ERASMUS KA229

PROJECT TITLE: ***Acting now for the future***

HORIZONTAL**: ENVIRONMENT AND CLIMATE CHANGE**

PRIORITY: **Reinforcing the development of key competences**

C2 Renewable energies and green solutions in each country

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1_EU laws on renewable energies

Renewable Energy Sources Laws in the EU and in Greece

- **In The Eurpean Union**

Energy Union: A EE strategy that aims to gurantee accesible, economic, safe and viable energy for all European citizens.

Regulation (EU) 2018/1999

- This regulation's goal is to ensure the application of the energy unions in a coherent and consistent manner. It also opts to ensure the achievement of all energy union goals, especially those made in the Paris agreement concerning climate change and those made in the climate and energy policy framework.
- The Paris Agreement sets out a global framework to avoid dangerous climate change by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C. It also aims to strengthen countries' ability to deal with the impacts of climate change and support them in their efforts.

Direction 2018/2001 made by the European Parliament

- This direction aims to promote the usage of Renewable Energy

Law 4602/2019

- Aims towards the exploitation and management of the geothermal power of the country, establishment of the Hellenic Authority for Geological and Mineral Surveys, ownership separation of natural gas distribution networks, and other provisions.

Law 4414/2016

- Promotes the faster development of renewable energy sources for the treatment of the climate change crisis and other provisions under the responsibility of the ministry of environment, energy, and climate change.

Law 3851/2010

- Production of electric energy from renewable energy sources and co-production of High Efficiency Electricity and Heat and other devices.

Law 2244/1994

- Regulation of electricity generation issues from renewable energy sources and from conventional fuels and other devices.

Law 2941/2001

- Law concerning the simplification of procedures for the establishment of licensing companies for renewable energy sources, regulation of issues of SA. Greek Shipyards and other provisions.

Law 3889/2010

- Its goal is to establish an integrated and specific system of financing environmental interventions, with the aim of enhancing development through environmental protection and the effective and transparent management of resources for the upgrading and rehabilitation of the environment and tackling climate change. Thισ system includes the establishment of the Strategic Committee on Environmental Policy, the securing, specialization, classification and systematization of resources available for the protection, upgrading and restoration of the environment and the restructuring and organization of the management body of these resources, which is the legal person under public law under the name "Πράσινο Ταμείο"

2_Renewable energies used and produced in Greece

The renewable energy sources are forms of exploitable energy. Renewable energy stands in contrast to fossil fuels because RES are always available and

harmless to the environment. The most remarkable energy sources are wind energy, biomass, hydroelectric power and solar energy, but at the same time marine energy, geothermal energy and aerothermal energy are also worth mentioning as they are in a great growth point too.

There are lots of advantages when it comes to renewable energy but there are also some disagreements over their use. First of all, every developing system relevant to the development of them is environmentally friendly, it doesn't contaminate the environment in any sector, leaving any residues. Furthermore, the sources can't be exhausted in contrast with fossil fuels. Also, renewable sources help the development of energy self-sufficiency in small countries. They are an alternative solution to the traditional, harmful fossil fuels. Their adaptive construction, meaning the fact that they can adjust to the needs of every district to fully cover them, is another benefit. They need no transporting, and this way, expensive and long-distance transportation is avoided. Furthermore, the manufacturing is really easy and have a long lifespan as well. Another equally remarkable benefit is that most governments in Europe subsidize and support this innovative and ecological idea.

