POLICY REPORT

The challenge of achieving sustainable renewable energy policy in Macedonia

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Abbreviations

CSO – civil society organization

EC – European Commission

EE – energy efficiency

EIHR – Energy Institute Hrvoje Pozar

ELEM - Macedonian power plants

EU – European Union

EVN - Energieversorgung Niederösterreich (Austrian energy porvider)

FEIT - Faculty of Electrical Engineering and Information Technologies

GDP – gross domestic product

HPP – hydro power plant

IEA – International Energy Agency

KfW - Kreditanstalt für Wiederaufbau (German Development Bank)

MACEF – Macedonian Center for Energy Efficiency

MANU – Macedonian Academy of Science and Arts

MEPSO - Electricity Transmission System Operator of Macedonia

PIP – Public investment program

RES – renewable sources of energy

USAID - United States Agency for International Development

VAT – value added tax

Units of measurement

GWh - gigawatt hour

kW – kilowatt

kWp - kilowatt-peak

kWh – kilowatt hour

MW – megawatt

Introduction

Macedonia's commitment for becoming an EU member state brought many reforms in the country. The energy sector, previously with no strategic vision of its development and no sustainability, has begun to transform to comply with the market economy model. Macedonia made efforts to fulfill the commitments coming from the EU candidate status[1] including reforming the energy sector and prioritizing the renewable sources of energy (RES) policy. However, the general perception is that the invested efforts have not brought the desired results. Although the strategies are put in place, their implementation is progressing slowly hampered by a set of barriers which discourage potential investors. In addition, the undertaken efforts were partial and insufficient since the energy sector reforms are tied to other system reforms. Last but not least, there is an absence of a coherent and horizontal policy in promoting RES and a lack of inter-sector cooperation in the area.

These challenges question the long-term sustainability of the RES policy in Macedonia. Having limited investments in RES sector; furthermore a set of policy, financial, legal, administrative and information obstacles which add to the existing investment uncertainty and low environmental awareness, it is of utmost importance, the RES policy to be thoroughly researched. The RES policy is important for Macedonia not only because it is an obligation steaming from the respective international agreements, but because Macedonia has underused RES potential. By investing in RES, the county would secure its future in light of its increasing energy demand, the high import dependency as well as the exhaustibility of the fossil fuels.

This policy report aims at analyzing the RES policy in Macedonia towards its sustainability and at presenting all obstacles and challenges to achieving it. Methodologically, it draws from analysis of the relevant legal framework and the Macedonian strategies, available statistical data, the EC progress reports on Macedonia, international and domestic energy studies, best practice examples from Greece and Spain, interviews with relevant stakeholders and information from the relevant institutions obtained by the Law on free access to public information.

The relevant stakeholders

The relevant stakeholders range from the relevant institutions, the Government over the independent regulator, up to the companies, academia and the civil society. The list of relevant stakeholders is presented in Table 1.

[1] The EU candidate status to Macedonia was granted in 2005.

Table 1: List of relevant stakeholders in the RES area

Stakeholder	Description of relevance
Ministry of Economy	The Department for Energy within the Ministry of Economy is responsible inter alia for the RES policy and the investment activities in the energy area; it prepares laws, bylaws and other legal acts in the energy area, follows the implementation of the laws and prepares energy strategies.[2]
Energy Agency	The Energy Agency is responsible inter alia for support of the energy policy implementation and is involved and has to initiate energy strategies, RES projects as well as to promote RES [3].
Energy Regulatory Commission	The Energy Regulatory Commission was founded in order to enable safe energy supply, environment and competition protection in the energy market.[4] Its establishment was in line with the energy market reforms for introduction of an independent regulatory body in the energy market.
Government	The Government is also responsible for energy policy creating. There is a Deputy Prime Minister for Economic Affairs for coordination of the economic departments and institutions focusing especially on big infrastructure projects, facilitating the work of the investors, improvement of the business climate etc.[5] According the new energy law the Government on proposal of the Ministry of Economy adopts the Energy strategy and RES Strategy[6] and also plays an important role in defining the feed-in tariffs.
Municipalities	The municipalities are obliged to draft own energy efficiency programs.[7]
Energy companies	The largest are ELEM, MEPSO and EVN, all established after the transformation of the previous vertical monopoly in electricity, the Electric Power Company of Macedonia. MEPSO is the state-owned electricity transmission system operator of Macedonia, ELEM is a joint stock company Macedonian Power Plants for generation electricity in state ownership and EVN Macedonia is the electricity distribution company in private ownership. There are also small and medium enterprises working in the energy area as manufactures or sellers of solar collectors, heating and cooling technology etc.
Civil society organizations (CSOs) and academia	The CSOs working in the area of environment, RES, energy efficiency (EE) and climate change work on influencing the decision-making, education and raising awareness etc. The academia includes the Macedonian Academy of Science and Arts (MANU) which has drafted the energy strategies as well as the technical universities as the Faculty of Electrical Engineering and Information Technologies (FEIT).

[2] Internet page of the Ministry of Economy/ Department for Energy (2011) http://www.economy.gov.mk/Home?article=e8652822-9c03-4591-83ed-6338b9f447fb&lang=3 last accessed on 04. 12. 2011.
[3] Law on Founding the Energy Agency of the Republic of Macedonia, Official Gazette of the Republic of Macedonia 62/05.
[4] Law on amending the Law on energy, Official Gazette of the Republic of Macedonia 94/02.
[5] Internet page of the Government/ Vladimir Peshevski http://vlada.mk/node/45 last access on 04.12.2011.
[6] Law on energy, Official Gazette 16/11, Art.10, Art 144.
[7] Ibid, Art 132.

