

Development and promotion of a transparent European Pellets Market
Creation of a European real-time Pellets Atlas

Pellet market country report GREECE



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1. Summary

The pellet industry in Greece is growing continuously but slowly. There are some wood industries that have already started pellet production mostly by using their own wood by-products. Some other companies are starting their involvement in the market in 2009 by installing pellet producing machinery with the help of European subsidies.

However, pellet consumption in Greece, especially in households, remains on very low levels. Wood by-products are usually being used without any processing, mainly for heating purposes in the agricultural sector. There are many small and medium manufacturers producing boilers for biomass, which supply this market, also with pellet boilers.

Until now, the lacking domestic pellet demand in Greece forces the pellet producers to target European markets and to export the largest share of their production, Italy being the most important import market. Another consequence is that the pellet trading and logistic infrastructure is not being developed in Greece.

Quality standards are not applied in the Greek production industry, but the plants follow a certain production procedure provided by pelletizing equipment manufacturers. However, they are not certified officially. In addition, none of the companies assure the quality of their logistics.

State policies in general do not provide supportive frameworks for bioenergy development. The development law for the promotion of RES does not equally promote bioenergy applications (such as pellets) and other RES technologies. In addition, a law from the 80's that prohibits biomass use for energy purposes in Athens and Thessaloniki makes things difficult for pellets market increment. Big steps have to be taken if the government wants this fuel to be used in the energy sector.

2. Introduction

The pellet market in Greece is in an initial state. Pellets are produced in considerable amounts, but domestic consumption is hardly developed. Pellets are only used in some industrial applications. Pellet trading within the country does hardly occur, but trade with other European markets is growing significantly.

Nowadays, the major raw material for pellet production is wood residues from wood industries (furniture producers, building materials, etc.). The current biomass availability covers the demand of the pellet industry, but if the Greek pellet market starts growing more rapidly, biomass availability will become a limiting factor rather soon. At the moment, large quantities of biomass are unused. With growing demand these raw materials will be considered as potential raw material for pellet production.

In Greece, wood residues are used unprocessed, as they leave the industrial operation. These materials are often used in boilers directly by the producing company or by companies near the production site. Nowadays, with the development of wood pellet production, these residues become more important, which means that the economic profit of the company would be higher if residues were sold as raw material for pellet production.

Being at the beginning of its development, the Greek pellet market still features considerable growth potentials. In 2005, no pellet production activity was reported from Greece while, by the end of 2008, there were five pellet production companies. Two more producers will start their operation during 2009.

There is no legislative framework for pellet production and consumption in Greece. The new law on the Development of Renewable Energy Sources that the Greek Government applied (2005), does not promote biomass use for energy purposes (photovoltaic and wind energy are subsidized three times more than biomass), even though 80 % of the Renewable Energy Sources in the European Union comes from biomass.

There is a law from the mid 80s that indicates certain fuels that can be used in the major cities of the country (Athens and Thessaloniki) and that prohibits the use of other energy sources (e.g. biomass derived fuels). So, the development of a residential pellet heating market is not possible in Athens (3.761.810 inhabitants) and Thessaloniki (1.084.001 inhabitants). Therefore, almost half of the Greek population (10.964.020 people) is excluded from pellet use and this is a major drawback for the development of the market.

In general, the Greek energy policy is based on fossil fuels, which is proven by the fact that more than 90 % of the total energy consumption is derived from oil, natural gas and coal (Table 1). The government does not support the diversification of energy sources. Pellets are also affected by this policy.

Table 1: Total energy consumption in Greece (source: European Association for Coal and Lignite, 2007)

Greek energy consumption (2007)	
<u>Source</u>	<u>% of total consumption</u>
Lignite	59.8
Natural gas	25.4
Oil	6.3
Hydro	6.0
Renewable Energy	2.5

The Greek public is not well informed on Renewable Energy technologies and their advantages and there is not enough environmental consciousness. People are afraid of innovation and new technologies have to be demonstrated before they are applied broadly.

Even though pellets provide an alternative source of residential heat, the consumption in Greece is very low and limited to industrial use. Due to the reasons mentioned above, household use is negligible and Greek citizens are not aware of pellets as an alternative fuel for their houses.

This forces Greek pellet producers to focus on European markets. Especially Italy, which experiences increased demand, is attractive, also because of limited transport distances.

3. History of market development

The Greek pellet market just started to develop. The first production plant started in late 2006 when there was no consumption in the country. However, during the last three years, six more producers appeared and the production showed rapid increase. It is obvious that in a virgin market there are always business opportunities, which was the reason for the development of these industries.