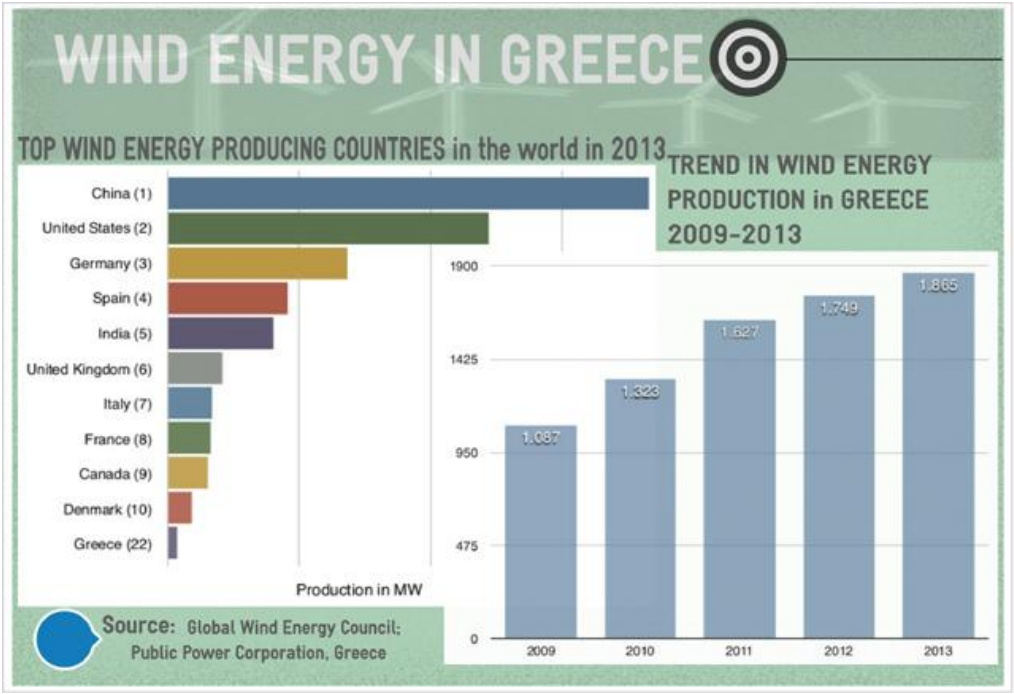
On the other hand, it is an issue that comes with some important objections too. First of all, the coefficient of their performance ranges within a rate of 25%, in contrast with the cost of their manufacture that is very high. Furthermore, the power that is supplied depends on the season, latitude and climate of each area. The methane release is also a worth mentioning negative consequence of hydrothermal power that contributes to the greenhouse effect. A major problem that is also caused is that their construction demands the physical destruction of large areas, along with the noise pollution they cause. Moreover, the bird deaths that have been noted are terrifying (16.700 yearly!).

Greece has considerable RES potential which can provide a practical alternative solution in order to meet its energy needs. The energy market in Greece is at the forefront of rapid developments, attracting investors from around the world. First of all, Greece is in a vantage due to its location in combination with its wind energy potential. The Investment Law of the country determines the terms and conditions for investments in Greece and provides the necessary investment incentives for investors from Greece and abroad, depending on the sector and the

region in which the investment for wind farms is to be performed. The wind energy covers the 13.6% of the electric needs in Greece and the wind farms that are in operation right now are approximately 1200 MW. Despite the fact that Greek citizens support to a large extent this environmentally friendly program, there is a movement that is called “Elefthera Vouna Horis Aiolika” (Free Mountains Without Aeolian Parcs) that stands up for the abolishment of the ecological plan mostly due to the noise pollution. Concerning the solar energy, Greece is in the 5th position globally as to the photovoltaic energy systems. In Kozani, 300MW have been produced and all over Greece the coverage is about 7%. When it comes to the biomass for energy purposes, this includes any kind of material that can be used for the production of solid, liquid or gas fuels. In some areas in Greece, where the quantities of biomass that are available are large, biomass is used as fuel in suitably modified boilers for many agricultural works, such as greenhouse heating, while at the same time individual or central boilers with olive pits are used to heat buildings. Geothermal energy is also a developing source that originates from the formation of the planet and the radioactive decay of material in equal proportions. Due to active extensional tectonics and volcanic activity, Greece is in an advantageous position and this way, 32 areas have actually been officially characterized as “geothermal fields”. Hydropower energy in Greece has grown rapidly during the last few years, reaching 3,412 MW (in 2020). Hydroelectric energy covers about 9% of its needs in electricity. Two of the most important dams in Greece are in Tavropos and in Mesochora. Furthermore, the construction of dams has increased drastically over the last 30 years. Greece implements its energy planning in full harmonization with EU policies, assessing national requirements concerning marine energy. The sea can provide huge amounts of energy through waves, tides and constant temperature changes. In Greece, university students of the Aristotle University of Thessaloniki have started conducting an investigation about the possibility of exploiting this unlimited clean energy resource. The scientific team leads its research in two directions: the purity in the Greek seas in the areas near the shores and at relatively shallow depths, where wave energy exploitation systems could be developed, and the design of the "engine" for the conversion of wave energy into mechanical. In Greece, the marine RES sector has not developed as one would expect based on the country's capabilities. Various factors are responsible for this, such as the lack of interconnection of some islands, the high

cost of technological equipment, difficult access in financing, administrative and environmental barriers.

