Sustainable Energy Actions Plan

The «Covenant of Mayors» is an initiative by European Cities, Towns and Regions. It entails the voluntary adhesion of towns in a network, aiming at fight against climate change. The goal is to reduce of greenhouse gas emissions (expressed as equivalent carbon dioxide - eqCO_2) by at least 20% below the 1990 values.

Municipality of Hersonissos, **one of the major touristic resorts of Greece,** adhered to the network "Covenant of Mayors" on 18th April 2011. It is committed to take measures to promote sustainable local economic development, to use innovative solutions on energy domain and to protect the environment (www.eumayors.eu/about/signatories_en.html?city_id=2704), as it experiences several environmental pressures due to spatial and seasonal intensive tourist activity.

The Municipality has to submit a plan, aiming on a local sustainable energy management actions, within a year of joining the network.

What is the SEAP plan?

Let's have a look at climate change, as a consequence of human activity in simple facts, from the Stern's report

- → In the middle of 19th century, average CO_2 concentration was 280ppm (i.e. there were 280 parts CO_2 in total volume of 1.000.000 parts air)
- → During the last 60 years, average concentration has risen to a value of 430ppm. (i.e. an increase of 150 ppm.)
- → As a consequence of the above the annual rate of increase was 2.5ppm.
- → Taking into account the predicted increase rate of 3-4ppm per year, for the forthcoming years, we can safely assume that the CO_2concentration will rise to 750ppm, by the end of the current century.
- → This extremely high value means that the temperature of our planet will probably increase by approximately 5 degrees Celsius, by the end of the 21st century.
- → We also have to take into account that 10.000 to 12.000 years ago a temperature reduction of 5 degrees Celsius would be referred to by scientists as an era of ice glace.

This is not a science fiction scenario, but merely simple mathematics!!!!

The consequences of such an increase by 5 degrees Celsius will be global and long-term and will be extreme weather conditions, ice melting, rise of sea level, land erosion, shortage of drinking water, biodiversity deterioration, loss of ecosystems balance, increase of migration due to famine and lack of housing, spread of contagious diseases etc.





Poor countries will be first and most affected by these changes and developing countries will follow. The last have contributed more than others to the increase of greenhouse gases emissions. Let's have a look at the geography of emissions (table1). Data, refer to year 2008.

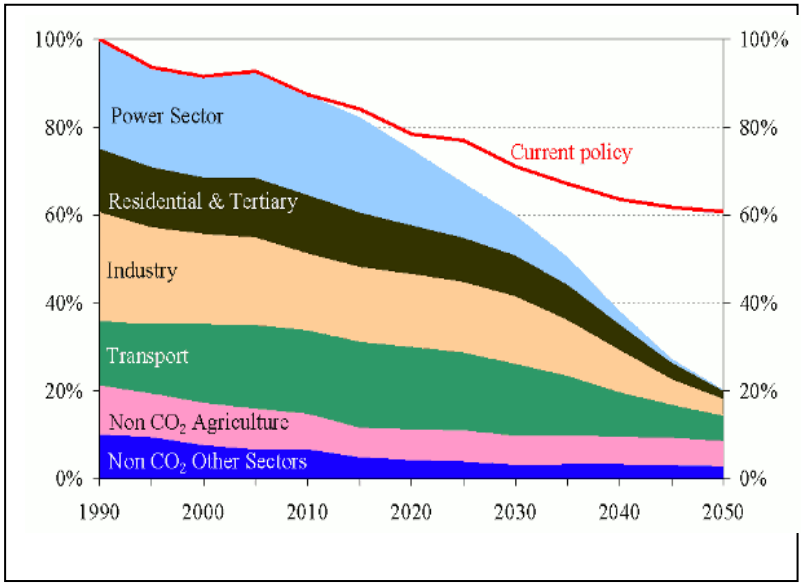
Table 1: Emissions in different countries (rates per capita).