Source: Set of sources presented separately with footnotes in the table text

The legal framework

The relevant legal framework dealing with RES presented in Table 2 is a combination of international and domestic legislation in which the obligations towards the EU and the Energy Community dominate.

Table 2: Legal framework in the RES area

Legal act	Description
Treaty Establishing the Energy Community (in the following text referred to as Energy Community Treaty)	The Energy Community Treaty has the goal to organize the relations between the parties and create a legal and economic framework in order to inter alia create a stable regulatory and market framework capable of attracting investment in gas networks, power generation, and transmission and distribution networks; to enhance the security of supply and to foster the use of RES.[8] Macedonia has ratified the Treaty in 2006 with a law.[9] The main obligations under this Treaty are to implement specific energy related parts of the EU acquis communautaire. This Treaty envisages liberalization of the market for all non-household customers from 1 January 2008 and liberalization of the market for all customers from 1 January 2015.
Law on Energy	The current Law on energy was adopted in February 2011. It determines inter alia the goals of the energy policy and the means of regulation of the energy activities, the construction of the energy facilities, the status of the Energy Regulatory Commission, the electricity, natural gas, crude oil and heat markets, conditions for achieving EE and promotion of utilizing the RES. One of the law's goals is to promote the use of RES.[10]
Strategy for Energy Development in the Republic of Macedonia until 2030 (in the following text referred to as Energy Strategy)	The Energy Strategy adopted in 2010 defines the long-term development of the energy sector in Macedonia in order to enable the consumer secure supply of energy. It also includes in its analysis organizational, institutional, legal and other aspects of the development of the energy sector. Among the priority means for implementation of the Strategy is considered the increase of RES utilization.[11]
Strategy for utilizing the renewable	The RES Strategy adopted in 2010 has the goal to present information on the RES potential and possible RES utilization in Macedonia by defining the RES percentage in the electricity and energy consumption respectively,

[8] Internet page of the Energy Community/ Treaty (2011) http://www.energy-community.org/portal/page/portal/ENC_HOME/ENERGY_COMMUNITY/Legal/Treaty last accessed on 04.12.2011.
[9] Law on Ratification of the Treaty Establishing the Energy Community, Official Gazette 59/ 06.
[10] Law on energy, Official Gazette 16/11, Art.1, 2
[11] Ministry of Economy of the Republic of Macedonia, *Strategy for Energy Development in the Republic of Macedonia until 2030*, (Skopje, 2010), p.2, 20, 29

sources of energy in Republic of Macedonia until 2020 (in the following text referred to as RES Strategy)	the dynamic for reaching these percentages with regard to the country's RES potential, financial implications from the introduction of the feed-in tariffs etc.[12] The RES Strategy has the goal the RES share from the total energy consumption in 2020 to be 21% and presents several scenarios for achieving this share. This is a reflection of the EU energy and climate change policy and the so called 20-20-20 threshold.[13]
RES bylaws	So far the following bylaws have been adopted: Rulebook on renewable energy sources, Decision on the goals and the annual dynamics of the growth of the percentage of energy from renewable sources of energy in the final energy consumption and Decision on the total installed capacity of the preferential producers of electricity from each of the renewable sources of energy.[14] The Regulation on feed-in tariffs should be adopted by February 2012 and the Rulebook on preferential producers which should have been adopted by August 2011.[15] The Program for implementation of the Energy Strategy and the Action plan for implementation if the RES Strategy will be adopted in 2012.[16]
Feed-in tariffs	The feed-in tariffs represent a form of state subsidy for production of electricity from RES and are one of the mechanisms for supporting RES utilization. There are feed-in tariffs for the small HPPs, wind power plants, photovoltaic systems and biomass as well as for biogas produced from biomass. They market operator, i.e. MEPSO is obliged to buy all electricity produced from the preferential producers of electricity.[17] According the new energy law, the Government with a Regulation on feed-in tariffs for electricity for each type of preferential producer separately defines the specific conditions which a power plant has to meet in order to become preferential producer; the maximal installed capacity of power plant which can gain the status of preferential producer; as well as the feed-in tariffs for electricity and the period of their use.[18] According the energy law of 2006, the Energy Regulatory Commission used to define the feed-in tariffs.[19] The new energy law gives the Energy Regulatory Commission more technical

[12] Government of the Republic of Macedonia, Ministry of Economy, *Strategy for utilizing the renewable sources of energy in Republic of Macedonia till 2020*, (Skopje, 2010), p.1,2.
[13] This threshold includes: 20% reduction in EU greenhouse gas emission bellow 1990 levels, 20% RES share in the EU energy consumption and 20% reduction of primary energy use compared with projected levels to be achieved by improving EE. Internet page of the European Commission/ Climate Change http://ec.europa.eu/clima/policies/package/index_en.htm last accessed on 02.12.2011.
[14] Internet page of the Ministry of Economy/ Bylaw in energy (2011) http://www.economy.gov.mk/?article=8c08b970-beeb-4121-8557-6535abdb0c07&lang=3 last accessed on 04.12.2011.
[15] Ministry of Economy, obtained by utilizing the Law on free access to public information in October 2011.
[16] Ministry of Economy, obtained by utilizing the Law on free access to public information in September 2011.
[17] Law on energy, Official Gazette 16/11, Art.153
[18] Ibid., Art.150
[19] Law on energy, Official Gazette 63/06, Art 141.

	responsibilities as issuing a Decision on gaining the status of preferential producer, maintaining a registry of the preferential producers etc.[20]