To sum up, the road to green economy in Greece, concerning all renewable energy sources, sustainability, offering a way out of the financial crisis, requires simplified procedures, detailed legislative provision, exploitation of best practices, specialization and elimination of market asymmetries. At the same time, it is deemed necessary to attract and leverage private investment funds in order to implement the provided for in energy planning technological changes to the Greek energy system.



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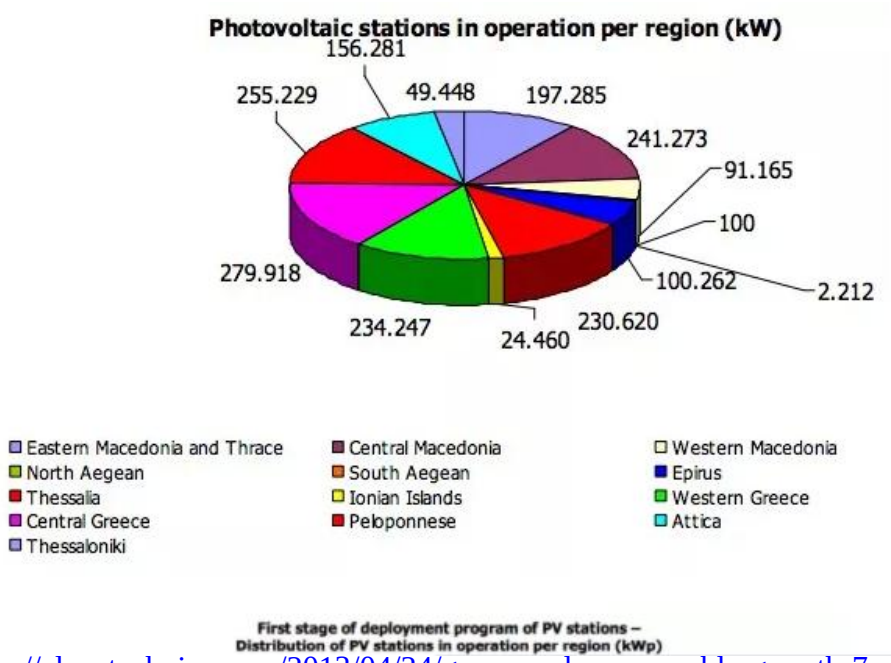

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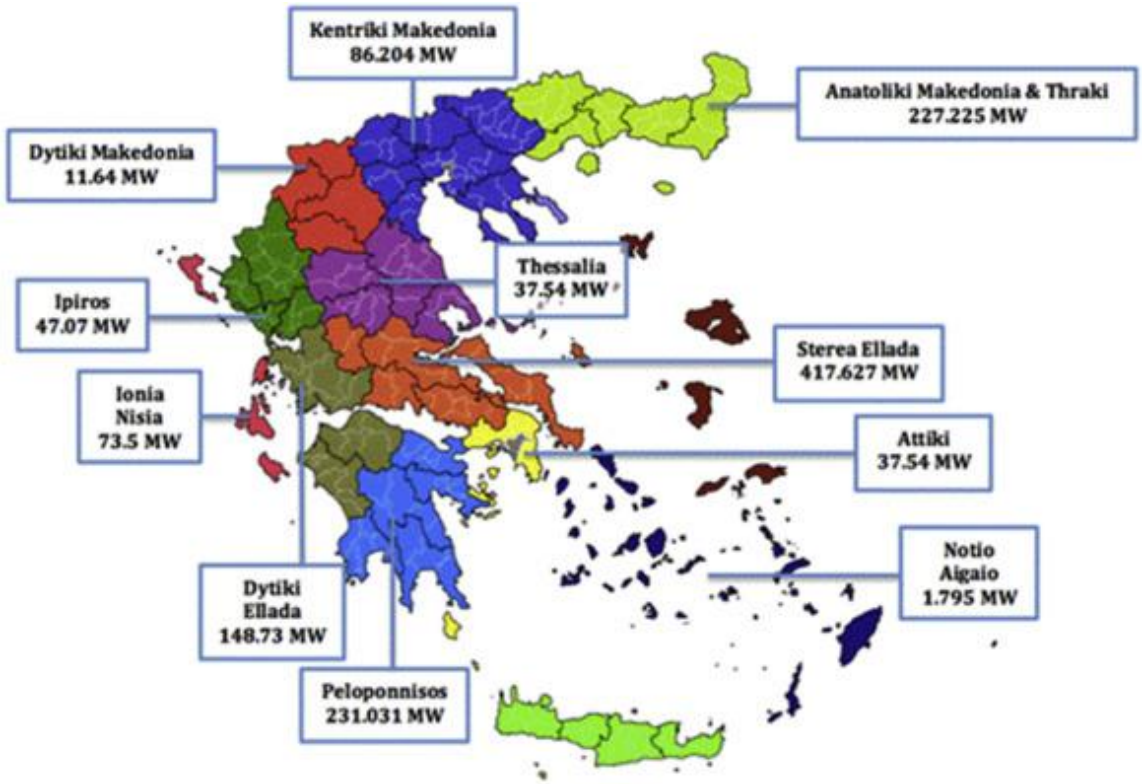

