

Environment

Certified energy-efficient homes

Developers and landlords will soon have to provide an energy-use certificate for all existing and new buildings sold or rented - much like the power-rating stickers already on household appliances

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LONG being able to buy a home appliance based on its energy efficiency, people in Greece will soon be able to buy a house or rent an apartment based on how much energy it consumes.

The energy-efficiency assessment of residences is expected to become law in a matter of weeks or months, once the relevant joint ministerial decision has been signed by the environment and finance ministers, says Antonis Marinos, a special advisor at the development ministry, which drafted the regulations.

Once the law is enacted, it will be compulsory for a property owner or landlord to have an energy efficiency audit conducted on a building before it is either sold or rented.

Valid for 10 years, the resulting energy efficiency certificate (see below) will have to accompany the sale or rental contract.

The purpose of the energy rating certificates for buildings - which resemble the energy rating stickers on new household appliances - is twofold.

On the one hand, homebuyers and tenants will be able to compare the energy performance of different dwellings before deciding on buying or letting. On the other, the system will enable building and energy



They might be picturesque and quaint, but how would these old buildings in Nafplio score in the new energy-rating procedure?

managers to compare their building's energy performance with others to identify possible improvements.

The regulations will not prohibit, however, the selling or renting of a property with a poor efficiency rating.

They will, however, contain minimum efficiency requirements for all new buildings as well as for the renovation of older building stock.

Laggard

The new regulations are based on the European Energy Performance of Buildings Directive (2002/91/EC), which came into force in January 2003 and which all EU member

countries were to have implemented by early 2006.

The directive is a major part of the EU's attempt at limiting energy consumption and reducing climate-altering emissions of carbon dioxide as required under the Kyoto protocol.

When the directive was enacted, it was estimated that all of the EU's 160 million buildings consumed over 40 percent of the bloc's energy and produced more than 40 percent of its carbon dioxide. Both figures show an upward trend.

Improving the energy efficiency - particularly as regards heating - in

Greece would greatly reduce the country's so-called carbon footprint. On average 70 percent of a Greek home's total energy consumption goes towards heating. Domestic appliances, lighting and air-conditioning account for 18 percent of the use.

As in the rest of Europe, the appetite of the average Greek residential unit is continuously climbing, particularly given the increasing use of air-conditioners.

Property owners will welcome the energy rating system, says Stratos Paradias, president of the Hellenic Property Federation, which

represents private owners.

Paradias said his organisation successfully lobbied the Greek government to have the cost of the energy audits reduced.

"The ministry had in mind to implement a very costly energy certification procedure which would have cost a minimum of 300 euros, plus VAT, for even the smallest apartment," Paradias said. "We managed to get this down to no more than one euro per square meter, with a minimum charge of 100 euros."

Owner pays

The responsibility of obtaining the energy rating certificate lies with the property owner or landlord, Paradias added.

"It's the landlord's job and must be at his expense."

The regulations do not require owners of existing properties to convert them.

Paradias suggests legislators will have to offer financial incentives to encourage people who own rental properties to invest and carry out efficiency conversion work.

He estimates it would take, on average, about 24,000 euros to bring a 100m², pre-1980, non-insulated apartment up to an acceptable energy standard. About two-thirds of that sum would go towards new windows and doors, with the remainder accounting for external insulation.

For more information:

- ✓ Hellenic Property Federation (Pomida) - www.pomida.gr/english
- ✓ Centre For Renewable Energy Sources (CRES) - www.cres.gr
- ✓ EPBD Buildings Platform - www.buildingsplatform.org

The making of a certificate

THE ENERGY ratings certificate (πιστοποιητικό ενεργειακής απόδοσης; see below) is a document showing the standard calculation of a building's energy performance. It is a measure of just how much energy a house will use - and therefore the amount of carbon dioxide it will produce - in one year.

A building energy rating certificate - issued after an energy assessment - looks much like the rating label on new household electrical appliances. Similarly, it lends itself to the same concept as the litre-per-kilometre rating for a motorcar.

The house's energy performance will be represented on the certificate by a coloured scale showing graphically just how energy efficient the building is.

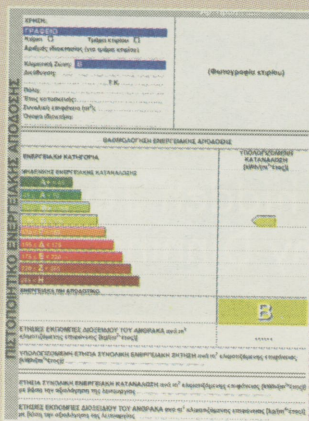
The rating scale, in Greek, ranges from A+ (most efficient) to

H (least efficient).

