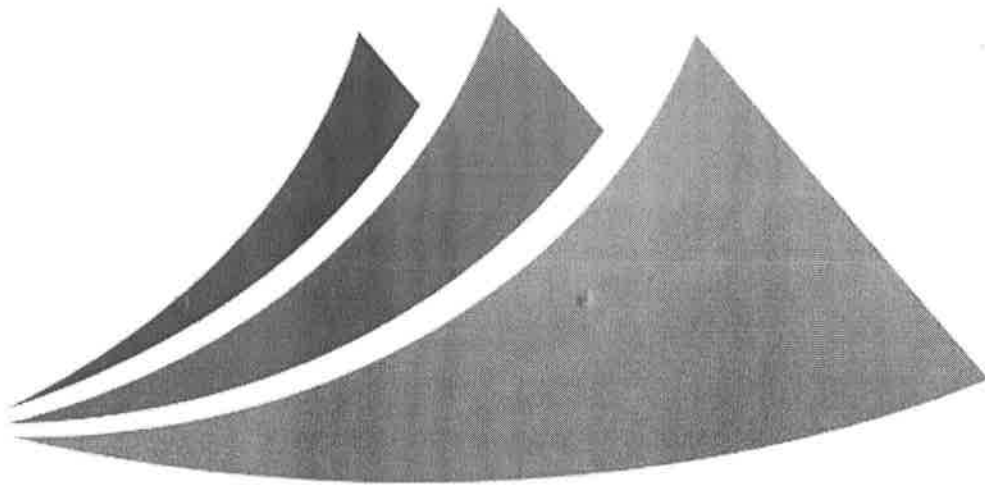


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**Abstract**

*Preservation of natural resources represents one of the key development factors of a competitive tourist offer. Modern tourist devotes greater importance to tourist destinations which base their development on sustainability factors. Renewable energy sources in the Republic of Croatia have still not been represented, in spite of their great potential. The Republic of Croatia, as an accessing country to the European Union, is facing a great task - to increase the share of using renewable energy sources until 2020. As an accessing country, the Republic of Croatia has to adapt to the European Commission's laws and regulations, and transfer and implement them in its legislation, among other, in the field of sustainable development, increase in the use of renewable energy sources, preservation of environment, and tourism development. Using renewable energy sources in tourism will enable achieving competitive advantages and positioning the Republic of Croatia as an ecological tourist destination on the European and international market.*

**Key words:** *renewable energy sources, sustainable development, Croatian tourist offer, EU*

**1. INTRODUCTION**

Lately, great emphasis has been placed on upholding sustainable development principles with the goal to preserve natural resources and protect the environment in order to ensure successful and undisturbed development of a competitive tourist destination and tourist offer. Ecologically acceptable renewable energy sources play a great role in this process. They also demand greater investments; however, their long-term use justifies the invested resources. They represent the key guideline of future sustainable development and are one of the basic elements for successful diversification of the Croatian tourist offer in relation to the competing countries, considering the fact that modern tourists have developed ecological awareness and show increased tendency of staying in ecological tourist destinations. The use of renewable energy sources will result in a significant decrease in the use of fossil fuels, the sources of which have been disappearing, and emission of greenhouse gases will be

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reduced. The greenhouse effect leads to significant climate changes, which pose a direct threat to the tourist offer of the Republic of Croatia as a tourist destination.

## 2. BASIC FEATURES AND THE ROLE OF RENEWABLE ENERGY SOURCES

Renewable energy sources have been known from ancient times. The use of some renewable energy sources (for example, wind energy by using windmills and water energy by using mills) was not as frequent, but in the past few decades, renewable energy sources have rightly taken their place in the world economy. Their role in the world energy production has been on the rise daily.

Renewable energy sources are classified into: water energy, wind energy, solar energy, bio-mass and geo-thermal energy.

Water energy (<http://energetika-net.com/skola/oie/energija-vodnih-tokova>) originates from several sources. Solar energy causes water movement in nature, which provides the energy of water flows (rivers and creeks), and waves, which was once used for providing mechanical work in the water-mills and it is presently used for obtaining electric power in various hydro-electric power plants. The term energy of water flows or hydro-energy includes all the possibilities for obtaining energy from the water flow in nature: from inland waterways (rivers, creeks, channels, etc.), from tides (high and low tide), and from the sea waves.

Wind energy (<http://energetika-net.com/skola/oie/energija-vjetrova>) is based on wind as a horizontal component of air masses circulation which originated from the differences in temperatures, i.e. spatial distribution of pressure. Wind is a consequence of solar radiation, and local factors have a great impact on its characteristics. Obtaining electric power is enabled by the functioning of wind farms and the wind.

Solar energy (<http://energetika-net.com/skola/oie/sunceva-energija>) is a renewable and unlimited energy source from which, directly or indirectly, originates the largest share of other energy sources on Earth. Solar energy in the strict sense of the word implies the quantity of energy transmitted through solar radiation, and is expressed in joules (J). In its original form, solar energy is most frequently used for transformation into thermal energy for the preparation systems of hot water consumption and heating (in the European countries mostly as an additional energy source), and in solar power plants, while photovoltaic systems are used for the transformation into electric power. Solar energy may be used in its original form, i.e. actively (direct transformation into thermal or electric power) and passively (by adequate construction of buildings – glass surfaces, adequate room layout, etc.)

Bio-mass (<http://energetika-net.com/skola/oie/energija-biomasa>) is a fuel obtained from plants or parts of plants such as wood, straw, cereal stems, shells, etc. Bio-mass is a renewable energy source, and it is generally classified into wood-, non-wood- and animal waste, and this may imply: wood bio-mass (fast-growing trees), non-wood cultivated bio-mass (fast-growing algae and weeds), leftovers and waste from agriculture, and animal waste and leftovers. Its application in the energy production has been stimulated while upholding the principles of sustainable development. Wood mass is used most frequently, derived as a by-product or waste, and leftovers which can no longer be used. It is used as fuel in the production plants for electric and thermal power, or is processed into gaseous and liquid fuels for application in vehicles and households.