Table 2: Development of the pellets market over the past years

Year	Total production capacity [tons/year]	Total production [tons/year]	Consumption [tons/year]
2008	87.000	27.800	11.100
2007	77.200	26.000	5.400

4. Pellet production

The total production during 2008 was 27.800 tons, while the installed production capacity was 87.000 tons. The majority of the production companies are only involved in this market, only one operates also in other business fields (specialized in livestock feed). Small scale producers dominate for two reasons. Firstly, the market is not large enough for large installations and secondly, big investors are not prepared to get involved to a high risk markets such as today's Greek pellet market.

There is a quality standard based on the German standard DIN 51731, produced by the Greek Standardization Organization (ELOT) which indicates the biomass specifications for combustion use. However, there is no quality standard for pellet properties, which poses problems to the companies. They do not provide official quality certifications which lowers the competitiveness of their products on the international markets.

The raw material that is used for pellet production is mainly coming from coniferous wood residues. After wood logs are lumbered and treated to make the prime product (timber for furniture, construction, etc.), the residues are sent to pelletization. There are other wood types that are being used mainly when coniferous material is on demand.

Pellet production in Greece has been active for almost three years. Therefore, the industry is not yet mature enough to establish a debate on measures to encounter upcoming barriers. In addition, the market actors are not willing to help each other as there is high lack of confidence. Thus, there is no association that could solve problems or represent the industry on Governmental levels. In addition, pellet producers have to compete with the oil industry, which has a great lobby with large influence.

Table 3: Production of wood pellets 2008 based on the size of the pellets plants.

Size of pellets plants	Production capacity 2008 [tons/year]	Total production 2008 [tons/year]	Number of pellets plants 2008	Utilisation rate 2008 [%]
small-scale (< 30.000 tons/year)	87.000	27.800	5	32

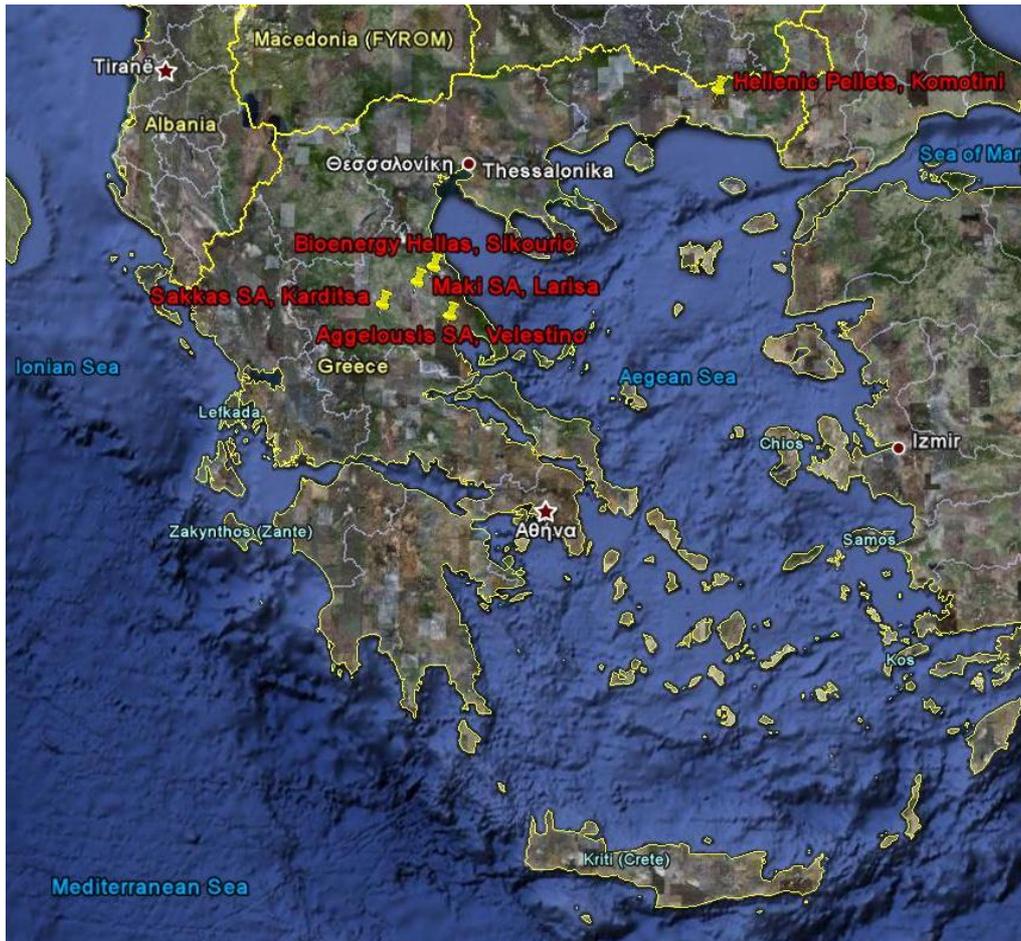


Figure 1: Location of wood pellet plants 2008.

