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Biogas Policies in Greece

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1. Introduction

This report was written in the frame of the BIG>EAST project (EIE/07/214), which is supported by the European Commission within the Intelligent Energy for Europe programme. The report aims to give an overview about current policies on biogas production, utilisation and related issues in order to facilitate the broader implementation of biogas projects in the European Union. Emphasis of this overview will be on policies at the European level as well as at national level as it is one of a series of six reports dealing with the target countries of the BiG>East project: Bulgaria, Croatia, Greece, Latvia, Romania, and Slovenia. Thereby, policies in Greece includes legislation, standards, tax policies, incentives, funding sources, and waste treatment policies, which affect direct or indirect the success implementation of a biogas project.

Europe's current situation with exploding fossil energy prices and rising dependency on energy imports makes it highly necessary to produce and valorise biogas in terms of heat, electricity and fuel. In 2006 about 5.35 Mtoe of biogas were produced for energy uses in the European Union, nevertheless, the potential is estimated at more than 20 Mtoe. In Greece for the year 2005 the Primary Energy Production of biogas was 36 Ktoe (the landfill gas represents 20,5Ktoe and sewage sludge gas covers 15,5Ktoe). In terms of final Energy the electricity production had a total of 179GWh¹.

However, future development of biogas projects is highly dependant on the support of politicians and policy makers that formulate policies and introduce legislations and the following market response.

Some of the main report questions seeking answers in the next chapters are the following ones:

- Which is the Policy and Legislative framework in Europe and Greece concerning RES and especially biogas?
- Which interactions occur between RES support schemes and other Policies (eg. Environmental, Agricultural Policy)?
- What is the current level of support for RES and biogas schemes in Greece compared to Europe?
- Is this support in Greece effectiveness and efficient and if no what is needed?

¹ EurObserver (2007). Biogas Barometer No 179, May-June 2007.

2. EU Policies and Targets

2.1. Renewable energy policy in the European Union

The development of renewable energy - particularly energy from wind, water, solar power and biomass - is a central aim of the European Commission's energy policy. There are several reasons for this. Renewable energy has an important role to play in reducing Carbon Dioxide (CO₂) emissions - a major Community objective. Increasing the share of renewable energy in the energy balance enhances sustainability. It also helps to improve the security of energy supply by reducing the Community's growing dependence on imported energy sources. Renewable energy sources are expected to be economically competitive with conventional energy sources in the medium to long term.²

The European Commission has set the target to reduce greenhouse gas emissions from developed countries by 30% by 2020 and it has already committed to cutting its own emissions by at least 20% and would increase this reduction under a satisfactory global agreement³. In January 2007 the European Commission presented a "Renewable Energy Roadmap" as part of its "energy-climate change" package⁴. This Roadmap was endorsed by the Commission in March 2007 with the following targets:

- A binding target to have 20% of the EU's overall energy consumption coming from renewables by 2020, and;
- A binding minimum target for each member state to achieve at least 10% of their transport fuel consumption from biofuels. However, the binding character of this target is "subject to production being sustainable" and to "second-generation biofuels becoming commercially available".

In November 2007, the European Commission presented a "Strategic Energy Technology Plan (SET-Plan) - Towards a low carbon future"⁵. The SET-Plan proposes to deliver the following results: (i) a new joint strategic planning, (ii) a more effective implementation, (iii) an increase in resources, and (iv) a new and reinforced approach to international cooperation.

Furthermore, in January 2008 the Commission has put forward a larger package on renewable energies and climate change and published a Draft Directive "on the promotion of the use of energy from renewable sources». This Directive is a comprehensive 'framework directive' on renewable energies including an update of the biofuels directive.

² Source: http://ec.europa.eu/energy/res/index_en.htm

³ Source: COM(2007)1final „An Energy Policy for Europe“

⁴ Source: COM(2006)848final „Renewable Energy Road Map: Renewable energies in the 21st century: building a more sustainable future“ (10.1.2007)

⁵ Source: COM(2007) 723 final „A EUROPEAN STRATEGIC ENERGY TECHNOLOGY PLAN (SET-PLAN) Towards a low carbon future“

2.2. Biogas policies and markets in the European Union

Within the diversification of energy resources and the increased reliance on renewable energy resources, biomass is considered to play an outstanding role in Europe's energy policy. As highlighted in the Commission Biomass Action Plan⁶, published on 7 December 2005, "Energy is key in helping Europe to achieve its objectives for growth, jobs and sustainability". The increasing oil prices and Europe's dependency on energy imports are considered to menace the economic growth within the European Community. In 2005, the EU met about 4% of its energy needs from biomass. The main objective of the Biomass Action Plan is to double this share by 2010. The plan would reduce oil imports by 8%, prevent greenhouse gas emissions worth 209 million tons CO₂-equivalent per year and create up to 300,000 new jobs in the agricultural and forestry sector.

Currently, the biogas sector in some European countries is faced by rapid technical and non-technical developments and innovations, and biogas markets are growing in these countries at a considerable pace. For instance, in Germany, the biogas market is booming although there was a significant decrease of new installed biogas plants in 2007. Until the end of 2007 about 3.700 biogas plants were in operation. Most of the newly installed biogas plants in Germany have an electric capacity of 500 kW by using CHP installations and are operated with energy crops as feedstock. New applications such as biogas up-grading to vehicle fuel (in Jameln) and feeding into the grid (in Pliening, Kerpen and Straelen) have come into operation. In Austria the number of biogas plants has increased from about 170 in 2004 to more than 340 in 2005 and to almost 600 in 2006, the majority of plants having an electric capacity of 100 to 500 kW. By September 2006, 62 landfill gas recovery plants, 134 sewage sludge digesters, 350 biogas and co-fermentation plants, 25 anaerobic waste treatment plants (industry), and 15 biowaste digestion plants (municipalities) were in operation. Finally, in Denmark the political aim is to produce 8 PJ from biogas through the construction of 40 new biogas plants by 2008. This target means a doubling of the present production and an increase of 1 PJ per year.

At the same time the biogas market is very small in many other European countries. This situation needs to be changed in the next years since these countries have to take actions in order to fulfill Europe's energy targets.

2.3. Legislation on biogas and related issues in the European Union

The production and utilization of biogas is affected and influenced by many European and national legislations.

Decision-making at European Union level involves various European institutions, in particular the European Commission, the European Parliament (EP), and the Council of the European Union. In general it is the European Commission that proposes new legislation, but it is the Council and Parliament that pass the laws. Other institutions and bodies also have roles to play. The rules and procedures for EU decision-making are laid down in the

⁶ COM (2005) 628: "Biomass Action Plan"

treaties. Every proposal for a new European law is based on a specific treaty article, referred to as the 'legal basis' of the proposal. This determines which legislative procedure must be followed. The three main procedures are 'consultation', 'assent' and 'co-decision'.

The following section gives an overview about European Directives and Regulations which are related to biogas production and utilization as well as to other important issues related to biogas. They may affect the European Biogas market directly or indirectly. The definitions about the borders of 'biogas production' allow a certain amount of flexibility, since many factors are important during the whole life cycle from agricultural feedstock production to the end use of biogas. Only the most important legislations were selected and briefly described (see Annex 1).

2.3.1 Directives

A Directive is a legislative act of the European Union which requires member states to achieve a particular result without dictating the means of achieving that result. It can be distinguished from European Union regulations which are self-executing and do not require any implementing measures. Directives normally leave member states with a certain amount of flexibility as to the exact rules to be adopted. Directives can be adopted by means of a variety of legislative procedures depending on its subject matter. An overview of European Directives on biogas is provided by Rutz & Prassl (2008)⁷ and in Annex 1.

