

# **Drivers and Barriers for Investments in Wind Energy in Serbia**

“Don Quixote against the windmills”

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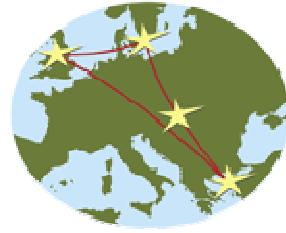
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## **Abstract**

The objective of this thesis has been to explore the potential for expansion of wind power in Serbia, through analysis of the key drivers and barriers for further development. This has been done primarily through literature review and semi-structured interviews. After elaborating on the institutional setting and national legal framework, this thesis examines international circumstances that impact investments in wind energy. These factors include the *Acquis Communautaire* of the European Union and the Clean Development Mechanism (CDM) of Kyoto Protocol. The negotiations with the EU for the status of candidate country result in the need for restructuring energy sector, which commenced with transposing the legal norms of the *Acquis* in the sphere of energy. However, this research depicts existing procedural barriers, such as complicated and contradicting licensing procedures and vague scheme for attaining subsidies for producing power from renewable energy sources. Thesis further examines the potential of wind energy to comply with National CDM Criteria and Indicators of Sustainable Development. Generally, the issue of wind energy development is embedded in the context of energy pricing and the issue of energy security. In this milieu local communities can benefit greatly from wind energy. The potential for wind energy development on the local level was analysed through the SWOT (strengths-weaknesses-opportunities-threats) analysis of the position of municipalities. The SWOT analysis aimed at indicating different managerial strategies those municipalities could take, pointing out drivers and barriers in this process. Research suggests that actors involved on the local and national level have the lack of understanding of crucial processes, followed by high transaction costs, the lack of will and the lack of human capacities. However, potential benefits that local actors observe – the broader level of job creation, the transfer of technologies and the raise of capacities – are seen as strong drivers and give significant impulses to wind energy sector development.

**Keywords:** wind energy, drivers and barriers, *Acquis Communautaire*, CDM indicators, SWOT

## Executive Summary

Following the global energy trends, interest arose in Serbia to invest in wind energy. Guided by the international legislative framework, such as the *Acquis Communautaire* and Clean Development Mechanism (CDM), Serbian Government works on forming national policy towards renewables. However, the contradiction of these policies creates barriers for investing in wind power, by generating financial burdens for the investors. Potential increase in energy prices, which investing in wind energy might bring creates the concernment of authorities and evokes the lack of institutional and legal support for the fulfilment of these investments. Unclear licensing procedures, high transaction costs and lack of understanding create significant barriers for these investments. On the other side, benefits, such as increase of own energy supply and creating prospects for sustainable development of local communities give push and present strong drivers for investing in wind energy. This thesis explored additional supporting mechanisms that could be used, such as Feed-In Tariffs or CDM scheme, for harnessing benefits of wind energy. But, securing the benefits from these mechanisms encounters also with specific barriers. CDM project scheme expires together with Kyoto protocol in 2012, although it was introduced in Serbia only in 2010. Additionally, awareness of existence of this scheme is very low. Moreover, the benefits from the Feed-In Tariffs are vague and it is unclear for project developers how they can benefit from this scheme. Finally, the municipalities should, as one of their primary goals opt for wind energy development. These investments create growth opportunities on the local level and can bring about sustainable regional development.



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## **Abbreviations**

€: Euro

AE RS: Energy Agency of Republic of Serbia

AR: Autonomous Region

c€: Euro cent

CDM: Clean Development Mechanism

CER: Certified Emission Reduction

CHP: Combined Heat and Power

CO<sub>2</sub>: carbon dioxide

DCA: Drivers of Change Approach

DNA: Designated National Authority

EC: European Commission

EIA: Environmental Impact Assessment

EP: European Parliament

EPAW: European Platform Against the Windfarms

ET: Emission Trading

EU: European Union

EWEA: European Wind Electricity Association

GDP: Gross Domestic Product

GHG: Green house gas

HPP: Hydro Power Plant

IEA: International Energy Agency

IGO: Inter Governmental Organisation

INCS: Institute for Nature Conservation of Serbia

ISO: International Organisation for Standardisation

JI: Joint Implementation

kW: kilowatt

kWh: kilowatt hour

LSU: Local Self-Governing Unit

MAFWM: Ministry of Agriculture, Forestry and Water Management

MESPE: Ministry of Energy, Spatial Planning and Environment

MIE: Ministry for Infrastructure and Energy

MME: Ministry of Mining and Energy

MT: Millions of Tonnes

MW: Megawatt

MWeq.: Megawatt equivalent

NGO: Non Governmental Organization

NO<sub>x</sub>: mono-nitrogen oxides

ODI: Overseas Development Institute

PE EGS: Public Enterprise the Electric Grid of Serbia

PE EPIS: Public Enterprise the Electric Power Industry of Serbia

RE: Renewable Energy

RES: Renewable Energy Sources

RGA: Republic Geodetic Agency

RS: Republic of Serbia

SAA: Stabilisation and Association Agreement

SEEA: Serbian Energy Efficiency Association

SEIO: Serbian European Integration Office

SEPA: Serbian Environmental Protection Agency

SEWEA: Serbian Wind Electricity Association

SO<sub>2</sub>: sulphur dioxide

SWOT: Strengths-Weaknesses-Opportunities-Threats

SWOTT: Strengths-Weaknesses-Opportunities-Threats-Trends

TC: Transaction Costs

TIC: Total Installed Capacity

toe: tones of energy

UNDP: United Nations Development Programme

UNESCO: United Nations Educational, Scientific and Cultural Organisation

UNFCCC: United Nations Framework Convention on Climate Change

UNMIK: United Nations Mission in Kosovo

USAID: United States Agency for International Development

VOC: Volatile Organic Compounds

WWEA: World Wind Energy Association

## 1 Introduction to the Research Topic

The historical background of Serbia, a Balkan country on the European continent, is discussed within this paper with the aim to better reflect the country's contemporary developments and positions towards the European Union. The energy scene, shaped in communist times, left no space for market development of energy prices, leading to a devastating state of energy companies.

Serbia is currently negotiating with the European Union for the status of the candidate country to this community of nations. Energy potential of the country, based mostly on coal and lignite, supported by the large scale HPP needed to be restructured. Negotiations with the EU and the need for restructuring legal norms and infrastructure in the sphere of energy have opened up for investments into renewable energy. One of the tasks is adopting legal body of the European Union – the *Acquis Communautaire*, which consists of regulations, directives, and verdicts, created throughout a period of time in the European Union. The *Acquis Communautaire* is binding for Member States and holds supremacy over national legislation. The focus of the EU, in the sphere of the environment is on climate change, energy security, but not neglecting economic growth (Mandil, 2008).

During this process of Eurointegration, Serbia became a part of the Energy Community<sup>1</sup>, joining the EU Member States and other European Non-EU countries, forming a single energy market. The Energy Community oversees the legal and practical advancement of introducing energy related norms into legal system. Some of these areas have been elaborated with more details recently, when Serbia was filing in the 'Answers to the Questionnaire of the European Commission', as a part of the process of negotiations for gaining the status of the candidate country to the EU. However, although existing in the national legislation, these directives are not supported in the by-legal documents, such as norms, targets, regulations. This thesis researches on the existing gap between normative rules and practice, as a barrier for investments.

The Governmental institutions have so far transposed a significant part of the legal framework of the EU. The directive of the EU on Renewable Energy<sup>2</sup> (EC, 2009a) still awaits to be transposed in the national legislation. The provisions of this directive stipulate the development and investments into renewable energy. The transposing of this directive is bound to happen with the new Energy Law, which should come in force in 2011. Investing in renewable energy sources becomes increasingly appealing for private sector with development of legal framework.

It is estimated that, if engaging capacities to harness all available potentials of the renewables in Serbia, these potentials could come to replace about 50% of oil and gas currently used (Stojadinović, 2011). This process requires undergoing series structural reforms of existing laws and institutions and requires system changes in the organization, management and legislation. These changes are required to happen on all levels of governance, from

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<sup>1</sup> Energy Community was established in 2005, between EU Member States and Albania, Bosnia and Herzegovina, Croatia, Former Yugoslav Republic of Macedonia, Montenegro, Serbia and UN Mission in Kosovo, today also including Moldova. It is created with the purpose of securing energy supply, which is recognized to be essential for ensuring social stability and economic development (Energy Community 2011)

<sup>2</sup> Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, 2009/28/EC C.F.R.

municipalities until Ministries. Although the changes in legislative framework might be challenging for the Government, they are very appealing for potential investors.

The highest potential in Serbia, as it is estimated by institutions in charge, lies in biomass (MME, 2010a). Other potentials include geothermal energy, small scale hydro power plans, solar energy and energy of wind (MME, 2010c). Although being that biomass is estimated as the one with the largest exploitation potential, investors are mostly interested in the energy of wind. However, the current procedures for obtaining these licences are very dissimulating for investors, demanding submission of studies, plans and documents that require investors to put significant financial resources, without having any guaranties for further success with the licences (USAID, 2010). On the other hand, benefits that local communities could harness from investing in this type of energy are significant. However, local authorities face problems in the realisation of these investments and lag behind in the creating investment friendly climate. This thesis will elaborate with details their position and expectations, their roles and behaviour, as one of the important actors in the system.

This thesis aims to indicate the potential for carrying out the investments in the wind energy in Serbia, but also explore drivers and barriers for investment flows. Although interest in wind energy is increasing it is also encountering with serious barriers. The thesis discusses these barriers and elaborates on factors behind them. Further, International factors and influences are also discussed. Their impact on shaping the national policy and law seem inevitable and is taken here as a significant factor. This mostly concerns the EU, the Energy Community, but also some other IGO's. The impact of Kyoto obligations and Clean Development Mechanism (CDM) seems like a great potential, untouched and unused by the wind investors. This potential seems also important to be explored. Additional drivers are found in the EU Renewable Energy Directive, which also concerns the energy of wind, containing specific formulas on how to calculate mandatory share of energy that should come from this source, for the total energy mix. This work maps the relevant actors in the scene of renewable energy of wind, notes their interactions and strategies in this field. Work also indicates the problems that these actors encounter while dealing with the tasks related to the renewable energy of wind. This research examines the role and the positions of all parties involved - the Government and the Ministries, local and regional authorities, agencies involved, as well as prospects for the local communities. The research aims contributing to broader understanding of the topic, for all the actors involved, indicating key gaps and offering suggestions for their overcoming.

## **1.1 Thesis Objective**

The objective of this thesis is to explore the potential of wind energy development in Serbia, through recognizing and setting apart the drivers and barriers. Based on the assumption that the local communities can significantly benefit wind power investments, the thesis further explores positions of local authorities, and elaborating on mechanisms they could use or develop to benefit from such investments.

The research aims to outline relations among different actors. Potentially, the findings can be used by the various actors in order to obtain a better understanding of the processes, as well as to understand different or confronting interests and motivations of other stakeholders.

### **1.1.1 Research Questions**

The thesis objective, in order to stream further research is explored through one main and three sub-questions. These questions aim at giving more coherent and the comprehensive image of investment climate within the country, particularly concerning the energy of wind.



Sub-Questions ought to help clarifying the main question, giving a course for research development.

**What are the drivers and barriers for the development of wind energy in Serbia?**

- a) **How does the energy system and legislative framework in this respect in Serbia look like and can there be lessons learned from observing similar cases?**
- b) **Who are the stakeholders in developing wind energy in Serbia and what is their position towards wind energy investments?**
- c) **What is the role of external factors, such as *Acquis Communautaire* of the European Union and the Kyoto Protocol Clean Development Mechanism?**

### **1.1.2 Target Audience**

This section lists the audience that might find this thesis to be of interests. This list does not include the private sector, although they might find these results of use. Private sector, although a significant stakeholder, is not the main focus of this thesis, being that previous studies and discussions have been focusing on this group - (Dulić, 2011; Lepotic Kovačević & Lazarević, 2010; USAID, 2010).