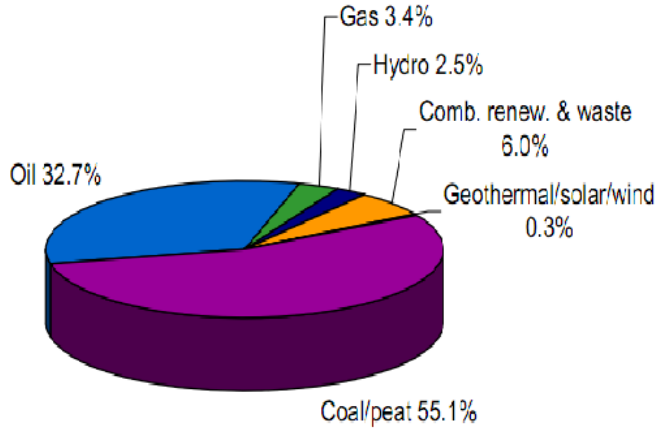
Source: Set of sources presented separately with footnotes in the table text

RES potential, infrastructure, utilization and future plans

As an import dependent country, Macedonia is facing increase of electricity import in the last few years which unfavorably influences the country's trade deficit.[21] This trend requires focus on maximal utilization of the domestic resources. Macedonia has promising RES potential, despite the fact that it is not rich in natural resources. RES (wind power, solar power – both thermal and photovoltaic, hydro power, tidal power, geothermal energy and biomass) unlike the fossil (coal, oil and natural gas) and nuclear fuels (uranium, plutonium) are not subject to final depletion. The RES utilization enables diversification of the sources of energy, contributes to energy security and to reduction of energy import dependence. In this line, RES play an important role in achieving sustainable development; they facilitate economic security to contribute to economic growth as well enable reduction of CO_2.

In Macedonia the hydro, wind, solar, biomass and geothermal energy are the relevant RES.[22] According to International Energy Agency (IEA) statistics in the total primary energy supply in 2008 the share of all renewable sources of energy combined (hydro, renewable and waste and geothermal and solar) was 8,8%.

Picture 1: Shares of energy forms in the total primary energy supply (excluding electricity trade) in Macedonia in 2008



[20] Law on energy, Official Gazette 16/11, Art.22
[21] Ministry of Economy of the Republic of Macedonia, *Strategy for Energy Development in the Republic of Macedonia until 2030*, (Skopje, 2010), p.19
[22] There is an ongoing discussion within the expert community whether the large HPP are RES. This report will treat the large HPPs as RES. The energy strategies have also the same position. The Energy Strategy even admits that the 21% RES threshold can not be achieved without the large HPPs.

Source: IEA[23]

Table 3: The unused potential of RES which can be utilized by 2030 on a real basis according the Energy Strategy

Electricity generation	Heat generation
Large HPP: 2260 GWh/annually Small HPP: 620 GWh/annually Wind HPP: 720 GWh/ annually Photovoltaic: 80 GWh/ annually Biogas from biomass: 45 GWh/ annually Waste biomass and other waste: 70 GWh/ annually **TOTAL electricity generation potential from RES: 3795 GWh/ annually**	Biomass: 860 GWh/ annually Heat from solar energy: 155 GWh/ annually Geothermal energy: 550 GWh/ annually **TOTAL heat generation potential from RES: 1565 GWh/ annually**

Source: Energy Strategy[24]

According to Table 3 the RES potential will enable increase of the RES share in the final energy consumption to 21% by 2020 and 27,6% by 2030.[25] This is a clear indication of Macedonia's large RES potential.

- *Hydro energy*

The hydro energy has been largely utilized for electricity production. There are large and small HPPs.[26] The seven largest HPPs are in state property, i.e. are owned by ELEM,[27] while two are in property of EVN. [28] The existing HPPs (both large and small) have a total installed capacity of 580 MW.[29] Additionally, there are eight small HPPs with a total installed capacity of 3689 kW, all of which have started operating from 2009 till 2011 and which have been granted the status of

[23] Internet page of IEA http://www.iea.org/stats/pdf_graphs/MKTPESPI.pdf last accessed on 04.12.2011.
[24] Ministry of Economy of the Republic of Macedonia, *Strategy for Energy Development in the Republic of Macedonia until 2030*, (Skopje, 2010), p.187
[25] Ibid., p.187
[26] Small HPPs have capacity up to 10 MW. One exception is the HPP Matka, which has 9,6 MW capacity and is considered to be large in the RES Strategy.
[27] Ministry of Economy of the Republic of Macedonia, *Strategy for Energy Development in the Republic of Macedonia until 2030*, (Skopje, 2010), p.38,39,40.
[28] Internet page of EVN Macedonia/ About us http://www.evn.mk/mk/evnmazedonien/index.asp last accessed on 04.12.2011.
[29] Ministry of Economy of the Republic of Macedonia, *Strategy for Energy Development in the Republic of Macedonia until 2030*, (Skopje, 2010), p.38

preferential producers.[30] Regarding future projects, the Government plans to build 400 small power plans with installed capacity of each of 5 MW each, so the Ministry of Economy will issue calls for concession every six months [31]; there is one ongoing project for construction of large HPP Sveta Petka and future plans also include construction of the large HPPs Boshkov most, Galishte, Chebren, Gradec, Veles and 10 HPPs as part of Vardarska dolina.[32]

- *Wind energy*

Up until the present day there is no wind power plant in Macedonia. In 2005 a Preliminary Wind Atlas has been drafted according which the best locations for construction of wind power plans have been mapped. In the last years projects on measuring the wind speed and several feasibility studies have been conducted. [33] In April 2011 the Agreement on financing the construction of the Wind farm Bogdanci with a loan from KfW to ELEM has been signed.[34]