Geo-thermal energy (<http://energetika-net.com/skola/oie/energija-okolisa/geotermalna-energija>) in the strict sense of the word implies only a part of the energy from the depths of the Earth which reaches

the surface of the Earth in the form of hot or warm geo-thermal medium (water or steam), and can be used in its original form (for bathing, healing, etc.), or for transformation into other forms (electric power, heat in the heating systems, etc.)

The above-described renewable energy sources have had a positive effect in their application in tourism and the hotel industry, despite the fact that initial investments for their application require significant financial investments. The invested resources will, over a certain time period, pay off through energy savings, protection of the environment, increase in the interest of ecologically aware tourists who are inclined to stay in ecological destinations, and improvement of the market position of the respective tourist destination on the tourist market.

The following effects of certain forms of renewable energy sources have been recorded (Granić, G. et al., 2005):

- wind: increase in windmill construction leads to the growth in power units and decrease in investment costs.
- bio-mass: applicable in electric power production, heating, and traffic, with achievements in the technological progress.
- sun: increase in the in-built collectors with the average annual growth of 13%, and in solar cells of 27%. The dominant construction technology of solar cells consists of use of silicon, with constant growth of new ideas, as for instance, the utilisation of amorphous rather than crystal silicon, cells in copper-indium-gallium-selenium (CIGS), dye-sensitized solar cells, and flexible solar cells.
- geo-thermal energy: growth in capacity of 44% for the previous period, in electric power production of 48%, in thermal capacities of 76%, in space heating production of 70%.
- small hydro-power plants: constant growth in production with minimal changes in technological development.

About 19% of the total world energy is obtained from renewable energy sources, but most of this energy is obtained from the traditional renewable sources. Although new renewable energy sources produce only 2,7% of the total world energy, they represent a significant potential for future development of renewable energy sources (<http://www.ecofutura.ba/index.php/bs/component/content/article/43-energija/106-podjela-obnovljivih-izvora-energije.html>). The above-stated facts speak in favour of development of renewable energy sources use, whose application will reduce the emission of greenhouse gases, and stimulate the use of domestic energy sources, which will result in the reduction of import of raw materials and energy sources, and development of domestic economy and tourism as its leading industrial branch.

### 3. RENEWABLE ENERGY SOURCES IN THE FUNCTION OF ACHIEVEMENT OF SUSTAINABLE DEVELOPMENT IN TOURISM

As a Mediterranean country, Croatia has over 1000 islands, a preserved coastline, cultural heritage and preserved ecological resources. Because of these characteristics, Croatia has great potential for development of selective forms of the tourist offer, while, on the other hand, sustainable tourism development is threatened by mass tourism, which is, along with increasing climate changes, one of the most significant obstacles for sustainable development. The tourist market is turbulent and records changes in tourists' attitudes and preferences daily. Over the years, tourists started devoting more

attention to sustainable development, preservation of the environment, health care, and staying in ecological tourist destinations. Renewable energy sources represent a great advantage and a challenge for development and improvement of business operations in modern tourism and the hotel industry.

Energy savings, which are achieved through the use of solar systems, amount to 30% for the heating support system, up to 90% for consumable hot water heating systems. The use of thermal energy from the solar system does not only contribute to positive energy balance of the Republic of Croatia, but also provides personal financial gain for every individual. Tourist facilities (small family hotels, apartments, villas, camps, facilities with pools...) which spend great amounts of electric power in the summer are one of the most favourable places for the use of solar energy to prepare hot water consumption, because the needs for hot water and availability of solar energy match perfectly. 75% of yearly sunshine is between the months of May and October. A small solar system, consisting of 2 to 4 m<sup>2</sup> of the collector surface and a water tank of about 200 to 300 litres, is sufficient for a weekend cottage. However, it is also profitable to install a larger system, of, for example, 10 to 12 m<sup>2</sup> of the collector surface with the tank of 750 to 1000 litres. Such system could accumulate enough energy during the winter to be adequate for connecting to the central heating system, which reduces the heating bill. By installing the solar system, it is possible to achieve significant savings in the use of primary energy sources, and become more competitive on the market because of reduced input costs for energy sources. Greater electric power consumers for water heating and heating in general will achieve financial savings on the level of the value of the investment made into the solar system in a short period of time (5 to 7 years). The average investment value for heating of hot water consumption in a family house is about 30,000 kunas, while in exclusive tourist villas, the total coverage of efficient under-floor heating, ceiling cooling, hot water preparation and pool heating with solar support represents an investment value of about 300,000 kunas (Krasnić, 2011). The above-stated facts clearly prove success of application of renewable energy sources in tourism and the hotel industry. Their use will result in the preservation of natural resources and reduction of business costs.

#### 4. AN OVERVIEW OF CROATIAN LEGISLATION IN THE RENEWABLE ENERGY SOURCES FIELD

In the framework of the accession process of the Republic of Croatia to the EU, the total concept of energy sector reform is synchronised with the EU requirements through legal and institutional framework, taking into consideration specific national solutions. With the goal to provide a detailed overview of Croatian legislation in this field, numerous screening meetings have been held in Brussels in relation to the Chapter 15 "Energetics" and great efforts have been made, especially by the Ministry of Economy, Labour and Entrepreneurship, as a government administration body competent for the field of renewable energy sources, in order to synchronise the legal and institutional framework of the Republic of Croatia with the *acquis communautaire* of the EU. In the process of reforming the Croatian energy sector, development and utilisation of renewable energy sources are ensured by the following laws and directives ([http://www.hro-cigre.hr/hrv/downloads/sr2/Predragovic%20Luka\\_diskusija%20za%20SR%2013\\_01\\_2011-Treci%20paket%20EZ%20i%20Zakon%20o%20OIE.pdf](http://www.hro-cigre.hr/hrv/downloads/sr2/Predragovic%20Luka_diskusija%20za%20SR%2013_01_2011-Treci%20paket%20EZ%20i%20Zakon%20o%20OIE.pdf)):

- Energy Law (Official Gazette No. 68/01, 177/04, 76/07, 152/08)
- Law on Electricity Market (OG No. 177/04, 76/07, 152/08)
- Law on Regulation of Energy Activities (OG 177/04 and 76/07)
- EU Directive: 2001/77/EC (in force until the end of 2011)

- EU Directive: 2009/28/EC (in force from 2012)