2.3.2 Regulations

A Regulation is a legislative act of the European Union which becomes immediately enforceable as law in all member states simultaneously. Regulations can be distinguished from directives which, at least in principle, need to be transposed in national law. Under the European Constitution regulations would have become known as "European laws" but this proposal has since been dropped. An overview of European Regulations on biogas is provided by Rutz & Prassl (2008)⁸ and in Annex 1.

2.4. Summary on European biogas legislation

Although currently no specific Directive or Regulation exists which is dedicated only to the production and use of biogas, the need for the implementation of a legislative framework on biogas is highlighted by many institutions and stakeholders. For example the Committee on Agriculture and Rural Development of the European Parliament has recently drafted a report⁹ and acknowledges biogas as a vital energy resource that contributes to sustainable economic, agricultural and rural development and environmental protection. It furthermore encourages both the European Union and the Member States to exploit the

⁷ Rutz D., Prassl H. (2008): Assessment of Biogas Policies in the European Union. – Report of the BiG>East Project; www.big-east.eu

⁸ Rutz D., Prassl H. (2008): Assessment of Biogas Policies in the European Union. – Report of the BiG>East Project; www.big-east.eu

⁹ Source: Draft Report on Sustainable Agriculture and Biogas: a need for review of EU-legislation (2007/2107(INI)) 29.11.2007

huge potential in biogas by creating a favorable environment as well as maintaining and developing support schemes to inspire investment in and sustenance of biogas plants.

More specifically, the Committee on Agriculture and Rural Development of the European Parliament highlights the need for a new biogas directive and review of legislation:

- First and foremost, an EU-directive on biogas production is needed, with specific targets for the agricultural biogas share within the target for renewable energy production, statistical elements, measures for construction and promotion of biogas-installations based on a national or regional impact evaluation, measures for dissemination and promotion of results gained from prior experiences, call for national and regional planning in order to restrict legal and administrative hindrances, and recommendations for the minimum level and yearly adjustment mechanism of payment for ‘green-electricity’ and ‘green gas’.
- The legislation on the use of residues from biogas installations should be revised.
- A ban should be considered on using growth enhancers in animal feed containing heavy metals if this should be a European wide problem for later use of biogas residues on fields.
- The effective enforcement of the IPPC and Nitrates Directives are crucial, along with the Sewage Sludge Directive, Water Framework Directive, Birds Directive, Habitats Directive and the Heavy Metals legislation.
- A strategy is needed to include biogas installations into the Kyoto-mechanism.
- EU-wide legislation is needed to ensure that biogas - upgraded to natural gas quality – can be fed into the natural gas network.
- Proposals are needed for further enhancing the use of animal by-products for biogas as announced in the ‘Biomass action plan’.
- Member States should include biogas in their mid-term evaluation of existing rural and regional development programmes and propose actions for the future. Rural Development strategies, including LEADER projects should contain development scenarios for biomass and biogas utilities.
- The Commission should present a coherent report on European biogas production to the European Parliament taking into account the above mentioned proposals and the progress made.
- Efforts should be made to fund research, development and demonstration.

3. Renewable Energy policy in Greece

3.1. The General context

Renewable Energy Sources (RES) seems to have an essential and important contribution to the Greek Energy System the years to come. In parallel the last decade a favorable climate has been created for the substitution of the conventional energy sources (fossil fuels) as they contribute to the greenhouse effect and their use is associated with a series of environmental problems. Thus, RES becomes more and more important in the State Energy agenda.

The Development and further RES penetration contributes not only to the energy system but also to the environmental protection and the energy and environmental country commitments. The main RES support mechanisms in Greece nowadays issued by the legal and financial incentives and the basic components of the RES-support schemes are: a) the feed-in tariff system for RES produced electricity and b) the public funding to RES investments.

The Ministry of Development is responsible for the Energy policy in Greece. The main targets of the Greek Energy Policy are¹⁰:

- Ensuring the security of supply for the Greek energy market.
- Decrease of oil share in the country energy mix and gradually replacement from natural gas.
- Upgrading the generation, transmission and distribution systems of the electricity sector.
- Increase the shares of renewable energy sources and biofuels to the energy system.
- Further penetration of natural gas by extending the natural gas transmission and distribution networks.
- Liberalization of the electricity and natural gas market.
- Enforcement of the international linkages in the areas of electricity, oil and natural gas in order for Greece to become energy interchange centre.
- Inspection of all the links of the oil market chain, for the competitiveness support.
- Implementation of energy infrastructure and environmentally friendly energy investments through fiscal measures.
- Development an Official Energy Planning for the year 2020.

According to Electricity production from RES Directive 2001/77/EC of the European Parliament and the Council on the promotion of the electricity produced from renewable energy sources in the international electricity market (OJ L283/27.10.2001) an indicative target was set for Greece. Specifically the Directive Annex 1 sets the national indicative targets for future consumption of electricity produced from renewable energy sources in terms of a percentage of the gross electricity consumption for the EU Member States by

¹⁰ Ministry of Development (2007). 1st report for the long term Energy Policy in Greece 2008-2020 part 1, Athens August.

2010. For Greece this target was set equal to 20.1% (included the contribution of the large-scale hydroelectric plants) and for the 15 Member States the above mentioned target was set to 22%.

According to the Ministry of Development estimations reflected to its national reports regarding the penetration level of RES the installed capacity required for 2010 in order for the target to be achieved, is presented in **Table 1**¹¹. Law 3468/06 adopts the Directive into the Greek legislation.

Table1: RES installation requirements to meet the 2010 target.

	Requirements in installed capacity by 2010, in MW	Energy gene-rated in 2010 in Twh	Percentage share of every renewable energy source in 2010
Wind parks	3,372	7.09	10.42
Small-scale hydro	364	1.09	1.60
Large-scale hydro	3,325	4.58	6.74
Biomass	103	0.81	1.19
Geothermal	12	0.09	0.13
Photovoltaics	18	0.02	0.03
Total	7,193	13.67	20.10

Source: Ministry of Development

It is worth mentioning that Directive 2001/77/EC target for Greece is in line with the country international commitments and especially with the Kyoto Protocol signed in December 1997 within the context of the Rio UN framework agreement on climate change (under the Kyoto Protocol the European Union agreed to reduce emissions of greenhouse gases by 8% for the period 2008-2012 in relation to the base year 1990 and Greece must reduce the rate of increase of CO₂ and other greenhouse gases by 25%).

According to article 1 of the Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport “This Directive aims at promoting the use of biofuels or other renewable fuels to replace diesel or petrol for transport purposes in each Member State, with a view to contributing to objectives such as meeting climate change commitments, environmentally friendly security of supply and promoting renewable energy sources”. The Directive sets indicative targets for biofuels and other renewable fuels share of 2% until 31-12-2005 and 5.75% until 2010. These targets are based on the basis of energy content, of all petrol and diesel for transport purposes. The Directive was adopted in the Greek legislation by the Law 3423/2005. It is estimated that the biodiesel and bioetha-

¹¹ Ministry of Development (2005). 3rd national report regarding the penetration level of RES up to the year 2010, Athens October.

nol required satisfying the needs of Greece according to the principles set in Directive 2003/30/EC, for the year 2010 is approximately 148,000t and 390,000t respectively¹².

The Ministry for the Environment, Physical Planning and Public Works (Y.PE.XO.D.E.) is responsible for the development and implementation of environmental policy in Greece. The Environmental legal framework is based on the International Environmental Agreements and Conventions the EU and National Environmental legislation. Law 1650/85 as it is amended is the main national law for the protection of the environment in Greece. Furthermore the Ministry is responsible for the implementation of the provisions of the Kyoto Protocol according to the Law 3017/2002 with which Greece ratified the Kyoto Protocol.

