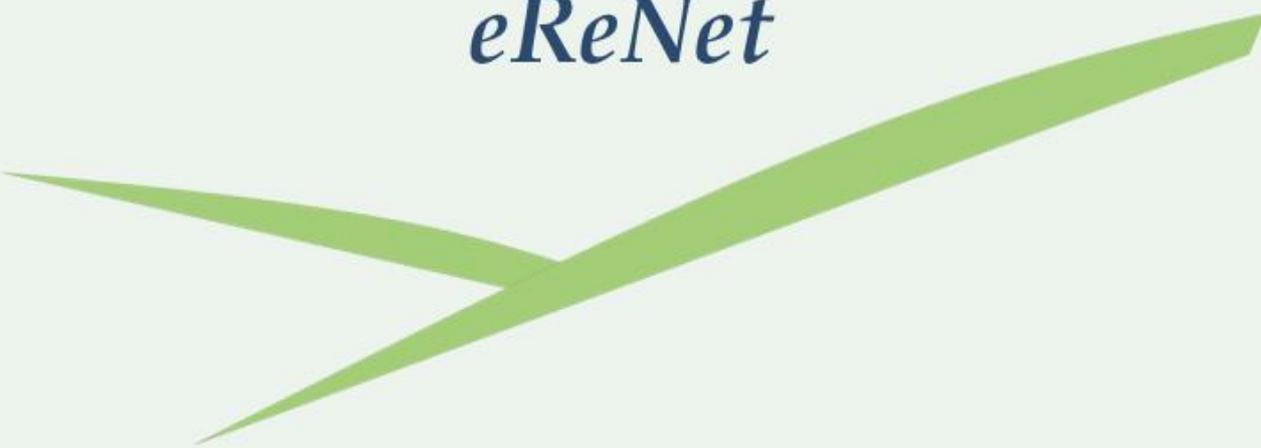


Project no: IEE/10/224/SI2.593412

Rural Web Energy Network for Action

eReNet



1st eReNet Brief

*“The Sustainable Energy Market Context
on the Target Regions”*



Table of Contents

1. Introduction	3
2. Municipality of Sertã	4
3. Municipality of Amyntaio	7
4. Municipality of Judenburg	10
5. Municipality of Asenovgrad	13
6. Municipality of Dugo Selo & Sveta Nedelja	16

1. Introduction

eReNet aims to add value to local actions in rural communities, creating an intelligent and integrated “Rural Web Energy Learning Network for Action”. eReNet fosters rural communities in the development, implementation and monitoring of their Sustainable Energy Action Plans (SEAPs), capacity building of the related actors through knowledge transfer from experienced communities.

In this context, the 1st eReNet policy brief has been prepared, entitled “The Sustainable Energy Market Context on the Target Regions”. This policy brief is based on the participating rural communities’ energy policy, namely the Municipality of Sertã (Portugal), Amyntaio (Greece), Judenburg (Austria), Asenovgrad (Bulgaria), Dugo Selo and Sveta Nedelja (Croatia).

More specifically, the eReNet policy brief provides an overview of the rural communities’ efforts towards sustainability, as well as their energy market current status and potential, compared to the national trends.



Figure 1: 1st eReNet Policy Brief

2. Municipality of Sertã



1st eReNet Brief: The Sustainable Energy Market Context on the Target Regions

Sertã, Portugal

Sustainable energy

This concept provides us the idea that to reach sustainable energy we should have a sustainable provision of energy that corresponds to the present needs, not compromising the future generations. Among the technologies that lead to a sustainable energy we can find renewable energy sources from hydroelectricity, solar and wind energy, wave power, geothermal, biomass and others.

Within this concept some targets were established. The National Strategy 2020 relies on five priority axis - the sustainability is among them. The axis can be divided in the following concepts:

- **Sustainability of the energy strategy** – Related to the economic and environmental sustainability in the way to promote the emissions reduction and the balanced management of costs and benefits of its implementation
- **Economic sustainability** – Consists of the creation of a sustainability fund that allows to manage the impact from the cost differentials in what concerns tariffs and also to internalize the benefits from the clean energies.
- **Technical sustainability** – It integrates the intention to increase the power of dams in order to allow more hydro energy production and also the use of smart networks and electric mobility.
- **Environmental sustainability** – The objective is to reduce until 2020 in a sustained way the emissions by the production of electricity from renewable energies.