- *Solar energy*

The solar energy can be utilized for heating and electricity generation (photovoltaics). The solar energy utilization takes usually place individually in households and companies. ELEM is currently working on a feasibility study for a project about solar power plants with thermal technology with installed capacity of 50MW. If the feasibility study is positive, this solar power plant will be constructed after 2020 in form of a public-private partnership.[35] There are also eight registered photovoltaic power plans with total installed capacity of 1468 kW, all of which have started operating from 2009 till 2011 and are preferential producers.[36]

- *Biomass and biogas*

The biomass comes from biological materials (plant based material, animal and vegetable derived material[37]) and can be used directly as a biomass or it can be converted into biogas. The biomass utilization is mostly down to individual use in households since is being mostly used in

[30] Internet page of the Energy Agency/ Issued documents (2011) http://www.ea.gov.mk/index.php?option=com_content&view=article&id=77&Itemid=72&lang=mk last accessed on 04.12.2011.
[31] Government of the Republic of Macedonia, *Program for work of the Government of the Republic of Macedonia for 2011*, (Skopje, 2011), p.164.
[32] Internet page of ELEM www.elem.com.mk last accessed on 04.12.2011.
[33] Internet page of the Energy Agency/ RES http://www.ea.gov.mk/index.php?option=com_content&view=article&id=53 (2011) last accessed on 04.12.2011.
[34] Netpress, Signed the agreement on construction of Wind park Bogdanci from 09.04.2011.
[35] Internet page of the Energy Agency/ RES http://www.ea.gov.mk/index.php?option=com_content&view=article&id=53 (2011) last accessed on 04.12.2011.
[36] Internet page of the Energy Agency/ Issued documents (2011) http://www.ea.gov.mk/index.php?option=com_content&view=article&id=77&Itemid=72&lang=mk last accessed on 04.12.2011.
[37] Internet page of the Biomass Energy Center http://www.biomassenergycentre.org.uk/portal/page?_pageid=76,15049&_dad=portal&_schema=PORTAL last accessed on 04.12.2011.

form of wood biomass for heating the households. The biomass can also be used for electricity generation. About 80% of the produced biomass in Macedonia comes from wood and wood coal.[38] Regarding biofuels, the first biodiesel factory in Macedonia was opened in 2007 and is in property of Makpetrol[39]. The fuel used is unrefined oil from rape, which is imported. Future plans include two new biodiesel factories.[40] The Center for wine production in the city of Kavadarci has expressed interest in making fuel briquettes from vineyard waste.[41]

- *Geothermal energy*

Geothermal energy is manifested on the earth surface in form of geysers, spring, volcanoes etc. There are 18 geothermal fields and more then 50 geothermal springs in Macedonia. This kind of energy is mostly used for heating greenhouses and in one case for heating an administrative building in the city of Kocani and can not be used for electricity production since its heat is insufficient.[42] The Macedonian Geothermal Association has prepared list of eight projects for expansion and rehabilitation of the existing geothermal schemes.[43]

Identified barriers

In the following part the analysis will be focused on identifying the problems and obstacles to having a long-term sustainable RES policy in Macedonia. This analysis considers some of the Ministry of Economy's indicators for successful implementation of the strategic plans in RES as the completion of the energy legislation, continuing the tenders for the small HPPs[44] etc., but will also focus on other indicators as the overall RES investment climate, realization of the planned activities etc. with the aim of identifying the different barriers.

- *Policy barriers*

The relevant institutions' documents as the Program for Work of the Government in 2011 and the Ministry of Economy's Strategic plan for 2010-2012 contain RES friendly policies. In fact, the Government's Program envisages state guarantees for energy projects as well as following up closely the implementation of the RES projects starting from the feasibility studies, the energy projects as well as keeping an eye on the dynamic of the increase of the RES share in the energy

[38] Ministry of Economy of the Republic of Macedonia, *Strategy for Energy Development in the Republic of Macedonia until 2030*, (Skopje, 2010), p.46
[39] Makpetrol is a large private company in Macedonia for oil distribution but it is also involved in other energy projects including natural gas, biogas etc.
[40] Internet page of the Energy Agency/ RES http://www.ea.gov.mk/index.php?option=com_content&view=article&id=53 (2011) last accessed on 04.12.2011.
[41] EIHR and the Energy Community, *Report on the Implementation of the acquis on renewables in the Energy Community contracting parties Final report* (Zagreb, 2007), p.59.
[42] Ministry of Economy of the Republic of Macedonia, *Strategy for Energy Development in the Republic of Macedonia until 2030*, (Skopje, 2010), p.46,47,48.
[43] EIHR and the Energy Community, *Report on the Implementation of the acquis on renewables in the Energy Community contracting parties Final report* (Zagreb, 2007), p.59.
[44] Ministry of Economy, *Strategic plan for Work of the Ministry of Economy for 2010-2012*, (2009),p.116

consumption and on the RES legal documents.[45] The Ministry's Strategic plan follows the same logic and therefore has attracting foreign investments in the construction of new energy facilities, realization of concrete EE and RES projects and construction of energy facilities as priorities as part of the energy activities for 2011 as well as their further intensification for 2012.[46]

After analyzing the planned and implemented plans in the RES area in the last few years by the Ministry of Economy and the Government, the general picture is that most of the planned activities for 2011 have been completed or are to be completed by end of 2012[47]. One exception is the failed tenders for the large HPPs[48]. Table 4 clearly indicates the problem of having no conducted research preceding the decision to plan the RES strategies since the Public Investment Program (PIP) 09/11 for some of the projects has either no deadline or the given deadline was postponed in the new PIP 11/13.