USA, Canada,Australia	:	20 tnCO_2/per capita
Europe	:	10-12 tn CO_2/per capita
China	:	5-6 tn CO_2/per capita
India	:	2 tn CO_2/per capita
Africa	:	0,1 tn CO_2/per capita

Covenant of Mayors

In order to reverse this increasing tendency and stabilise the earth's temperature rise by 2 degrees Celsius - taking into account a population of 9 trillion people in 2050 - CO_2 emissions will have to be reduced to 20 trillion tonnes (i.e. half of the 1990 levels). That is equivalent to 2 tonnes CO_2 emissions per capita. It is quite difficult for rich countries, to sustain control of CO_2 concentration, since they must achieve a higher decrease in CO_2 concentration per capita, by sacrificing some of their daily habits.

Diagram 1



In other words, a decrease from 10-12 tonnes CO_2 per capita to 2 CO_2 tonnes per capita is a total reduction of 80% in carbon emissions in European countries.

The decrease per sector such as energy production, industry, transport and residential/services is illustrated in diagram 1.

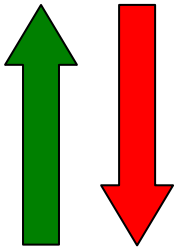
The climate change is firmly associated with the energy issue in Europe. This issue can be divided in three themes:

- Ensuring energy provision
- Ensuring variety of energy resources (the two above contribute towards the independency of Europe.)
- Environment Protection

Subsequently, Europe needs to take measures that will not only reduce greenhouse emissions but will also lead to reduction of energy consumption.

Within the «Covenant of Mayors» network, these goals are included as a general target, and referred as 20-20-20 by 2020:

1990 Baseline year



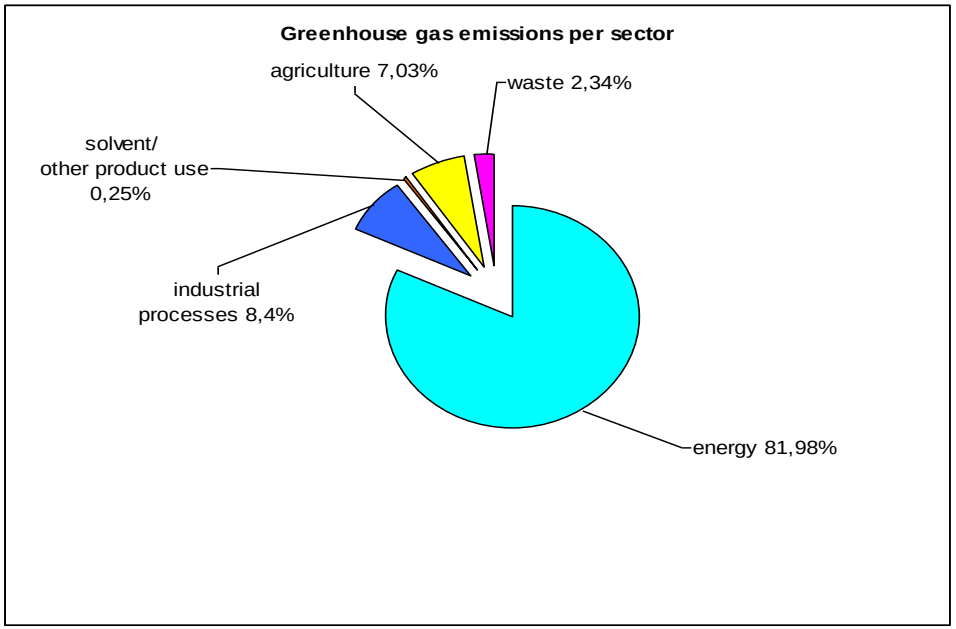
- A 20% reduction in primary energy
- A reduction in EU greenhouse gas emissions of at least 20% below the 1990 levels
- 20% of EU energy consumption deriving from renewable energy resources

2020 Target year

Members of the European Union publish annual reports on climate changes and produce sustainable energy actions plans, at a national level.