5. Pellet trade and logistics

All of the pellet producers provide sufficient pellet storage capacities at their plants. However, most of them do not store their final product, because the demand covers the production.

At the moment, there is no household use of pellets and only minor use in industry. The producers focus on exports, mainly to Italy and always in big or small bags. The trade is always between the producer and retailer and the transportation is constantly being conducted by trucks on ferries (Igoumenitsa port to Ancona port).

Most of the produced quantities are exported (Figure 2). 52.5 % of the national production (one of the larger producers) is sold to a Greek trader, who is exporting the whole quantity to Italy.

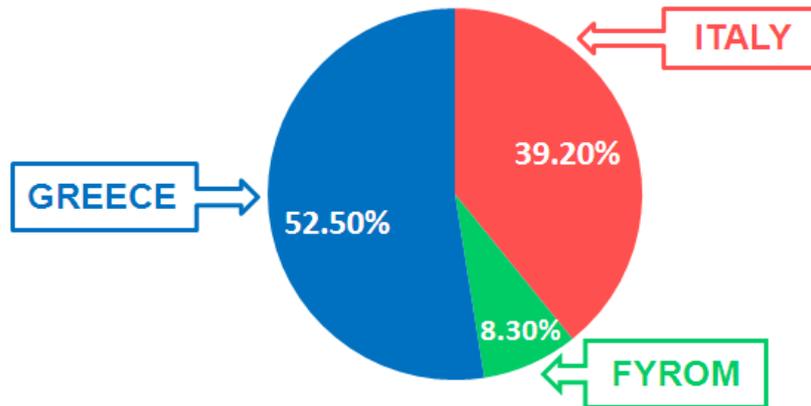


Figure 2: Total pellet sales from production sites (2008).

The total export amount for 2008 is 9.600 tons and as there is hardly any domestic consumption there are no imports.

6. Pellet consumption

Pellet consumption in the country is negligible and only small quantities have been used in industries, mainly in pilot projects. There are companies that use biomass for energy purposes and they were willing to test this new product. Especially the greenhouse industry has shown interest in pellets as they can be utilised in normal biomass boilers.

In the residential sector, fossil fuels (diesel and natural gas) are used except some northern areas where biomass is also employed. Wood is also used in fireplaces, but pellets have not found their place in the market yet.

Due to the pellet market development many companies have decided to import boilers and stoves for pellets in order to be ahead of the market progress. In addition, many Greek boiler producers are thinking of evolving their products for pellet use.

7. Mixed biomass pellets

In Greece the MBP market remains at initial stage. Only one company produces MBP officially. There are two more companies producing MBP but at experimental stage. These companies planned to enter the MBP market by the first quarter of 2009. Furthermore, there is one company which will start the production of wood pellets and MBP in the first quarter of 2009.

There is no formal quality standard for MBP in Greece. Most people who use biomass for heating purposes burn their own byproducts unprocessed like a rice processing company where rice shells are burnt directly in big biomass burners.

Legal background

Greek legislation does not cover MBP production, which is a significant drawback for this market to expand. There is a major need for legal coverage of this market, in order to promote this market. Greek legislation could follow other European countries' experience, which were successful.

Barriers and solutions

An important economical aspect that may influence market development is the continuously increasing diesel price. This motivates investors to get involved with other kinds of fuels, with a major focus on solid fuels. Thus, mixed biomass pellets are also going to evolve. Another financial aspect that can be improved with the integration of MBP in the Greek energy market could be the reduction of energy imports, in terms of oil and natural gas imports.

In Greece, the main obstacle for further market development is the lack of political will. Governmental subsidies should be offered in order to develop and implement business plans. Also another factor that hampers pellet market development is the low public environmental conscience, the increase of which seems to be crucial.