Municipalities – elements developed in this thesis help profile standpoints and problems this target group faces, resulting in specific suggestions for strengthening their positions.

Academia – for potential further researches on this topic, to fulfil remaining and arising gaps. This field might become more audible with development of wind energy sector in Serbia, once more relevant and practical data become available.

Government of Serbia (Ministry for Infrastructure and Energy, Ministry for Ministry for Environment, Mining and Spatial Planning; European Integration Office, Designated National Authority) – this audience group is responsible for setting the standards in the field of environment and energy. This research might contribute to disclose existing legislative and procedural gaps and offer suggestions.

## **1.2 Scope and Limitations**

The scope of this thesis focuses on developing potentials of wind energy of Serbia, in the specific institutional and legislative framework. The applicability of the findings for other settings, and for other types of investments in renewables, must be contextualised.

The focus of this research is placed on energy of wind. There are two main reasons for this delimitation: 1. quality of information within given timeframe, 2. Current developing plans for this energy type. Other types of renewable energy sources are excluded from this research. However, the author encourages similar researches, discovering potentials, the drivers and barriers of other types of renewable energy in Serbia.

Another limitation for this paper is the number of actors that was consulted. Namely, the actors involved are numerous, but the literature review tried to scope the main players. Here, the limited number on interviews conducted should be also noted. Thus, time comes as one of the inevitable barriers for a thesis research. Relying on the triangulation methods of using

several different methods to ensure the credibility of the results solves the potential problems arising from these limiting factors.

Further, a potential limitation to this paper was finding contacts and relevant actors to consult. This turned out to be a minor limitation, being that most of the contacted parties were very interested to share their thoughts and knowledge on this topic. However, another limitation arises out of the previous one; and that is the credibility of the information obtained. This is one of the inherent problems on any qualitative research, being that is based on opinion of interviewed parties, which does not have to be correct. Still, combining and cross referencing several different methods – such as literature review, interviews with different groups of stakeholders and SWOT analysis, the research findings gain on credibility.

### 1.3 Methodology: the qualitative research

Qualitative research is a particularly useful method in social sciences. Under the umbrella of qualitative research, a study inquires about human interactions, their understanding and interpretation of a problem and how do these factors impact their behaviour in the social world (Mason, 2002; Sandelowski, 2004). In the context of this thesis, what qualitative research reveals, compared to a quantitative one, is a spectrum and variety of fragile relations among the actors involved. What qualitative research provides are explanations and arguments, rather than claims (Mason, 2002), which is what this research will focus on.

The methodology of this paper combines several approaches, which aim to cast a light on the researched topic, but also be of use for some future research. The research could be of use as comparison of similar case. Additionally, this research can be used as a benchmark for following further development of the case presented. The approaches used in this research are firstly, the literature review, followed by the comparative cases analysis and comparison, SWOT analysis and finally, the interviews.

The interviews were semi-structured and aimed at accounting the opinions of all relevant actors in the projects of implementing wind farms in Serbia. The interviews are conducted in two phases. The first phase of interview was conducted with the governmental officials and private companies in order to explore their position. The second phase of interviews was conducted in order to carry out a SWOT analysis on the position of the municipalities, defined as one of the key stakeholders in the scope of the thesis. The complete list of interviewees can be found in Annex II of this thesis. In the context of the thesis, SWOT analysis helps discover and disclose problems and develop managerial strategies for dealing with a specific problem.

This thesis is divided to tasks and subtask. For each of them, a methodological framework is developed. Figure 1-1 gives a graphical presentation of methodological framework. The stages presented are not necessarily linear.

#### **Task 1: Review of the institutions, actors and legislation on renewable energy in Serbia**

##### **Subtask 1.1: *Provide basic country analysis***

**Methodology:** The backbone of this section relies of historical to contemporary literature, providing basic inputs for understanding current state of political organisation, reflecting the economical and energy scene.

##### **Subtask 1.2: *Literature review on key stakeholders and analysis of current developments***

**Methodology:** Literature review is used to give an overview on the topic of investing in wind energy in Serbia. This is set in order to help determine the main and relevant actors and their relations, but also to place this type of energy in the economic framework, comparing its competitiveness and potentials with other types of energy.

For this purpose, a certain analytical framework has been developed guided by the principles of Drivers of Change Approach. Drivers of Change Approach is an idea created by the Overseas Development Institute (ODI) with the aim to help define and solve problems which are typically called "a lack of political will" (ODI, 2011). Their aim is to help better understand drivers and interests behind this terminology (Ibid.). For the purpose of the thesis work, "An Analytical Framework for Understanding the Political Economy of Sectors and Policy Arenas" has been adapted to be compatible with the topic and it includes now the interview stage and the comparative cases stage. This analytical framework was originally developed by Joy Moncrieffe and Cecilia Luttrell (2005) for the ODI as a support mechanism for Drivers of Change Approach and is used mostly in developing countries for estimating drivers for change. It thus seems appropriate to use this framework for assessing the potential of renewable energy and drivers and barriers in Serbian context.

Their framework makes an analysis of political economy of certain sectors and policy arenas (Moncrieffe & Luttrell, 2005). Authors suggest that this framework can be used to indicate the relationship between economic tendencies, policies and institutions. The framework aims at offering better understanding on how these interactions affect policy making, the implementation of desired policy and final outcomes. The framework also aims at giving a sectoral and cross-sectoral analysis, while providing a space for reflection (Ibid.).

These authors share a common believe that in order for effective and meaningful change to happen in a society, the planned programs must have thorough and deep understanding of a comprehensive set of data of specific economic and social situation. The planning stage must also create an understanding of the political, ideological and institutional factors and frameworks, which can be drivers or barriers and are specific for an each country or a region (Moncrieffe & Luttrell 2005).

### ***Subtask 1.3: Literature review on relevant national legislation and analysis of current developments***

**Methodology:** To obtain results for this subtask, research firstly consulted studies on licensing procedures. These studies gave an overview of relevant legislation. The next step included complete analysis of relevant legislation, which provided insight into provisions of legal framework with regards to wind farms, but also indicated certain contradictions in the overall procedures. The findings of the literature review were backed up with semi-structured interviews with governmental and municipal officials, private companies and IGO's. The interviews also provided the insight into current developments and project development phases.

### ***Subtask 1.3: Literature review on relevant international legislation and analysis of current developments***

**Methodology:** This part of research relies greatly on the literature review of the legislative framework of the European Union – the *Acquis Communautaire*, with particular retrospective view on the renewable energy provisions. Additional information is found in the communication of the EU and Serbian Government, through the Questionnaire of the European Commission. This section also observes the impact of the Energy Community, which oversees the implementation of the energy *Acquis* in the members of this organisation.

## **Task 2: Analyse *potential of wind energy projects to qualify for CDM scheme***

### ***Subtask 2.1: Literature review on wind energy***

**Methodology:** This section gives an overview of data on development of wind technology and scientific literature forms this section. First are acquired by review of the World Wind Energy Association and their reports. Latter are based on scientific papers on wind technology features.

### ***Subtask 2.2: Understand Kyoto provision and position of Serbia towards it***

**Methodology:** This subtask is carried out through literature review on relevant provisions. This review included observing of Kyoto targets, relation of EU emission reduction targets and their relation to the Kyoto provisions, legislative acts of Serbia and statements of officials. These findings were supported by interviews conducted with officials and private sector representatives.

### ***Subtask 2.3: Testing the applicability of CDM criteria against wind energy characteristics***

**Methodology:** The Designated National Authority (DNA) designed criteria, which a project that applies for the CDM scheme needs to fulfil. There are three different criteria. These are economic, social and environmental criteria. Each of these criteria is further divided into areas, which should finally be tested through specific indicators. For a project to qualify for the CDM scheme, it needs to meet only one of the given indicators in each of the designed criteria.

Using the actual available data on wind technology, this thesis provides an analysis of wind energy impact on areas relevant for CDM scheme. Responses to these criteria are based on literature review of the scientific paper, but also on the interviews conducted. The potential wind energy project is tested against DNA provided criteria and the results of this testing are presented in the separate section of this paper.

The criteria designed by the DNA can be found in the Annex I of this paper.

## **Task 3: Conduct comparative cases which would allow comparison to Serbian model**

**Methodology:** The comparative cases (Croatia, Slovakia and Czech Republic) have been chosen based on the similar recent experiences that these countries have gone through on the path of Euro Integrations, but also based on the need for restructuring one older, non functioning system, dating from communist or pre-communist times. All of these countries share a similar culture deeply shaped by historical conditions. All countries are for example Slavic, which creates a common historical background, three out of four countries have been a part of Austro-Hungary monarchy, excluding the Czech Republic, and all of them share common communist and post communist culture shaped after the world wars.

The author believes that this studies help cast additional light on possible methods and paths of further development. These studies can also be preventative, since they can indicate barriers that could be found on the way, and good and bad solutions for overcoming them. They also contain strategies for attracting investments and, by observing them, lessons can be learned and used in future actions by relevant actors.

## **Task 4: Conduct SWOT analysis on the position of municipalities**

#### **Subtask 4.1: *Develop a Questionnaire for SWOT analysis and conduct a field research***

**Methodology:** The need for conducting the interviews and a SWOT analysis came since this is a complex situation, in which the actors are not just passive receivers of changes in laws and of economic incentives, but they do react, they themselves influence shaping of policy and affect the further development and investment flows. The interviews and the SWOT analysis are presented as a separate section of the thesis, since they can cast a new light on the conclusions based on the literature review.

As Moncrieffe and Luttrell themselves suggest, their analytical framework is not to be used as prescription, it is more a steering and a guiding document than a set of rules to be followed (2005). This is how the author of this paper is approaching the framework. Framework is modified to the needs of the situation and also comparative cases were made and detailed interviews, followed by the SWOT analysis have been conducted.

The interviews conducted were semi-structured. They were based on the literature review, which helped forming specific topics, followed by discussion. Another impulse to the interview came in the later stages, for discussion with representatives of local authorities, focusing on data obtained in the interviews with other groups of stakeholders – private companies, central authorities and NGO's. The interviews focused on several topics, but with loose ends, giving much of a freedom to the interviewee to reflect and express his full view on the topic. The semi-structured interviews were also used since the actors involved are very diverse among themselves, so they could not be represented well enough with fully structured interviews. Still, some questions relate more to one group of actors, while others do not. These interviews are presented separately and not included in the data obtained by the literature review, since they present data qualitatively different than the once obtained by literature. These data are empirical and present concrete findings of the author on the topic. Finally, these data are used for the purpose of conducting a SWOT analysis, focusing on the positions and opportunities for the municipalities, since they are recognized, by the author, as a key link, with final say for developing and implementing projects of renewable energy of wind.

#### **Subtask 4.2: *Data analysis***

**Methodology:** Relying on the literature found on SWOT analysis basis for this analysis, within the thesis are set. This section also relies on some previous researches and analyses the data collected according to the methodology described in the previous section.

Data were, based on predesigned questionnaire, divided into strengths, weaknesses, opportunities and threats. This classification is followed by analysis of the factors.