The Energy Law and Law on Electricity Market generate five competent by-laws (rules and regulations) which regulate the use, rights and obligations, stimulative measures, and organisation and institutions relating to implementation of renewable energy sources in the field of energetics, construction, urban planning, concession, water resources and ores, environmental protection, protection of nature, trade and other aspects of project development from the renewable energy sources fields (<http://www.menea.hr/hr/component/attachments/download/18.html>). These are the next by-laws ([http://www.eihp.hr/hrvatski/zakoni\\_propisi.htm](http://www.eihp.hr/hrvatski/zakoni_propisi.htm); <http://oie.mingorp.hr/default.aspx?id=51>):

- Regulation on fees for the promotion of electric power from renewable energy sources and cogeneration (Official Gazette No. 33/07, 133/07, 155/08, 155/09, 8/11) -  
adopted by the Croatian government, based on the Energy Law, this Regulation regulates the manner of use, amount, calculation, collection, distribution and payment of the compensation for stimulating electric power production from the plants using renewable energy sources and from cogeneration plants.
- Regulation on minimum share of electric power produced from renewable energy sources and cogeneration, the production of which is stimulated (OG 33/07, 8/11) -  
adopted by the Croatian government, based on the Law on Electricity Market, this Regulation regulates the minimum share of electric power produced from plants which use renewable energy sources and from cogeneration plants.
- Tariff system for electric power production from renewable energy sources and cogeneration (OG 33/07) -  
adopted by the Croatian government, based on the Energy Law, this Tariff System regulates the right of eligible electric power producers to a stimulative price paid by the market operator for the delivered electric power produced from the plants which use renewable energy sources and from cogeneration plants. This law prescribes tariff items, and tariff rates for electric power producers from the plants which use renewable energy sources and from cogeneration plants.
- Regulation on the use of renewable energy sources and cogeneration (OG 67/07) -  
adopted by the Ministry of Economy, Labour and Entrepreneurship, based on the Energy Law, this Regulation establishes the RES and cogeneration plants used for energy production, and prescribes the terms and possibilities, and other significant issues for the use of renewable energy sources and cogeneration plants. The same Regulation also prescribes the form, content and manner of keeping the Registry of Projects and Plants for using renewable energy sources and cogeneration, and eligible producers.
- Regulation on granting the status of eligible electric power producer (OG 67/07) -  
adopted by the Ministry of Economy, Labour and Entrepreneurship, based on the Law on Electricity Market, the Regulation prescribes the terms for granting the status of eligible electric power manufacturer, which may be acquired by the project manager or a producer who produces both electric and thermal power at the same time in a production facility, and who uses waste or renewable energy sources for electric power production in an economically adequate manner, synchronised with environmental protection requirements.

Directive 2001/77/EC has been transferred into Croatian national legislation entitled „Promoting electric power produced from renewable energy sources in the internal electric power market“, adopted on September 27, 2011. In accordance with this Directive, Action Plan for Renewable Energy Sources until 2020 has been prepared, and the Republic of Croatia was obliged to compose it in the framework of negotiations in the Chapter 15 “Energetics”.

In relation to Croatian goals until 2020, and the new Directive 2009/28/EC, adopted by the European Parliament and Council on the promotion of using the energy from removable energy sources, it is important to point out that it will be implemented in Croatian legislation through future amendments of legislation and implementing regulations for renewable energy sources. The new Directive 2009/28/EC “Promotion of the Use of Energy from Renewable Energy Sources” dated April 23, 2009 cancels or amends the existing Directives (2001/77/EC, 2003/30/EC i 2003/54/EC), which had an impact on the existing legal solutions ([http://europa.eu/legislation\\_summaries/energy/renewable\\_energy/index\\_en.htm](http://europa.eu/legislation_summaries/energy/renewable_energy/index_en.htm)). Some provisions of the Directive 2009/28/EC have already been implemented into the Action Plan for Renewable Energy Sources until 2020, which shall determine long-term perspective until 2020, with the estimate for 2030, as well as the plan of activities for the development of renewable energy sources infrastructure in the Republic of Croatia for the EU goals concerning climate changes and renewable energy sources for 2020. The goals of the new Directive 2009/28/EC are: increase in energy efficiency; stimulation of local and regional development; improved development of energy market from renewable energy sources; reduction of the emission of greenhouse gases and independence of energy import; decentralised energy production; legal clarity of the provisions of the Directives and the Energy Law; use of waste materials and other biological materials on farms for the production of bio-gas; use and stimulation of other forms and purposes of renewable energy sources, not only electricity; training for architects, planners and installers and their certification for renewable energy sources and building; simplification of regulations on building and environmental protection; simplification and easier availability of renewable energy sources to the internal energy market, and connection to public networks, etc.

## **5. FUNDS AND FINANCIAL SUPPORT FOR THE INTRODUCTION OF RENEWABLE ENERGY SOURCES**

In accordance with the Energy Development Strategy of the Republic of Croatia, adopted in 2009, the Croatian energy system has been fully incorporated into the EU energy system and the energy system of South-Eastern Europe. An open system enables energy market development and an increase in competitiveness, attracting domestic and foreign investments in energy market activities, synchronisation of future strategic energy projects development and economic co-operation with the neighbouring countries. Croatian government will lead an active policy since energetics provides special opportunities to the stakeholders that clearly define their position and interests, and implement them consistently and without delay. In order to increase the supply safety and positive external effects of investments in energetics on economic growth and development, investments in facilities on the territory of the Republic of Croatia shall become a priority (Energy Development Strategy of the Republic of Croatia).

Republic of Croatia imports over 50% of primary energy. Although import of oil and petroleum derivatives is expected, a reason for concern is the figure concerning the import of electric power which exceeds 35% of today's electric power consumption. However, a significant share of electric power may be saved by using solar systems for support to heating in general and heating of hot water consumption. Solar water heating system consists of a solar collector which is placed on the roof, and



other corresponding places in the facility. Installation of such a system is possible in virtually all facilities and does not require extensive construction works (Krasnić, 2011).