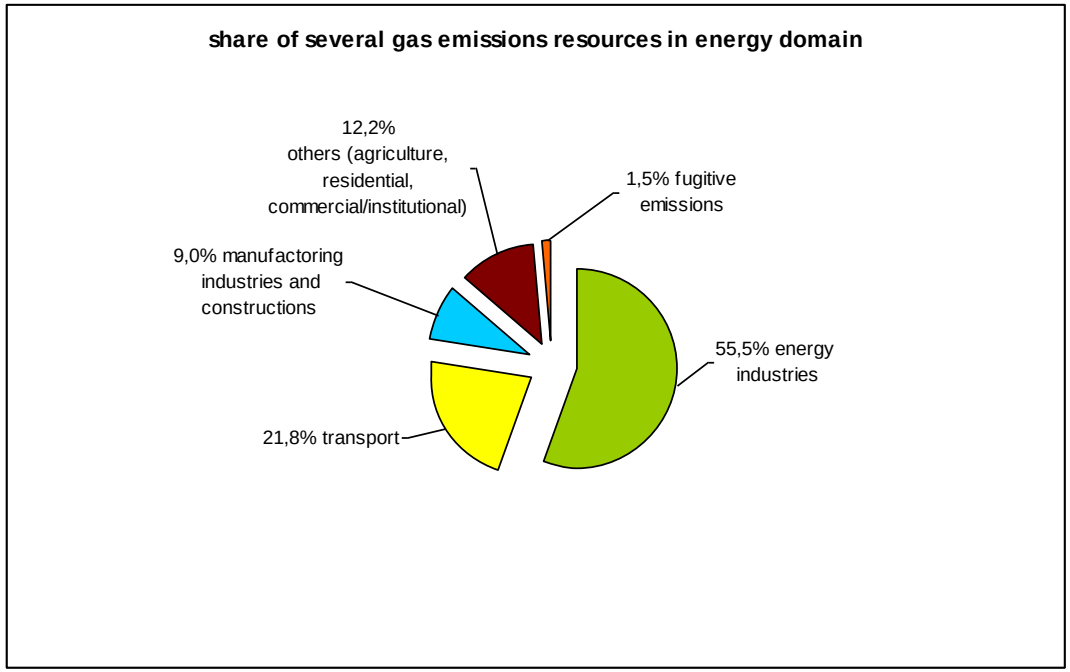
The energy sector in Greece contributes to CO_2 emissions at a percentage 81.98% (Diagram 2) according to the annual report of climate changes, in 2010, by the Ministry of Environment, Climate Change and Energy. (1)

Diagram 2



The energy sector contributes by 55.5%, transport and residence with a share of 21.8% and 12.2%, respectively. (1)