Table 4: RES projects in the PIP 2011-2013 and PIP 2009-2011

Project	Implementation
Construction of HPP Sveta Petka	Deadline 2009 (PIP 09/11); Deadline 2011 (PIP 11/13) Ongoing implementation, will be completed by the end of the year.[49]
Reconstruction and revitalization of the existing HPP Second phase	Deadline 2012 (PIP 09/11); Deadline 2014 (PIP 11/13) Ongoing implementation, the tender procedure is ongoing.[50]
Construction of dam Lukovo Pole	Deadline not given (PIP 09/11); Deadline 2015 (PIP 11/13) Ongoing implementation, next activities include preparation of environmental studies.[51]
Construction of the HPP Chebren and HPP Galishte	Deadline not given (PIP 09/11 and 11/13) There have been two failed tenders for these two HPPs (in 2006 and 2008). The third tender which was announced in January 2011 is

[45] Government of the Republic of Macedonia, *Program for work of the Government of the Republic of Macedonia for 2011*, (Skopje, 2011)
[46] Ministry of Economy, *Strategic plan for Work of the Ministry of Economy for 2010-2012*, (2009),p.4
[47] These planned activities according the Strategic plan of the Ministry of Economy included subsidies for RES, completing the action plans for the energy strategies, issuing call for concessions for the small HPPs etc. Ministry of Economy, *Strategic plan for Work of the Ministry of Economy for 2010-2012*, (2009),p.116, 117
[48] So far there have been two failed tenders for Chembren and Galishte in 2006 and 2008, two failed tenders for Boshkov most in 2007 and 2009 and one failed tender for Vardarska dolina in 2008. Ministry of Economy, obtained by utilizing the Law on free access to public information in October 2011.
[49] Untrinski vesnik, HPP Sv. Petka will start working by the end of the year from 28.04.2011.
[50] Dnevnik, The Hydro power plants will produce more electricity from same water quantity from 25.09.2011.
[51] Porta3, ELEM has started with preparatory activities on Lukovo pole.

	postponed till December 2011.[52]
Construction of HPP Boskov most	Deadline not given (PIP 09/11); Deadline 2015 (PIP 11/13) There are two failed tenders for Boshkov most (in 2007 and 2009).[53]
Construction of Wind park Bogdanci (new in PIP 11/13)	Deadline 2012 (PIP 11/13) Ongoing implementation, next activities include preparation of tender and the basic project.[54]

Source: PIP 2011-2013 of the Government[55], PIP 2009-2011 of the Government[56], information obtained by the Ministry of Economy by utilizing the Law on free access to public information and media articles given with separate footnotes in the table text

- *Legal barriers*

A new comprehensive energy law was finally adopted and the RES investment climate was improved by introducing feed-in tariffs. However, the feed-in tariffs for biomass and photovoltaics have changed.[57] The previously unannounced change of the feed-in tariffs has the potential to discourage the investors since the new tariffs completely alter the potential investors' calculations for achieving profit. In addition, some of the important RES bylaws for implementing the energy law are still missing which hampers utilization of the feed-in tariffs.

The Energy Regulatory Commission has justified the changes in March 2010 to the feed-in tariffs for biogas produced from biomass and photovoltaics and the new tariff for biomass with the experience in some EU member states and according to the data and analysis in the RES Strategy.[58] The Macedonian center for energy efficiency (MACEF) has also justified the reduction of the tariffs on 31.03.2010 by comparing the gross domestic product (GDP) and the feed-in tariffs in Macedonia and other countries in the region and in Western Europe since the feed-in tariffs are subsidies which as such burden the state budget.[59] However, many experts agree that the feed-in tariff policy especially for photovoltaics is still facing challenges especially regarding its actual capacity for attracting investments. In this line, the fact that there were sudden and frequent changes of the feed-in tariffs, uncertainty rose among the investors as well as among the banks that support these investors, eventually leading to rejection of investments

[52] Ministry of Economy, obtained by utilizing the Law on free access to public information in October 2011.
[53] Ibid.
[54] Kurir, Preparations for construction of the Wind park Bogdanci from 20.04.2011.
[55] Government of the Republic of Macedonia, *Public Investment Programme 2011-2013* (Skopje, 2011).
[56] Government of the Republic of Macedonia, *Public Investment Programme 2009-2011*, (Skopje, 2009).
[57] These changes are more clearly presented in Table 5.
[58] Energy Regulatory Commission, *Annual report on the work of the Energy Regulatory Commission in 2010*, (Skopje, 2011), p.14, 15, 16.
[59] MACEF, *Analysis of the feed-in tariffs for electricity production from RES.*

and dissimulation of investors.[60] The recommendations in line of removing the legal barriers also include extending the period for use of the feed-in tariffs from the current 15 to 20 years[61] and previously announcing the date for changes of the feed-in tariffs as in Greece, Serbia or Germany.[62]

Table 5: Change of the feed-in tariffs for photovoltaics and biomass

Power facility utilizing RES	Date of decision	Installed capacity (KW)	Feed-in tariff (EUR cents/ KWh)	Time period for using the feed-in tariff
Photovoltaic	04.09.2008	≤ 50 ——————— > 50	46,00 ——————— 41,00	20
Photovoltaic	31.03.2010	≤ 50 ——————— 51 - 1000	38,00 ——————— 34,00	15
Photovoltaic	27.07.2010	≤ 50 ——————— 51 - 1000	30,00 ——————— 26,00	15
Biogas produced from biomass	22.11.2007	≤ 500 ——————— > 500	13,00 ——————— 11,00	20
Biogas produced from biomass	31.03.2010	≤ 500 ——————— 501 - 2000	15,00 ——————— 13,00	15

[60] Ivanovski claims that change of the feed-in tariffs twice within one year has created uncertainty for the investors and for the banks that support these investors leading to rejection of investments. Dimitrov and Iliev find the frequent or sudden changes of the feed-in tariffs dissimulating. Interview with Slave Ivanovski, former President of the Energy Regulatory Commission and expert in energy policy, conduced on 21.09.2011; Dimitar Dimitrov, Atanas Iliev, *Actual techno-economic issues in the field photovoltaic system in the Republic of Macedonia*, presentation at the Workshop Low cost solar cells 2011 in Skopje, May 2011.

