



LEGISLATION AND REGULATION ANALYSIS COUNTRY BROCHURES

GREECE

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The legislative and regulatory framework for the real case study site at the Bioclimatic office building at CRES in the Attica region is presented below.

GEOHERMAL LEGISLATION

Geothermal Energy is defined by Law 3175/2003 as the total of geothermal natural vapours, hot waters (surface waters or groundwaters) and the heat from geological formations with a temperature higher than 25°C.

The legal definition of shallow geothermal energy is given as the heat of geological formations and waters (surface waters or groundwaters) that are not characterized as geothermal potential as above (lower than 25°C)

LOCAL LEGISLATION

Shallow geothermal energy is included in local legislation in Law 3175/2003 [Government Gazette (GG) 207 A']. Local laws on geothermal energy include: Law 3175/2003, Decree law 210/1973 and Ministerial Decision Δ9B/Φ166/οικ20076/ΓΔΦΠ5258/329 (1530/2005).

LICENSING & PERMITTING PROCEDURES

LICENSING AND PLANNING APPLICATION

A local licensing system in accordance with Ministerial Decision Δ9B,Δ/Φ166/οικ13068/ΓΔΦΠ2488 (1249/2009) applies to all GSHP system installations in the Attica Region and is administered by the Regional Authority of Attica. The license application process must include a study that specifies the maximum heating and cooling capacity (power) of the system seeking a license. A typical cost of €150 for filing the application, exclusive of the costs of preparation of supporting document, applies. A permit processing time of 1 to 3 months should be expected.

A planning application is also applicable in the case of a GSHP system. The application needs to be accompanied by a detailed planning study which must include the applicants details, property data, project manager engineers data, coordinates installation, topographic diagram, description of the space in radius of 100 meters, definition and description of the required drilling (location, number, depth, drawings, etc.), detailed description from the proposed system of ground heat exchangers, description of conditioning spaces, description of the electrical and mechanical equipment. The cost of this application is dependent on the size of the installation and is around €500 for the case study site.

DRILLING PERMITS

A permit from the Regional Authority of Attica for all drilling and ground works operations is applicable to all GSHP installations. The fee for this permit is included in the main cost of the above licensing process.

EIA REQUIREMENTS

No environmental impact assessment requirements are applicable in the case of GSHP systems.

MONITORING REQUIREMENTS

No monitoring requirements for the Attica region are applicable in the case of closed loop GSHP systems. Metering of water extraction and reinjection as well as groundwater temperatures is applicable in the case of open loop system only.

GSHP SYSTEM REGULATIONS

The regulations define a GSHP as a combination of equipment and/or piping networks and/or boreholes and/or installations by which heating and/or cooling of spaces is achieved through the exploitation of the heat of the geological formations and waters (surface or underground) that do not exceed 25 °C. Any borehole relating to such an installation must be at least two (2) meters from the boundaries of the property.

A closed loop system is defined as the system that combines a heat pump with a ground heat exchanger. An Open loop system is defined as any system which is not defined as a closed loop, is characterised as an open loop system and may include, among others, the production well and the reinjection well.

ENVIRONMENTAL

Regulations specify restrictions and construction specification requirements for GSHP and ground heat exchangers. These include a minimum obligation of the use of steel casing and cementing to surface in the upper 5m of any borehole.

Other restrictions require that each borehole or trench to be at least: two (2) meters from the boundaries of the ownerships, five (5) meters from the existing neighbouring building of different ownership, five (5) meters from the boundary of the expropriated railway zone, ten (10) meters from the main natural gas pipeline, five (5) meters from main underground pipelines (water supply, irrigation, drainage, etc.), ten (10) meters from high voltage electrical distribution lines; unless between line and drilling mediates building, five (5) meters from medium voltage electrical distribution lines; unless between line and drilling mediates building.

BUILDINGS

The implementation of the EPBD in the regulations are defined in Ministerial Decision Δ6/B/οικ. 5825 which is titled 'Rules of Building Energy Efficiency' as well as Law 4122/2013.

Law N.3028 / 2002 (Government Gazette 153 / A / 28.06.2002) protects antiquities and cultural heritage establishing new criteria for recovery interventions in cultural heritage buildings. Minimum energy performance requirements in the regulation implementing the EPBD are not applicable to this category of historic buildings. The historic / preserved buildings are recorded by the Ministry of Culture and Tourism as well as by the Ministry of Environment, Energy and Climate Change. For activities relating to these buildings permits from the Ministry of Culture and Tourism, the Ministry of Environment, Energy and Climate Change as well as the Architectural Committee are required.

HEATING & COOLING PLANTS

No Specific regulations are applicable.

POLICY CONTEXT

The estimated market is c. 3000 installed systems totalling c. 150 MW(th) producing c. 200 GW(th) of thermal energy annually equivalent to c. 140 GW(th) of renewable heat. Annual installations are estimated at around 14 MW(th) annually corresponding to 12% of new buildings constructed.

The GSHP market has been favoured by the implementation of L3851/2010, as well as from other recently introduced legislations, that include:

- Energy labelling of buildings, introduced in April 2010.
- Total coverage of their primary energy consumption through energy supplied from RES, CHP, district heating and heat pumps for all new buildings that accommodate services of the public sector. The same stands for the private sector buildings after the 31.12.2019.
- Compulsory (since 2011) energy audit certificates for all building transactions: buying-selling, letting-renting, leasing, erecting, refurbishing.
- Additional taxation on heating oil, imposed in October 2012.
- The enforcement in February 2013 of the EU Energy Performance of Buildings Directive
- The enforcement in November 2015 of the EU Energy Efficiency Directive for compulsory energy audits in large enterprises and minimum energy requirements for the public sector during refurbishing or purchasing of used buildings.

Both the NREAP and the L3851/2010 set specific targets regarding the share of RES in final energy consumption, electricity generation and contribution in heating, cooling and transport. More specifically, the annual geothermal energy use (geothermal heat pumps excluded) is set at 51 ktoe, which is more than double the annual energy use at the end of 2015 (21 ktoe). The respective number for the geothermal heat pumps has been set to 50 ktoe. Achieving the above targets by 2020 requires an annual increase of the geothermal energy use to around 20%. The latter seems achievable for the GSHP sector, but rather unlikely, at least under the current circumstances, for the classical geothermal applications (Papachristou et al. in press).

STANDARDS & GUIDELINES

No standards and guidelines were reported.

TRAINING & CERTIFICATION

No training and certification schemes are applicable.

OTHER INFORMATION

Information and promotion on GHSP systems is provided through a series of national initiatives and European studies that demonstrate the potential for the use of GSHPs in Greece. CRES is responsible for the promotion and the organisation of workshops, conferences and the distribution of brochures.