The best possibilities for using renewable energy sources, taking into consideration competitiveness and a possible contribution to national energy balance in the field of thermal energy are bio-mass heating plants and thermal solar collectors, and in the electric power field, wind farms and bio-mass cogenerations. Other renewable energy sources technologies are, for example, geo-thermal plants for the production of thermal energy, small hydro-electric power plant and photovoltaic systems for the production of electric power, while possibilities for using liquid bio-fuels in traffic are somewhat smaller.

The original goal of the Republic of Croatia was to realise 5,8% of the total energy consumption from renewable energy sources by 2010, while in the total consumption of motor fuels, 5,75% would be manufactured from bio-fuels. Furthermore, until 2020, the share of renewable energy sources should have amounted 20,3%, and the share of bio-fuels in the total consumption of motor fuels 10% (<http://www.gradimo.hr/Obnovljivi-izvori-energije-u-Hrvatskoj/hr-HR/8947.aspx>).

The set goals have not been achieved, and the Croatian government has prescribed the new minimum share of electric power from renewable energy sources and cogeneration for 2020. The Regulation prescribes that the minimum share of electric power from renewable energy sources and cogeneration, the production of which is stimulated, shall amount 17,6% by December 31, 2020, out of which 13,6% from renewable energy sources and 4% from cogeneration plants (<http://www.mojaenergija.hr/Aktualno/Vijesti/Hrvatska-i-regija/Minimalni-udio-obnovljivih-izvora-energije-u-Hrvatskoj-2020.-godine>).

#### *5.1. Financing of renewable energy projects*

Market potential for renewable energy sources projects in Croatia is great and constantly on the rise, which is especially contributed by continuously rising prices of energy, import of energy, supply safety, accession to the EU, fulfilment of international obligations (EU directives, the Kyoto Protocol), increasing awareness of the necessity of sustainable development on all levels (environment, climate changes), as well as domestic industry, possible new workplaces, possibilities of more significant growth of the BDP, macroeconomic policy, etc.

In order to realise the planned values, it is necessary to ensure additional financing level and financing sources, to define legislative, administrative and institutional framework, and define organisation and market environment. The possible sources of financing in Croatia are numerous. Budgetary expenditure for renewable energy sources may be allocated for financing (national, local, regional), dedicated funds (Environmental Protection and Energy Efficiency Fund), state grants to the manufacturers of equipment for using renewable energy sources; for example, Tariff System for Electric Power Production from Renewable Energy Sources and Cogeneration, (OG 33/2007). Except for domestic sources, also available are deed of donation and other international assistance programmes (GEF's deed of donation for financing the preparation of renewable energy sources projects and GEF's deed of donation for development of energy efficiency projects, as well as UNDP energy efficiency projects.

Croatian Bank for Reconstruction and Development has developed special credit lines – Loan programme for financing the projects of environmental protection, energy efficiency and renewable energy sources; Zagrebačka Banka and Privredna Banka Zagreb offer their „green“ loans for increasing energy efficiency of facilities. Also important are the EU programmes – IPA, FP7, IEE, and

other forms of financing through energy services (ESCO), third party financing, public-private partnership, etc.

*5.2. The role, financing sources and criteria of granting funds of Fund for environment protection and energy efficiency*

This fund, based on the Law on Environmental Protection and Energy Efficiency Fund was constituted on the basis of the Environmental Protection Act and the Energy Law, and it is the first and only extra-budgetary fund earmarked for the financing of projects, programmes and measures of environment protection, management of special waste categories, energy efficiency and renewable energy sources. Funds are collected through dedicated revenues from fees by the pollutants (CO<sub>2</sub>, SO<sub>2</sub> and NO<sub>2</sub> emissions), compensation for waste disposal in the environment (non-dangerous and dangerous waste, industrial waste, special categories of waste - packaging waste, waste tires, electrical and electronic waste, used oil, vehicles, batteries, accumulators), and special environmental fees for motor vehicles. Fund resources are allocated to the users on the basis of a public tender announced by the Fund, and are granted to local (regional) self-government units, companies, craftsmen, and other legal and natural persons. Fund resources are granted in the form of loans, interest rate subsidies, financial aids and donations. It is important to note that companies and other private-legal persons qualify only for loans and loan interest rate subsidy approved by commercial banks (the so-called „green loans“).

Criteria for allocation of fund resources are classified into general and special criteria. General criteria determine the manner of financing of the user, so that local self-government units are co-financed in the areas of special state concern to 80%, hilly and mountainous and island area up to 60%, and in other areas up to 40%. Other legal and natural persons are financed to the amount of 40% of the planned investment (interest rate subsidies of up to 1,0 million kunas at most, and loans up to 1,7 million kunas). Special criteria are preparation level of the project, degree of favourable impact on the environment and energy efficiency, the quality of the offered technical solution, level of endangerment of the environment, financial capacity of the user of investment funds, and refund if it is stipulated in the contract (<http://www.fzoeu.hr/hrv/index.asp?s=ofondu&p=iskaznica>).

The research fields of the Fund are the following – Energy Efficiency; Renewable Energy Sources; Industry; Service Sector and Public Sector – public lighting, fuel substitution, using waste heating; Energy Audits and Demonstration Activities; Cogeneration Facilities; Centralised Heating Systems, Buildings/Sustainable Construction – low-energy and passive facilities, installation of the new and/or substitution of the existing materials, components and devices; application of renewable energy sources; Cleaner Transport - organisational and technical measures, using of alternative fuels, procurement of EURO 5 vehicles; Solar Energy – thermal solar collectors, photovoltaic systems; Wind Energy – project development and construction; Bio-Mass Energy – co-generation, heating, bio-gas, solid bio-fuels (charcoal, briquettes, pellets) and liquid bio-fuels (bio-diesel, bio-ethanol); Energy from Small Waterways – project development and construction; Geo-Thermal Energy – project development and construction; Other Renewable Sources – energy of gas from dumpsites or sewage treatment plants (see table 1) ([http://www.fzoeu.hr/hrv/pdf/PRAVILNIK\\_sredstva\\_fzoeu.pdf](http://www.fzoeu.hr/hrv/pdf/PRAVILNIK_sredstva_fzoeu.pdf)).

For renewable energy sources projects 50,631,802 kunas was granted, while only 23,297,034 kunas was paid, which indicates insufficient dissemination of information in the local community on the possibilities of funds as assistance in the financing of renewable energy sources introduction.