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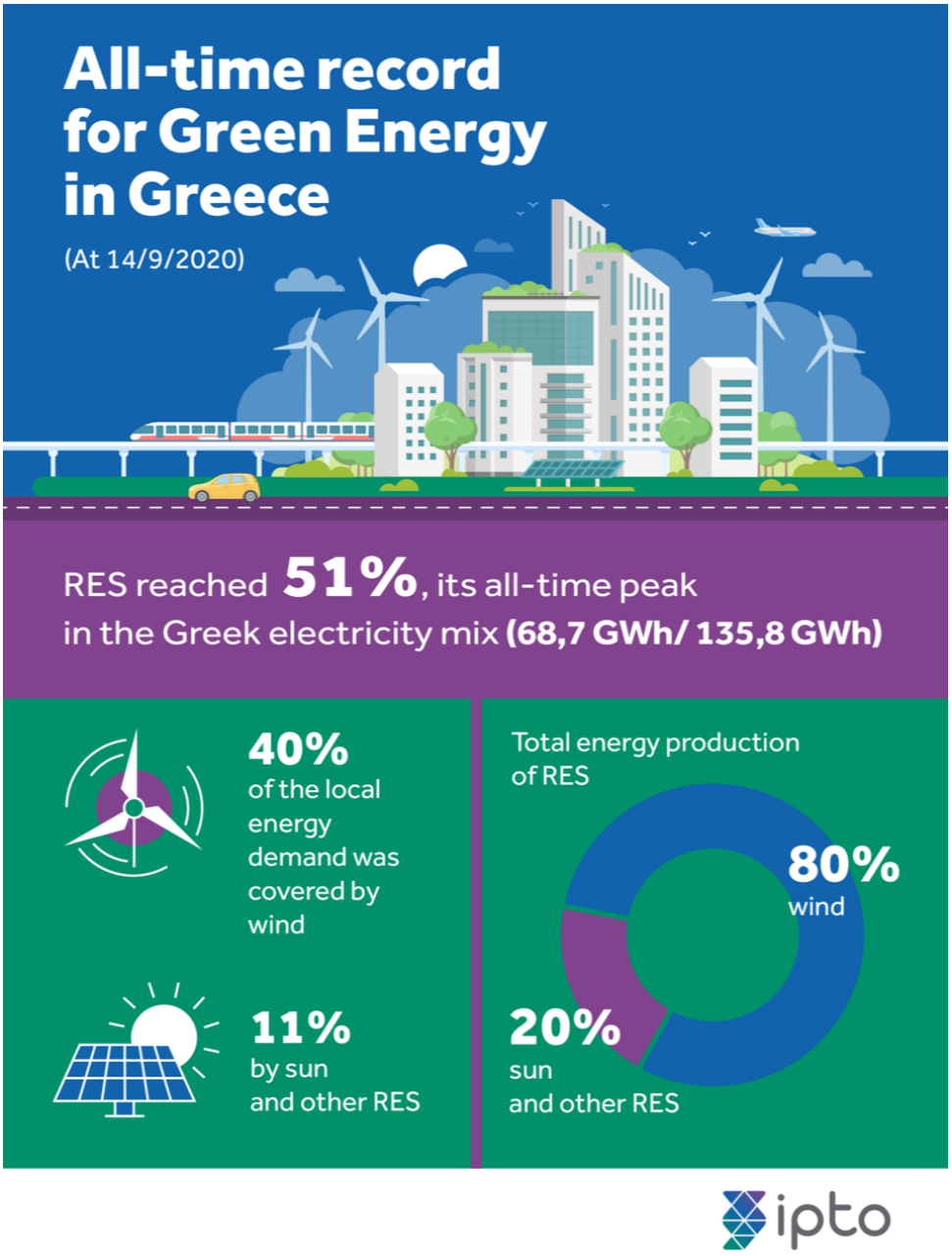

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3_Passive energies AND EU laws on passive energies

Passive energies and laws on passive energies in Greece New regime of support of the stations of production of electricity from Renewable Energy Sources and Cogeneration of High Efficiency of Electricity and Heat - Provisions for the legal and functional separation of the supply and distribution sectors in the gas market and other provisions.