Environmental policy¹³ in Greece is based upon the following principles:

- **precautionary** principle; attempts to prevent, rather than to rectify an environmental problem;
- **polluters pays** principle; recognizes the responsibility of the pollutants who are called to take rectification measures;
- **The equity and shared responsibility** principle; distributes the burden responsibility among parties and takes into account their potential to contribute towards the confrontation of environmental problems.

Among others, Ministry for the Environment, Physical Planning and Public Works has the overall responsibility for the national GHG inventory. Based on the results of the latest report for emissions inventory¹⁴:

- Base year GHG emissions for Greece (1990 for CO₂, CH₄, and N₂O - 1995 for F-gases) were estimated at 106.83 Mt CO₂ eq.
- In 2006, GHG emissions (without *LULUCF*) amounted to 133.11 Mt CO₂ eq showing an increase of 24.6% compared to base year emissions and of 27.3% compared to 1990 levels.
- Carbon dioxide emissions accounted for 82% of total GHG emissions in 2006 (without *LULUCF*) and increased by approximately 32% from 1990. Nitrous oxide emissions accounted for 7.8% of total GHG emissions in 2006 and decreased by 14% from 1990, while methane emissions accounted for 6.3 % of the total GHG emissions in 2006 and decreased by 6.8% from 1990. Finally, F-gases emissions that accounted for 3.6% of total GHG emissions in 2006, increased by 38% from 1995 (base year for F-gases).

Based on the tool of Law 2741/1999 the Special Spatial Plan for RES was drafted by the Ministry not only to stress the priority of RES but also to show the priority for sustainable development. The Plan establishes guidelines and rules for the sitting of RES plants and

¹² Ministry of Development (2004). 1st national report regarding promotion of the use of biofuels or other renewable fuels for transport in Greece for the period 2005-2010.

¹³ www.minenv.gr

¹⁴ Ministry for the Environment, Physical Planning and Public Works (2008). Annual inventory submission under the Convention and the Kyoto protocol for Greenhouse and other gases for the years 1990-2006, Athens.

gives directions to the other planning levels such as regional or local level. Furthermore, it has special provisions and references to the RES categories like wind parks or hydropower plants. For biogas plants the most suitable sites are considered those located near to the “feedstock” production and availability. The Plan excludes some areas and land uses.

3.2. Main Legislative & Administrative framework

The main legislative framework affecting RES and its evolution is the following:

- **Law 1559/1985** «Regulation of issues of alternative forms of energy and specific issues of power production from conventional fuels and other provisions» (Official Gazette 135/A/85). This law can be said that is the start point of RES introduction in Greece although its impact was limited.
- **Law 2244/1994** «Regulation of power generation issues from renewable energy sources and conventional fuels and other provisions» (Official Gazette 168/A/94). The Law was based on the German Energy Law (Stromeinspeisungsgesetz) and it was the real start of RES in Greece. This Law was replaced by law 2773/99.
- **Law 2773/99** «Liberalization of the Electricity Market – Regulation of Energy Policy Issues and other Provisions» (Official Gazette 286/A/99). This law is the basic law governing RES electricity and the liberalisation of the domestic electricity market (as it has incorporate the majority of the Law 2244/1994 provisions). At present, there is no Greek law dealing specifically with heat production from RES. Law 2773/99 introduced a new license, the so-called electricity generation license, which is nowadays the first license required to be obtained by any electricity-producing plant (conventional or RES-based), in a licensing procedure which includes permits like generation licence, presiting permit, approval of environmental terms and conditions, installation license, operation license, etc.
- **Law 2941/2001** «Simplification of procedures for establishing companies, licensing Renewable Energy Sources plants, regulation of issues of the company GREEK SHIPYARDS S.A. and other provisions» (Official Gazette 201/A/01). This law supplemented Law 2773/99 with important provisions about renewable like under which conditions a RES plant may be installed in forests and the characterisation of all RES projects as projects of public utility status.
- **Law 3017/2002** “Ratification of the Kyoto Protocol to the Framework-convention on climate change” (Official Gazette 117/A/02). By this law the Greek State put on an official footing the country’s commitment to actions against climate change.
- **Law 3010/2002** «Harmonization of Law 1650/1986 with Directives 97/11/EC and 96/61/EC, procedure for delineation and regulation of matters regarding water courses and other provisions» (Official Gazette 91/A/02). This new law harmonizes the national legislation to the provision of Directive 96/61/EC (IPPC Directive) set-

ting the new environmental process amended for that reason the basic environmental Law 1650/86.

- **Law 3175/2003** “Exploitation of geothermal potential, district heating and other provisions” (Official Gazette 207/A/03) deals with the rational use of geothermal energy and sets the basic rules.
- **Law 3423/2005** «Introduction of biofuels and other renewable fuels on the Greek market» (Official Gazette 304/A/05). The Directive 2003/30/EC has been adopted by this law in the Greek legal framework and the use of biofuels is promoted through it.
- **Law 3468/2006**, «Generation of Electricity using Renewable Energy Sources and high-Efficiency Cogeneration of Electricity and Heat and Miscellaneous Provisions» (Official Gazette 129/A/06). The new law for RES (law 3468/2006) is dedicated to the promotion of RES and in order to speed up the licensing procedures and to reform the electric energy production from renewable energy sources. The law sets the new environment in the electricity generation, the guaranteed market price is increased and the market time expands from 10 to 20 years. Furthermore, the licensing deadlines are being reduced. Although the new pricing tariff system for electricity production from RES and CHP systems set a tariff of 73€/MWh (€75,82/MWh for the year 2007) for biogas plants the electricity prices are rather low. A higher electricity price must be examined based on the form of Biomass (there is no differentiation according to biomass form).

New pricing tariff system for electricity production from RES and CHP systems

Generation of electricity from:	Price of energy (Euro/MWh)	
	Interconnected System	Non-interconnected islands
(a) wind energy	73	84.6
(b) wind energy from sea wind farms	90	
(c) hydraulic energy exploited in small-scale hydroelectric plants with an installed capacity up to fifteen (15) MW _e	73	84.6
(d) Solar energy utilized in photovoltaic units with an installed capacity less than, or equal to one hundred (100) kW _{peak} , and which will be installed in a lawfully owned or possessed property or in adjacent properties of the same owner or lawful possessor	450	500
(e) Solar energy exploited in photovoltaic units with an installed capacity of over one hundred (100) kW _{peak}	400	450
(f) Solar energy exploited in units employing a technology other than that of photovoltaics with an installed capacity up to five (5) MW _e	250	270
(g) Solar energy exploited in units employing a technology other than that of photovoltaics with an installed capacity of over five (5) MW _e	230	250
(h) Geothermal energy, biomass, gases released from sanitary landfills and biological treatment plants and biogases	73	84.6
(i) Miscellaneous RES	73	84.6
(j) High-efficiency cogeneration of heat and electricity	73	84.6

The main licensing procedure changes are the following (Table 2)¹⁵.

