

Greece turns from lignite to anthracite

Over the past few months, the construction of five new anthracite-fueled power plants has been announced in Greece. Total capacity is projected at 4,820 MW, equivalent to more than 30% of current installed power on mainland Greece. Environmentalists are up in arms, but analysts doubt whether all plants will be built.

| by Ioannis Michaletos

The companies that have announced building plans are the Greek Power Company (DEI), RWE, Edison Hellas, Endesa Hellas-Mytilineos and Terna. Projected costs of the plants are €4 billion in all. The 8 million tonnes of anthracite, or stone coal, to be imported would cost \$800 million per year based on current price indices. Prices of stone coal have risen 60% last year, sparked by high Chinese demand. The commodity prices will partly determine the prospects of the proposed investments.

One of the reasons for the sudden Greek interest in stone coal, a commodity used for electricity production mainly in Germany, the Netherlands and Denmark, is the clouded future of Greek lignite mining. Greece is one of the largest lignite, or brown coal, producers in the world and many of the Greek power plants currently run on lignite. Research published by consultancy Booz Allen Hamilton last year, commissioned by power company DEI, revealed that the cost of extracting lignite was much higher than originally thought. Moreover, they are expected to grow even further in future.

The general manager for electricity production at DEI, Avraam Mizan, said



DEI gas fired power station. Photo: Public Power Corporation S.A.

to EER that a MWh produced with lignite currently costs €54, with stone coal €60. But these figures are based on the assumption that extraction costs for lignite are 50% lower than the price of stone coal. According to Mizan, 'the rich lignite fields in Greece suffer from overproduction and lignite will soon cost as much as stone coal. If we take

into consideration that the cost of CO₂ emission rights for DEI will increase and extraction is becoming more expensive, it is not improbable that a point will be reached soon where lignite costs €10 more than stone coal per MWh.'

Booz Allen Hamilton has said that 'extraction costs must be reduced by some



DEI's 550 MW Megalopoli lignite fired power station. Photo: Public Power Corporation S.A.

€270 million per year in order to make lignite production as efficient as stone coal production'. DEI now intends to 'decrease electricity production derived from lignite from the current 62% to 23% in 2020', says a spokesperson. Hence, the need to turn to stone coal and the plans for new stone coal power plants. DEI is planning to build an 800 MW plant in the Aliveri region in southern

Greek producer of nickel, of which DEI is also a major shareholder. This plant will be located at Larko's production facilities in Larymna, southern Greece. Sources say DEI will own 75% of the shares in the two new plants.

In December 2007, German power producer RWE signed an agreement with DEI that calls for the construction of two more 800 MW anthracite power

Coal markets |

Endesa Hellas, a joint venture between the Spanish company Endesa, and the Greek conglomerate Mytilineos, has announced plans to build a 600 MW anthracite plant on the St. Nicolas site of Voiotia in southern Greece. Costs are estimated at over €700 million and completion is projected for 2013. The Greek energy analyst and media commentator George Findikakis says that Endesa, which operates similar projects in Spain, will take responsibility for the import of stone coal from world markets, most probably from Ukraine and Latin American countries.

Quite a few blogs have been launched propagating against the use of stone coal in power production

Greece in collaboration with the Aghet Cement Company, a Greek subsidiary of the French construction company Lafarge. Aghet owns a port terminal and a logistics base there that could be used for stone coal storage. In addition, DEI has plans to build another 800 MW plant together with Larko, an important

stations in Greece. RWE will own 51% in these proposed investments and will manage the companies. Locations under consideration are Alexandroupoli, Kavala (northern Greece) and the Volos in central Greece, a spokesperson of DEI says. It is not clear yet when these projects will start.