NEW SUPPORT SCHEME FOR ELECTRICITY POWER STATIONS FROM RENEWABLE ENERGY SOURCES AND HIGH EFFICIENCY ELECTRICITY AND HEAT PRODUCTION

Article 1

Purpose and scope

The purpose of this law is:

a. The development of a new regime for the support of power stations from Renewable Energy Sources and from High Efficiency Cogeneration of Electricity and Heat compatible with the State Aid and Energy Aid Guidelines (2014-2020) (announcement of EU)

b. The reform of the support system for the production of electricity from passive (P.E) energies and High Efficiency Electricity-Heat Cogeneration (H.E.E.H.C) in order to achieve the gradual integration and participation of power stations from (P.E) and (H.E.E.H.C) in the electricity market in the best way at a cost-benefit level for society.

c. Utilization of domestic power generation capacity by (P.E), with a view to protecting the environment, diversifying the national energy mix, securing energy supply and strengthening and developing the national economy.

d. The achievement of the national energy objectives, set out in Generation of Electricity from Renewable Energy Sources and Cogeneration of High Efficiency Electricity and Heat and other provisions, as amended by accelerate the development of Renewable Energy Sources to tackle climate change and other provisions in matters of competence of the Ministry of Environment, Energy and Climate Change. With which the Greek legislation was harmonized with the Directive of 2009/28/EK in terms of the contribution of energy produced by (P.E) to gross final energy consumption in the country by 2020

e. The development and implementation of the support regime for the production of electricity from (P.E). in the context of the unified policy of the European Union for the confrontation of the climate change, and the achievement of the goal of participation of the (P.E). to gross final energy consumption. New buildings with zero energy balance are being prepared in Greece The technologies of the passive building are maturing and opening new horizons in the construction industry in Greece, offering the opportunity to utilize old properties or to build new ones that will aim at the least possible environmental burden.

The deposit…

The Greek market has already been activated in order to acquire know-how and to follow the trends indicated by the passive building model. In the first phase, new pilot projects are completed or prepared, which aim to activate professionals in the field but also to present an example to be imitated in the Greek reality.

Greece Approves New Renewable Energy Law

Greece’s parliament has approved a new law governing the renewable energies sector. The new law, which allows for feed-in premiums, competitive tenders and virtual net metering, comprises a significant rearrangement of the country’s energy sector.

According to the new policy, all types of new renewable energy plants connected to the grid after Jan. 1, 2016, need to participate in the energy market. Their compensation will consist of what they make in the power market plus a

variable feed-in premium. The latter is the difference between a price depending on market variables (e.g., the system's marginal price) and a set price decided via a competitive tender.

Hence comes the second new element in the new law. Starting on Jan. 1, 2017, the new scheme to approve new renewable energy capacity is based on competitive tenders. Following recommendations of the energy regulator, the Greek energy minister will be able to call on a tender for specific capacities and technologies.
In 2016, the country will run a pilot tender for solar PV plants only. The pilot tender, according to the law, will tender at least 40 MW of solar PV projects. Investors need to pay a 500-euro fee to Greece's energy regulator to be allowed into the bidding process, while bids for PV farms larger than 10 MW will not be accepted. The date for the pilot tender will be announced at a later date.

There are some exceptions to the new policies. Firstly, wind power plants smaller than 3 MW, projects using all other renewable types of technology that are smaller than 500 KW and innovative projects that use a new type of technology configuration (e.g. a university-based innovation) can still apply for a set feed-in tariff (FIT).
Secondly, projects that have signed a power purchase agreement (PPA) with Greek institutions by Dec. 31, 2015, do not need to participate in the energy market and can still apply under the previous policy scheme (of stable FITs). The only condition for this is wind projects to be connected in the grid by June 30, 2018, or by Dec. 31, 2017, for all other type of projects.