In Sertã, efforts towards sustainability come far- for instance, since 1951 with the construction of Castelo de Bode dam, with an hydroelectric production of 400 GWh/year. After that, in 1954, the Cabril dam was operating with a production of 300 GWh/year. In 1955, the Bouça dam arises with a production of 150 GWh/year. In 2000 a wind farm was implemented, with 26 turbines and still expanding nowadays.

Additionally, in the region, the education and training regarding renewable

energies is very important. There are four schools with renewable energies' related trainings distributed among Sertã, Castelo Branco and Tomar.

Sustainability has also been present in European projects: Sertã is a Portuguese partner of RETS (Renewable Energies Transfer System) project that initiated in 2010. This project involves nine European Union member states and its main purpose is to improve the knowledge and competences of the politicians in what regards renewable energies and its role in the local development.

Nowadays, Sertã is also the Portuguese partner of the eReNet (Rural Web Energy Learning Network for Action) project with the final purpose of developing, implementing and monitoring municipality's SEAP.

Energy Market

The energy market has an influence on almost everything that it's done in a country. The energy prices are often volatile, being the energy a very important product around the world, affecting industries and nations.

In Portugal, until 2005, the electricity business was centered in one operator in the regulated market, selling at a tariff set by the market regulator. In 2005, following a European Union Directive, the Portuguese government set goals such as: primary energy sources, higher environmental concerns and the promotion of competitiveness.

Within these goals Portugal presents for the Renewable Electricity Production by Energy Source, in 2010, the following indicators:

Table 1. Renewable Electricity Production by Energy Source in Portugal (2010)

Renewable Electricity Production [MWh/year]	Portugal
Hydro Power	16,249,001
Wind Power	9,023,998
Biomass with Co-generation	1,578,516
Biomass without Co-generation	612,160
Municipal Solid Waste	454,847
Biogas	100,491
Photovoltaics Energy	213,298
Total	28,232,311

In what concerns Sertã, this region holds several sustainable energy projects, specifically the dams of Cabril e Bouçã, a wind farm with 26 turbines, a biomass plant and also solar panels at several buildings, namely the municipal swimming pool. Therefore, for the year of 2010, in Sertã, we have the following indicators:

Table 2. Renewable Electricity Production in Sertã (2010)

Renewable Electricity Production [MWh/year]	Sertã
Hydro Power	421,030
Wind Power	97,545
Biomass with Co-generation	0
Biomass without Co-generation	8,950
Municipal Solid Waste	0
Biogas	0
Photovoltaics Energy	0
Total	527,525

Regarding energy consumption, in the table below a brief comparison on the indicators (2010) of the energy performance in Sertã and in Portugal is shown.

Table 3. Energy Performance in Sertã and Portugal (2010)

	Portugal	Sertã
Energy Intensity [MWh/M€]	1,008	1,476
Energy Consumption per inhabitant [MWh/hab]	16	15
Total Electricity Consumption in the Domestic Sector per Accommodation [MWh/acc]	1.4	1.2
Services Energy Intensity [MWh/M€]	223	446
Industrial Energy Intensity [MWh/M€]	1,251	329
Road Transport Energy Intensity [MWh/M€]	428	806
Public Lighting Energy Consumption per Municipality Revenues [MWh/k€]	0.8	0.8

The use of energy in a sustainable and efficient way is a primary focus for the Municipality of Sertã. To achieve the best results, the municipality works with local schools in order to accomplish sustainable energy actions, raising awareness in the younger and trying to reach all the community.

3. Municipality of Amyntaio



1st eReNet Brief: The Sustainable Energy Market Context in the Target Regions

Municipality of Amyntaio

Sustainable energy

The Municipality of Amyntaio is part of the Prefecture of West Macedonia, where 80% of the total electricity generation in Greece is realized. The high density of thermal power stations in the territory is justified due to the existing local resources, namely the rich in lignite subsoil, which comprises the operating fuel for the majority of the power stations in the region.

