costs is taking place. Furthermore, an overall cap of €5.8 billion per year is set to control overall costs.

### **3. Lessons learnt: key best practices and pitfalls identified**

- The Italian support scheme provides an interesting case study as the system not only distinguishes between technologies but also between the sizes of the plants. It includes a Registry for smaller plants in which projects are evaluated against qualitative criteria, and a lowest bid auction where projects are evaluated based on the price only.
- Results of three rounds of the Lowest Bid Auction show the scheme is functioning well only for onshore wind.
- The auction scheme led to reductions in the level of support for onshore wind.
- For hydro, offshore wind, biomass and geothermal, the number of submitted bids is below the targeted volume. Hence, there are problems with the overall effectiveness of the support scheme.
- The reasons for the low participation should be further investigated. One potential reason might be that the auction scheme (price rule, qualification criteria, etc.) were appropriate for onshore wind but not for the other technologies. This argument, if true, would support a case against a one-scheme-fits-all-technologies approach.