[61] Interview with Slave Ivanovski, former President of the Energy Regulatory Commission and expert in energy policy, conduced on 21.09.2011.

[62] Interview with Zoran Sindiliev, owner of the company Petro M, conducted on 07.10.2011.

Biomass	31.03.2010	≤ 1000 _____ 1001 - 3000	11,00 _____ 9,00	15

Source: Internet page[63] and Annual Report 2010 of the Energy Regulatory Commission[64]

Beside the issue with the feed-in tariffs, another pressing issue is the incomplete secondary legislation. Until the Regulation on feed-in tariffs and the Rulebook on preferential producers are adopted, this feed-in tariff related procedures can not be practiced. Dimitrov explains that as the new law prescribes different procedures and the previous bylaws are not applicable anymore, there is a vacuum regarding the procedures for acquiring the status of preferential producer. This legal vacuum period involves additional uncertainties for the investors regarding the procedures.[65]

- *Administrative barriers*

The investment climate in the area of RES tackles also other legal material as construction and environmental permits. They are the necessary pre-steps before dealing with the material under the energy legislation. In the Macedonian case they seem to be the one of the biggest obstacles to implementing RES projects. Greece, which has compatible levels of solar irradiation to Macedonia, shown in Box 1, opted to remove the administrative barriers and thus facilitate the penetration of photovoltaics in the country.

The process of acquiring the status of preferential producer, the necessary precondition for utilizing the feed-in tariffs, is a long and thorny one. It also includes knocking on the door of a large list of institutions as the Ministry of Economy, Ministry of Transport and Communications, Ministry of Environment and Physical Planning, the Energy Agency, the Energy Regulatory Commission, the market operator MEPSO and for projects below 1MW the municipalities, which all make the projects costly and risky.[66] The process before beginning with the procedures defined in the Law on energy, the procedures under the Law on special and urban planning, Law on environment and Law on construction have to be completed. Since the security of investors is a key factor for attracting RES investments, it is recommendable that all the procedures as part of these laws, although they have been already simplified, to be further simplified. [67]

[63] Internet page of the Energy Regulatory Commission http://www.erc.org.mk last accessed on 04.12.2011.
[64] Energy Regulatory Commission, *Annual report on the work of the Energy Regulatory Commission in 2010*, (Skopje, 2011), p.50
[65] Interview with PhD Dimitar Dimitrov, Assistant Professor, Institute of Power Plants and Systems, FEIT Skopje, conducted on 10.10.2011.
[66] USAID, *Macedonia Energy efficiency and renewable energy assessment Final report*, (2009), p8, 46
[67] Interview with Slave Ivanovski, former President of the Energy Regulatory Commission and expert in energy policy, conduced on 21.09.2011.

The companies which have went through the process of becoming preferential producers, as the company Petro M which utilizes the feed-in tariff for photovoltaic, find some of the administrative barriers prior the energy related procedures as challenging. These pre-energy law procedures which are also a precondition for getting the construction permit, as locating the suitable land and acquiring the documents whether the land is urbanized, are time consuming. For one investor in solar energy it is important to have the information on solar irradiation, the land ownership and the whether the land is connected to the infrastructure. Once the construction permit is granted, there is no problem to implementing RES projects.[68] Additionally, for all the documents and the license, the investor has to pay taxes to the municipality and to other institutions. In fact, photovoltaics can be considered as temporal objects and they can be dismantled easily. These long lasting pre-energy-law procedures make the investment risky especially if the feed-in tariffs change in the meanwhile. [69]

The question of the failed tenders for large HPPs[70] completes the picture of the investment climate in the country. IEA identifies in this regard the problem in the domestic capacity of managing complex arrangements with the private investors.[71] Further explanation for the failed tenders is the weak technical documentation for hydrology which has not been updated with decades.[72] Therefore, the tender documentation needs to be improved.[73] After dealing with the tender issue and eventually signing the contracts for HPPs, investors face further administrative barriers as the land ownership matters. The ownership matters lead to other obstacles on the way of completing RES projects. In this regard, Ivanovski clarified that due to unsolved land ownership issues, the construction is delayed, while the bank guarantees are expiring. If after three years the investor does not start constructing, he or she loses the right to concession. This leads to lack of investments in the energy sector.[74]

The current feed-in tariff policy does not target natural persons since only legal persons can be preferential producers. Both the academia and the private sector agree that natural persons should be given incentive to invest in photovoltaics[75] having in mind the far-reaching results regarding the increase of solar energy. One further obstacle is the fact that there is no possibility to install photovoltaic system on a roof of the house, since the urban plans do not allow placing objects for