Table2: RES licensing procedure changes.

old framework	new framework
Licensing procedure	
1) Installation permit	
Minimum 3 years from applying day until permit approval	New deadlines for permit procedure steps, ends to overall application permit period of less than 1 year
2) Exemption of electricity generation permit procedure for small RES systems	
RES systems up to 20kW	i) geothermal systems ≤ 0,5MW ii) biomass or biofuels ≤ 100kW iii) PV systems ≤ 150kW iv) wind energy systems <ul style="list-style-type: none"> ▪ Isolated microgrids: ≤ 20kW ▪ Grid-connected islands: ≤ 40kW ▪ Mainland grid: ≤ 50kW v) other RES ≤ 50kW
3) Framework for permit procedure concerning offshore wind parks, geothermal plants, RES hybrid plants	
Not applicable due to lack of legislative framework	Especially for the hybrid systems, it is foreseen a periodic assessment and a compensation for the benefits that result at the autonomous island grids
4) Abatement of the 50MW upper limit for operation permits	
5) Favourable treatment of petitions for RES electricity generation permits whereas the legal status of the RES project owner is of a public basis with the participation of municipality companies	
Tariff system	
Tariffs are based to the PPC's pricing system	New tariffication system, independent of the PPC's pricing system and varying upon the applied technology for the production of electricity.
1) Autoproducers tariff system: same pricing system for the electricity surplus that they sell to the grid with the independent power producers' that are selling their entire electricity production to the grid.	
2) Contract agreement for the purchase of electricity from RES & CHP	
10-year contract with the RES-electricity producer, for the purchase of his electricity	10-year contract with the RES-electricity producer, for the purchase of his electricity. Renewal option for 10 more years
charge fee for the local authorities	
The special levy for the local administration organizations hosting such companies is 2%	The special levy is raised to 3% with the exception of PV producers who are exonerated.
Guarantees of Origin	
Not predicted	System of issuing guarantees of origin for RES electricity and the establishment of the relevant monitoring body

¹⁵ CRES (2007). Manual for RES and micro CHP in Rural Lodges. Under the project Green Lodges Contact No:EIE/04/252/S07.38608

- **Law 3661/2008** «measures for the reduction of energy consumption of buildings and other provisions» (Official Gazette 89/A/08). The Directive 2002/91/EC has been adopted by this law in the Greek legal framework. The main articles of the law concern building codes and minimum requirements for Energy Efficiency in new and existing buildings.

The main relevant Greek legislation was selected and can be found in **Annex 2**.

3.3. Financial Instruments

Financing the investments of Renewable Energy Technologies (RET) remains a major and first priority issue. Nowadays, more and more possible investors are willing to create green investments. The access to financing resources and the development of adequate financial instruments are only two of a series of many parameters dealing with a biogas project financing.

Currently, among others, there are two main state financial-support instruments that provide substantial public subsidies to RES investment projects:

- The so-called «National Development Law» (Law 3299/2004 as was modified by law 3522/2006, Article 37, Official Gazette 276 A', December 22, 2006)
- The Greek Operational Programme for Competitiveness, one of the eleven (11) National and the thirteen (13) Regional Operational Programmes, in which the Third Community Support Framework (CSF III; 2000-2006) for Greece is divided (the Operational Programme “Competitiveness & Entrepreneurship” is scheduled to continue for the period 2007-2013).

The Operational Programme for Competitiveness (OPC) in the CSF III was initiated by the Ministry of Development and it is the continuity of the successful implementation of the Operational Programme for Energy (1994-1999) which drew funds from the 2nd Community Support Framework (CSF II) for Greece.

For more information concerning Financial Instruments and Economic incentives for Energy Investments see www.cres.gr and www.antonistikotita.gr.

RES projects can receive financial support from a series of other programmes managed by the Ministry of Rural Development and Food.

National Development Law

The Law 3299/2004 as was modified by law 3522/2006, Article 37, Official Gazette 276 A', December 22, 2006 covers all private investments implemented in Greece (dealing with all sectors of economic activity). Regions facing certain problems like low incomes per capita or high unemployment rates receive higher investments subsidies compared to others. Thus, this instrument has a strong regional character (Greece is divided in 3 zones). Investments in RES installations (both electricity- and heat- producing ones) have a special status under this Law. Proposals for private investments can be submitted to the National

Development Law at any time. The Law does not have any total budget cap, thus there is (theoretically) no limit in the number and budget of proposals that can be funded.

Among other the Development Law gives incentives in environmental protection and waste disposal projects, cogeneration of electricity and heat and energy production from biomass.

National Operational Programme for Competitiveness - NOPC (CSF III)

The Operational Programme “Competitiveness” (OPC)¹⁶ that uses funds from the Community Support Framework III provides public funding for RES and energy saving, substitution and other energy-related actions as high as Euro 1.644 billion. Public aid accounts for 30% of the eligible cost of the projects and goes up to 60% (in certain projects). Grants were awarded to RES projects by NOPC following rounds of public calls for RES investment proposals and subsequent competitive evaluation of the submitted proposals (per round). A summary of RES funded projects from the CSF III is given below (**Table 3**).

Table 3: Summary data of cost and capacity of RES funded from the 3rd CSF

	Wind	Small hydro	Photo-voltaics	Bio-mass	Total
Number of investments	51	27	91	3	172
Total budget in million Euro	549.59	122.20	38.30	25.70	735.79
Total public expenditure in million Euro	175.40	49.70	17.30	10.30	252.70
Total installed electric power in MW	554.69	88.40	4.32	17.30	664.71
Annual power production in billion kWh	1,392.30	318.70	5.32	136.30	1,852.62

Source: Ministry of Development¹⁷

A RES investment-subsidy programme, very similar to that of NOPC/CSF III, also existed in the Second Community Support Framework (CSF II; 1994-1999) for Greece. This Programme entitled Operational Programme for Energy (OPE) granted about 80 million Euro to 42 RES investment projects, having a total budget of about 197 million Euro and a total installed capacity of 154MW. This programme was very helpful in materialising a large number of commercial-scale RES projects in Greece at that time.

3.4. The energy market

The establishment of a unique energy market (open and competitive) in the EU Member States is a great challenge for the European Union. This market will have a major effect on the customers like industry or domestic consumers and will affect one way or another consumers choice.

¹⁶ See website of Ministry of Development www.ypan.gr

¹⁷ 4th National report regarding the penetration level of RES up to the year 2010 (article 3 of Directive 77/2001/EC).

Developments in the Electricity market

Directive 96/92/EC of the European Parliament and the European Council on the deregulation of the internal electricity market came into force on 19 February 1997. In Greece, the electricity market deregulation began since 19/02/2001 (law 2773/99). The law 2773/99 was modified by law 3426/2005 in order to adopt the provisions of the Directive 2003/54/EC (common rules for the internal electricity market). More specifically law 3426/2005 introduces the further opening up of the market, with gradual deployment of eligibility rights to all customers (by the 1st of July 2007 all customers are considered as eligible). In Greece although the electricity market is fully liberalised since the 1st of July 2007 the process is rather slow.

Developments in the Gas Market

Due to the fact that natural gas has been introduced in the Greek energy mix by 1996 the country was granted an exception until November 2006 to implement the Directive 98/30/EC. Nevertheless, Law 3175/2003 is the first step toward liberalization of the gas market. The full framework for the liberalization of the natural gas market was given by Law 3428/2005 (the Gas Law) which transpose Directive 2003/55/EC (the Gas Directive) into the Greek legislation.

According to Law 3428/27.12.2005 “Liberalization of Natural Gas Market” (Official Gazette 313/A/2005), Article 39:

“The use of Natural Gas Systems pursuant to the provisions of this law is also allowed for the transmission of biogas, gas produced from Biomass and other kinds of gases, provided that it is so possible from a technical point of view and the technical specifications are met, after taking into consideration the quality requirements and the chemical features thereof”.

4. Biogas Policy and contribution to national targets

There is no specific biogas legislation in Greece. The development of biogas projects and biogas exploitation falls mainly under the provisions of the general RES legislation and fiscal measurements and the Greek environmental policy for waste management.