Factors that assessors will inspect include:

- ✓ Size, geometry and exposure of the dwelling
- ✓ Materials used for construction
- ✓ Thermal insulation
- ✓ Ventilation of the dwelling and ventilation equipment
- ✓ The model of air-conditioners used
- ✓ Efficiency, responsiveness and control characteristics of the heating system(s)

- ✓ Solar gains through glazed openings
- ✓ Thermal storage capacity of the dwelling
- ✓ The fuel used to provide space and water heating, ventilation and lighting
- ✓ Renewable and alternative energy generation technologies



Few homes rate an 'A'

THE CURRENT residential housing stock in Greece features few structures that would fall in the top energy efficiency category, says Lena Lampropoulou, head of the buildings department at the Centre for Renewable Energy Sources.

"Most of the buildings built since 1990 would fall into the C-class rating," Lampropoulou says. "Thus, in order to meet the B-class specifications would not require a considerable investment or renovation work - passing from C to B is rather easy."

For the owners of buildings built prior to 1980, when the first requirements to insulate buildings were introduced - the issue is more complex, Lampropoulou says.

Most of the pre-1980 buildings, which account for 60 percent of the country's building stock, lack external insulation, double-glazed windows and new-generation water heaters.

"The problem with older buildings is with their draughty wooden windows and doors," says Stratos Paradias, president of the Hellenic Property Federation. "These will have to be modernised if their owners want to stay in the property market."

The inspectors

ENERGY efficiency audits may only be carried out by holders of a third-level degree in a related field, such as architecture and civil or electrical engineering.

Greece has yet to establish a formal training course for assessors. During the first year of operation, a provisional assessor licence will be issued to professionals who request them. After one year assessors will be required to complete a special training course.

According to the draft guidelines now awaiting signature from the environment and finance ministries, the energy efficiency audit may be carried out according to two methodologies.

The so-called reference building approach is the default method in the draft legislation. Under it the inspector creates an ideal model of how the building under inspection would have been built given current energy-efficiency requirements. The assessor then compares the actual building with the ideal model.

Antonis Marinos, an advisor at the development ministry, says the advantage of this method is that it is fast and inexpensive. The downside is that it produces a general grade but no detailed readings, useful particularly for industrial applications.

The so-called reference value method requires the extensive inspection of a building and produces clear readings on energy usage.

"The methodology we adopt is not the main thing," counters Lena Lampropoulou from the Centre for Renewable Energy Sources.

The issue is implementing the regulations, issuing the energy certificates, establishing a database to ensure quality assurance, and collecting data on the country's building stock, she says.

"This will allow governments proceed on new plans on improving energy performance," she says. "Without this data, such improvements are impossible."

Greece hits the green road

After years of failing to capitalise on its abundant potential, is the country poised to finally harness its renewable energy resources?

By **George Hatzidakis**
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WITH ITS year-round sunshine, strong Aegean winds and powerful northern rivers, Greece should be a world leader in harnessing renewable energy.

It isn't. Yet this could change with a new government push to build a string of renewable energy plants from the north through to the south and on its wind-swept islands.

Last week Development Minister Kostis Hatzidakis inaugurated a new hydroelectric plant in central Greece for the country's main energy provider, Public Power Corporation (PPC).

Greece has already announced plans to create the country's first wind-powered, energy-self-sufficient island on Ai Stratis, in the northern Aegean.

At the same time EU Environment Commissioner Stavros Dimas was in Athens sponsoring a biodiversity conference focusing attention on the role of renewable energy in saving the environment.

From prison to green paradise

IN THE late 1960s and early '70s, during the time of the Greek colonels' dictatorship, hundreds of dissidents were exiled, shackled and ferried to the remote island of Agios Efstratios, or Ai Stratis, in the northern Aegean.

All who were sent there, including poet Yiannis Ritsos and composer Mikis Theodorakis, cursed the constant battering of their flimsy huts by strong winds and the scorching sun on their skin.

With the fall of the junta, many returned in a kind of political pilgrimage. Now the rocky outcrop may find itself the centre of a new pilgrimage, only the devotees are likely to be environmentalists and EU bureaucrats.

That's because the Greek government is moving ahead with plans for the island to be transformed into a community fully self-reliant on renewable energy sources.

Greece has pledged an initial 10 million euros for the project, to be completed by the end of the year. Plans call for the island to replace its oil-powered generators with wind and solar power, as well as energy drawn from biomass.

Its decrepit diesel buses are to be replaced by electric vehicles. "By 2010, Ai Stratis will be the country's first green island," Development Minister Kostis Hatzidakis (photo) said.

Ai Stratis has about 260 permanent inhabitants, mainly fishermen and livestock farmers, and requires about 4MW of electricity on average per day - about 1,500MW-hours per year.

Its relative small size makes it more feasible to implement the plan than if it was attempted on a much larger island.

