

## Energy & Natural Resources - Greece

### Using biomass to generate power

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### Role of biomass in power generation

Biomass is a renewable energy source (RES) which is mainly used for thermal and electric power production, and which is therefore expected to contribute to the state's efforts to secure energy sufficiency, replacing fossil fuels such as oil, carbon and natural gas. This is particularly true at present, as the state's 2020 target for installed capacity of photovoltaic (PV) power plants has already been achieved and the investment focus is thus turning towards other, less saturated, types of RES.

At present in Greece, biomass is principally employed for the generation of heat at home (eg, for cooking and heating), for heating greenhouses, at oil mills and, using more advanced technologies, in industry, but on a limited scale. The use of biomass for the production of biofuels as well as for the generation of electricity is limited, but with the potential for growth.

According to a July 2013 report issued by the Greek electricity market operator, the installed capacity of RES power plants which use biomass or biogas to generate electricity amounts to 46 megawatts (MW) out of approximately 4,100MW of the overall installed RES capacity, and therefore represents approximately 1% of the total installed RES capacity in Greece.

However, the state authorities, which are making efforts to manage resources in a cost-effective manner, have identified the significant potential for growth of RES systems other than wind and solar, and are now trying to attract investment in these sectors. Particularly with regard to biomass, the Greek Centre for RES estimates that the theoretical potential of the country in thermal and electric power production from agricultural waste amounts to 27.7 terrawatt hours. Within this framework, the targets set by the state for installed capacity of biomass power plants for 2014 and 2020 are 200MW and 350MW, respectively – a target which, in comparison to the existing situation, shows the significant efforts that still need to be made by the state.

### Biomass supply chain

In Greece, the agricultural sector accounts for more than 5% of gross domestic product – more than three times the EU average of 1.8% – and therefore investors in the biomass sector should find abundant sources of raw materials in Greece.

More particularly, based on a recent census, it has been estimated that overall immediately available biomass amounts to approximately 7.5 million tons of residual crops, as well as 2.7 million tons of forest residues from woodcutting activities, most of which remains unexploited.

From these quantities of biomass, the percentage which results from the secondary manufacturing of products (eg, cotton ginning, processing of agricultural products and timber processing) in the form of residues is immediately available, requires no special provisions for its collection, poses no transportation issues and may be fed directly to various energy-generating systems. In other words, its exploitation may be rendered economically advantageous. In parallel to the utilisation of various rural and forest pickings, substantial quantities of biomass may also be taken from energy crops, which have the advantages of higher output per surface unit and easier collection, and which are expected to be promoted by the European Union due to the existing agricultural surpluses in EU member states.

However, despite the significant availability of raw materials in Greece, the promotion of

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biomass use in the Greek regions requires the resolution of many issues. One element holding back the utilisation of biomass energy is the lack of an efficient, cost-effective supply chain, which would be key to improving the exploitation of unexploited biomass and introducing of biomass energy in isolated areas, where people need access to energy and heat. The weak Greek biomass supply chain may also be attributed to the limited interest shown by potential investors in this sector to date, since a supply chain requires a significant amount of investment for infrastructure development.

Sector experts estimate that the prospects for the utilisation of biomass in Greece remain promising, since there are substantial potential resources, many of which are immediately available. At the same time, in many cases the energy which may be generated is financially competitive compared to that generated from conventional energy sources, despite the relatively high cost of investment, which can be balanced by the support schemes introduced by the state.

#### **Future of Greek biomass sector**

The RES Law (3851/2010), which entered into force in June 2010, introduced a more favourable framework for the development of RES projects by:

- streamlining the licensing procedures for RES projects in order to expedite their materialisation;
- exempting a larger field of RES projects from the need to obtain production licences and environmental approvals; and
- particularly in regard to biomass projects, increasing the feed-in tariffs applicable to such investments.

In addition, and within the framework of a national RES action plan, a significant percentage of the overall RES capacity to be installed by 2020 was secured in favour of biomass power plants, a development which was followed by an increase in the number of applications which were submitted to the Regulatory Authority for Energy (RAE) for the grant of production licences for biomass projects. It is estimated that at present, the capacity of biomass projects which have already received a production licence from RAE amounts to 450MW.

Furthermore, the significant increase in investments in the primary sector (eg, energy crops, pellets) and the entry of more investors to the biomass sector (particularly regarding the production, trade, installation and support of biomass heating systems) are expected to reduce the cost of the technology and establish a cost-efficient, effective supply chain in Greece. Within this framework, and in order for the state to achieve the national targets set for RES regarding heating buildings, the respective markets in Attica and Thessaloniki were recently liberalised.

It is clear that the Greek biomass sector is still in its infancy. Despite the obstacles to the implementation of biomass investments, energy production from biomass is expected to play an important role in RES energy production due to the favourable environment, the availability of raw materials, the national objectives and the applicable support schemes. Finally, reforms to the EU Common Agricultural Policy are expected to favour the cultivation of certain crops, which is also expected to contribute to the growth of the biomass sector.

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