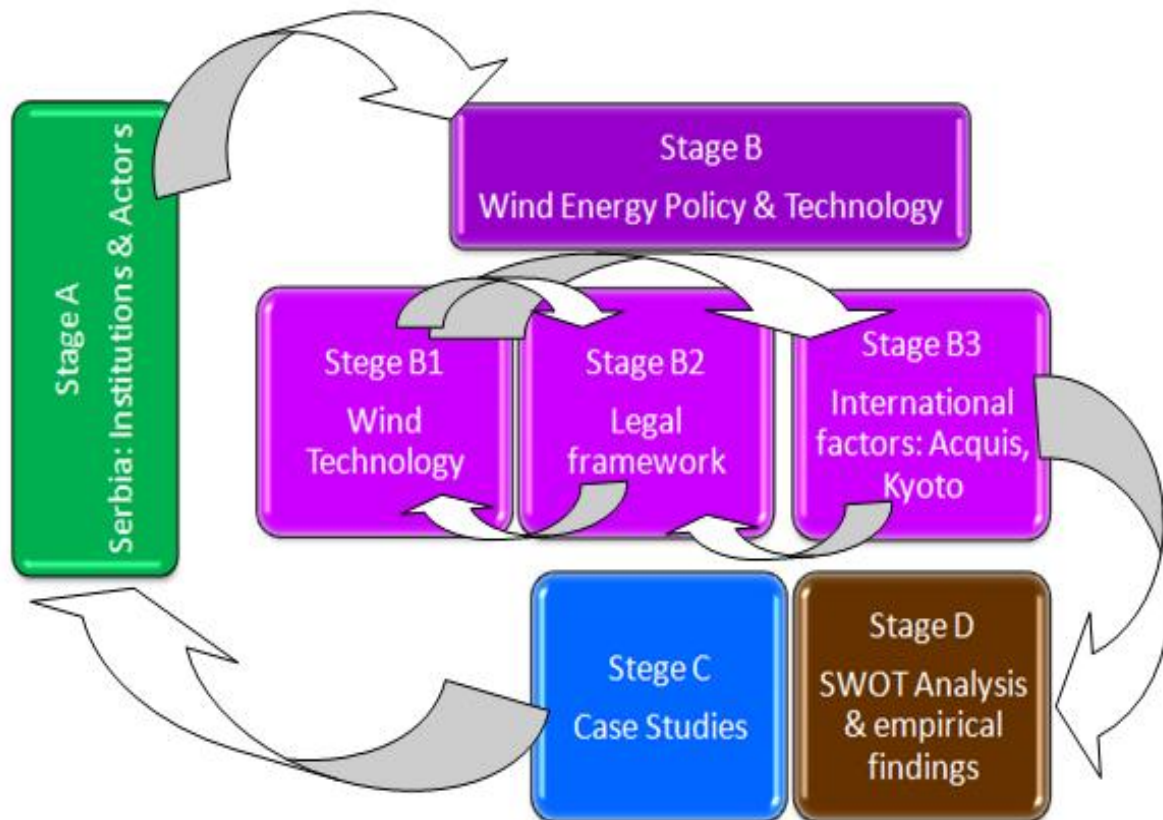
Further steps of this analysis included cross referencing data into pre-established categories. Data were grouped in four groups, intersected as strengths-opportunities, strengths-threats, opportunities-weaknesses and threat-weaknesses. This is done in order to combine different, yet similar factors. Results indicate current state and potential managerial strategies for achieving desired results.

#### **Task 5: Summary of drivers and barriers for investment in wind energy and concluding remarks**

**Methodology:** The research conducted to fulfil previous tasks is synthesised in order to give overview of the main drivers and barriers that investments in wind energy in Serbia encounter.

This task was accomplished throughout collection of data throughout literature review and interviews conducted with municipal and governmental officials, private companies and IGOs. Other documents, such as reports and conference proceedings were also referred to.

Figure 1-1 'Stages of research: methodology'



#### 1.4 Outline of the Study

This work is structured in 8 chapters. Following paragraphs summarise the content of the thesis chapters, which are presented on the following pages.

**Chapter 1:** This chapter introduces the thesis topic, giving a general introduction and stating the research problems and aims of the research, as well as the research questions. It presents the scope and limitations of this work. This section also contains methodological framework used in this study, which sets the line of further research.

**Chapter 2:** In this chapter, the reader is firstly introduced to the background of the Serbian contemporary energy scene. Following sections open up the debate on the institutions and actors relevant for the thesis topic. The chapter elaborates on the role of different institutions in processes related to investments in wind energy, disclosing their positions, interests and expectations.

**Chapter 3:** This chapter encloses the literature review on the legislation relevant for wind energy development. The first chapter section gives an insight into technological aspects of wind energy and recent development trends. The second section of this chapter elaborates

national legislation, relevant law and norms, their implications for the project developers and potential contradictions. Here the reader meets with the national renewable energy targets, designed Feed-In Tariffs and licensing procedures. Section that follows discloses relevant EU legislation and legal provisions of the *Acquis Communautaire* on renewable energy and relation to the Energy Community.

**Chapter 4:** Closely connected to the previous chapter, this chapter deals with Kyoto targets and implications that Kyoto Protocol commitments bring to Serbia. A section of this chapter deals with Clean Development Mechanisms (CDM) and their potential applicability for wind energy. This is done through testing the applicability of indicators (economic, social and environmental) given by the Designated National Authority (DNA) on wind energy projects.

**Chapter 5:** This chapter explores three comparative cases – Czech Republic, Slovakia and Croatia and their adaptations on EU regulations and wind market demands. These countries were chosen based on observed similarities in culture, state of economy or history. The experience of other countries can help avoid potential pitfalls and learn on stimulating policies for renewable energy.

**Chapter 6:** This chapter presents results of SWOT analysis on the position of municipalities. Chapter elaborates on strengths, weaknesses, opportunities and threats that shape investment climate.

**Chapter 7:** In this section, drivers and barriers, encountered during this research and presented in various chapters of this thesis, are summarised and further elaborated. Their goal is to reveal a genuine wind energy investment climate.

**Chapter 8:** Final chapter of this thesis offers conclusions and summarises overall findings.

## **2 Serbia: Institutions and Actors**

### **2.1 Basic Country Analysis**

Serbia is located in Southeast Europe, on the Balkan Peninsula. Historically, it has been struggling between Ottoman Empire and Austro-Hungarian Monarchy, always balancing between the east and the west. After the First World War, the first Yugoslavia was formed, of countries of Western Balkans: Serbia, Croatia, Slovenia, Bosnia and Herzegovina, Montenegro and Macedonia. The country has lived its ups and downs, but after the Second World War started finally living an economic recovery, putting the country as a leader of Non-Aligned movement. Recent, non glorious history of Serbia puts the country in the context of civil war that erupted in the sunset of twenty-first century. The breakdown of Yugoslavia ended up in bloodshed among different nations and religions that formed this country. Finally, the situation settled, but left devastated countries with ruined economic systems. One of the key factors for their economic recovery, although yet slow, was the European Union. All of the countries have recognized the importance of the EU for its further development and have thus started, individually, their Eurointegration path. Integration in the EU has been seen as one of the primary goals of all the governments in the region, to be achieved in as short time as possible.

The path of Eurointegration is elaborated in this work with more details, since author has considered relevant to explain how this process affects the energy market constellation of Serbia and directs the behaviour of actors involved.

However, it is here to be noticed that this path has been hardened by the not complete cooperation with the International War Crime Tribunal in Den Haag, especially influencing the process of integration of Serbia. Accused for the war crimes in the nineties, several fugitives are slowing down the negotiations and blocking the achievement of the status of a candidate country for Serbia.

This last fact was not discussed later during the paper, since it is highly political and it can be categorised as one of the negative externalities that lie beyond the sphere of power of researcher that she can, by discussing it, change the final series of events.

### **2.2 Understanding Institutions and Actors**

This section of the paper lists the main actors in the process of initiating and establishing wind power generation projects. The aim of this section is to give clear perspectives on all stakeholders and describe their roles and positions, including here their expectations. This includes the list of relevant governmental actors – ministries, agencies, but also municipalities for which there are plans for these investments to happen. Further, foremost investors and their organizations are included. Finally, this section will include the relevant IGO's and NGO's that show interest in development of renewable energy in Serbia. Underlining here, once again the limiting ability to fully represent all actors, here only the most relevant ones will be discussed. In the end, these sections will contain a description of energy scene in Serbia.

The Ministry of Mining and Energy – MME/ The Ministry for Infrastructure and Energy MIE

Within the MME there is a special department in charge for bringing about policies for introducing the renewable energy, making favourable deals with investors and creating generally favourable market conditions for investing into this sector. This ministry, together



with USAID and energy experts created a Guide for Investors into Wind Energy in order to stipulate this sector and ease the process of building the first wind farms in Serbia.

By the recent reform in the Government, this ministry has of January 2011 ceased to exist. The work of this Ministry is now transferred under the jurisdiction of the Ministry for Infrastructure. This Ministry was unsatisfied with the work of the previous Minister in charge and has already announced changes in the contracts that concern investments in the small hydropower plants. It is still early to determine the impact that the new policy will have on the wind projects.

The main area of work of this ministry, with regards to wind farms, was giving out energy permits and determining the Feed-In Tariffs for privileged energy producers. All the investors that applied for these permits have obtained one.

The MME has also established the status of privileged producers and created conditions for giving the feed-in tariffs. The procedure for obtaining this status is discussed in the following section, under the Energy Law 84/04 (Off. Gaz. of RS, 2004a). The question of Feed-In Tariffs, for the period after 2012 is to be further defined by the by-legal documents.

The Ministry for Environment and Spatial Planning – MESP/ Ministry for Environment, Mining and Spatial Planning MEMSP.

This Ministry has brought about some important law in the environmental sector, such as Law on the Air, Law on the Noise Pollution and also the laws on Spatial Planning.

This ministry is in charge for giving location permits or deny this right to the municipalities, depending on the assessment of the impact of intended project.

The MEMSP has specialized departments for transposing the EU legislation in the Serbian legal framework, in the relevant area of work.

Another one of the activities of MEMSP is coordinating activities with regards to Kyoto Protocol and United Nations Framework Convention on Climate Change (hereinafter: the convention or UNFCCC) (Vučićević et al., 2010). For fulfilment of these obligations, the Ministry established the 'Designated National Authority of the Republic of Serbia (DNA), established under the Clean Development Mechanism (CDM) of the Kyoto Protocol' (DNA, 2011; Vučićević, et al., 2010) in charge of coordinated the activities and overseeing the fulfilment of the Kyoto and UNFCCC goals and targets. Work of this agency will be further elaborated on in the Chapter 4. of this paper.

The Ministry of Agriculture, Forestry and Water Management – MAFWM

The MAFWM comes out as an important player in this field, being that it is the Ministry in charge for issuing the licence for water use. The licence that the investor in wind energy needs here is related to the impact of the project to the water bodies and protected areas such as wetlands. For this purpose, and impact assessment is required, together with Prefeasibility Study and Preliminary Design of the project. Together with this, for obtaining this permit, property rights need to be resolved, and excerpt from the land registry for the cadastre enclosed (Lepotic Kovačević & Lazarević, 2010, p. 18).

These provisions are regulated by the Law on the Protection of Waters.

## Municipalities – Local Self-Government Units (LSU)

There are, so far, ten municipalities for which the projects of building wind farms are planned to happen. These are Alibunar, Bela Crkva, Boljevac, Golubac, Indjija, Kovin, Kučevo, Negotin, Plandište, Veliko Gradište and Vršac (MME, 2010b). However, these ten LSUs are very much different among themselves. They range from undeveloped LSUs, such as Plandište, to highly developed and industrialized municipalities, such as Indjija or Vršac. This is very likely to shape their expectations and enthusiasm about these projects. Do they see the wind projects as a potential for earning some income and raising the level of energy independency, do, they fear from implementing new project which could potentially jeopardise their position of a solid median, or do they look on these projects as something that would further promote their municipality and attract some bigger investments?

One municipality, Tutin, located in Southwest Serbia, managed to overcome the barriers and since April 2011 started producing energy of wind from, for now, a single windmill. Several similar projects in this municipality are in plan to happen ("Puštena u rad prva vetrenjača [The first wind mill started operating]," 2011).

### Serbian Energy Efficiency Agency (SEEA)

This agency and its responsibilities were established by the Energy Law 84/04 (Off. Gaz. of RS, 2004a). Its main role is in drafting laws that enhance the energy efficiency and supporting the implementation of these projects on regional and municipal level.