In November 1997, the Commission published a White Paper entitled «Energy for the future: renewable sources of energy». The paper sets an ambitious goal of doubling from 6 to 12% the share of renewable energies in the total energy demand. Biomass should produce more than 80% of the total RES additional contribution by 2010. Agriculture is expected to produce more than 50% of the additional Renewable Energies to be implemented by 2010, through energy crops and use of residues and the Biogas (livestock, sewage treatment, landfills) target for 2010 is 15Mtoe. Thus, important efforts particularly concentrated on farmers have to be undertaken in order to realise this objective because the farmers' decision to become involved in biomass is essential. Countries from Eastern Europe will also have a major impact on the European agriculture picture.

As it is already mentioned the new law 3468/2006 tries to promote of RES, to speed up the licensing procedures and to reform the electric energy production from renewable energy sources. The new pricing tariff system for electricity production from RES and CHP systems set a tariff of 73€/MWh (75,82€/MWh for the year 2007) for biogas plants. According to the Greek Ministry of Development estimations, in order for Greece to cover a part of its gross national electricity consumption by 2010 from renewable energy sources (RES), biomass installation requirements to meet the 2010 target are 103MW (0.81TWh or 1.19% of RES share in 2010).

In parallel, The 2nd National Programme for Climate Change was developed and adopted in 2003 (Ministerial Council Act 5/27-2-2003) with an aim to establish a set of policies and measures to reduce greenhouse gas emissions. The aim of the Programme was for Greece to fulfill its national obligations under the Kyoto Protocol during the commitment period 2008-2012 (that is to limit the increase of greenhouse gas emissions to 25% during that period compared to base year emissions).

The main actions foreseen by the 2nd National Programme were:

- Further penetration of Natural Gas (NG) in all energy demand sectors and electricity generation, including combined heat and power generation (CHP).
- Promotion of Renewable Energy Sources for electricity and heat production
- Energy saving in industry and the residential – tertiary sector.

Policies used to promote renewable energy development are described also in the revised Greek National Programme for Climate Change, which estimates realistic CO₂ savings of 4.5 Mt CO₂-eq from the increased use of Renewables. Among others it is estimated that Anaerobic Digestion of pig manure (35% of the total breeding animals in 2010 and 50% of the total breeding animals in 2015 respectively) can reduce greenhouse gas emissions by 60,000t CO₂-eq in 2010 and 83,000t CO₂-eq in 2015.

According to the Ministry for the Environment, Physical Planning and Public Works data (National Inventory report 2008):

- **GHG emissions from Energy** in 2006 increased by 35% compared to 1990, while the average annual rate of increase for the period 1990 – 2006 was 1.9%.
- **GHG emissions from Agriculture** decreased by 13.86% between 1990 and 2006, with an average annual rate of decrease of 0.86%. Manure management is responsible for methane and nitrous oxide emissions. Methane is produced during the anaerobic decomposition of manure, while nitrous oxide is produced during the storage and treatment of manure before its use as fertilizer. CH₄ and N₂O from manure management in 2006 accounted for 4.19% and 2.49% of total GHG emissions from *Agriculture* respectively, and for 0.37% and 0.22% of total national emissions respectively (without *LULUCF*).
- GHG emissions from *Waste* in 2006 decreased by 20.38% compared to 1990 levels, while the average annual rate of decrease of emissions for the period 1990 – 2006 is estimated at 1.27%. Greenhouse gases emissions from solid waste disposal on land present an increasing trend, while, on the contrary, emissions from wastewater handling are gradually decreasing.

Renewable Energy Sources contributed 1.8 Mtoe of the Greek Total Primary Energy Supply (31.5Mtoe) in 2006. Biomass accounted 56% and covers mainly thermal needs¹⁸. Biogas from landfills, wastewater treatment plants and a couple of industrial applications contributed 36 ktoe mainly for electricity generation. The installed capacity of electricity generation from biogas was 24 MW, when the installed capacity of electricity generation from renewable energy sources was 3,894 MW. The gross electricity generation from biogas was 92 GWh (1.1% of RES electricity generation)¹⁹. Currently (2007) fifteen biogas plants are in operation in Greece²⁰. The utilisation of biogas in most of these cases mainly covers heat demands of the plants. Nevertheless, the installed capacity of electricity generation from biogas was 37.4 MW and the gross electricity generation reached to 155.9 GWh²¹. The most energy was produced in the area of Athens due to the operation of the Municipal Wastewater Treatment Plant (MWTP) of Psytallia and the Sanitary landfill (SL) of Ano Liosia, which treat liquid and solid wastes respectively.

Based on the last available GHG national report prepared by the Ministry for Environment, Physical Planning and Public Works (National Inventory report 2008), the total CH₄ recovery from the solid waste disposal sites (SWDS) of Athens, Patra, Thessalonica and Larissa was estimated to 53,800kt (the CH₄ emissions from managed and unmanaged solid waste disposal in 2006 was reached to 123,860kt).

¹⁸ Greek Ministry of Development (2008). Energy Balance 2006, www.ypan.gr

¹⁹ Ministry of Development (2007), 1st report for the long term Energy Policy in Greece 2008-2020, part 1, Athens, August.

²⁰ CRES Energy Policy and Planning Division Database.

²¹ Hellenic Transmission System Operator SA, www.desmie.gr

5. Conclusions

The energy sector in Greece undergoing the last years significant changes due to the EU and national policies in the field of energy and environment (eg. full liberalization of the energy market, environmental protection). As a result the impact and effects of the implementation of these policies are not yet visible and especially for the near future (eg. energy price, energy mix). Lignite, the main domestic fossil fuel resource of Greece, it seems that will continue to play a major role in the country's fuel mix in the future, but further RES penetration is a necessity.

The promotion of RES in Greece is based not only to the great potential of the country but also to the state priority toward RES electricity and emissions reduction. Although today there is still heavy state involvement in the economy the policy for the future is the reduction of the role of the state and the further development of the market rules and financial-support schemes.

The new law for RES (3468/2006) is dedicated to the promotion of RES, sets a new environment in the electricity generation and among others, simplifies the licensing procedures, the guaranteed market price is increased (the new pricing tariff system for electricity production from RES and CHP systems set a tariff of 73€/MWh for biogas plants) while the licensing deadlines are being reduced. However, it seems that the situation for the attractiveness of new biogas investments has not been significantly changed until now.

During last years renewable development in Greece is positively affected by the country's very good resource potential and the state policy. The Legislative framework has significantly improved by the introduction of new RES and environmental legislation. However, although the legislative framework (eg. energy and environmental policy, EU and country commitments, new law for RE matters, etc) and the financial environment have changed the picture, so that new biogas plants were constructed and operated, there are still barriers (mainly no technological) which affect to further biogas exploitation and deployment in Greece (eg. public perception, experience and awareness mainly on farm scale and industrial biogas applications, lack of price for the heat production, licensing procedure, lack of «gate fees» for waste disposal, externalities like eutrophication, groundwater pollution, replacement of fossil fuels which are not assessed and monetized, price of the biogas-produced electricity, etc).

Annex 1: EU Legislation

Directives

► DIRECTIVE 2000/76/EC

“on the **incineration of waste**”

To prevent and limit negative environmental effects by emissions into air, soil, surface and ground-water, and the resulting risks to human health, from the incineration and co-incineration of waste.

► DIRECTIVE 2001/77/EC

„on the promotion of **electricity produced from renewable energy sources** in the internal electricity market“

The purpose of this Directive is to promote an increase in the contribution of renewable energy sources to electricity production in the internal market for electricity and to create a basis for a future Community framework thereof.