HRK (Croatian kunas)	Granted	Paid
Improvement of Energy Efficiency (78)	58.995.802	33.149.754
Using of Renewable Energy Sources (39)	50.631.802	23.297.034
Sustainable Building (9)	7.300.976	5.024.665
Cleaner Transport (3)	355.865	129.005
Energy Audits and Demonstration Activities (118)	3.665.710	3.100.201
Education, Research and Development Studies (50)	4.777.072	2.696.169
Other Projects and Programmes (5)	21.750.000	8.117.015
<b>Total RES and EU projects (303)</b>	<b>147.477.227</b>	<b>75.513.843</b>

Table 1: Investments of the Renewable Energy Sources Projects Fund and the EU (2004- 30/09/2008)

Source: <http://www.sumari.hr/biomasa/urhsisak2008/4-1SculacDomac.pdf>

## 6. AN OVERVIEW OF EXPERIENCES OF RENEWABLE ENERGY SOURCES INTRODUCTION IN TOURISM OF THE SELECTED EU MEMBER STATES

European Union has developed its energy policy by adopting „Green Papers and Strategic Energy Reviews“ in order to improve the agenda on sustainability, competitiveness and safety of energy supply. Establishment of the internal energy market, energy savings, insurance of successful and undisturbed energy supply are only some of the factors for achieving competitiveness. The share of renewable energy sources in 2008 amounted 10% of the total consumption of energy sources in the EU Member States. In 2009, 62% of newly installed electricity capacity in the EU originated from renewable sources, mainly wind and sun (<http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/11/441>). The above-mentioned facts indicate successful application of renewable energy sources in the European Union Member States, and the fact that Croatia is facing a demanding task: full synchronisation with the standards and energy policy set by the European Union in relation to renewable energy sources introduction. Below are the examples of successfully implemented renewable energy sources projects in tourist destinations of the EU Member States. The stated examples are the islands of Sicily, Sardinia, Cyprus, Corsica and Crete ([http://www.tourisminnovation.eu/index.php/downloads/cat\\_view/50-produced-documents](http://www.tourisminnovation.eu/index.php/downloads/cat_view/50-produced-documents)).

*Sicily* is an autonomous Italian region and the largest Mediterranean island (surface of 25,799 km<sup>2</sup> inhabited by 5,1 million people), located in Southern Italy. The economy of the island of Sicily is mostly based on agriculture, fishery, industry and tourism. During the 1970's, the island was affected by migrations of a great part of the population to the United States of America and Europe, which caused lack of labour force and investments of local entrepreneurs. Sicily still suffers significant unemployment rate of 20%, and lack of specialised experts. From the energy point of view, 70% of electric power originates from fossil fuels and 30% from renewable energy sources (mostly from hydro-electric power plant). However, the potential of renewable energy sources is still great, thanks to geographical characteristics and the Etna volcano which is the largest volcano in Europe. A great part of the island is on the UNESCO's list of natural heritage. In terms of renewable energy sources, Sicily is an area with a significant innovative project – production of renewable energy from the force of waves. The electric power system produced by waves has been tested in the Messina Strait, where

water density (by which also electric power production) is up to 800 times higher than the force of wind. Unlike wind, wave energy can in most cases be predicted, which is a significant advantage for the development of this form of renewable energy source. Results have been very encouraging so far, and the system has proved to be much more profitable than using wind energy. Implementation of this project has, among other things, stimulated significant tourist development, also because it is a pilot-project and attracts great attention of scientists who regularly visit the island, thus contributing to renewable energy sources development.

**Sardinia** is an island of 24,090 km<sup>2</sup> inhabited by 1,655,677 people, which acquired the status of an Italian „autonomous region“ in 1948. Sardinia has very significant geological characteristics because it originates from a part of the oldest rocks in Europe, while the climate is typically Mediterranean with mild temperatures. In 1994, the Magdalena Archipelago with its 180 km<sup>2</sup> of the coastline was classified as a seaside eco-park. As for island economy, the primary sector holds 33% of the total economy, the secondary sector 19%, and the tertiary sector 48%. The tertiary sector is mostly comprised of tourist services, and employs 60% of the local population. Tourism realises 7% of the national product which has caused, among other things, construction of a series of hotel chains, especially in the southern part of the island. About 10 million tourists visit Sardinia every year, and the most significant tourist months (recording arrivals of 80% of the tourists) are July and August. Although it has various economic activities, Sardinia records high unemployment rates (about 12%), mostly in the youth population (about 22%), which leads to emigration of the youth, especially from the inner part of the island. As for energy, the most significant energy source is oil. In order to avoid using this fossil fuel, a project was designed to use renewable energy sources so as to take into consideration specific energy needs and energy resources of each island area separately. Development of renewable energy sources in Sardinia was stimulated by the European Union through development of thermal pumps in order to fulfil the energy needs of the local community. For example, energy obtained through burning of the bio-mass is used for the heating of schools, offices and local homes, companies, farms, and camps, and bio-fuel for transport. It is interesting that small wind farms attracted significant interest of local investors, since investment costs and visual pollution of the environment are nominal. Development of this project has significantly stimulated the synergy between thermo-electric power plants and hydro-electric power plants because water serves for maintaining the maximum efficiency of thermo-electric power plants.

**Cyprus** is an island in the vicinity of Turkey, Syria and Lebanon inhabited by 820,000 people, covering the surface of 9,251 km<sup>2</sup>. Development of island economy and growth of the living standard has been aggravated because of the geo-political problems which unfolded throughout the history of this island. The most significant negative impact on the life of local inhabitant's occurred in 1974, when Turkish armed forces had invaded the island, which resulted in the occupation of a strategically important part of the island. When the Republic of Cyprus joined the European Union, in May of 2004, it used significant benefits obtained through the EU cohesion funds which are oriented to increasing the use of renewable energy sources. Its geo-morphological elements, climate, local natural sources and way of life have influenced the fact that renewable energy sources have been developed differently in certain regions, which has resulted in different and unsynchronised energy strategies. In the areas marked by delicate ecosystems and historical monuments, only slight interventions in space are possible in order to avoid visual saturation of the space. In the areas with luxurious tourist attractions, application of renewable energy sources has been conducted through solar energy used for vehicles on golf courses, while in more distant areas, bio-mass was adapted to be used in households.