One of the focuses of this agency is the NRES Program – Program for exploring and promoting National Renewable Energy Sources, which, in part, focuses on renewable energy of wind and its promotion.

According to the SEEA, it is expected that the RES will significantly increase in the energy balance in Serbia in coming years, being that the fossil fuels and lignite are relatively poor energy source in the country (SEEA, 2011) .

### Institute for Nature Conservation of Serbia (INCS)

This institute was established in 1948 and since then is in charge of implementation of standards for nature conservation. The main tasks of the institute consist of launching the procedures for environmental protection, which are based on EIA and the strategic EIA. The institute is in charge of setting out the conditions for work in the protected areas of nature, as well as determining key factors and conditions for nature conservation that need to be fulfilled. It is in the power of Institute to further follow the accredited programs and projects and do the assessments on their impacts and operating procedures. In the end, one of the important functions of the institute is the international cooperation and following of the international standards in the area of nature conservation (INCS, 2011).

### Serbian European Integration Office (SEIO)

The Integration office is in charge of coordination of the work of the Ministry in their communication with the EU Institution. Being that SEIO is in charge of following the transposing and implementation of the EU legislation in the process of harmonization, this work necessarily results in their work being involved in the issues of the renewable energy and energy of wind. Following the Directives and Regulations of the EU on the use of renewable energy and energy security, SEIO works with other Ministries and governmental institutions

in bringing to effectiveness these measures. Special department within the SEIO, Group for Environment, Agriculture and Rural Development deals with the questions of implementation of projects of renewable energy in Serbia (E. I. O. SEIO, 2011).

Recently, in December 2010, the Integration office and the Government worked together on submitting the Answers to the Questioner to the European Commission, as a part the process of Eurointegration and in order to obtain the status of candidate country to the EU. Some of the accession process was already explained in the Historical Background part of the paper. More words on these issues will be said in the sections of the paper that deal with the *Acquis Communautaire* of the EU.

#### Serbian Wind Energy Association - SEWEA

Although not having a certainty of feasibility studies on wind and small HPP, many private companies have shown interest in investing in renewable energy potential of Serbia. Many of the companies have opened branches and even formed themselves in societies, such as Serbian Wind Energy Association (SEWEA). SEWEA is an organization that gathers companies interested in investing in the wind potential in Serbia. They act with the idea that they can commonly recognize obstacles in communication with institutions in order to better deal with same (SEWEA, 2010).

Not all investors have joined this group. Many of them choose to act independently and secure themselves their independent position on the market.

#### The Republic Geodetic Authority – RGA

The RGA is an authority in charge of cadastre affairs. This body regulates the allotment for the project designs. Allotment plans need to be confirmed, including here the Geodetic Survey Benchmarking. Interesting point to be observed here is the expropriation phenomena. The expropriation in Serbia refers to the period after Second World War, when the properties of defeated party were collectivised and nationalised (M. Djordjević, 2009, p. 127). Thus, if property was illegally expropriated from the original owners, for this property to be sold today, restitution and denationalisation of land has to take place. After the collapse of communism, arises the need for returning properties to the original owners (Ibid.). Although having one such a law is necessary to adopt, in order to meet the *Acquis*, this law does not yet exist in Serbia. The process was started by introducing the Law on Restitution of Property to the Church and Religious Communities of 2006 (Off. Gaz. of RS, 2006), but total restitution has not yet occurred. However, when it comes to life, all the property should be return or compensations made to the rightful owners. This creates troublesome situation and long administrative work, which may be a turn off for the investors and is a large barrier for wind power development in Serbia.

#### The Serbia and Montenegro Air Traffic Services Agency

The Air Traffic Agency needs also to approve the feasibility of a designed project of a wind farm, having in mind safety for air traffic. According to the Guide for Investors in Wind Energy, the potential investor submits a request to this Agency in order to obtain the approval for the construction of a wind farm (Lepotic Kovačević & Lazarević, 2010). The Air Traffic Agency needs to find the project safe and fit for its surroundings and submissable to labelling standards for construction of a wind farm. The investor in his request needs to give precise description of the reasons why he is submitting the project for the approval of the agency,

what kind of facility will he be building, on which exact position, of precise height and shape (Lepotic Kovačević & Lazarević, 2010).

#### United States Agency for International Development (USAID)

One of the IGO's that started being seriously interested in making investments into renewable energy possible is the USAID. USAID held many conferences, forums and plenary meetings, supported conducting feasibility studies and guidebooks for investors into renewables. One of their interests has been energy of wind. USAID tries to achieve is to provide assistance to potential investors and project developers for renewable energy, mapping the process of obtaining licences, making it thus more transparent and easy to understand (Gamberale, 2011). The USAID is collaborating with several investors in wind energy, trying to facilitate fulfilment of these projects (Ibid.).

#### The Public Enterprise Electric Grid of Serbia – PE EGS and the Public Enterprise Electric Power Industry of Serbia – PE EPIS

In the energy sector, there are two independent, state owned companies. These are Elektroprivreda Srbije (The Electric Grid of Serbia - EGS) and Elektromreža Srbije (The Electric Power Industry of Serbia - EPIS).

EGS is in charge of energy transmission, also sale, import, export, transit (Government of Serbia, 2011b). Electricity used comes from own supply, of which roughly 2/3 come from coal generation in thermal power plants and about 1/3 from large scale hydro power plants. Very small amount of electricity is imported.

So far, renewable wind energy projects are in pilot plans. The positive impacts of developing these projects will be felt in the coming five years period.

One of the problems that comes out of having the state owned companies that hold a monopoly, or oligopoly, over the market is the phenomena of having 'the price of electricity as a social category'. In practice this means that the low price of energy is not market based, but created based on governmental subventions. Prices are thus low in order to avoid big social disturbances and dissatisfaction, and it is considered that changing them could reflect on the elections, making changes on the political scene (Vučićević, et al., 2010). So far, different governments have been hesitating with introducing changes in this area. Today, Serbia has one of the lowest, if not the lowest price of energy in the region, which is 6 c€ per KWh (Stojadinović, 2011). According to Zoran Sretić, from the Serbian European Integration Office (SEIO), the situation created for Serbia is hard, since now the country is obliged to comply with the EU targets and obligations in the field of energy, but, not being a member state, many of the funds, which are otherwise available to the members, are not opened for Serbia. Thus, the country is struggling in the position of being a country with transitional economics, obliged to comply at the same time with legislation of developed country, without being able to fully use the benefits of EU membership.

So far, in the electricity sector there has been no privatisation. With the under-pricing and failing to represent actual costs, the state companies have been in financial deficit for decades (Stojadinović, 2011). It is expected that in the coming period 'soft' privatisation, with strategic partners, is going to begin, which will bring higher prices, but should potentially reflect real market conditions (Government of Serbia, 2011b). The European Commission sent, in February 2011, a list of additional questions for Serbia. In the Section 15, which refers to Energy a question was raised by the EC what is meant under the term of soft privatisation and

further elaboration of this term is required (EC, 2011). Further clarification of this question indicates that the 'soft' privatisation refers to joint investments of PEs and "strategic partners in the realisation of infrastructural projects" (Government of Serbia, 2011a).

However, at this stage, it seems that the Government of Serbia is still hesitating and balancing between the *Acquis* and the obligation that come from it and the self need for the development. More specific and more viable proofs or transposition of EU legislation are expected if Serbia wants to be successful in the process of Eurointegration (EC, 2011).

### 2.3 Section Summary

Numerous and diverse actors involved in the development of wind energy in Serbia suggest two things. Firstly, number of actors suggests that many institutions, private and public, are interested in this area of work. As a second conclusion, it can be said that this number of actors and their relations indicate complexity of investing in this field and moreover setting the conditions for developing these investments. The following chapter discusses this complexity of realisation of these investments, indicating numerous steps and legal provisions necessary for commencing production of energy coming from wind.

## **3 Wind Power and Energy Policy Framework**

### **3.1 Wind technology**

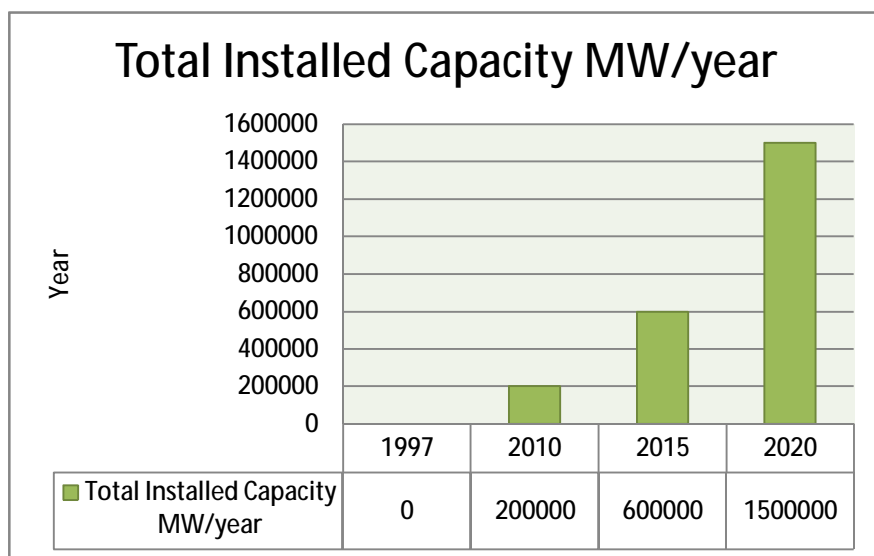
Last decades have experienced a major increase in total amount of electricity produced from wind (Lahtinen & Katančević, 2004). What one wind energy based system needs to test, in is weather a certain configuration of the grid and transmitting installations can support the demands that wind energy creates. Namely, wind energy creates significant variations in the voltage and the electricity sent to the grid. This is why it is vital, for a system to function impeccably, to secure tolerance within a grid for voltage changes. Complying with these demands secures that the wind farm will not pop out of the system if short-circuit or disturbances on the grid occur (Katančević, 2003; Lahtinen & Katančević, 2004). In order to avoid short-circuit a transformer, which connects to the grid is used (Katančević, 2003). Katančević in his work explains that this transformer secures safety of operations. Further, in order to rationalise high costs of transformer, adequate transformers, sized to fit the grid should be used (Ibid., p. 18). In most of the countries, these studies are conducted before the constructions phase (Gamberale, 2011). In Serbia, these tests can be done only after a wind farm is constructed and before starting the energy production phase (Ibid.). This is very problematic from the investor perspective, being that intolerance of the grid creates significant additional expenses. Upcoming legislative reforms need to address this issue.

With constant growth in energy produced from wind, the price of the equipment for producing one windmill becomes lower and thus the total costs of wind energy decrease. This enabled that the cost of electricity produced by wind drastically decrease. Today, the price of electricity from wind comes down to about 7 c€ per kWh of electricity (Besant-Jones et al., 2010). The current price of electricity in Serbia is currently 6 c€ per kWh which makes it one of the cheapest in the region (Stojadinović, 2011). But it is important to stress here, once again, that this price fails to reflect the costs and expenditures of energy production (Government of Serbia, 2011b). Although feared as expensive by many, the price of wind energy is significantly decreasing, making it competitive with other types of energy. For Serbia, this price comparison should be an important roadmap, something that should make stakeholders more eager to get involved in the wind energy production, and governmental bodies more keen on loosening up the procedures for starting the operation of these farms.

The increased investment in wind energy is very much connected to the stimulating legal norms, also the Feed-In Tariffs, which go in favour of renewable energy. Some of them were already discussed here. A very important one is the EU Directive 20009/28/EC, which envisions exact proportion in energy mix that has to come from energy of wind, for each of the Member States (EC, 2009a). Being that Serbia is applying for membership in the EU, these measures are expected to be applied within the Serbian national legislation as well.