For the purposes of this Directive, the following definition applies: ‘renewable energy sources’ shall mean renewable non-fossil energy sources (wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases);

► DIRECTIVE 2001/80/EC

“on the **limitation of emissions of certain pollutants** into the air from large combustion plants”

This Directive shall apply to combustion plants, the rated thermal input of which is equal to or greater than 50 MW, irrespective of the type of fuel used (solid, liquid or gaseous).

► DIRECTIVE 2002/91/EC

„on the **energy performance of buildings**“

The objective of this Directive is to promote the improvement of the energy performance of buildings within the Community, taking into account outdoor climatic and local conditions, as well as indoor climate requirements and cost-effectiveness.

Article 5 of the Directive is related to new buildings and is relevant to the use of biogas since Member States shall take the necessary measures to ensure that new buildings meet the minimum energy performance requirements referred to in Article 4. For new buildings with a total useful floor area over 1,000 m², Member States shall ensure that the technical, environmental and economic feasibility of alternative systems such as:

- decentralised energy supply systems based on renewable energy,
- CHP,
- district or block heating or cooling, if available,
- heat pumps, under certain conditions,

is considered and is taken into account before construction starts.

► **DIRECTIVE 2003/30/EC**

„on the promotion of the use of **biofuels** or other renewable fuels for transport“

This Directive aims at promoting the use of biofuels or other renewable fuels to replace diesel or petrol for transport purposes in each Member State, with a view to contributing to objectives such as meeting climate change commitments, environmentally friendly security of supply and promoting renewable energy sources.

Upgraded biogas (biomethane) can be used as renewable transport fuel. For the purpose of this Directive, the following definitions are related to the biogas sector:

- ‘biofuels’ means liquid or gaseous fuel for transport produced from biomass;
- ‘biomass’ means the biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste;
- ‘biogas’: a fuel gas produced from biomass and/or from the biodegradable fraction of waste, that can be purified to natural gas quality, to be used as biofuel, or wood-gas;

► **DIRECTIVE 2003/55/EC**

“concerning common rules for the **internal market in natural gas** and repealing Directive 98/30/EC”

This Directive establishes common rules for the transmission, distribution, supply and storage of natural gas. It lays down the rules relating to the organisation and functioning of the natural gas sector, access to the market, the criteria and procedures applicable to the granting of authorisations for transmission, distribution, supply and storage of natural gas and the operation of systems.

The rules established by this Directive for natural gas, including liquefied natural gas (LNG), also applies to biogas and gas from biomass or other types of gas in so far as such gases can technically and safely be injected into, and transported through, the natural gas system.

Since this directive was introduced, biogas industry has been working to obtain a priority for biogas feed-in into the pipeline system, analogous to EEG in Germany. In Germany it is possible to feed biogas into the natural gas system.

► **DIRECTIVE 2003/87/EC**

„establishing a scheme for **greenhouse gas emission allowance trading** within the Community and amending Council Directive 96/61/EC“

This Directive establishes a scheme for greenhouse gas emission allowance trading within the Community (hereinafter referred to as the ‘Community scheme’) in order to promote reductions of greenhouse gas emissions in a cost-effective and economically efficient manner.

► **DIRECTIVE 2004/8/EC**

„on the promotion of **cogeneration** amending Directive 92/42/EEC“

The purpose of this Directive is to increase energy efficiency and improve security of supply by creating a framework for promotion and development of high efficiency cogeneration of heat and power based on useful heat demand and primary energy savings in the internal energy market, taking into account the specific national circumstances especially concerning climatic and economic conditions. Cogeneration technologies covered by this Directive are:

- (a) Combined cycle gas turbine with heat recovery
- (b) Steam backpressure turbine
- (c) Steam condensing extraction turbine
- (d) Gas turbine with heat recovery
- (e) Internal combustion engine
- (f) Microturbines
- (g) Stirling engines
- (h) Fuel cells
- (i) Steam engines
- (j) Organic Rankine cycles
- (k) Any other type of technology or combination thereof falling under the definition laid down in Article 3(a)

► **DIRECTIVE 2006/12/EC**

„on **waste**“

For the purposes of this Directive ‘waste’ shall mean any substance or object in the categories set out in Annex I of this directive (e.g. industrial waste, agricultural waste, waste from households, etc.) which the holder discards or intends or is required to discard. However, gaseous effluents emitted into the atmosphere, animal carcasses and the following agricultural waste (faecal matter and other natural, non dangerous substances used in farming) and waste waters, with the exception of waste in liquid form are excluded from this directive since these materials are covered by other directives.

The directive requests Member States to take appropriate measures to encourage the prevention or reduction of waste production and its harmfulness, in particular by:

- (i) the development of clean technologies more sparing in their use of natural resources;
- (ii) the technical development and marketing of products designed so as to make no contribution or to make the smallest possible contribution, by the nature of their manufacture, use or disposal, to increasing the amount or harmfulness of waste and pollution hazards;
- (iii) the development of appropriate techniques for the final disposal of dangerous substances contained in waste destined for recovery;

It also requests Member States to take appropriate measures to encourage:

- (i) the recovery of waste by means of recycling, reuse or reclamation or any other process with a view to extracting secondary raw materials; or
- (ii) the use of waste as a source of energy.

► COUNCIL DIRECTIVE 86/278/EEC

“on the protection of the environment, and in particular of the soil, when **sewage sludge** is used in agriculture”

The purpose of this Directive is to regulate the use of sewage sludge in agriculture in such a way as to prevent harmful effects on soil, vegetation, animals and man, thereby encouraging the correct use of such sewage sludge.

► COUNCIL DIRECTIVE 91/676/EEC

„concerning the protection of waters against pollution caused by **nitrates** from agricultural sources“

This Directive has the objective to reduce water pollution caused or induced by nitrates from agricultural sources and to prevent further such pollution.

With the aim of providing for all waters a general level of protection against pollution, Member States shall, within a two-year period following the notification of this Directive: (a) establish a code or codes of good agricultural practice, to be implemented by farmers on a voluntary basis, which should contain provisions covering at least the items mentioned in Annex II A of the Directive, and (b) set up where necessary a programme, including the provision of training and information for farmers, promoting the application of the code(s) of good agricultural practice.

Furthermore, Member States shall submit to the Commission details of their codes of good agricultural practice and the Commission shall include information on these codes in the report referred to in Article 11. In the light of the information received, the Commission may, if it considers it necessary, make appropriate proposals to the Council.

► COUNCIL DIRECTIVE 96/61/EC

“concerning **integrated pollution prevention and control**”

The purpose of this Directive is to achieve integrated prevention and control of pollution arising from the activities listed in Annex I. It lays down measures designed to prevent or, where that is not practicable, to reduce emissions in the air, water and land from the abovementioned activities, including measures concerning waste, in order to achieve a high level of protection of the environment taken as a whole, without prejudice to Directive 85/337/EEC and other relevant Community provisions.

► COUNCIL DIRECTIVE 1999/31/EC

“on the **landfill** of waste”

The EU Landfill Directive represents a step change in the way we dispose of waste and sets demanding targets to reduce the amount of biodegradable municipal waste that is landfilled. These targets are:

- By 2010 to reduce biodegradable municipal waste landfilled to 75% of that produced in 1995
- By 2013 to reduce biodegradable municipal waste landfilled to 50% of the produced in 1995
- By 2020 to reduce biodegradable municipal waste landfilled to 35% of that produced in 1995.