**Corsica** is a French island with the surface of 8,680 km<sup>2</sup> inhabited by 279,000 people. The island has a long tradition and history. The altitude of the island is 2706 metres, and the coastline extends to 1000

km. The island has numerous renewable energy sources and many protected natural parks. The island is often at risk of fire, which is especially caused by climate changes. Corsica has several airports and great diversity of the production sectors; thus, the primary sector makes 5,3%, the secondary sector 15,3%, and the tertiary sector 79,4% of island economy. Local entrepreneurial activity is very powerful, often based on family manufactures. Energy needs on Corsica are great and there are attempts to fulfil them by applying renewable energy sources projects. Some of these projects greatly contribute to achievement of sustainable tourism development. For example, in 1998, a German company started building the second wind energy park (the Calenzana Park) on the island, and its building was not finished until 2003. Today, there are 10 wind farms on the island with the total installed capacity of 6MW, which is especially significant during tourist season when there is significant expansion of energy consumption. Total investment amounted more than 5 million euros, and was not subsidised by the French government. Realisation of the project was aggravated by geomorphological characteristics of the island (transport of material to the construction site of the wind farms), but also by the lack of understanding of the local community because of bad experiences with the first wind farms installed on the island, as well as outdated French legislation. Presently, wind-farms serve, except for fulfilling local needs for power, as a confirmation for a successfully managed project. European students visit the faculty of the University of Corte while they attend summer school ([http://www.univ-corse.fr/presentation-organisation-administrative-service-de-la-communication-et-de-l%27evenementiel-service-evenements-campus-d%27etc\\_920.html](http://www.univ-corse.fr/presentation-organisation-administrative-service-de-la-communication-et-de-l%27evenementiel-service-evenements-campus-d%27etc_920.html)).

*Crete* is the second largest island of the Mediterranean Sea with the surface of 8,335 km<sup>2</sup> inhabited by 650,000 people. It is a mountainous island, full of olive groves and vineyards, with high grounds of up to 2,452 m. Economy of the island is marked by the tertiary sector, which employs 80% of the island population. Mass tourism is a significant threat to the development of the island, which is indicated by the increase in the number of tourist arrivals between 1986 and 1991, an increase of 53%, while growth in the remaining part of Greece amounted to 25%. For example, 13,3% of the total number of visitors to Greece stayed on Crete in 2006 ([http://portal.kathimerini.gr/4dcgi/w\\_articles\\_kathextra\\_9\\_27/06/2007\\_195397](http://portal.kathimerini.gr/4dcgi/w_articles_kathextra_9_27/06/2007_195397)). There are various selective forms of the tourist offer developed on the island (leisure time, religious, cultural, medical events, ecological tourism, etc.), which has also contributed to significant development of local traffic infrastructure (two international airports) and the accompanying facilities. Development of infrastructure has enabled improved connection of the island with the rest of Greece. Numerous scientists come to the island who, together with the local community, contributes to greater promotion of the use of renewable energy sources. There is a hotel on the island with one of the largest solar systems in Europe; its capacity is 275 beds. The surface of the solar collector amounts 2,358 m<sup>2</sup>, which fulfils as much as 70% of hot water needs in the hotel (Waldmann, 2004). Except for this system, since 1999, a few more hotels started using the benefits of renewable energy sources, primarily by solar collectors which enable coverage of almost 10% of the hotel needs, which implies the daily load of 450-500kWH (Soursos, 2002). Greece has significant insolation of almost 3000 sun hours per year, and great possibilities of solar energy production, which is estimated to 1900 kWh/m<sup>2</sup> per year (Dascalaki & Balaras, 2004). The building sector realises significant energy consumption in Greece, which causes 40% of greenhouse gases. The very application of solar energy will ensure improvement of the standard of living of the local population and increase in the total quality of the tourist offer. On Crete, there are developed theme parks projects based on the application of renewable energy sources. The beginning of the use of renewable energy sources in theme parks is linked to Windmills Lassithy, built during the 1930s, with the goal to supply the neighbouring settlements with energy. This marked the very beginning of using the renewable energy sources. The wind mills triggered numerous negative reactions of the local population. Today,

however, they represent local tradition because the wind used to drive the mills in the past, and the wind mills, in fact, represent continuation of the tradition of Greek islands, and the local government has decided to use the windmills to provoke memories of the old mills and turn them into a great tourist attraction. This example clearly shows the synergy between the tourist offer and great possibilities provided by the use of renewable energy sources through the creation of theme parks.

The above examples indicate success of tourist destinations development through the use of renewable energy sources, the use of which has contributed to the increase in competitive advantages on the world tourist market, with continuous upholding of sustainable development principles.

## **7. PERSPECTIVES OF DEVELOPMENT OF RENEWABLE ENERGY SOURCES USE IN THE REPUBLIC OF CROATIA**

Almost the entire energy demand in the world until 2050 could be settled from renewable sources such as wind, solar and geo-thermal energy with the purpose of obtaining electricity, for transport and heating. The assumption of obtaining 95% of the energy from renewable sources in the future originates from the study designed by the American fund WWF International and the Dutch consulting firm Ecofys. The share of oil, gas and coal, and nuclear energy in the global energy mix in the next four decades will be reduced to only 5%. It is stated in the study that estimations show that energy saving measures might reduce the total consumption by 15% in relation to 2005, even if the population, industrial production, conveyance costs and passenger traffic grow. This would demand 4,8 billion dollars of investments until 2035 in the modernisation of buildings, electric power network and expansion of wind farms and capacities for obtaining solar energy, and profitability of this initiative should be visible until 2040 (<http://www.poduzetnistvo.org/news/do-2050-iz-obnovljivih-izvora-95-struje>). Introduction and use of renewable energy sources represents a security against changes in the prices of oil and gas and climate changes, and this will be achieved by application of available technologies; and the technologies which will soon appear on the market. At the same time, the International Energy Agency (IEA), global umbrella energy organisation, estimates that it takes 33 billion dollars of investments in energy infrastructure until 2035 for the countries to fulfil international obligations in connection to reduction of greenhouse gases.