The trends in the general EU policy may lead the reader to believe that these measures are favourable for further rational decrease in the price of wind energy. But on the global level, at the moment, it seems as there is not enough support for the development of wind energy (WWEA, 2011). According to the annual report of the World Wind Energy Association (2011), today the investments in the energy of wind have been the lowest since 2004, partially explaining this phenomenon with the consequences of global economic crises, which caught the world out of guard in the ending of the first decade of XXI century.

In spite of the current trend on the global level and policies that fail to reflect the needs of the market development in the wind energy sector, the WWEA, in the same Report, expects that investments in wind energy will continue strong. This organisation depicts a strong interest of investors and many projects that are already in plan to happen (WWEA, 2011). The forecast of WWEA for the period of 2015 - 2020 mostly concerns investments in the emerging markets, such as China, India and Eastern Europe, but also in the Americas (Ibid., p. 18). According to the prognosis of this organisation, the total installed capacity for deployment of wind energy should rise from the existing 200 000 MW in 2010 to about 1.5 million MW by 2020 (Ibid.). *Figure 3-1* reflects these trends and predictions, based on the forecasts from WWEA Report for 2010.



*Figure 3-1 'Total Installed Capacity 2020 Prognosis'*

*Source (WWEA, 2011), adapted*

The WWEA defined in its report 6 major drivers that will further stipulate the development of wind energy. These are prevention of climate change, global trend

in rise in oil prices, environmental damages caused by fossil resources, nuclear disasters, such as the one in Japan, raising awareness on benefits of renewables and energy of the wind and in the end technical improvements which brought down the prices of wind energy and related equipment (WWEA, 2011, p. 17). Still, this organisation sees, as one of the key drivers for further development of wind energy, strengthening institutions and policies by bringing about appropriate legislation, both on national and international level (Ibid.). Although the situation requires additional support of the legislative framework, growing number of policy and decision makers support the development of energy of wind (WWEA, 2011).

On the local level many benefits can be harnessed. Having in mind municipalities, which appear to be one of the key stakeholders to make these investments possible, it is necessary to make these actors aware of potential benefits in participating in these projects which are significant. They range from financial contributions from the investors, completing the spatial and urban plans, capacity rising, to those more subtle benefits – opportunity for a LSU to step out as a leader of regional development - making it thus more attractive for different kinds of investments.

### 3.1.1 Section Summary

The global energy scene reports on significant increase of the energy produced by wind farms. Development of this technology ensures constant decrease of price of energy produced this way, making it compatible on the market. Yet, being that energy prices in Serbia are still a social category, introducing this energy will inevitably lead to higher prices of energy, followed by additional governmental subsidies, to maintain current price levels. On the other hand, the fact is that the price of wind energy is rapidly decreasing. Serbia should thus seriously consider

investing in this type of energy. Among the drivers for these investments are also Feed-In Tariffs given for producing the energy of wind.

To commence the actual operation phase, wind farm needs to be compatible with the existing grid. However, in Serbia, these tests are planned to be conducted only after a wind farm is built. This fact puts investors in challenging situation, being that it can bring unexpected financial burdens. From the perspective of municipalities, one of their primary goals should be to opt for wind energy development. These investments create growth opportunities on the local level and can bring about sustainable regional development.

Climate change and energy trends present additional drivers for development of this energy sector. WWEA expects that by 2020 total amount of the energy produced from wind would reach 1.5 million MW. For this to happen, it is necessary to reinforce institutional capacities and develop adequate policy measures.

### 3.2 National Law and Policy

This section presents a summary of national legislation on energy and elaborates, with more details, law and policy on renewable energy. What should be noted here is that, in Serbia, there is no one single law that regulates the area of renewable energy. The Law on the Renewable Energy Sources (RES) neither exists nor is it planned to be created and adopted in the near future (Stojadinović, 2011). However, guided by the need for reform that come out of the harmonisation and integration processes, the Government is considering adopting a specific law to regulate this field (Government of Serbia, 2011b).

**Figure 3-2 'Review of legislation relevant for starting the operation of a wind farm in Serbia'**

**Source: (Lepotic Kovačević & Lazarević, 2010)**

Relevant Legislation	<ul style="list-style-type: none"><li>- The Energy Law (Official Gazette of RS No. 84/04)</li><li>- The Law on Planning and Construction (Official Gazette of RS No. 72/09 and 81/09)</li><li>- The Law on Environmental Protection (Official Gazette of RS No. 135/04 and 36/09)</li><li>- The Law on Waters (Official Gazette of RS No. 30/10)</li><li>- The Law on Air Traffic (Official Gazette of RS No. 12/98, 5/99, 44/99, 5/00, 70/01)</li><li>- The Law on Concessions (Official Gazette of RS No. 55/03)</li><li>- The Law on Public Enterprises and Activities of Common Interest (Official Gazette of RS No. 25/00, 25/02, 107/05, 108/05)</li><li>- Other relevant laws and by-laws</li></ul>
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The statement of a Governmental official, Mr. Dejan Stojadinović, tries to answer the question on why the law on the RES does not exist. Stojadinović explains that this field is regulated by numerous laws and by-laws (targets, guidelines, action plans), all coming from different Departments and different Ministries, referring to different broader areas. In the interview with Mr. Dejan Stojadinović, in charge of Renewable Resources in the former Ministry of Energy and Mining, Mr. Stojadinović pointed out that at this moment, the position of Government is such that it is considered far too complicated to bring about a completely new law on Renewable Resources. He explained that bringing this law to force would require changing a significant amount of existing laws and by-laws (Stojadinović, 2011).

It is, on the other hand, true that by adopting the primary and the secondary legislation, which concerns RES and its promotion, the Government has indeed set a legal framework for future work in the field of renewable energy (Government of Serbia, 2011b). Still, the Government is hesitating and prolonging making a commitment to some more binding targets. Why this is so will be further discussed within this thesis.



Indecisiveness of the Government creates troublesome situation for companies interested in investing in renewables and energy of wind. This paper will further elaborate on the position of these companies as well as impact of these companies, and their projects, on civil society and potential impact on more global challenges - climate change and poverty reduction.

In 2010, the USAID funded a publication on Construction of wind farms and electricity generation from wind energy in the Republic of Serbia (Lepotic Kovačević & Lazarević, 2010). Prominent energy experts were consulted to make a manual containing all or most of the necessary licences for building a wind farm - guiding investors through procedures and legislation.

This section will try to grasp on most relevant laws in the context of this thesis, relying on the summary of legislative framework provided in the report of Lepotić-Kovačević & Lazarević (2010).

1. The Energy Law: Official Gazette of the Republic of Serbia 84/04; Decree on Incentive Measures for Electricity Generation Using Renewable Energy Sources and for Combined Heat and Power (CHP) Generation; Decree on the Requirements for Obtaining the Status of the Privileged Electric Power Producer and the Criteria for Assessing Fulfilment of these Requirements

The Energy Law of 2004 (Off. Gaz. of RS, 2004a) establishes grounds for the functioning of the energy system of the country and creates the first stimuli for investments into renewable energy. The law places an emphasis on the benefits that potential investors may have if investing in the exploitation of renewable resources, also affirming the need for establishing measures for protecting and preserving the environment. These elements are placed as important goals of energy policy in Serbia. Here is defined, for the first time, the status of the privileged energy producer and drafted the guidelines on how can this status be achieved. The law defines that the status of the privileged energy producer can be obtained in three ways: 1. as a producer that, in the process of producing the energy, uses the renewable energy sources or waste; or 2. produces energy or heat in the small power plants; or 3. this status can finally be given to the producers that produce simultaneously energy and heat, having in mind that the criteria of energy efficiency is met (Ibid.).

Wind energy producers, being that they use renewable source of energy, fall under the first point of the privileged energy producer classification. These producers, after filling in this basic criterion, have to apply for the licence for producing energy under privileged conditions (Off. Gaz. of RS, 2009c) and based on the Decree on Feed-In Tariffs (Off. Gaz. of RS, 2009b). To obtain this licence, the investor in the wind energy has to submit the documentation, according to the legislation, to the Ministry of Energy and Mining. In the recent reconstruction of the Government, from the beginning of 2011, this Ministry has been annulated; The Law on Ministries 16/11, made the Ministry for Infrastructure (and Energy) in charge for the matters of energy (Off. Gaz. of RS, 2011).

The state defined that the energy of wind has the potential of about 1300 MW. The licences are given to the producers for up to 1390 MW. Although the law defines producers of wind energy as the privileged producers, the benefits that they harness from this status are to be defined later in the by-legal documents and institutional reforms (Stojadinović, 2011). However, these documents are lagging behind (Gamberale, 2011; Rogelj, 2011)

The Government brought two important by-legal documents that further regulate on this sphere. One of them is the Decree on obtaining the status of Privileged Energy Producer.

This Decree does define the wind energy producers as the privileged, giving them, now officially, this status (Off. Gaz. of RS, 2009c). The requirements and conditions that define the producers of wind energy as privileged energy producer fall under the legal provisions of the Article 10, point 3 of this Decree:

*“A power plant that produces electric power from renewable energy sources (except for biomass), provided that in the production process the energy value of the used renewable energy sources makes up at least 90% of the total primary energy at an annual level. The supplementary fuels can be certain kinds of fossil fuels or waste”*

The application for the status of privileged producer, under the provisions of this Decree, should be submitted to the Ministry for Infrastructure and Energy (Off. Gaz. of RS, 2009c). The documents to be enclosed are the copies of the energy licence and licence to be connected on the grid, further, full design of the project and the usage permit (Ibid.). From the perspective of investors this means that they must have full design of the project before they know that they can even get other, numerous licences needed to start energy production. Having a full design of wind farm requires project developers to invest serious financial resources in this costly document, not knowing that they will manage to qualify for the privileged producer scheme or even get all required permits.

The Decree on Incentive Measures, on the other sides, regulates harnessing of benefits for the privileged producers. More specifically, this Decree establishes the Feed-In Tariffs for the producers of renewable energy and establishes conditions for remuneration of expenses to the purchasers of the energy produced by the privileged producers. In this case, the purchasers are public enterprises EGS and EPIS. The provisions of this Decree define the conditions for all types of renewable energy, including here the provisions for the production of wind energy (Off. Gaz. of RS, 2009b).

The table here shows the Feed-In Tariffs for Wind Energy expressed in eurocents (c€) per the kWh of energy produced and is the adapted version of table found in the Decree on Incentive Measures (Off. Gaz. of RS, 2009b). For the purpose of comparing the economic incentives given to the wind energy producers, the table also shows incentive measures for other sources of renewable energy.

The author gives two remarks to this table. One concerns the table itself. The table does not represent entire structure for Feed-In Tariffs issued by this Decree. The entries are chosen to present almost all the types of renewables, but not all variations in their Installed Capacities. Namely, some types of energy have a predefined Tariff for the different types of installed capacities. For the purpose of easier comparison, the author encloses here the highest capacities supported, which have the lowest Feed-In Tariffs. Some types of energy, such as solar or wind, are independent from the size of the installed capacity. This, however, does not mean that the Feed-In Tariffs for these energy types are unlimited. Moreover, they are very limited, since, as defined by the Article 5 of this Decree, for wind and solar energy producers, government has defined that only the first comers will get the status of the privileged producers, and only for the first 450MW and first 5MW respectively, of the energy produced (Off. Gaz. of RS, 2009b). Also, the Feed-in Tariff for wind energy is lower than originally planned in the Governmental proposal for regulating this area in Serbia (MME, 2009). Observing this report, it can be noted that the price came down from originally proposed 10.5 c€ to 9.5 c€, which was the final price adopted for wind energy Feed-In Tariffs.