Finally, the new law allows for virtual net metering projects, albeit for specific investors only. These are educational institutes (e.g., schools and colleges), city and regional councils, farmers and farming associations, and they can use any type of renewable energy technology.

4_Environment and climate change vs tourism

Tourism is an international industry that grows continuously with high rythm. New destinations become fashionable and traditional ones are left aside. New types of tourism and touristic products come into the picture, giving travelers all over the globe more and more choices.

The complex nature of tourist industry combines a huge variety of material and immaterial goods and services with the construction of new hotel resorts or monuments and other necessary infrastructure.

This whole process upsets the ecosystem of areas that are considered to be touristic. State authorities and public services are responsible for minimizing damage to the ecosystem while at the same time maximizing positive results.

The tourist industry in Greece has experienced a fabulous growth in the last thirty years. Greece is by no means the exception to the rule, tourism has been on the rise all over the globe. The number of international tourists in the 50s was 25 million a year. Because of the significant development in the areas of transport and mass international flows, this number shot up to 1,4 billion tourists in 2018.

This tremendous growth has had an immense influence not only on the economy but on the environment as well.

Rapid growth of tourist activities cannot be achieved without growth of traveling and so, unavoidably, carbon dioxide levels go up. Air travel is partly to blame for the rise of the greenhouse effect.

Carbon dioxide rising levels because of tourist industry growth is not the only related problem. There are also other issues concerning the environment. As

we all know, hotels and resorts in general demand huge amounts of energy consumption as well as other natural resources, especially water.

Tourist infrastructures use up huge quantities of water, for the hotels, the pools and the golf courses and football fields. The need for water is constant.

Countries around the Mediterranean, where water is sometimes scarce, face this problem even more. Tourism related water scarcity may even lead to social clashes between communities. A golf course needs 1.500 kilos of fertilizer and uses up as much water as 60.000 villagers do in Thailand. Fertilizers finally drain down to the underground water reserves and so water becomes unfit to drink any more.

An example of water consumption by tourism is the case of Iraklia, an island in the Cyclades. During the winter time, daily water use comes up to 30 cubic meters. In the summer however, because of extreme weather conditions and high numbers of visitors, consumption reaches 150 cubic meters. Desalination plants have not been able to solve the problem.

Water is not the only natural resource that comes under pressure by tourist growth. The soil as well is under attack. Building construction without any control has taken over most Greek islands and has led to extreme urbanization of the landscape. This cancels the picturesque character of the islands as well as the quality of everyday life.

A terrible example of building frenzy is the case of the resort that was planned to be constructed near the Antinioti lagoon. It soon came up that despite having had all the necessary permits, the lagoon itself started to be filled up. It took constant demonstrations by locals to have the permits revoked and the works to be stopped. The damage however to the environmentally important lagoon was not reversible.

5_Environmental impact due to bad political

Every individual has the responsibility of taking care of our planet. In our small little ways, we can be a big help in the reduction of emissions causing climate change. But, what about the government? Does it take action in order to improve our environmental situation or does it not care about it?

Unfortunately, the truth is that in Greece the politicians do not take action for improving or even solving some problems that pollute the environment. The most current problem that concerns us is the open mining, the most typical form of unsustainable activity, planned against the will of local communities (Halkidiki, Milos, Fokida, Thrace). There are serious causes of soil and water poisoning and generally degradation of the environment and the quality of life of citizens. We are concerned, as the state mechanism delays in deciding administrative measures that should result from the reports and decisions of the environmental inspectors.

What could the government do to eliminate environmental pollution in our country? Firstly, the most feasible way to save the planet is to heal the natural ecosystem. The government should protect forests, rivers and oceans in order to avoid significant natural disasters or human actions that could be harmful for it. For instance in the summer of 2021, fires broke out in Evia and in many other areas of Peloponiso . The government was not prepared for this situation and thus did not provide the necessary amount of firefighting in these areas resulting in many forests being completely burned. If the politicians had predicted and were alert in case of fire, due to increased temperatures, then most of the forests would have been saved.

Another helpful action could be the promotion of green energy. Green energy is energy that is collected from natural recourses such as the sun, water and wind. The more developed a country is the more energy it consumes. Because of technology it is easier to raise people's awareness to use this type of energy in their daily life in order to avoid environmental pollution.

To conclude, the government does not really help to improve our environment. The examples above of halkidiki and evia show that politicians do not care about the environment and do not find it as big problem. On the contrary it is an important

problem that concerns all of us and could affect our health and generally future life in a bad way.

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