► COUNCIL DIRECTIVE 2003/96/EC

“restructuring the Community framework for the **taxation of energy products and electricity**”

The Directive widens the scope of the EU's minimum rate system for energy products, previously limited to mineral oils, to all energy products including coal, natural gas and electricity. In particular, the Directive will:

- reduce distortions of competition that currently exist between Member States as a result of divergent rates of tax on energy products;
- reduce distortions of competition between mineral oils and the other energy products that have not been subject to Community tax legislation up to now;
- increase incentives to use energy more efficiently (to reduce dependency on imported energy and to cut carbon dioxide emissions); and
- allow Member States to offer companies tax incentives in return for specific undertakings to reduce emissions.

► COUNCIL DIRECTIVE 2004/67/EC

“concerning measures to safeguard **security of natural gas supply**”

This Directive establishes measures to safeguard an adequate level for the security of gas supply. These measures also contribute to the proper functioning of the internal gas market. It establishes a common framework within which Member States shall define general, transparent and non-discriminatory security of supply policies compatible with the requirements of a competitive internal gas market; clarify the general roles and responsibilities of the different market players and implement specific non-discriminatory procedures to safeguard security of gas supply.

This directive also includes the aim to promote domestic production of gas and the diversification of sources of gas supply.

Regulations

► REGULATION (EC) No 1774/2002

“laying down **health rules concerning animal by-products** not intended for human consumption”

This Regulation lays down animal and public health rules for (a) the collection, transport, storage, handling, processing and use or disposal of animal by-products, to prevent these products from presenting a risk to animal or public health, and (b) the placing on the market and, in certain specific cases, the export and transit of animal by-products and those products derived therefrom referred to in Annexes VII and VIII of the Regulation.

This Regulation also includes catering waste if it is destined for use in a biogas plant or for composting. It was amended by several new Commission Regulations including also issues on biogas:

- COMMISSION REGULATION (EC) No 808/2003
- COMMISSION REGULATION (EC) No 668/2004
- COMMISSION REGULATION (EC) No 92/2005

- COMMISSION REGULATION (EC) No 93/2005
- COMMISSION REGULATION (EC) No 416/2005
- COMMISSION REGULATION (EC) No 181/2006
- COMMISSION REGULATION (EC) No 208/2006
- COMMISSION REGULATION (EC) No 2007/2006

► **REGULATION (EC) No 2003/2003**

“relating to **fertilizers**”

This Regulation shall apply to products which are placed on the market as fertilisers designated ‘EC fertiliser’. This includes only mineral and synthetic fertilizers and does not cover fertilizers from anaerobic fermentation residues.

► **COUNCIL REGULATION (EC) No 1782/2003**

“establishing **common rules for direct support schemes under the common agricultural policy** and establishing certain **support schemes** for farmers and amending Regulations (EEC) No 2019/93, (EC) No 1452/2001, (EC) No 1453/2001, (EC) No 1454/2001, (EC) 1868/94, (EC) No 1251/1999, (EC) No 1254/1999, (EC) No 1673/2000, (EEC) No 2358/71 and (EC) No 2529/2001”

This Regulation establishes:

- common rules on direct payments under income support schemes in the framework of the common agricultural policy which are financed by the ‘Guarantee’ Section of the European Agricultural Guidance and Guarantee Fund (EAGGF), except those provided for under Regulation (EC) No 1257/1999;
- an income support for farmers (hereinafter referred to as the ‘single payment scheme’);
- support schemes for farmers producing durum wheat, protein crops, rice, nuts, energy crops, starch potatoes, milk, seeds, arable crops, sheep meat and goat meat, beef and veal and grain legumes.

Annex 2: Greek Legislation

► **Joint Ministerial Decision (JMD) 22912/1117/2005, Official Gazette 759/B/2005**

Joint Ministerial Decision 22912/1117/2005 defines measures and terms for the prevention and reduction of environmental pollution and the incineration of waste. With this JMD the EU Directive 2000/76/EC on waste incineration is integrated in the Greek legislation.

► **Law 3468/2006, Official Gazette 129/A/2006**

The Law 3468/2006, Production of Electricity from Renewable Energy Sources and High-Efficiency Cogeneration of Electricity and Heat and Miscellaneous Provisions (Official Gazette 129/A/2006) set a new environment in the production of electricity energy form RES. This new RES law, among others:

- a) sets new administrative procedures for the promotion of RES and simplifies the licensing procedures,
- b) sets a new pricing tariff system for electricity production from RES and CHP systems and
- c) aims to play a main role toward the national target for 20,1% production of electricity from RES until 2010 and 29%, until 2020.

With this new RES law the EU Directive 2001/77/EC on RES promotion is integrated in the Greek legislation.

A number of MD followed the law 3468/06 like Δ6/Φ1/21691/ 2006, Δ6/Φ1/5757, Δ5/Φ1/25968, Δ5/Φ1/13303, Ministerial Decision Δ6/Φ1/οικ.18359/2006 "Form and content of agreements to purchase electricity in the System and the Interconnected Network according to the provisions of article 12 par. 3 of Law 3468/2006" (OG 1442/B/2.10.2006), Ministerial Decision 5707/2007 "Regulation of Authorisations for the Production of Electricity from Renewable Energy Sources and High Efficiency Cogeneration of Heat and Electricity" (OG 448/B/3.04.2007), Ministerial Decision Δ6/Φ1/οικ.1725 "Determination of the type and content of purchase agreements of electricity produced from Renewable Energy Sources and High Efficiency Cogeneration of Heat and Electricity..." (OG 148/B/6.02.2007).

► **JMD 29457/2005, Official Gazette 992/B/2005**

This JMD is transposes EU Directive 2001/80/EC and deals with the emissions of certain pollutants form from large combustion plants

► **Law 3661/2008, Official Gazette 89/A/2008**

Law 3661/2008 on the measures for the reduction of energy consumption of buildings issued on 19 May 2008. This law adopts the EU Directive 2002/91/EC (Energy Performance in Buildings Directive).

► **Law 3423/2005, Official Gazette 304/A/2005**

Law 3423/2005 Introduction of biofuels and other Renewable fuels in the Greek market aims to promote the biofuels and other Renewable fuels adopt the EU Directive 2003/30/EC. This law is an addition to Law 3054/2002 «Organization of petroleum products market and other provisions» (Official Gazette 230/A/2002).

► **Law 3428/2005, Official Gazette 313/A/2005**

Law 3428/2005 “Liberalisation of the Natural Gas Market” regulates the regime of operation of the natural gas market in Greece. According to article 39:

“The use of Natural Gas Systems pursuant to the provisions of this law is also allowed for the transmission of biogas, gas produced from Biomass and other kinds of gases, provided that it is so possible from a technical point of view and the technical specifications are met, after taking into consideration the quality requirements and the chemical features thereof”. This Law adopts the EU Directive 2003/55/EC.

► **JMD 54409/2632/2004, Official Gazette 1931/B/2004**

JMD 54409/2632/2004 “Establishment of emissions trading scheme in Greece in compliance with Directive 2003/87/EC” sets the rules for the implementation of the emissions trading scheme in Greece. Joint Ministerial Decision 9267/468/2007 is the amendment of JMD 54409/2632/2004 concerning the flexible mechanisms of the Kyoto Protocol in compliance with Directive 2004/101/EC.

► **JMD 50910/2727/2003, Official Gazette 1909/B/2003**

JMD 50910/2727/2003 (OG 1909/B/2003), on measures and terms for solid waste management, comprising of the following basic axes:

- Adaptation and approval of the National Solid Waste Management Planning so as to incorporate the major principles, goals, policies and actions for the rational management of urban wastes;
- Establishment of the Regional Solid Waste Management Schemes.