Type of Power Plant	Installed capacity (MW)	Encouraging measures – Feed In Tariff (c€/kWh)
Solar power plants	/	23
Biogas power plants	over 2 MW	12
Biomass power plants	from 5 MW to 10 MW	11.4
Wind power plants	/	9.5
Hydro power plants	2 MW to 10 MW	7.85
Geothermal power plant	/	7.5
Landfill and sewage gas power plants	/	6,7
Hydro power plants on existing structure	2 MW to 10 MW	5.9

*Table 3-1 'Feed-In Tariffs in Serbia'*

*Source (Government of Serbia, 2011b), adapted*

Other remark made here is that, by giving Feed-In Tariffs, and especially by giving different Feed-In Tariffs, the Government clearly marks its priorities and its interest. Thus, it can be noted that there are several energy types, such as solar, biogas or biomass that have higher priority in Serbian energy policy than wind energy. One of the reasons is the security of supply, as defined by MME. Governments believe that the largest potential for Serbia, lies in Biomass and Biogas, while the supply of wind energy is very unstable and undependable, thus questionable when it comes to the issues of energy security.

2. The Law on Planning and Construction: Official Gazette of the Republic of Serbia 72/09 and later amendment to this law: 81/09)

The law on Planning and Construction 72/09 (Off. Gaz. of RS, 2009e) establishes procedures needed for obtaining building permits, which is one of the prerequisites for building a wind farm. What this law has in mind is special care for the environment, sustainable development and more balanced regional development. This law emphasises the need to create conditions for rational use of renewable energy sources and do all measures to prevent from catastrophes. One of the main goals of this law is the enhancement of energy efficiency, following energy standards, which application is a basis for obtaining a certificate. Another obligation that this law envisions is conducting an Environmental Impact Assessment for each project in order to validate that the desired object does not violate any of the environmental norms and standards (Ibid.).

This law is in its essence based on the European Union norms and standards in spatial planning (Off. Gaz. of RS, 2009e). It also aims to create conditions for international cooperation which would hearten the process of European Integrations.

By this law, Local Self-Governing Units (LSU) hold power on issuing building permits, location permits and construction permits. But this power transmits to the state organs in the case that objects exceed power over 10 MW that use renewable resources, exceeds the height of 50 m or is intended to be built in a national park (Ibid.). In these cases, these objects fall under the jurisdiction of Ministry of the Environment and Spatial Planning (Lepotic Kovačević & Lazarević, 2010; Off. Gaz. of RS, 2009e, Art. 133).

Interestingly enough, these laws envision that, with the exception of aforementioned cases, all these permits fall under the jurisdiction of LSU. These laws further envision that LSU have to be the ones to create conditions for issuing the permits. To be able to issue a permit, an LSU has to have a detailed spatial plan, which should map the road of desired development of municipality, including here a SWOT analysis on current state of the local unit, detailed plans on urban and agricultural zones, mapping traffic routes, communal infrastructure, having in mind regional and cross border issues, conducting an EIA. This all further LSU has to compare and match to surrounding municipalities, region and republic cadastres and plans (Off. Gaz. of RS, 2009a; 2009e, Art. 19 & 20). The question of LSU's struggle with financial and human capacities for bringing these plans to reality and to comply with these targets will be discussed in a separate section of this paper.

3. The Law on Environmental Protection (Official Gazette of the Republic of Serbia 135/04 and later amendment to this law: 36/09, also Law on the Protection of the Environment from the Noise Pollution 36/09)

The laws passed in this area reaffirm and re-establish some long term goals towards sustainable development and cleaner technologies. Thus this area is strongly connected to the field of investing into energy of wind, being that this technology is one of the cleanest known technologies and can contribute to targets for emission reductions, which will be discussed in the following section of this paper – relationship of Serbian legislation and the *Acquis Communautaire* (the total body of the EU legislation).

The law on the Environmental Protection 135/04 firstly establishes duties of managing natural goods of the country, which are, according to this law, shared among autonomous region (AR) if there is such and LSU (Off. Gaz. of RS, 2004b). Although AR and LSU are the ones that manage the spatial plans and use of natural goods, according to the Article 36 of the same law, the Ministry in charge, in this case the Ministry of the Environment and Spatial Planning, is the one that gives an 'Opinion' on the use of these goods and the environmental impact of a certain project (Off. Gaz. of RS, 2004b; USAID, 2010). Without having the 'Opinion' construction cannot be proceeded with. For investor this requires in this stage significant investments. In order to apply for the 'Opinion', project developer needs to present preliminary design of a wind farm and its main characteristics. This presents a major expense for the investors (USAID, 2010).

This law further defines that activities that take place in the area where protected natural goods are, have to be prohibited (Off. Gaz. of RS, 2004b). This means that every project that intends to run on one such a territory has to prove that does not breach the natural balance and capacity of the ecosystems, that it does not put in danger the biodiversity, particularly emphasizing on the importance of preserving forests, flora and fauna – animal species and their communities (Ibid.). The law goes further, stating that a project must not jeopardize the cultural values and the values of landscape and scenery (Ibid.). These paragraphs of the law 135/04 suggest a potential issues regarding the construction of wind farms, being that many international movements, like EPAW (European Platform Against Windfarms) are established with the purpose to demonstrate the greatness of the negative effects (EPAW, 2011). EPAW

(2011) argues that wind farms have negative impact on the animal species living around the wind farms, particularly birds and bats. The current interests of this organisation are consequences that wind farms might create for some landmarks, such as Mont Saint Michel in France, a part of UNESCO protected heritage (EPAW, 2011). Further, it is argued by this organisation that wind farms actually destroy natural scenery and violate traditional cultural values. Following these concerns and legal provisions, the Agency for Nature Conservation went as far as claiming that in Serbia there are no adequate locations for building these wind farms (Gamberale, 2011). Other organisations and studies, such as United States Department for Energy, might argue with findings of EPAW, pointing out all the benefits of this type of energy, such as energy security or better quality of air (NREL, 2005).

The Article 31 of the Law on the Environmental Protection raises the question of noise and vibrations (Off. Gaz. of RS, 2004b). The provisions of this article imply that the source of noise needs to be constrained. Noise has to be kept on the minimal levels and this section can also be applied on the wind farms, having in mind constant vibrations that they produce (EPAW, 2011).

This law further envisions the need for urban and spatial plans for every LSU before any project can be even started (Off. Gaz. of RS, 2004b). This is very interesting point and it turned out to be one of the most serious obstacles for building wind farms. Namely, according to the guide for investors in wind energy "Construction of wind farms and electricity generation from wind energy in the Republic of Serbia", not having municipal plans became one of the largest obstacles for investors in this type of energy (USAID, 2010). These plans should clarify issues such as land use, types of investments allowed, but most of the municipalities do not yet have these plans. For example, in AR Vojvodina, which is of the main interest for investors in wind energy due to favourable wind conditions, only 15 out of 45 municipalities have these plans. Although, according to the US Ambassador in Serbia, Mary Warlick, potential investments into wind energy in Serbia could go to about 1.5 billion €, problems, such as lack of municipal spatial plans and hinge on legislative reforms are a major obstacle on this way (USAID, 2010).

Further, the technology used has to meet the ISO 14001<sup>3</sup> standards as well as the standards of the EU in this regard (Off. Gaz. of RS, 2004b). The technology has to fulfil the standards of the environmental protection and product quality and in the case that it is being imported it has to be accredited for use in the country exporter (Off. Gaz. of RS, 2004b, 2009d).

At the same time, 2004, the Government adopted another law on the Strategic Assessment of Impact on the Environment 135/04 (Off. Gaz. of RS, 2004b). The Article 5 of this law deals with the matters of energy and investors in this field, marking them as submissable to the Strategic Environmental Impact Assessment by the authority. This Strategic EIA is to be conducted by the LSU or by the Ministry in the case of larger projects (Ibid.).

Another law that is important to mention here is the law on the Protection of the Air 36/09. This law envisions adopting instruments for long term planning of protection of air (Off. Gaz. of RS, 2009g). One of the most important instruments this law introduces in the National Program for gradual decrease of maximal annual emissions of pollutants (Ibid.). This National Program should bring about standardisation and harmonisation in determining and calculating total emissions of pollutants in Serbia, setting targets for the national maximal annual

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<sup>3</sup> ISO 14001 is a standard for accessing environmental management in organisation, providing guidelines and setting out the requirements. ISO 14001 is a part of ISO 14000 family, which aims at minimising negative consequences of activities that could harm the environment (ISO, 2011).

emissions of polluting matters and substances. Based on this law, it can be observed that producers of electricity that use renewable resources and have no emissions, such as the wind energy, should be favoured among other producers. This is also reaffirmed in the Law on Energy (Off. Gaz. of RS, 2004a) that gives to these producers the status of privileged energy producers. The emission targets have not yet been consolidated, but their compiling and publishing can further encourage the development of the wind energy in Serbia simply by pointing out greater need for emission reductions and cleaner technology development. For example, production of 1000 MW of energy from wind farms would contribute to emission reductions of 2.7 million tonnes (MT) of CO<sub>2</sub> (Gamberale, 2010a). According to the same report of Gamberale (2010a), the current 4000 MW of energy produced by the thermal power plants, based on coal and oil, produce 24.9 MT of CO<sub>2</sub>. By supplementing a quarter of energy produced in thermal plants, emission reductions would thus decrease in 10%.

The Law on the Protection of the Environment from the Noise Pollution 36/09 prescribes the marginal levels of noise pollution, but also requires of AR, LSU and project planners to have spatial, urban and acoustic plans, provide plans for sound isolation and protection and work within these margins (Off. Gaz. of RS, 2009f). Also, a project needs to have an impact assessment on the environment and on the humans (Ibid.). This law is based on the international standards and the *Aquis*, specifically refereeing to Directive 2002/49/EC<sup>4</sup> of the European Council and the European Parliament. This Directive proposes the criteria for the assessment of environmental noise and it proposes strategies for noise management (EC, 2002). According to Serbian Environmental Protection Agency (SEPA) in Serbia, the phase of the consolidation of the measuring of noise pollution is still undergoing (Živković et al., 2010). SEPA's Report on the state of the environment for 2009 informs that specific goals have not yet been implemented. The same report indicates that the work has been done on creating strategic noise maps, which are mandatory for all higher populated areas, with over 100 000 inhabitants. SEPA is working on designing these maps (Ibid.).

#### 4. The Law on Waters (Official Gazette of the Republic of Serbia 30/10)

In order to obtain Operating Permit for constructing an object on the territory of LSU, a Water Permit must be obtained first. According to the national legislation, an object such as windmill needs to acquire a permit that proves it will not harm water bed, stream of river, complementing to a broader need for conducting and EIA (Off. Gaz. of RS, 2010).

#### 5. The Law on Air Traffic (Official Gazette of the Republic of Serbia 12/98 and later amendments to this law: 5/99, 44/99, 5/00, 70/01)

Further steps for acquiring a Construction Permit for building a wind farm are connected to the legal provisions of use of air space of Serbia. Being that a wind farm uses the air space and that its inadequate physical characteristics can be a risk for the air traffic, according to the Law on Air Traffic, for constructing an object, such as wind farm, it is necessary to have the Wind Farm submitted for labelling (Off. Gaz. of RS, 1998).

To have a wind farm labelled, the investor must submit an application to the Serbia Air Traffic Service Agency. The labelling is necessary in order to confirm the safety of the proposed project operations. This is why, within this step, the project has to be explained with details, giving exact height, shape and location (Lepotic Kovačević & Lazarević, 2010).

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<sup>4</sup> Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise (EC, 2002)

## 6. The Law on Concessions (Official Gazette of the Republic of Serbia 55/03)

This law regulates the use of natural goods that, by definition, belong to RS (Off. Gaz. of RS, 2003). The subjects of the concession process are defined in the Article 5 of this law. Obtaining a Concession is necessary for any subject that intends to "build, maintain and use the energy and other objects for the purpose of producing, storing, transmitting and distributing electric energy or heat including here their reconstruction, modernisation, maintaining and use." (Off. Gaz. of RS, 2003). The Concession can be given for the period up to 30 years (Ibid., Art. 6) and passed on the public tender, according to the Article 11 of the same law.