The Municipality of Amyntaio is part of the Monastirio – Amyntaio – Ptolemaida - Servia tectonic graben, in which the largest lignite deposits exist. More specifically, Amyntaio's deposits surpass 450 million tons and constitute the feedstock for the Amyntaio - Filotas Steam Electric Station (SES), located North West of the Filotas area. The Station is comprised by two units of 600MW combined power (2 X 300 MW), using the Combined Heat and Power (CHP) technology with an installed capacity of 24 MW_{th}. The heating produced is provided, through the existing district heating network, to the domestic and tertiary sector of Amyntaio at a relatively low cost. At this point it has to be noted that the respective units are participating in the European Emissions Trading Scheme (EU-ETS).

The thermal power stations in the region have been for many decades the driving force contributing to the territory's regional development and economic prosperity. Even within the economic crisis, the Public Power Corporation has been one of the major employers' in the region.

However, apart from the above mentioned widely recognized facts, evident are also in the territory the environmental degradation, as well as the high levels of existing air pollution. Frequent are the publications in the local press and not only, on the health problems caused by the operation of these stations.

This picture is being completed by the fact that till 2009 almost no investments had been realized in the region on renewable energy sources (RES) and rational use of energy (RUE).

These parameters have been the driving force behind the decision of the municipality's mayor, towards a sustainable energy planning for the region, which would allow the creation of additional jobs and the reduction of the pressure on the environment. In this respect, the municipality participates in two major initiatives, the Rural Web Energy Learning Network for Action (eReNet) project, co-financed by IEE programme and the Network of Energy Producing Municipalities (NEProM). Within the eReNet's framework, the mayor signed the Covenant of Mayors on April 18th, 2011, and approved its Sustainable Energy Action Plan (SEAP) on the 17th of October 2012.

Energy Market

As mentioned above, the sustainable energy related projects in Amyntaio were almost nonexistent in 2009. More specifically, based on the work realized for Amyntaio's SEAP, the community in 2009 presented some very small electricity generation from photovoltaics, while solar thermal collectors are considered to have significant penetration levels in the region. Finally, biomass is being utilized for heating purposes.

For comparative reasons, the energy consumption in GWh for 2009 is being presented at the following table (Table 4) for the local and national level.

Table 4. Final Energy Consumption (GWh) in 2009

	Amyntaio	Greece
Gazoline	31.3	49,741.5
Diesel	79.4	32,377.9
Heating Oil	95.7	42,251.8
District Heating	27.4	569.9
Biomass	10.5	9,850.6
Solar Thermal	1.4	2,116.7
Electricity	62.9	54,707.5

Moreover, the municipality's participation in the energy production from RES achieved in 2009, against the progress at the national level, is presented in Table 5.

Table 5. Energy Production (GWh) in 2009

	Greece	Amyntaio
Hydro	5,256.76	-
Wind	2,546.97	-

PVs	46.52	0.35
Geothermal	255.86	-
Biomass	9,269.11	10.5
Biogas	662.91	-
Biofuels	825.73	-
Solar Thermal	2,116.66	1.4
Total	20,980.52	12.25

Moreover, based on the available data at the regional level, comparisons can be made to the national one only regarding the energy consumption per capita, which for 2009 were 21.2 MWh at the national level and 18.2 MWh at the regional one.

4. Municipality of Judenburg



eReNet BRIEF – Newsletter December 2012

Municipality of Judenburg's SEAP is setting another milestone in climate protection

Judenburg was the second municipality in the Austrian Province of Styria to submit a Sustainable Energy Action Plan to the Covenant of Mayors. Assisted by the Energy Agency of Upper Styria, it took one year to complete the SEAP titled "Energy Action Plan Judenburg 2020" which is another important milestone in the almost 25 year-long history of environmental and climate protection in Judenburg. The town has been a member of the Climate Alliance since 1992 and is holding the European Energy Award in Silver.

Judenburg's CO₂ reduction goal by 2020 is minus 28 % compared to 1990, thereby even outreaching the EU's climate protection goals. Since Judenburg started energy accounting for the public buildings and made its first energy concept back in 1990, it was possible to take the Kyoto base year as baseline for the SEAP as well.

The SEAP aims at reducing the total energy consumption in the town area and increasing the production of renewable energies. Centre piece of the action plan are measures to lower the energy consumption of the municipal buildings by 24 % and the CO₂ emissions by 60 % compared to 1990 by the year 2020. 100 % of the energy used for heating are supposed to come from renewable sources. The dependency on energy imports for energy and heat production shall be tackled with the increased use of traditional local energy sources like water and biomass (wood).