The Terna Corporation, a construction and energy group, has announced a project that includes a 460 MW anthracite-fueled power plant. Kostas Mihalakis, operations manager for the company, expects that, 'in the long term, a second plant of equivalent output will be constructed in addition to the first one'. The project is scheduled for completion by 2011. It will be located in

the Mantoudi area in the Island of Evoia, a former metallurgy complex, which was bought by Terna in early 2006. According to the Greek regulatory authority for the energy sector, RAE, 'the investment is based on 1,073,000 tons of stone coal per annum and its energy efficiency level is calculated at 43%. Total investments will reach €737.5 million, 20% of which will be financed by Terna in the period from 2008 to 2011'. According to Aristotelis Spiliotis, business development manager for Terna, the

has been classified by the Ministry of Public Works as a zone prohibiting power plants and heavy industrial complexes'. The committee has proceeded to file legal claims against the ministry in order to prevent this status from changing. Makri warns that should RAE and the other state authorities provide clearance for this construction, 'local residents will file a suit with the European Court of Justice and protest at various high levels'. The prospect of a stone coal

for WWF, 'stone coal will be imported mostly from South Africa and Ukraine, is probably cheaper than lignite, but in the long term will create environmental risks. In general, the government should work towards clean energy and not only assess everything based on cost effectiveness'.

Generally speaking, there is fierce opposition to the stone coal projects, and over the past few months quite a few blogs have been launched that propagate against the use of this commodity. In addition, citizens have formed protest groups that use a variety of methods to make themselves heard, such as the internet, public events, press releases and so on.

The costs of extracting lignite turn out to be much higher than previously thought

sources for stone coal will mostly be India and Ukraine, but 'all available options in the world market are on the table'.

Finally, Edison Hellas, a subsidiary of the French power producer EDF, has announced plans for a 600 MW stone coal power plant in the Astakos port of western Greece, facing the southern Italian coast of Kalambría. The director of the company, Ioannis Zisimos, says to EER that 'work will be completed by 2013'. RAE has not yet given a positive recommendation for this project and notes that 'a similar application by the same company for a stone coal factory in the Aliveri area in 2002 was rejected'. Zisimos, however, is confident that the plant will be built. 'The Astakos port has all the necessary installations for the project, whilst the factory is going to be constructed far away from residential areas so as not to cause problems to the local population.'

The increased use of stone coal has caused a stir among the Greek public, especially for citizens in the areas involved. Elina Makri, an attorney based in Athens who resides in the Astakos area, and is a member of the local committee against the construction of the Edison Hellas proposals, says to EER: 'The area has invested considerably in tourism and agrotourism projects and

factory is considered 'damaging to the environment and the long-term prospects of the area, which has a lot of potential for development without the burden of an energy industry, in addition to the health hazards involved'.

Harmful |

The director of the Athens office of Greenpeace, Nikos Charalambidis, says that 'stone coal might be less harmful than lignite production, but is certainly far more harmful than oil, gas and of course renewable energy resources'. He argues that 'the government should prioritize the expansion of renewable energy sources and forget about stone coal as a new energy resource'. WWF Hellas is also adamantly opposed. According to Achilleas Plitharas, a campaign director

Quite apart from this grass-roots resistance, it is doubtful whether the Greek market is big enough to accommodate all the proposed new plants. According to Findikakis, 'it is likely that just 2 or at most 3 projects will eventually be constructed. The amount of capital needed to complete this kind of energy infrastructure in Greece is just too great for the already overburdened Greek energy companies.'

Theodoros Panagoulis, an energy analyst specialized in the Greek electricity market, is certain that 'should DEI and RWE proceed, there will be no room for the other market players to invest'. The whole situation should be settled by mid-2008 if and when RAE has given the green light for the various projects. ■

Different coal types

Anthracite = stone coal = a hard compact variety of mineral coal, with the highest carbon count of all coals ('stone coal' is not to be confused with German 'Steinkohle' or Dutch 'steenkool', which are generic terms that refer to all types of coal).

Lignite = brown coal = is the 'lowest' rank of coal, which has a high moisture content and is used almost exclusively as fuel for steam-electric power generation. Greece belongs to the top-five lignite producers in the world; Germany is the biggest.