[68] Interview with Zoran Sindiliev, owner of the company Petro M, conducted on 07.10.2011.
[69] Interview with PhD Dimitar Dimitrov, Assistant Professor, Institute of Power Plants and Systems, FEIT Skopje, conducted on 10.10.2011.
[70] The tenders for small HPPs proved to be successful. EU progress reports on Macedonia (2007, 2009, 2010).
[71] IEA, *Energy in the Western Balkans The path to reform and reconstruction,(*2008), p.246.
[72] Interview with Slave Ivanovski, former President of the Energy Regulatory Commission and expert in energy policy, conduced on 21.09.2011.
[73] Ministry of Economy of the Republic of Macedonia, *Strategy for Energy Development in the Republic of Macedonia until 2030*, (Skopje, 2010), p.192
[74] Interview with Slave Ivanovski, former President of the Energy Regulatory Commission and expert in energy policy, conduced on 21.09.2011.
[75] Interview with PhD Dimitar Dimitrov, Assistant Professor, Institute of Power Plants and Systems, FEIT Skopje, conducted on 10.10.2011; Interview with Zoran Sindiliev, owner of the company Petro M, conducted on 07.10.2011.

energy generation use. Therefore, the municipalities should consider allowing construction of photovoltaics on the roofs without the necessity of changing the urban plans.[76]

The national energy policies are also to be implemented through the local plans and strategies, which are to be drafted and implemented by the municipalities. Therefore, a strong local approach in renewable policy making plays a key role for having significant results. Ivanovski explains that all RES except the large HPPs are a question of local business which engages local citizens and local investors.[77] Therefore, solar, geothermal and biomass energy are a great opportunity for developing small and local businesses.

Box 1: Greece as best practice example for incentives for photovoltaics

Greece has heavily invested in RES incentives and especially in photovoltaics. Some of the incentives include:

- Any citizen can install a solar system with a capacity of up to 10 kWp on their roof;

- Almost every bank in Greece offers up to 100% financing for the installation of residential photovoltaic systems;

- The feed-in tariffs are guaranteed for 20 years.

This all resulted in 2010 with expansion of the Greek photovoltaic market by 4 times compared with the previous year despite the ongoing financial crisis. This development opened around 4250 new jobs in the last 4 years.

Source: Internet page of the Hellenic Association of Photovoltaic Companies[78]

- *Financial barriers*

Neither national nor local RES programs can be implemented without proper financial support. There is a range of possible financial tools which can be used for supporting RES projects as tax reduction, grants, subsidies, feed-in tariffs, green credits etc. However, the financial incentives as in also shown in the PIPs focus predominately on the large HPPs, other incentives include the feed-in tariffs, which changes negatively affect the investors' interest in biomass and solar energy, leaving other incentives limited.[79]

[76] Interview with PhD Dimitar Dimitrov, Assistant Professor, Institute of Power Plants and Systems, FEIT Skopje, conducted on 10.10.2011.
[77] Interview with Slave Ivanovski, former President of the Energy Regulatory Commission and expert in energy policy, conduced on 21.09.2011.
[78] Internet page of the Hellenic Association of Photovoltaic Companies/ The Greek PV Market http://www.helapco.gr/The_Greek_PV_Market.html last accessed on 04.12.2011.
[79] Some banks offer green credits but with high interest rates (about 7-10 %).

In 2009 the Ministry of Economy has subsidized the first 500 buyers of solar collector system with 30% and not more than 300 EUR per buyer.[80] However, USAID criticized this initiative by citing the limit of 500 rebates and pointing out that many consumers had the solar collectors already installed before submitting applications for rebates. Also, the consumer requests for solar systems reached its maximum when the program was announced, but then dropped sharply once the program maximum was reached.[81] This support was provided in 2007, 2009 and 2011, having more of a short term then a long term character.

Although the RES technology is getting less expensive with time, it is still considered expensive. Therefore, a special fiscal policy is necessary for stimulating the investors dealing with RES. The Government lowered the value added tax (VAT) rate for solar collectors from 18% to 5%, but the tax refers only to the collector, which is only 20% of the cost for the whole system.[82] Therefore, the VAT should be lowered not only for the solar collectors but for all RES technologies as a further tool for facilitating the investors' work.[83] Although the Energy Strategy suggested establishing Energy Efficiency Fund[84], this has not been realized yet. Since RES projects require rather expensive investment, bank support is a necessity. Dimitrov highlights the issue of having no credit lines with 2-4% interest rate for RES projects in Macedonia. He further explains that the banks also demand additional requirements other then the installed equipment as bank guarantees for example which are costly.[85]

- *Information barriers*

Increased use of RES has to be achieved with a support of raising RES awareness targeting all relevant energy actors from the public and private sector to the citizens and civil society and in that way explaining the benefits from RES projects. Promoting RES, EE or energy saving can be successful if it takes place in many forms (not only as an information on a website, but via lectures, conferences, trainings) and need to include the different sectors such as the private companies and CSOs as shown in the best practice example from Spain. Since the RES and energy developments are a novelty both for the stakeholders and for the private sector, it is important to invest in proper RES research.

For the purpose of RES and EE awareness raising, the Energy Agency has opened an Info center on energy in 2010 in order to give free and quick information on EE and RES. Their target

[80] Ministry of Economy, *Strategic plan for Work of the Ministry of Economy for 2010-2012*, (2009),p.8-9.
81 USAID, *Macedonia Energy efficiency and renewable energy assessment Final report*, (2009), p.50
[82] Ibid., p.27
[83] Interview with Vladimir Karchicki, Proaktiva, conduced on 28.09.2011.
[84] Ministry of Economy of the Republic of Macedonia, *Strategy for Energy Development in the Republic of Macedonia until 2030*, (Skopje, 2010), p.69
[85] Interview with PhD Dimitar Dimitrov, Assistant Professor, Institute of Power Plants and Systems, FEIT Skopje, conducted on 10.10.2011.

groups are the citizens, the public and private sector as well as the potential investors.[86] The Info Center has also prepared brochures on RES and EE in plain language understandable to the general public.[87]