JMD 50910/272/2003 Supersedes MD 113944/1997 (OG 1016/B/1997) which was filled in by the JMD 14312/1302/2000 (OG 723/B/00).

► **JMD 80568/4225/91, Official Gazette 641/B/1991**

MD 80568/4225/91 adopts the Directive 86/278/EC of the soil, when sewage sludge is used in agriculture. The Decision sets limits to the quantity of toxic substances that are to be disposed to land and limit values of concentrations of potential toxic substances in the soil and in the sludge to be used in agriculture.

► **JMD 16190/1335/97, Official Gazette 519/B/1997**

JMD 16190/1335/97 on Protection of Water from Nitrate Pollution adopts EU Directive 91/676/EC into the Greek Legislation.

► **Law 3010/2002, Official Gazette 91/A/2002**

Law 3010/2002 “Harmonisation of Law 1650/1986 with Directives 97/11/EC and 96/61/EC, procedure of delination and other issues pertinent t watercourses and other provisions” harmonizes the basic Greek Environmental Law with the EU leg-

islation. While the new Law 3010/2002 and the JMD 15393/2332/2002, MD 25535/3281/2002, JMD 11014/703/104/2003, JMD 37111/2021/2003, JMD 13727/724/2003, JMD 19500/2004, JMD 104247 & 104248/2006 the environmental authorization process was updated.

► **JMD 29407/3508/2002, Official Gazette 1572/B/2002**

JMD 29407/3508/2002 on measures and terms for sanitary disposal harmonizes the EU Directive 1999/31/EC (the landfill Directive).

► **Law 3336/2005, Official Gazette 96/A/2005**

Transposition of the Directive 2003/96/EC into the Greek legislation, concerning the taxation of energy products and electricity.

► **Presidential Decree (PD) 211/2006, Official Gazette 211/A/2006**

Greek Presidential Decree establishing national provisions for the implementation of the Regulation (EC) No 1774/2002.

► **Ministerial Decision (Y.A.) Δ1/1227/2007, Official Gazette 135/B/2007**

Ministerial Decision (Y.A.) Δ1/1227/2007 “On the determination of the procedure for the conclusion, content and terms of agreements for the exercise of the right to access and for the use of the National Natural Gas System” determines the content, the terms, and the procedure for the conclusion of Agreements for the Transfer of Natural Gas.

► **Ministerial Decision 125347/568/2004, Official Gazette 142/B/2004**

Ministerial Decision 125347/568/2004 “Agricultural Code of Good Practice” was amended by JMD 140920 (OJD 1710/B/05).

► **Ministerial Decision 29457/1511/2005, Official Gazette 992/B/2005**

This MD concerns the air emissions from certain large combustion plants. Especially, for large combustion installations, i.e., those with nominal thermal capacity greater than 50 MW, the emission limits and other provisions of M.D.29457/1511/2005, which conforms to 88/609/EC, are applicable to biomass installations as well as to any other type of installation. This MD Superseded MD 76802/1033/96 (OG 596/B/96) and 58751/2370/93 (OG 264/B/93).

► **Ministerial Decision 22912/1117/2005, Official Gazette 759/B/2005**

With M.D. 22912/1117/2005 the EU Directive 2000/76/EC on waste incineration is integrated in the Greek legislation. The MD defines measures and terms for the prevention and reduction of environmental pollution and the incineration of waste.

► **Law 2939/2001, Official Gazette 179/A/2001**

The object of Law 2939 «Packaging and alternative management of packaging and other products – Establishment of a National Organisation for the Alternative Management of Packaging and Other Products (N.O.A.M.P.O.P.) and other provisions» is the regulation of the management of packaging and other products aiming at reuse or recovery of their waste. This Law constitutes the general legal framework for the alternative management of packaging and other waste streams. Relevant are the PD 82/2004 (mineral oil), 109/2004 (tyres), 115/2004 (batteries), 116/2004 (End-of Life Vehicles), 117/2004 and 15/2006 (Waste of electrical and electronic equipment). Pursuant to Law 2939/2001, the Ministerial Decisions 106453/2003 (OG 391/B/2003) and 105857/2003 (OG 391/B/2003) approved the operation of two nationwide systems for the collective alternative management of packaging wastes. This JMD was amended by MD 9268/469/07 (OG 286/B/07) which sets new targets for the packaging reuse and recycling.

► **PD 33/2007, Official Gazette 31/A/2007**

The present decree establishes and regulates the operation of the S.A. with the company name “Administrator of the National Natural Gas System S.A.”.

► **JMD 5673/409/97, Official Gazette 192/B/1997**

This JMD defines measures and specifications for the treatment of urban waste water and adopts the Directive 91/271/EC into the Greek legislation. The JMD was later completed with MD 19661/1982/99 (OG 1811/B/99) and 48392/939/02 (OG 405/B/02). Directive 91/271/EC includes provisions for collection and treatment of wastewater and has certain requires for the constant monitoring of the quality of the final effluent.

► **Hygiene Code Y1β/2000/1995, Official Gazette 343/B/1995**

This HC deals with the establishment and operation of the animal breeding settlements. Among the provisions of the HC article 2 deals with the distance from other settlements and article 7 with the waste management.

► **JMD 49541/1424/1986, Official Gazette 444/B/1986**

The JMD 49541/1424/86 (“solid waste in conformity with Directive 75/442/EEC...”) among others gives definition (eg. “solid waste”, solid waste management”, “solid waste disposal” etc), it gives the national waste policy framework, the basic principles for the solid waste management and describes for the first time the necessity for Management Plans and the necessary procedures. JMD 4951/1424/1986 adopts the Directive 75/442/EC for solid waste and was superseded by MD 69728/824/96 (OG 358/B/96).

► **JMD 114218/1997, Official Gazette 1016/B/1997**

JMD 114218/1997 on “the establishment of a framework of technical specifications and of general plans of solid waste management” determined the criteria for the selection of landfill and sanitary landfill sites, mechanical sorting plants and com-

posting facilities and gives the framework of specifications for the waste treatment methods.

▶ **JMD 13588/725/2006, Official Gazette 383/B/2006**

JMD 13588/725/2006 “Measures, terms and restrictions on hazardous waste management in compliance with the Directive 91/689/EEC...” is the first part of the new legislative framework on hazardous waste management. This JMD has been completed by JMD 24944/1159/2006 (OG 791/B/2006) for hazardous waste management. Both of them were amended by MD 8668/07 (OG 187/B/07) “Approval of Hazardous Waste National Management Plan according to Article 5 of JMD 13588/725/06...”

▶ **JMD 486/2002**

This JMD refers to the relocation of the animal breeding settlements and the improvement of the waste treatment facilities. The JMD was amended by the JMD 268351/12.8.2004 and JMD 310052/23.11.04.

▶ **JMD 487/2002**

This JMD refers to the establishment of animal breeding parks.

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Useful addresses

Ministry of Development

<http://www.vpan.gr>

Ministry For Environment, Physical Planning and Public Works

<http://www.minenv.gr>

Hellenic Ministry of Rural Development and Food

<http://minagric.gr>

Ministry of Economy and Finance / General Secretariat for Investments and Development

<http://nomothesia.ependyseis.gr/eu-law/categoryAction.do?action=displayCategory&categoryId=403>

Centre for Renewable Energy Sources

<http://cres.gr>

Invest in Greece Agency

<http://elke.gr>

Regulatory Authority for Energy

<http://www.rae.gr>

EUROLEX

<http://europa.eu.int/eur-lex/el/index.html>

National Printing Office

www.et.gr

Hellenic Institute for Occupational Health and Safety

www.elinyae.gr

Hellenic Solid Waste Management Association

www.eedsa.gr