Improvement of energy efficiency and reduction of the emission of greenhouse gases are the goals also set by Croatia on the threshold of accessing the European Union. Namely, the EU wants to reduce the emission of greenhouse gases until 2020 by 20% in relation to 1990. Accordingly, Croatia plans to achieve the goal of energy policy by 2020 formulated as „three times 20%“, i.e. to use the measures of energy efficiency to reduce emissions of greenhouse gases by 20%, reduce energy consumption by 20%, and to increase the share of renewable energy sources by 20%. Thus, Croatia will need to invest up to 10 billion euros until 2030. However, the question is posed how much of these resources, as well as great incentives for renewable energy sources production will remain in Croatia, and how much will end up abroad, so that foreign companies and scientists, instead of Croatian companies and scientists, will benefit the most from using Croatian national resources and incentives, which is an opinion of numerous experts. Great investments in renewable energy sources (of the total power of 1600 megawatts) are also predicted in the Energy Development Strategy of the Republic of Croatia in order to ensure its own additional energy sources and thus facilitate the fulfilment of consumption growth and reduce increasing dependence on import, as well as fulfilling of the obligation to reduce the emission of greenhouse gases from the Kyoto Protocol and the EU membership. However, the problem is that foreign, and often also domestic investors, mostly use foreign technologies and products because of the relatively modest offer of domestic technologies and products, and this is why

foreign companies profit from the largest share of these 90 million kunas of incentives. The example of Končar shows that Croatian industry is also interested to have its share in this great amount. Končar invests 80 million kunas in building of wind farms in the hinterland of Split in order to acquire the necessary references for placing its own technology on the domestic and foreign market. It should be pointed out that over 75% of wind farms is a domestic product. The interest for investing in renewable energy sources in Croatia is great, which is also confirmed by over 700 requests which the Ministry of Economy, Labour and Entrepreneurship has obtained from foreign and domestic investors. Until now, 512 requests have been processed, and investors are in the process of acquiring licences, or in the process of building already, and 25 of them are already functioning. Renewable energy sources also provide numerous economic benefits, such as initiation of development and innovations, production, employment, reduction of import, increase in export and others. For examples, only the building of 100,000 solar collectors would open about 2000 workplaces and the same amount of thermal cranes using geo-thermal energy would ensure 1200 workplaces (<http://www.poduzetnistvo.org/news/koliko-ce-od-10-milijardi-eura-ulaganja-ostati-hrvatskoj>).

HEP also joined the sector of renewable energy sources. „HEP – Renewable Energy Sources“ is one of the companies in the HEP Group which deals with developing renewable energy sources projects. These are primarily projects of wind farms, encompassing a defined series of possible projects. It is also involved in the development of projects of several bio-power plants, and one of the most important is the project of a power plant running on bio-mass in Velika Gorica as one of the 30 priority government projects.

European Commission's reports indicate that acceleration and modernisation of electric power network is necessary for all EU Member States, i.e. improved interconnectivity of electric power systems, as well as introduction of the so-called smart networks, management modernisation, securing of secondary back-up of the electric power system, as well as more efficient stimulation of renewable energy sources. It is recommended that the renewable energy sources projects be developed in co-operation with the local community so that it could also benefit from the project. It is necessary to train the employees in the public sector in order to accelerate, i.e. remove administrative obstacles which slow down the realisation of projects. The above-mentioned goals, i.e. action plans in general may also be transferred to the Croatian market in order to achieve the set goal (<http://www.poduzetnistvo.org/news/do-2050-iz-obnovljivih-izvora-95-struje>).

Below is a SWOT matrix which points to the importance of using renewable energy sources in tourism (see table 2).

STRENGTHS	WEAKNESSES
Preservation of the environment, biodiversity and distinctive features. Creation of an eco-destination brand. Improvement of the local population's living conditions. Ensuring pre-requisites for improved business environment. Differentiating the offer on the tourist market. Long-term profitability of the project.	Costly expenditures for building of the basic infrastructure. Profitability after longer period of use. Credit lines in the initial stage.
OPPORTUNITIES	THREATS

Financing of removable energy sources projects through EU cohesion funds.	Lack of understanding of local and business community for renewable energy sources systems.
Stimulation of investments in renewable energy sources development through tax policy - exemption from duties.	Insufficient training of the staff.
Strengthening of awareness of citizens and companies on the necessity to introduce renewable energy sources.	Low financial support.
Creation of special teams for renewable energy sources within companies - a legal obligation.	Insufficient use of the EU cohesion funds.

Table 2: S.W.O.T. Analysis of Using Renewable Energy Sources in Tourism Development

Source: authors' interpretation

The S.W.O.T. matrix shows that there are numerous advantages of introducing renewable energy sources. Introduction of renewable energy sources in business operations of the hotel industry, but also the everyday life of the local community, enables active participation of all interested participants in sustainable development of a destination. The tourist destination will preserve its distinctive features: climate, landscape, clean sea, and provide the visitors with a new and more fulfilled offer of green tourism which may also be defined as return to nature, which has lately been especially significant, taking into consideration general accelerated pace, alienation and stressful everyday life of tourists. It is an obligation of the bodies of national, regional and local government to ensure legislative framework for implementation of sustainable development measures and to stimulate by this legislation (through active political activities - tax policy) the use of renewable energy sources as the only one allowed in a tourist destination. Except for legislation (on paper), participation of the interested parties in the implementation and design of the renewable energy sources projects is also necessary, which will be financed from the EU funds and the Environmental Protection Fund of the Republic of Croatia. Also, it is necessary to stimulate banks, primarily to introduce „green“ loans into their credit lines, and ensure co-financing of realisation expenses of the loan, in order for them to become more available for the local community.

Providing education to all participants in the decision-making process on the necessity to introduce renewable energy sources will accomplish greater engagement of local entrepreneurs, but also of natural persons in the promotion and introduction of these types of energies. In order to adopt a successful strategy of tourism development of each destination, including the Republic of Croatia, it is necessary to initiate the entire series of interdisciplinary activities through inclusion of experts from various fields – economists, engineers, geographers, landscape experts, constructors and others in designing sustainable and innovative renewable energy sources projects.