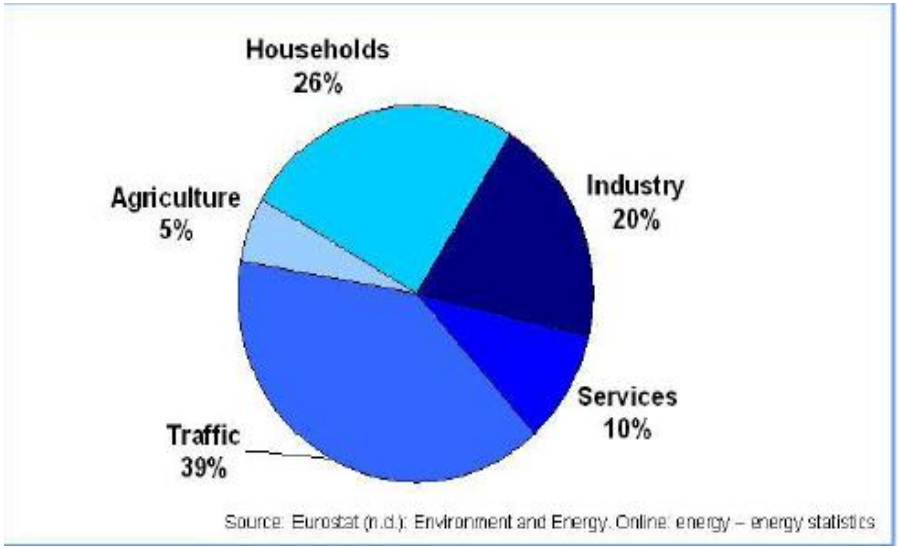
Diagram 3

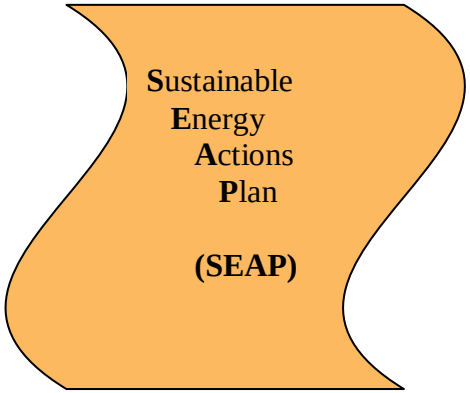


Although, energy production is the primary responsible sector for gas emissions, (Diagrams 2 & 3), it is evident from diagram 4 that residential (26%) and transport domain (39%) in end-use energy consumption, are high enough, to make us interfere, in order to avoid warming of our planet.

As a subsequence, the necessity for sufficient planning, action and audit needs to be done at a Local – Town level.

Diagram 4: Data 2006 in Greece (5)





Fundamental characteristics of Sustainable Energy Actions Plan.

1. Baseline year emissions inventory recording. (In general, 1990 is defined as the baseline year or the nearest to it, in which there are adequate, accurate and reliable data)
2. The plan includes actions and measures that the Municipality must implement in order to reach the 20-20-20 target.
3. Time line of measures implementation (short-term, medium-term and long-term).
4. Establishment of specific indicators for monitoring the implementing the SEAP.
5. Allocation of efficient human resources on behalf of the Municipality dedicated to the Covenant of Mayors.
6. Financing tools, Subsidized funding resources.
7. Development of Support, Administrative and Technical consulting structures.
8. Cooperation with Energy production agencies, Enterprises of wastewater or solid waste treatment, NGOs, Universities, Polytechnics, Schools, Centres of environmental education, Private bodies.
9. Networking with other cities
10. Networking with individuals, who will advocate the scopes and relay the message to others.

The Sustainable Energy Action Plans should not and must not constitute a nice document of virtual reality. They should integrate all best practices in the planned strategies as well as in everyday life.

An important prerequisite for achieving the plan's goals is the active participation and involvement of local society, particularly professional unions, target groups of the same age, private/public sector, residents and visitors/tourists. All of the above need to be motivated from the early stages of the plan, to the final stage, which is that of implementation.

Municipality plays a crucial role:

- ✓ As a consumer giving the good example by reducing the amount of energy consumed in Municipal buildings.
- ✓ As a visionary leader, designing sustainable local policies and
- ✓ As an auditor who will reward good practices.

Indispensable key-points for the plan's successful implementation are:

According to the template of SEAP there are target-sections which will be studied and audited:

1. Municipal buildings
2. Municipal fleet / transport
3. Public lighting
4. Private sector of transport
5. Public sector/tertiary services
6. Private services (hotels)
7. Residential sector.

Indicative measures, for reduction of energy consumption.

Buildings of residential sector and tertiary services
Improvement of thermal insulation / Energy designing buildings (building tightness, surface and orientation of glazed Surfaces).
Use of renewable energy resources / e.g. use of solar energy for water warming
Use of efficient electrical devices. (e.g. eco-labelling products). It has been proved that 15% of energy consumption in a household is used for lighting and operation of electrical appliances.
Substituting the conventional lamps with energy efficient ones.
Promotion of Efficiency of equipment in heating/cooling
System Management in buildings
Good practices in the office/home: Use central printers, flat screens. Reduction in energy consumption by avoiding stand-by mode.

	Public lighting
Substituting conventional lamps. By using Led technology or energy efficient lamps we can achieve 80% reduction in energy consumption, in conjunction with longer lifespan, thus counteracting the investment cost that is higher using new technology than old ones.	
Moreover, we can use autonomous (PV) photovoltaic systems for street lighting.	