## 7. The Law on Public Enterprises and Activities of Common Interest (Official Gazette of the Republic of Serbia 25/00 and later amendments to this law: 25/02, 107/05 and 108/05)

Building a wind farm also falls under the legitimacy of the Laws on the protection of public interest. According to Law 25/00 production, transmission and distribution of electric energy producing, storing, transmitting and distributing electric energy y falls under the provisions of the public interest (Off. Gaz. of RS, 2000). This is also an issue of strategic importance for Serbia (Ibid.).

These laws establish that the companies that work with public goods gain the status of a Public Enterprise and draw their obligations further from this relation (Off. Gaz. of RS, 2000), which influences the position of wind energy investors.

In order to obtain the licence to use the goods of public interest a company must provide certificates on standards used, such as technical equipment, human resources, labour protection and environmental protection. To be able to start the operations, the investor must have a contract with the government and LSU, which have to give their approval for the business plan, the company's statute, pricing tariffs, the plan of exploiting or use of public good. This contract regulates rights and duties of the both sides (Off. Gaz. of RS, 2000).

### 3.2.1 Section Summary

This section gave an overview of the main legal norms in the national legislation of Serbia that influence investors and wind project developers. Complexity, numerosity and occasional contradiction of acts, found when compared different legal acts, reveals the problems investors face in the given environment.

The following section gives an overview of the EU legislation and the impact it has on the forming of legal norms in Serbia, as a country that aspires for status of candidate country to the European Union.

### 3.3 *Acquis Communautaire* on Energy and Renewable Energy of Wind

Serbia has listed as a primary goal of its diplomacy obtaining the status of candidate country to join the EU (Bošković, 2005). On that road, numerous changes are to be made, mostly concerning the legal system, justice and fairness. A part of this road is adopting *Acquis Communautaire* and creating an action plan for its implementation.

*Acquis Communautaire* is the total body of the European Union law, applied in the EU member states. *Acquis* consists of numerous legal documents, such as Treaties, Directives, Regulations,

verdicts of the European Court of Justice. Each year, another 15 000 of new legal documents are added to this body. This law holds primacy over national laws of Member States. This law can also be divided into different sections, which refer to different areas of activities, such as agriculture, internal market, energy, environment, etc (EUabc, 2011; Eurofound, 2011).

It is required of any country desiring to enter the Community to adopt this body of law, adapting to it also their administrative and institutional capacities. The progress made is measured in screenings, different for every chapter, evaluated until the negotiation process is closed (O. f. E. I. SEIO, 2011).

To obtain the status of the candidate country to the EU, country has to pass several stages of accession. The process starts with filing the applications to the European Council. If Council accepts the application, it further asks for the opinion from the European Commission. In order to give its opinion, the European Commission sends a Questionnaire to the country, asking about the reforms and progress made. After getting back the filled Questioner, Commission may ask additional questions and then gives an Opinion (Avis) and sends it back to the Council. Council gives the status of the candidate. But still further, potentially long, phases in negotiations remain to become a full member (O. f. E. I. SEIO, 2011).

Serbia is currently working on finalising communication regarding the Questioner of the European Commission, which was submitted by the end of January 2011. Additional Questions from the EC and Answers to them followed. Further stages of negotiation process are expected to begin.

The energy *Acquis* has several focus points, amongst which the need for achieving energy independency of the Community and increase security of supply, but also complying with the Kyoto Protocol targets of reduction of 12% of Green House Gasses by 2012 and plans that go beyond these obligations – 20% reductions by 2020 (EC, 2006).

The EU had seen a great chance in investing in renewable resources, not only on the side of energy *per se* but also as a chance for economic growth and employment. Investing in this type of energy is sought to bring greater social cohesion on the local and regional scale, empowering small scale producers and improving their financial perspectives (EC, 2009a).

The main goals of the government at this moment are to understand directives, to understand how do they relate to the practical situation in the field of energy and to determine what are the possibilities, financial projections and to determine its own position (Sretić, 2010).

Thus, the provisions of *Acquis* set of legal standards on renewable energy and to be able to comply with the legal obligations that come out of EU negotiations process, Serbia is due to increase its share of renewable energy, since EU has introduced binding targets on this type of energy for member states (Stojadinović, 2011). The most viable scenarios for Serbia are the increased investments in biomass, geothermal, small HPP and energy of wind (MME, 2010c). This paper forces on renewable energy of wind, since the projects in this area have come to the attention of the investors; they are already announced to start happening.

According to a directive of the EU, 2009/28/EC, each member state must come up with the legislative framework on renewable energy, creating sets of targets which are to be reached by 2020. This directive states that the main goal of the targets setting is to provide certainty for investors but also to encourage research and development of technologies in this field. These targets are different for each member state. The total goal of the EU is 20% reduction by 2020, but is to be achieved by member states according to their GDP (EC, 2009a).



To be a part of the Community, a country needs to be well advanced in the application of the *Acquis*. Serbia is in the process of transcribing the energy *Acquis*, also in the process of trying to establish potential obligations that would come out of the membership in the Union (Sretić, 2010).

This paper discusses wind energy projects, as projects that are already planned to happen in Serbia, with already known investors and bidders. However, this is one among numerous existing types of renewables, that all have share in future national targets for renewable resources. For calculating the contribution of wind energy in the total share or renewable, the so called normalisation rule is used (EC, 2009b).

The *Figure 3-3* shows the formula according to which a country can calculate its own share in renewable energy with targets for wind. This gives clear perspectives on seeing ones positions and comparing them against EU set of targets. According to the directive 2009/28/EC, accounting electricity generated from wind power is calculated according to formula shown on *Figure 3-3*, to obtain figures on normalized electricity generated in specific country in all wind farms ( $Q_{N(norm)}$ ) in a reference year (N) (EC, 2009b).

*Figure 3-3 'Normalisation rule for accounting electricity produced from wind'*

*Source:(EC, 2009b)*

$$Q_{N(norm)} = \frac{C_N + C_{N-1}}{2} \times \frac{\sum_{i=N-n}^N Q1}{\sum_{j=N-n}^N \left( \frac{C_j + C_{j-1}}{2} \right)}$$

It is believed that Serbia holds a great potential in production of renewable energy (Stojadinović, 2011). Nevertheless, a progress in the field of energy efficiency and renewable energy has been very small (EC, 2009c). So far,

Serbian authorities hesitate with starting these calculations and until now they have been based on estimations of certain agencies.

Based on existing analysis, energetic potential of wind production in Serbia is estimated to about 1300MW. Total needs of the country are estimated today to about 4000MW (MME, 2010c). Studies on this potential are currently been done. Currently, energy prices are not favourable for this type of energy, making it costly in comparison with other types. Although *Acquis* is supportive to feed-in tariffs and tax reductions for privileged producers, which is also supported in Serbian law, sublegal documents are lagging behind (B92, 2010; Sretić, 2010). Still, the companies interested in this particular energy source are willing to invest (Rogelj, 2011).

It is suggested that other sources of renewables, such as biomass and geothermal energy present much greater potential for the country (A. Kovačević, 2010). However, wind energy holds its share in the renewables pie (IEA, 2008), with the potential of supplementing 10-15% of total energy needs of the country (Gamberale, 2011), making it thus not negligible potential. Additionally, Gamberalre (2011) argues that Serbia's biomass potential is largely overestimated, accounting for unsustainable use of potential resources, which could account for this type of energy.

By ratifying the aforementioned Treaty of establishing the Energy Community, Serbia obliged itself to accelerate the development of the use of renewable energy and promote electricity

produced this way (Stojadinović, 2011). This also binds Serbia to implement the *Acquis* on energy, environment and renewables (Ibid.). The country should also come up with the plan of implementation, which should be provided to the European Commission, no later than one year after the law has entered into force (Lepotic Kovačević & Lazarević, 2010). Under this law, country should be able to describe the diversity of supply of its electricity, meaning presenting clear picture on types of energies produced and their shares. Also, by signing this treaty, Serbia has accepted to participate in all aspects of Energy Community, with the proportional input of 0.7% of total Community budget (Ibid.).

Another important agreement that Serbia has ratified with the EU is Stabilization and Association Agreement (SAA). This agreement further binds Serbia to the provisions of the *Acquis* (Lepotic Kovačević & Lazarević, 2010).

### 3.3.1 The Questionnaire

This section of the paper should further elaborate on the commitments Serbia took in the process of EU integration. Under the term “The Questionnaire” here are meant the Questions that the European Commission has sent to Serbia, in December 2010. Under the term “The Answers”, the author refers to the Answers that the Government of Serbia presented to the European Commission in the response to the Questionnaire. The Answers were, prior to submission to the EC, available for a public debate. Finally, in January 31, 2011 these Answers have been submitted back to the Commission and made available, in complete, for public (O. f. E. I. SEIO, 2011).

The Questionnaire is an EU insight into state of Serbian legislation, and the Answers were composed to a document of over 8 000 pages (O. f. E. I. SEIO, 2011). What this thesis observes is the section that refers to the Energy legislation of the Republic, an integrated document of 170 pages, reflecting the energy scene in Serbia. The answers presented to the EC and the public will be discussed here.

The questions of the EC inquired about the energy mix of Serbia and about the possible stimulating measures for development of renewable energy sources (Government of Serbia, 2011b). Among other questions, ministry in charge, MME, had to present a plan for development of renewable energy (Government of Serbia, 2011b). The table below focuses on the energy of wind and its potential future targets, expressed in 1000 tonnes of energy (toe). Figures for oil, gas and coal and their predicted production up until 2015 is also presented in this adapted table. They are given in the *Table 3-2* since they represent the major part of energy scheme in Serbia and thus, for comparison, their numbers might be interesting at this point.

As presented in the *Table 3-2*, it can be noted that in 2008 and in fact until April 2011, there has been zero energy produced from the wind power plants (Government of Serbia, 2011b; "Puštena u rad prva vetrenjača [The first wind mill started operating]," 2011).

This table also suggests that in one year period from today, from zero there will be 200 toe of wind energy produced, until 2015, as predicted by the specified targets within the table enclosed (Government of Serbia, 2011b). The Questionnaire also indicates that the forecasts, which include data after 2015 are not yet available (Ibid.). Based on the current Development Strategy for the Energy Sector in Serbia, forecasts are made only until 2015 and thus, within this strategy, no further forecasts are possible (Ibid.). There is a plan for bringing about a new Energy Sector Development Strategy of the RS. This strategy should provide data and predictions that could cast a light on the period up until 2030. According to the Answers to the Questionnaire (2011), this strategy should come to life during the current year, 2011, but so far no date for bringing about this strategy has been specified (Government of Serbia,

2011b; Stojadinović, 2011). It is stated further, in the response to the EC, that the entire sector of renewable energy is a novel field in Serbia, just starting to develop (Government of Serbia, 2011b). The incentive measures that support investing in this field started being effective only as of January 2010 (Ibid). What is noted in the Report of the Energy Community (Energy Community Secretariat, 2010), the correlation between the Feed-In Tariffs that Serbia adopted and the contracts made with prospective investors are very problematic. Namely, the contracts for producing electricity are given for the period of 12 years. On the other side, the newly adopted Feed-In Tariffs, which, as stated earlier, came to effectiveness in January 2010, will be valid only until 2012. In 2012 new package of Feed-In Tariffs will be adopted, but they will not apply for the earlier signed contracts (Energy Community Secretariat, 2010).

000 toe	2008	2012	2015
Wind	0	180	200
Oil	660	1000	1000
Gas	201	400	400
Coal	7369	8480	8480

*Table 3-2 'Energy Scheme in Serbia'*

*Source: (Government of Serbia, 2011b)*

Driven by many factors, of which important part play EC Directives and Regulations, the new energy strategy is expected to give a stronger push to the renewable energy sources (Government of Serbia, 2011b). Interestingly, as the first windmill started operating in April 2011, it can be concluded that the contracting parties will have, at most, only 7 months for benefiting from the existing Feed-In Tariffs. It is yet unknown how will the new tariffs affect existing players.