Core measures to reach these goals are:

- construction resp. expansion of a district heating network in the whole town area, fed with waste heat provided from the pulp mill Heinzl Pulp at nearby Pöls;
- expansion of renewable energies (solar energy, wind power, hydropower);
- procurement of green energy for public buildings as good practice;
- energy saving measures in public buildings and facilities (including residential buildings);
- grants by the Municipality for RES/RUE measures in private and tertiary

buildings (thermal insulation, biomass heating, solar thermal systems, photovoltaic installations, and heat pumps);

- expansion and promotion of non-motorized traffic (walking, cycling) and public transport;
- sustainable public procurement.

As a long term vision, by the year 2050 100 % of the energy consumed in the area of Judenburg are supposed to come from renewable sources. To reach this goal the potential of hydropower, wind power und photovoltaics is to be expanded from 30,000 MWh to a total production of 50,300 MWh, saving 15,600 tons of CO₂ per year.

As in many other European towns, traffic proves to be the problem the hardest to tackle. Whereas traffic volume increased by 53 % from 1990 to 2011, it is expected to languish at the present level until 2020. Financing a city bus line and a regional linked transport system, promoting public transport through improvements of timetables and lines as well as projects to get children to walk to school and kindergarten instead of being driven are among the measures planned to reduce car traffic.

Surrounding the hard technical measures, the SEAP includes soft measures to help implementing climate friendly and energy efficient technologies and further promote energy saving in all stakeholder groups: financial incentives by the Municipality, consciousness building activities and information about climate protection and renewable energies, along with setting good examples on the Municipality's side.

The SEAP was developed during one year by a team consisting of about 15 employees of Municipality, Energy Agency and the local energy supplier. A thorough questionnaire analysis among the most important stakeholders and two public presentations enabled the inclusion of suggestions by citizens, entrepreneurs and energy experts. The final presentation took place in front of more than 100 guests of the ceremony celebrating Judenburg's 20 year membership in the Climate Alliance on September, 20th 2012. On October 25th, 2012 the action plan was passed by the Municipal Council of Judenburg and immediately submitted to the Covenant of Mayors.

Specific data about the GHG emission inventory and the measures planned are available on the website of the Covenant of Mayors. The German version of the SEAP "Energieaktionsplan Judenburg 2020" can be downloaded from www.judenburg.at, go to "Umweltschutz" and "Energie".

For further information. please contact:

DI Josef Bärnthaler, Energy Agency Upper Styria / Energieagentur Obersteiermark

T: ++43 / (0)3577 / 26664-0, E-Mail: office@eao.st, www.eao.st



Präsentation of the Sustainable Energy Action Plan (SEAP) of the city of Judenburg during the 20 years celebration in the Climate Alliance in Judenburg on 19th of September 2012 (Foto: Haslebner)

Persons (From left to the right): Gundi Pein und Alfred König (Landesenergieverein Stmk), Christine Bärnthaler (Energieagentur Obersteiermark), Eva Volkar, Bgm Hannes Dolleschall, Helfried Kreiter (Stadtgemeinde Judenburg), Josef Bärnthaler (Energieagentur), Friedrich Hofer (Klimabündnis Stmk)

5. Municipality of Asenovgrad



1st eReNet Brief: The Sustainable Energy Market Context of the Target Regions

Asenovgrad, Bulgaria

Sustainable energy

The sustainable energy sources - sun, wind, water, biomass and geothermal energy are practically clean, inexhaustible, eliminating dependency on fossil fuels and mitigating climate change. The challenges in front of developed countries are to integrate the cleaner energy production into their existing infrastructure, while there are new opportunities faced by developing countries to start with new, cleaner and more efficient technologies from the beginning. The European energy policy strategy lays down several priority directions for better management of the energy production and consumption, namely – overcoming the negative effects on climate, reduction of the economy's energy intensiveness and energy efficiency improvement, including that in energy self-sufficient buildings, limiting the EU's external dependency on imported energy resources, and promotion of the economic growth and employment.