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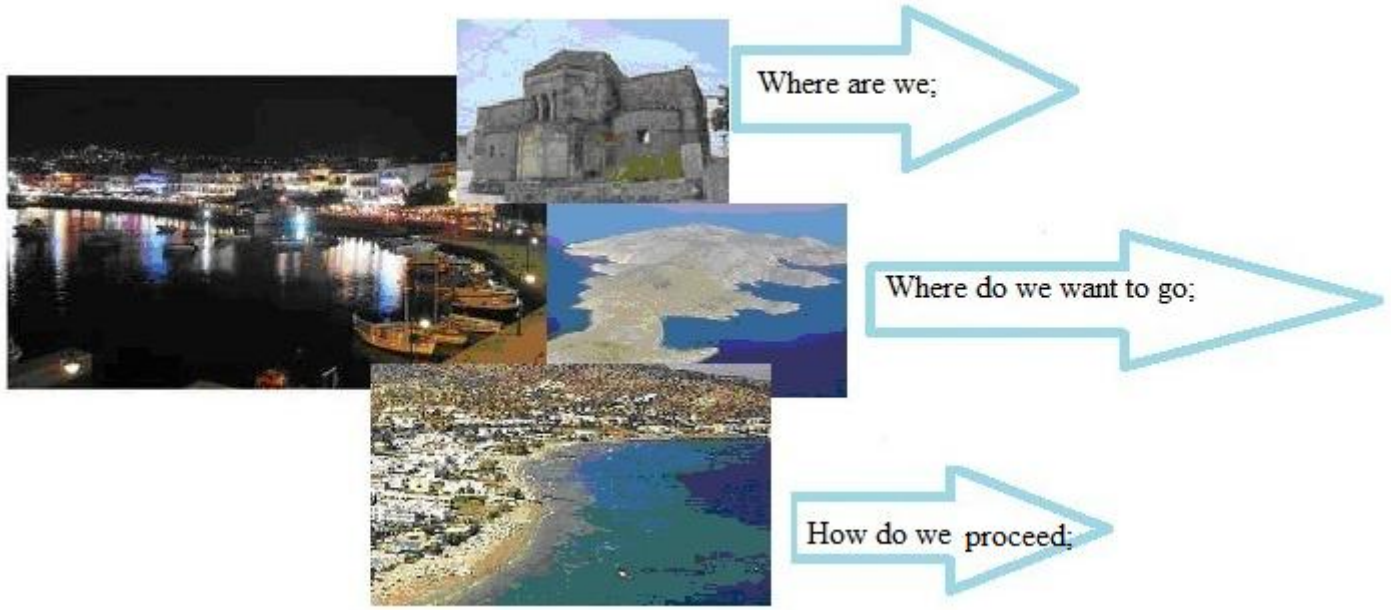
Transport.
Changing our behavioural stereotypes. Choosing Public Transport Cycling/walking Greece, exhibits a tendency of increase in kilometres per capita per year as well as on number of private cars per capita. Respectively, 12.000 km per capita per year in 2000 → 24.000 km per capita per year in 2004, 0.17 private cars per capita in 1990 → 0.35 private cars per capita in 2004.
Renewal of Municipal fleet/Use of new technology cars
Use GPS for selecting optimal journeys for municipal fleet
Administrative measures, use of advanced ICP technologies.

REFERENCES

1. Ministry of Environment, Climate Change and Energy: «Climate change, emissions inventory» April 2010.
2. Scientific Report «Solutions for climate change· Vision of Sustainability in Greece, in 2050» WWF Greece.
3. Covenant of Mayors: Guidebook «How to develop a Sustainable Energy Action Plan».
4. Economist Stern's report for climate change.
5. BewareE Country Reports Europe 2008/09/23 «Energy Services: Reducing the Energy Consumption of Residents by behavioural Changes».
6. COM(2011) 109 Final/8-3-2011, «Plan for energy efficiency 2011».

Sustainable Energy Actions Plan (SEAP) of Municipality of Hersonissos;



Excerpts from Sustainable Energy Actions Plan of Hersonissos, for example data statistics of the area, energy consumptions of municipal buildings, schools, Enterprise of waste landfill, Plant of wastewater treatment, energy classification of municipal buildings, good practices, will be published, during the development of the plan.

FAQ

What will be the title of SEAP of Municipality of Hersonissos?

Websites

www.hersonisos.gr/municipal/CovenantofMayors//covenanteisag.html

http://www.eumayors.eu/index_en.html

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