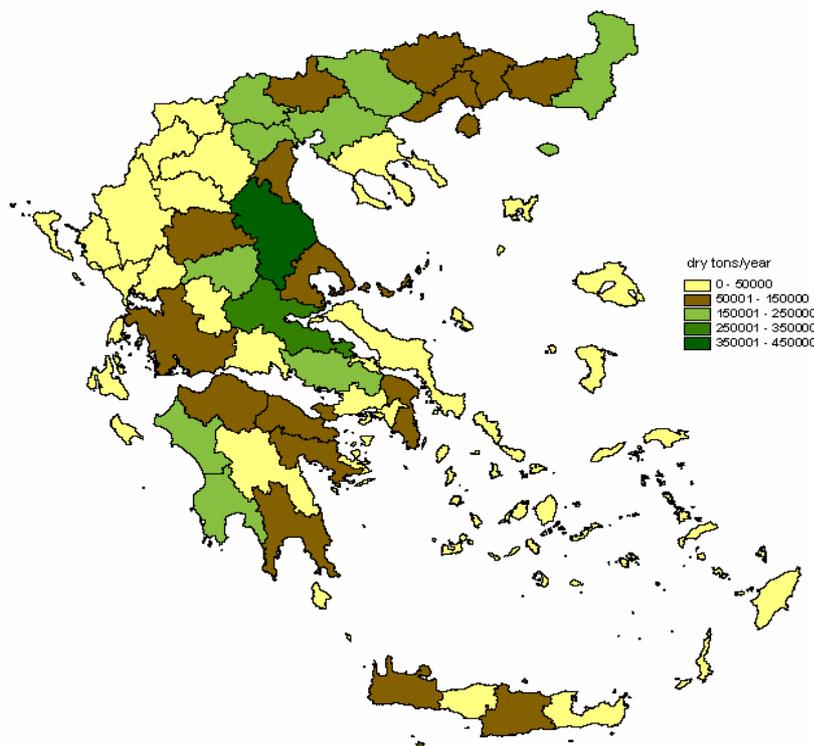


Figure 3: Geographical distribution of agricultural residues available quantities (ton/y)

Quality requirements on physical and mechanical properties of fuels

Currently, there is only one type of MBP produced. The raw material is straw from Cardoon (*Cynara cardunculus*). The physical and chemical properties are:

- Ash content → 0.5 %
- Humidity → 8 %
- Diameter → 3 mm
- Length → 6 mm

8. Legal framework & Policy

The legal framework does not cover aspects required for pellets development in Greece. For that reason a new law was applied (2005) in order to promote Renewable Energy Sources, including biomass and of course pellets. However, biomass was not treated equally in comparison to solar and wind energy (photovoltaic and wind energy are subsidized three times more than biomass). This law does not reflect the fact that 80 % of the Renewable Energy Sources in the European Union comes from biomass.

Another significant drawback for pellets development is that pellets, as all biomass, are not allowed to be used for household and district heating in the two major cities of the country (Athens and Thessaloniki). This prohibition started in the mid 80s, due to high air pollution that produced major problems to the citizens. So, the development of a pellet market for heating purposes is not possible for Athens (3.761.810 inhabitants) and Thessaloniki (1.084.001 inhabitants), which means that almost half of the Greek population (10.964.020 people) is excluded from pellet use which is a major barrier for the development of the market. However, nowadays technology has produced ways to use biomass without harmful emission levels and it is important that these technologies are excluded from prohibition.

More than 80 % of the total energy consumption in Greece comes from oil and coal. The government does not support different energy sources. One of the victims of this policy is the pellet market. The fact that the Greek energy policy is based on petroleum does not follow the path of sustainability and it is important to start focusing on alternative energy sources.

As for Mixed Biomass Pellets, the Greek legislation does not cover any aspect of this product, which makes its future uncertain. There is a major need for legal coverage of this market, in order to promote it and a way could be to follow other European countries' experience, which were successful.

9. Projections on future developments

At the moment feedstock is mostly coming from residues of sawmills, wood and furniture industries. It has to be noticed that residues during wood cutting in forests are almost 30 % of the total tree biomass and a good share of this could be used for pellets production. If national policies concerning wood residues could be applied, high quantities of wood feedstock would be available, mainly close to the big forests of the country (Epirus, Macedonia and Thrace).

The Greek pellet market is active only in terms of production, while there is hardly any consumption. This fuel could be applied for heating purposes and CHP plants, especially in the above mentioned areas, where raw material exists in large quantities. In the northwestern part of Greece there are several electricity production units using coal where pellets could be used in co-firing together with the conventional fossil fuel.

Concerning the final pellet price for the consumer, it is believed that it will always follow the fossil fuel prices and this will make it competitive. If the internal market has the perspective development, then pellets might increase their price due to high demand.

Increased internal use of pellets will oblige the production industry to apply quality standards to the final product, because the consumer will face certain problems (ash crystallization, unburned residues in the boiler or the stove, problematic supply from the storage to the boiler due to increased moisture content) and there will be a need for better quality pellets.

10. Conclusions

The pellet market in Greece is not well developed, but it has potential. However, if the proper actions are taken, the expansion of the market is sure. The biggest issue to be solved is the legal coverage of pellets. The development law has to be renewed and promote biomass energy production equally. Furthermore, the existing prohibition law for biomass combustion in Athens and Thessaloniki has to be changed after a detailed research on the results of such an action.

There is a significant demand for Greek pellet standardisation in order to improve its position in the global market in terms of quality.

The biomass availability is important, but a big percentage is not being used for energy purposes and remains unused. The responsible authorities have to be activated and try to calculate the exact availability and its possible use.

Greek citizens do not have adequate information on other energy sources than the conventional ones and cannot act alone. It is important to promote new energy technologies, in order to make pellets a part of peoples live.