The Bulgarian priorities in the field of RES development are set in the Energy Strategy of the Republic of Bulgaria till 2020, adopted in June 2011. The strategy foresees utilization to the maximum of the RES potential in order to achieve more than 16% share of RES in the final energy demand in the country. The State and the municipalities are the main actors in the achievement of that target through supporting the private initiatives in the process of increasing the energy self-sufficiency of public and residential buildings by retrofitting and reducing of energy costs by means of solar water heating installations, biomass based local heating systems or thermal and geothermal energy sources, etc.

The municipal administration of Asenovgrad shows strong interest in developing projects for energy production from RES. Up until now there are two small hydro power plants – SHPP "Asenitsa 1" with power capacity of 6.7 MW and SHPP "Asenitsa 2" with 1.6 MW located on Asenitsa river. The Municipality is very

interested in expanding the energy production from sustainable sources through installing photovoltaics and solar collectors for hot water on the roof of its buildings and utilizing the potential for biogas production in the local waste water treatment plant.

In December 2012 Municipality of Asenovgrad won the award for "Greenest Municipality in Bulgaria" in the category for 30,000 – 100,000 citizens. The reason for this success is the significant reduction of greenhouse gases through realizing projects for energy efficiency in the Municipality – complete renovation of the local hospital, nine schools and kindergartens are in progress of renovation, and the city has increased significantly its gasification share in the last 10 years. The municipality received compliments for being very active in using the financial options from International fund "Kozloduy", National Trust EcoFund and Operative Programme "Regional Development".

The Municipality of Asenovgrad is also one of the Bulgarian partners in the eReNet (Rural Web Energy Learning Network for Action) project, co-financed by Intelligent Energy – Europe Programme, which aims to support several local authorities in different European countries through developing, implementing and monitoring their Sustainable Energy Action Plans (SEAPs).

Energy Market

The energy market has significant influence in almost every process in a country. Prices of product and services are directly dependent on the electricity price.

In Bulgaria, in line with Directive 2003/54/EC and under the Energy Act, the wholesale electricity market in the Republic of Bulgaria has been fully liberalized since 1.07.2007. In 2010, 18% of the internal consumption in the country is traded in the wholesale market at freely negotiated prices.

The share of energy production from renewable energy sources in 2010 is presented in the following table.

Table 6. Share of Energy Production from Renewable Energy Sources (2010)

Hydro Power		Photovoltaics energy		Wind Power		Biomass (biogas)		Total	
MW	GWh	MW	GWh	MW	GWh	MW	GWh	MW	GWh
2,188	3,709	25	15	488	722	3	16	2,704	4,461

Source: First report on Renewable Energy Action Plan of Bulgaria, December 2011

On Municipality's territory are located two small hydro power plants with the following production for 2012 – SHPP "Asenitsa 1" – 26 896 MWh, and SHPP "Asenitsa 2" – 5 888 MWh.

The Municipality of Asenovgrad aims to improve the services it provides and to improve the living comfort on its territory through promotion and implementation of rational use of energy. Some of its main priorities are to collaborate with citizens, schools and kindergarten to secure the best results in the sustainable actions it intends to implement.

6. Municipality of Dugo Selo & Sveta Nedelja



1st eReNet Brief: The Sustainable Energy Market Context on the Target Regions

Municipalities of Sveta Nedelja and Dugo Selo, Croatia

An increase of energy efficiency is one of the basic components of sustainable development. Energy efficiency is a significant way of reducing energy sector environmental impacts, increasing employment and enhancing competitiveness of the whole national economy.

Renewable energy sources that we can use without compromising future generations are: hydroelectricity, solar energy, wind energy, geothermal energy, biomass and others.

Sustainable energy development is also defined in Energy Sector Development Strategy of the Republic of Croatia.

Goals of The Energy Sector Development Strategy are:

- Safety of energy supply;
- Competitiveness of energy sector;
- Sustainable energy development.

Safety of energy supply

Safety of energy supply in Republic of Croatia is necessary to improve. Attention should be paid to: dependence on oil imports, insufficient security of natural gas supply and especially to the high dependence on electricity imports.

Competitiveness of energy sector

Competitiveness of the Croatian energy sector is satisfactory. Croatia energy sector has diverse energy structure of electricity production and a relatively high share of domestic natural gas production.

For the competitiveness of energy sector it is necessarily

- Development of the energy market,

- Country openness,
- Sharing risks by the investment,
- Development and technological advancement and etc.