The population swells six-fold during the summer tourist season. The 43km² island, which lies about 30km southwest of Limnos in the northern Aegean, was included in the European Union's Natura 2000 network of protected areas due to its well-preserved ecosystem.

The green plan follows similar projects on King Island in Australia, the island of Samsø in Denmark and Utsira in Norway.

An initial study is set to be completed next month, while there are also plans for similar developments on the islands of Nisyros and Tilos.

"We chose Ai Stratis, a place with memories and symbolism," Hatzidakis said. "We want a symbol of the country's passing into a new era, of progress and respect to the quality of life for its citizens and the environment." **George Hatzidakis**



Morris Mac Matzen, Reuters

Greece will be able to draw on 3,400MW of wind energy by next year, up from 750MW in 2006, according to the environment ministry

"Greece is blessed with sun and wind, great resources that can be positively exploited," Dimas told the *Athens News*. "There is great interest in investing in these sectors."

Targeted investment

As part of EU guidelines, Greece has pledged to generate 20 percent of its energy needs via renewable resources by 2020. It currently generates about 8 percent.

So far the nation has lagged behind its northern European peers as a stagnant bureaucracy, regulatory weaknesses and high investment costs have led to delays in starting projects and industry development.

A 20-country study by Ernst & Young on renewable energy markets ranked Greece 8th in terms of how much of its energy is renewable, behind the US, Spain and India and way below its potential.

Currently about 1,000MW of the roughly 12,000MW of Greek demand are drawn from renewable sources.

With newly passed laws and funding guarantees from the EU's 4th Community Support Framework (CSF) package there is growing confidence Greece will soon be on the right path.

"I'm not just confident, I strongly believe that these targets can be met once bureaucratic obstacles have been overcome," Dimas said.

According to the CSF, up to 4 percent of the 20 billion euros earmarked for Greece could be used to subsidise renewable energy sources for citizens, including solar energy and wind energy.

Green watts

The government's commitment to the much needed legislative changes was signalled earlier this year with the development minister pledging to streamline and help investment in the sector, calling 2009 the "Year of renewable energy sources".

In opening PPC's new hydro-plant near the town of Karditsa, Hatzidakis emphasised the importance of the project, not just financially but

also socially and environmentally.

"The central question in the energy sector is to secure energy sustainability and security while at the same time respecting the environment," Hatzidakis said. "To achieve these aims we need a serious and systematic effort from all sides."

As such Greece has moved to reduce bureaucratic and financial burdens on the sector and help boost demand. Measures include the lifting of fuel taxes on biofuels.

The country's need to meet its Kyoto Protocol obligations plays a significant role in driving change, coming hot on the heels of its embarrassing suspension last year from the protocol's so-called flexible mechanisms, including carbon trading, as punishment for violating rules on reporting greenhouse gas emissions.

Greece was subsequently readmitted but not before its being named and shamed led to stern criticism from environmental groups and a pledge by the country's prime minister to meet its commitments.

Banking on sun and wind

ACCORDING to Greece's environment and public works ministry, there are over 1,000 wind turbines installed throughout the country, with the number set to rise over 2,500 by the end of next year in an effort to help meet the country's renewable energy targets.

This translates to about 3,400MW of renewable power compared to about 750MW at the end of 2006, the ministry says.

Greece has decided that wind power investments will be its main focus, followed by hydroelectric and solar developments.

To that end, Greece has announced that its project on Ai Stratis will be a forerunner of things to come. (see left)

Greece has also promised to lift obstacles that have existed so as to take advantage of its huge solar potential. The country has about 24MW of solar power installed, while the government has set a goal of 700MW by 2020.

Apart from establishing new hydroelectric plants, the country's major

energy provider, Public Power Corp (PPC), has said it plans to invest as much as 2 billion euros in the sector by 2014 through its PPC Renewables subsidiary.

It has announced plans to develop one of Europe's largest solar-powered parks in southern Greece.

PPC Renewables has already received approval



The Public Power Corporation's planned 50MW solar plant near Megalopolis will be one of the biggest in Europe

by the country's Regulatory Authority for Energy (RAE) to build a park for the production of solar energy totalling 50MW, to be situated near PPC's soon-to-be exhausted lignite mine near Megalopolis.

The project is being touted as one of the largest in the world which, along with natural gas units that are planned to replace the existing lignite units, will produce enough energy to meet the demand of about 28,000 households, or more than 40 percent of the total households in the Arkadia region.

Additionally, about 48,000 tonnes of carbon-dioxide emissions will be avoided, PPC said.

"The time has come to take stock and look to the future," Dimas told the biodiversity conference in Athens this week. "I do not want to be remembered as belonging to a generation that knew the damage it did, but refused to change."

George Hatzidakis