## 8. CONCLUSION

Renewable energy sources represent a very important developmental factor in an economy. In its energy policy, the European Union places great emphasis on the use of renewable energy sources (energy of water, sun, wind, bio-mass and geo-thermal energy). As a future Member State of the European Union, Croatia is facing a demanding task: full synchronisation with the standards and energy policy of the European Union. Croatian legislation in the field of renewable energy sources is designed on the basis of guidelines of European legislation, umbrella energy laws of the Republic of



Croatia, as well as by-laws in the field of renewable energy sources and co-generation. What is more, the entire concept of the energy sector reform has been synchronised with the EU requirements, within the limits of specific national solution, and there are continuous efforts to synchronise Croatian legal and institutional framework with *acquis communautaire* of the EU. Croatia is a country rich in natural resources, and as such has excellent pre-requisites for increasing the use of renewable energy sources, primarily in tourism and the hotel industry, which are one of the most important factors of development of the Croatian economy. Benefits of their use will be reflected in preservation of natural resources, reduction of emission of greenhouse gases, reduction of business costs as a result of a decrease in the import of energy and raw materials, and, consequently, development of Croatia as an ecologically desirable tourist destination.

## REFERENCES

1. Dascalaki E, Balaras C A. Xenios – a Methodology for Assessing Refurbishment Scenarios and the Potential of Application of RES and RUE in Hotels. *Energy and Buildings* 2004; 36; 11: 1091-1105.
2. Energy Development Strategy of the Republic of Croatia. Croatian Parliament. OG 130/2009.
3. Granić G et al. Energetski sektor u razdoblju od 1990-2005.: analiza i posljedice (Energy Sector in the Period between 1990 and 2005: Analysis and Consequences). Zbornik radova: Energetske perspektive danas i sutra - Svijet-Europa-Hrvatska (Proceedings: Energy prospects today and tomorrow - The World-Europe-Croatia). Croatian Energy Association (Zagreb) 2005: 18.
4. <http://energetika-net.com/skola/oie/energija-biomase> (05/07/2011)
5. <http://energetika-net.com/skola/oie/energija-okolisa/geotermalna-energija> (05/07/2011)
6. <http://energetika-net.com/skola/oie/energija-vjetra> (05/07/2011)
7. <http://energetika-net.com/skola/oie/energija-vodenih-tokova> (05/07/2011)
8. <http://energetika-net.com/skola/oie/sunceva-energija> (05/07/2011)
9. [http://europa.eu/legislation\\_summaries/energy/renewable\\_energy/index\\_en.htm](http://europa.eu/legislation_summaries/energy/renewable_energy/index_en.htm) (25/06/2011)
10. <http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/11/441> (05/07/2011)
11. <http://oie.mingorp.hr/default.aspx?id=51> (29/6/2011)
12. [http://portal.kathimerini.gr/4dcgi/\\_w\\_articles\\_kathextra\\_9\\_27/06/2007\\_195397](http://portal.kathimerini.gr/4dcgi/_w_articles_kathextra_9_27/06/2007_195397) (05/07/2011)
13. <http://www.ecofutura.ba/index.php/bs/component/content/article/43-energija/106-podjela-obnovljivih-izvora-energije.html> (04/07/2011)
14. [http://www.eihp.hr/hrvatski/zakoni\\_propisi.htm](http://www.eihp.hr/hrvatski/zakoni_propisi.htm) (29/06/2011)
15. <http://www.fzoeu.hr/hrv/index.asp?s=ofondu&p=iskaznica> (05/07/2011)
16. [http://www.fzoeu.hr/hrv/pdf/PRAVILNIK\\_sredstva\\_fzoeu.pdf](http://www.fzoeu.hr/hrv/pdf/PRAVILNIK_sredstva_fzoeu.pdf) (05/07/2011)

17. <http://www.gradimo.hr/Obnovljivi-izvori-energije-u-Hrvatskoj/hr-HR/8947.aspx> (06/07/2011)
18. [http://www.hrocigre.hr/hrv/downloads/sr2/Predragovic%20Luka\\_diskusija%20za%20SR%2013\\_01\\_2011-Treci%20paket%20EZ%20i%20Zakon%20o%20OIE.pdf](http://www.hrocigre.hr/hrv/downloads/sr2/Predragovic%20Luka_diskusija%20za%20SR%2013_01_2011-Treci%20paket%20EZ%20i%20Zakon%20o%20OIE.pdf) (30/06/2011)
19. <http://www.menea.hr/hr/component/attachments/download/18.html> (29/06/2011)
20. <http://www.mojaenergija.hr/Aktualno/Vijesti/Hrvatska-i-regija/Minimalni-udio-obnovljivih-izvora-energije-u-Hrvatskoj-2020.-godine> (06/07/2011)
21. <http://www.poduzetnistvo.org/news/do-2050-iz-obnovljivih-izvora-95-struje> (05/07/2011)
22. <http://www.poduzetnistvo.org/news/koliko-ce-od-10-milijardi-eura-ulaganja-ostati-hrvatskoj> (05/07/2011)
23. <http://www.sumari.hr/biomasa/urhsisak2008/4-1SculacDomac.pdf> (05/07/2011)
24. [http://www.tourisminnovation.eu/index.php/downloads/cat\\_view/50-produced-documents](http://www.tourisminnovation.eu/index.php/downloads/cat_view/50-produced-documents) (05/07/2011)
25. [http://www.univ-corse.fr/presentation-organisation-administrative-service-de-la-communication-et-de-l%27evenementiel-service-evenements-campus-d%27ete\\_920.html](http://www.univ-corse.fr/presentation-organisation-administrative-service-de-la-communication-et-de-l%27evenementiel-service-evenements-campus-d%27ete_920.html) (05/07/2011)
26. Krasnić I: Aktivni sudionik revolucije energetskeg modela sadašnjice (Active Participant of the Revolution of the Present Day's Energy Model). Slobodna Dalmacija; 28/02/2011.
27. Soursos M: Technical Feasibility and Economic Viability of Grid-Connected PV Installation for Low Cost Electricity Production. Energy & Buildings 2002; 34; 7: 753-758.
28. Waldmann A. International Experiences on Solar Thermal Applications in the Hotel Sector. Xenios, final report. European Commission. DG for Energy and Transport (Brussels) 2004.