The relevant energy institutions have also engaged themselves in campaigning. In fact, while EVN has focused more on campaigns on energy saving[88], one of the Ministry of Economy's campaigns focused on RES awareness raising for which purpose only a 5 page document was published at the Ministry's webpage giving explanation on the different RES sources and projects.[89] Karchicki points out that the role of the CSOs is very important in the area of awareness raising, education and in presenting practical examples about RES and EE because without proper information and education the national goals can not be realized.[90] The USAID study highlights the importance of cross-cutting public awareness campaigns.[91]

Box 2: Energy saving campaign in Spain as best practice example

In Spain there was a campaign "Saving Energy in Residential Housing" in the Province of Burgos in order to address the issue of increasing energy consumption by promoting energy saving. The campaign was led by the Provincial Energy Agency of Burgos with support of the Provincial Government, the main provincial newspaper, 'Diario de Burgos', the Burgos Provincial Civic Union of Consumers and Housewives, the local City Councils and the Housewives Associations in the different municipalities. The result was that 22000 leaflets were distributed containing simple but effective advice on residential energy efficiency and hundreds of householders attended conferences in 9 provincial municipalities. The success of this campaign can be seen in the targeted leaflet, the local conferences as well as in the collaborations involving local organizations and councils.

Source: European Commission, EU local energy action Good practices 2007[92]

[86] Internet page of the Energy Agency/ Info Center for energy/Activities http://www.ea.gov.mk/index.php?option=com_content&view=article&id=251&Itemid=114&lang=mk last accessed on 04.12.2011.
[87] Internet page of the Energy Agency/ Info Center for energy/Publications http://www.ea.gov.mk/index.php?option=com_content&view=article&id=56&Itemid=116&lang=mk last accessed on 04.12.2011.
[88] EVN campaigns include inter alia energy efficiency in 2010 and energy saving in 2009. Internet page of EVN Macedonia/ Press http://www.evn.mk/mk/presse/index.asp last accessed on 04.12.2011.
[89] Internet page of the Ministry of Economy/ RES http://www.economy.gov.mk/WBStorage/Files/tekst%20za%20obnovlivi.pdf last accessed on 04.12.2011.
[90] Interview with Vladimir Karchicki, Proaktiva, conduced on 28.09.2011.
[91] USAID, *Macedonia Energy efficiency and renewable energy assessment Final report*, (2009), p.12
[92] European Commission, *EU local energy action Good practices 2007*, Information campaign brings home energy issues in Spain, p, 12-13.

Conclusion and recommendations

This policy report aimed at analyzing the RES policy in Macedonia in the last few years in order to locate its barriers with the purpose of drafting suggestions for improvement. The general conclusion is that Macedonia has made and is making significant efforts in complying with the international obligations and in drafting and implementing RES policies. After many efforts and years the main legal framework and strategies have been adopted pending to get secondary legislation. However the existing legal vacuum, the over-night-changes of the feed-in tariffs, the tradition of failed tenders, the lack of financial and information support for implementing RES projects especially the projects involving solar energy and biomass as well as the complicated procedures for getting a construction permit are serious obstacles to reaching the RES goals and to implementing the on-paper drafted RES policy.

On the basis of the conducted analysis this policy report recommends:

The Government to close the current legal vacuum by adopting the Regulation on feed-in tariffs and the Energy Regulatory Commission by adopting the Rulebook on preferential producers;
The Government to announce in advance the future changes of the feed-in tariffs;
The Government to initiate in-depth research including the input of all relevant stakeholders before amending the feed-in tariffs;
The Government to consider extending the duration of the feed-in tariffs for photovoltaics, biogas produced from biomass and biomass to a period of 20 years;
The Government to consider allowing natural persons to utilize the feed-in tariffs for photovoltaics;
The Government to focus its financial RES policies towards assisting the small and medium companies and supporting local business on utilizing solar, biomass and geothermal energy by introducing tax and customs reductions on RES technology as solar collectors, photovoltaic systems etc.
The Government to simplify the pre-energy law procedures as the procedure for construction permit and to even consider the photovoltaics as temporal objects since their construction is more of an act of mantling;
The Government to make sure that the investors in RES projects are not hampered by unsolved land ownership issues;
The municipalities to draft their local energy strategies and plans in partnership with the

small and medium energy companies and the CSOs and to facilitate the small and medium companies' work in implementing RES projects by initiating local incentives as lower local taxes, allowing building of photovoltaics on households' roofs without the necessity of changing the respective urban plans etc;
The Government, the large energy companies and the Energy Agency to give grants for the CSO and the academia with focus on: implementing RES projects at local level; on supporting inter-sector cooperation in the area; on RES research especially on solar energy, biomass and geothermal energy; and on RES raising awareness campaigns;
The Government and the Ministry of Economy to draft reasonable time frames for implementation of RES projects in the PIP having previously assessed the institutional and financial capacity of implementing stakeholders;
The Government and the Ministry of Economy to update the technical tender documentation for the large HPPs and put reasonable demands in the respective tender requirements;
The Government and the Ministry of Economy to enable long-term support through the solar collectors' subsidies and to raise the subsidy limit;
The Government, the Ministry of Economy, the large energy companies, the Energy Agency and the municipalities to consider the CSOs, the small and medium energy companies as equal and important partners for raising awareness campaigns; to use several campaigning tools as conferences, leaflets, posters etc.; to make sure that the campaigns have not only information but educational character as well; to focus the campaigns on one local area for bigger campaign impact; and to make sure that the campaigns include inter-sector cooperation;
The banks to consider giving green loans with lower interest rates and simpler demands.

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POLICY REPORT

Energy and Infrastructure

"The challenge of achieving sustainable renewable energy policy in Macedonia"

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