Sustainable energy development

Sustainable energy development is the challenge of modern development. Energy related activities participated with 75% in total emission of greenhouse gas in Republic of Croatia. In order to achieve Kyoto targets for Republic of Croatia it is necessary to significantly increase investment in energy efficiency, renewable energy sources and technologies with low greenhouse gas emissions. Sustainable energy development depends on domestic technological development of the energy sector through own production of energy as well as of energy equipment.

Implementation of energy efficiency measures and utilization of renewable energy sources in both municipality (Sveta Nedelja and Dugo Selo) have high priorities in the sustainable energy developments of the municipalities.

Some of on-going RES/RUE projects in the Municipality of Dugo Selo

- Implementation of the project: Systematic Energy Management in municipalities and counties in the Republic of Croatia (SGE);
- Energy efficient modernization of public lighting;
- Low-energy reconstruction of kindergarten Dugo Selo;
- Installation of Solar Water Heating systems in the building of FC Dugo Selo.

Some of on-going RES/RUE projects in the Municipality of Sveta Nedelja

- Implementation of the project Systematic Energy Management in municipalities and counties in the Republic of Croatia (SGE);
- LED modernization of public lighting;
- Low-energy reconstruction of kindergarten Sveta Nedelja;
- Low-energy reconstruction of primary school building in Rakitje.

Regarding so called "soft measures" Sveta Nedelja and Dugo Selo organize Energy days every year.

Energy Market

Energy market in Croatia deals with the trade and supply of energy, and has really big influence on almost everything that it's done in a country.

In the table below, indicators for Renewable Electricity Production by energy source, in 2009 in the Republic of Croatia are presented.

Table 7. Renewable Electricity Production in the Republic of Croatia (2009)

Renewable Electricity Production [MWh/year]	Republic of Croatia
Hydro Power	18,269,444.44
Wind Power	6,816,666.67
Biomass	4,991,666.67
Municipal Solid Waste	0
Biogas	0
Photovoltaics Energy	361,111.11
Total	30,438,888.9

In the table below, indicators for Renewable Electricity Production by energy source, in 2009 for the Municipality of Dugo Selo are presented.

Table 8. Renewable Electricity Production in Dugo Selo (2009)

Renewable Electricity Production [MWh/year]	Municipality of Dugo Selo
Hydro Power	0
Wind Power	0
Biomass	12,112
Municipal Solid Waste	0
Biogas	0
Photovoltaics Energy	0
Total	12,112

In the table below, indicators for Renewable Electricity Production by energy source, in 2009 for the Municipality of Sveta Nedelja are presented.

Table 9. Renewable Electricity Production in Sveta Nedelja (2009)

Renewable Electricity Production [MWh/year]	Municipality of Sveta Nedelja
Hydro Power	0
Wind Power	0
Biomass	5,408.81
Municipal Solid Waste	0

Biogas	0
Photovoltaics Energy	0
Total	5,408.81

Regarding energy consumption, in the table below a brief comparison on the indicators (2009) of the energy performance in Dugo Selo, Sveta Nedelja and in the Republic of Croatia are shown.

Table 10. Energy Performance (2009)

	Energy Consumption per inhabitant	Total Electricity Consumption in the Buildings Sector	Total Energy Consumption in the Transport Sector	Total Energy Consumption in the Public Lighting Sector
	[MWh/hab]	[MWh]	[MWh]	[MWh]
Croatia	25.52 (including industry)	21,891,667.0	24,955,556.0	NA
Dugo Selo	10.26 (without industry)	109,182.22	69,088.02	1,607.54
Sveta Nedelja	11.12 (without industry)	140,922.10	51,443.59	1,552.27

It can be concluded that in the last few decades sustainable energy development is of high priority in both municipalities.

The main prerequisites for the successful realization of the targets of SEAPs of Dugo Selo and Sveta Nedelja are:

1. Setting up the organizational structure for SEAP implementation in the shortest possible term (coordination, implementation, monitoring);
2. Introduction of the system for monitoring of energy consumption and indicators on the territory of both municipalities;
3. Introduction of a unique classification of energy sectors and sub-sectors in accordance with this Action Plan;
4. Systematic and responsible enforcement of the proposed measures and activities and rational energy management on the territory of both municipalities;
5. Continuous monitoring and reporting on the achieved results;
6. Regular preparation MEIs for both municipalities.