Another interesting question that arouse from the EC Questionnaire is the one on energy pricing. Namely, EC wanders weather current energy prices reflect the real costs of energy (Government of Serbia, 2011b). The MME, in charge for filling in the section on Energy, explains in the Answers that the prices for the eligible customers are free and pre-determined by the contract concluded between supplier and the customer (Ibid.). The same document suggests that the energy prices for the final (tariff) consumers are fixed, not guided by market and based on the Government approval. Here is interesting to quote on the sentence from the Answers to the Questionnaire: "the prices of energy for eligible customers would fully cover justified operational costs if the existing energy prices would be in line with this methodology" (Government of Serbia, 2011b). This, in fact, confirms that energy prices in Serbia are still a social category, a tool that every Government, for the last 20 years at least, has been using to keep the power and maintain the stability as a 'social peace-keeping factor' (Vučićević, et al., 2010, p. 14). In the Answers to the Questionnaire it is further stated that the electricity pricing for tariff customers stays far below the level that reflects the actual costs of operating and depreciation, let alone to provide a solid profit. Without having an adequate and cost-reflective price levels, it is very hard for the public enterprises to ensure the sustainability and security of energy supply for the long runs (Government of Serbia, 2011b).

Privatisation of the two public enterprises - PE EPIS and PE EGS - could potentially bring a greater relieve to this sector. The privatisation of these enterprises would help forming the energy prices in the market based way. This would result in higher prices and thus connected potential social disturbances, but it is in this authors believe that at least partial market based forming of prices is required in order to enable spending from the state budget to be used in a more productive and effective way, which would stimulate the development of trade and energy trade on the foreign markets.

However, according to the Answers, privatisation of the two PEs has not been initiated so far. In the Answers it is further stated that the potential privatisation needs to be 'soft', done in the cooperation with well selected strategic partners. Government is expressing an interest for this kind of privatisation and it could come to effective in recent future (Government of Serbia, 2011b).

As its priorities in the sphere of energy, MME has stated three targets: 1. Increasing energy efficiency; 2. Increasing the use of RES, and 3. Shifting electricity industry from guided to market based (Government of Serbia, 2011b). What can be noted here is that already the second position on this priority list takes RES. MME list intensifying the use of RES by 2015 as one of its priorities, when it comes to energy policy. In this scenario, the RES should rise to come to 2% of total electricity available and consumed (Government of Serbia, 2011b).

The new National Renewable Energy Action plan is expected to be brought during this year. The new NREA should contain plans for energy scene up till 2020. It is expected that this Plan continues harmonisation with the *Acquis* in the sphere of Energy, more specifically to focus on the provisions of the Directive 2009/28/EC, which is the Directive on Renewable Energy Sources (Government of Serbia, 2011b).

### 3.3.2 Section Summary

In the strive for obtaining status of the candidate country to the EU, Serbia is obliged to transpose its legal body – the *Acquis Communautaire* – to its own legal system. This section of the thesis focused on the *Acquis* on Renewable Energy and mostly on the provisions of 2009/28/EC Directive on renewables. This directive reaffirms the commitment of the EU to the Kyoto targets of 20% emission reduction by 2020, but also to resolving the question of security of supply in the energy sector. Serbia, on its Eurointegration path needs to find adequate model for fulfilling these commitments.

Potential of Serbia in the sector of renewables is significant and could supplement large amounts of imported oil and non-renewable resources. However, the government, due to the political reasons and social concerns hesitates in setting out stronger commitment to development of renewables. Potential of wind energy should not be neglected. If developed, this sector could supplement for c.a. 15% of total energy consumed in the country. However, existing Feed-In Tariffs and process of licensing prevent wind investments from becoming more competitive source of energy.

In the Answers to the Questionnaire of the EC, governmental officials in Serbia claim that by 2020, Serbia will have 200 toe produced, compared to 0 toes in 2010. The same sources express their fear from establishing renewables as a significant source of energy production. This fear comes mostly from the price change expectations, which could jeopardise social and political stability of the country.

Further on, the field of Feed-In Tariffs is not clearly regulated. Investors are uncertain of their position when it comes to this type of support. More elaborated statements on development

of Feed-In Tariffs, after the first contracting period, which expire in 2012, have to be provided.

Another problem for investing in wind energy is the monopoly on the PE EGS. Concerned for prices of energy, this public enterprise, guided by governmental policy, creates barriers for investment in renewable energy. The liberalisation of the energy market should offer better opportunities for investing in alternative sources of energy.

It would be good if the further development of this sector would be covered in some future researches.

### 3.4 Serbia and the Energy Community

So far, Serbia has ratified the Treaty of Establishing the Energy Community, which obliged the country to accelerate the development of the use of renewable energy and promote electricity produced this way. This also binds Serbia to implement the *Acquis* on energy, environment and renewables. The country should also come up with the plan of implementation, which should be provided to the European Commission, no later than one year after the law has entered into force. Under this law, country should be able to describe the diversity of supply of its electricity, meaning presenting clear picture on types of energies produced and their shares. Also, by signing this treaty, Serbia has accepted to participate in all aspects of Energy Community, with the proportional input of 0.7% of total Community budget (Lepotic Kovačević & Lazarević, 2010).

It is within the Energy Community that the first strategies for implementing EU Directive 2009/28/EC started to be discussed. The Energy Community initiated, in 2009, a study of implications for the non-EU members of the Energy Community, connected to the implementation of the new directive on RES (Government of Serbia, 2011b).

The Energy Community is making reports on progress on regular basis and informing the European Commission on the status of application of provisions of the *Acquis*. It evaluates the changes made based on the Reports that Governments of Contracting Parties submit, but also by sending supervisors that follow the implementation of new measures. Thus, the Energy Community, in one of its Reports states that only a few Contracting Parties have introduced in their national legislation the indicative targets. Out of nine Contracting Parties, only Serbia, Croatia and UNMIK have implemented these targets in their systems (Energy Community Secretariat, 2010).

The Energy Community, in its report of 2009 had also made an observation about the energy pricing within the community (IPA Energy + Water Economics, 2009). The findings of the report go in line with the definition of Serbian energy pricing as a social category. Serbia has, according to the report of the Energy Community, the lowest average tariff for the electricity consumption. This retail price for the consumers, notes the Energy Community report, is the lowest in the region even though these tariffs have seen the largest regional increases percentagewise, of a 65% from 2005 to 2008 (IPA Energy + Water Economics, 2009).

Further, in 2009, the Energy Community has established the Renewable Energy Task Force (Hodson, 2010). The Task Force follows the processes of adaptation to the new Directive on Renewable Energy 2009/28/EC of Contracted Parties. According to the Report of Hodson (2010), the chairman of the abovementioned Task Force and the member of the European Commission, this Task Force conducted a study on the state of measures applied within the Parties and based on that study calculated future binding targets for each of the countries. The methodology applied was the same one used for the EU Member States, which was elaborated

in the Renewable Energy Directive. This also brings about binding targets for the energy of wind, as expressed in the section 3.2. of this paper. What remains is that this directive is transposed to Serbian legislation, so that the provisions regarding wind energy production become mandatory.

### **3.4.1 Section Summary**

The Energy Community presents a significant international factor which shapes the energy policy not only of the European Union, but also of potential member states to this community, which are members of this organisation. This organisation oversees the implementation of the energy *Acquis* and strives for harmonisation of the energy market of its members. This is done by sending supervisors and filing reports on the state of implementation. One of the reports this organisation created, informs on the electricity consumption tariffs, noting Serbia holds the lowest tariffs in the region. While pushing for further reforms, the Energy Community awaits for Serbia to transpose the EU Directive on the Renewables. This will ensure that the wind energy gets mandatory targets, what will stipulate the development of this sector.

## **4 Serbia and Kyoto Protocol: CDM for Wind Energy**

With regards to Kyoto Protocol, in 2007, Serbia has signed and ratified the Kyoto Protocol, as a non Annex I country and in has entered into force January 17<sup>th</sup> 2008 (Government of Serbia, 2011b; Vučićević, et al., 2010). Further in this direction, in 2010, Serbia joined the United Nations Framework Convention on Climate Change (UNFCCC). However, joining this Convention created no binding targets for CO<sub>2</sub> and GHG emission reductions, for the time being (Vučićević, et al., 2010). Based on its status and with regards to the protocol and the Convention, Serbia only qualifies for participating in the CDM projects. According to the Answers, submitted to the EC and with regards to Kyoto Protocol obligations, this status prevents Serbia for applying for projects of Joint Implementation (JI) or Emission Trading (ET) (Government of Serbia, 2011b).

CDM (Clean Development Mechanism) is a mechanism established under the Kyoto Protocol, which aims at encouraging introduction of measures to fight the climate change, by reduction of GHG emissions and promotion of sustainable development (Mundaca & Rodhe, 2005). The CDM projects give an opportunity to developed countries, Annex I countries, to realize project in Non-Annex I countries, which are both cost effective and provide reductions in GHGs (Ibid.). First benefit from realising their investments and the latter benefit by environmentally favourable solution that brings also social and economic benefits. By contributing to emission reductions, project developer can certified emission reduction (CER) credits (UNFCCC, 2011a). UNFCCC (2011), under the Kyoto Protocol, defined that each CER credit equals one tone of CO<sub>2</sub>. These credits can later on be traded, sold or used by the industrialised country to meet their Kyoto emission reduction targets (Ibid.).

To be able to qualify for the CDM scheme, a project needs to be voluntary for all parties involved; it needs to bring long term benefits regarding the climate change and global warming; finally the project needs to be additional (UNFCCC, 2001). The additionality is defined as anything that brings about lower emissions, which would not be accomplished without this CDM (additional) project (Ibid., p. 16). Additionality, further defined, can deal with investment constrains, technological obstacle, policy framework or other constrains (Mundaca & Rodhe, 2005). In their study, Mundaca and Rodhe (2005) add that in order to assure a successful implementation of a CDM project, host countries need to strategically and systematically work on strengthening institutional and human capacities, policies and instruments, in the public as well as the private sector.

While the connection of wind energy with climate change or global warming will be discussed in the following sections, it is worthwhile here to touch upon the problem of additionality. For a project to be additional it means that it must go beyond any target that is already set as mandatory. In Serbia, the wind target is determined by the aforementioned normalisation rule. This rule results in specific targets for wind energy in order to meet EU norm 20-20-20. How will then wind projects be able to prove additionality? Firstly, these targets are binding for Member States (and potential members), meaning that they are not mandatory for private sector. Private sector will invest in this type of energy only if it is economically feasible. This means that the return of investment in wind has to be comparable to the conventional means of energy production in the country – such as fossil fuels – which are additionally subsidised by the government and not reflect actual market prices (Government of Serbia, 2011b). Thus to make wind attractive, these investments will require additional funding through generation of carbon credits through CDM, especially having in mind the cap that the government placed on the subsidies for renewables – for the first 450MW of wind energy produced (B92, 2010).

Having in mind Kyoto protocol and CDM scheme, position of Serbia differs from the positions of the Member States of the European Union. Namely, EU Member States are listed as Annex I countries, while Serbia is not. Thus, the obligations of the EU and Serbia draw upon different strategies. EU being Annex I party to the protocol has a binding commitment of 12% reduction of its emissions by 2012, setting, as previously discussed its targets even further.

Thus, in the field of energy, several obligations came with these agreements. Maybe most interesting is to observe the state of energy in Serbia and the consequences that come out of the application process to the EU in the context of the Kyoto Protocol. Still, being a non Annex I country gives *per se* opportunities for development, since it disregards problem of climate change, disfavouring it in this stage when compared to development.

Obligations of EU as a develop country under Kyoto are 12% reductions by 2012. Further strengthened in *Acquis*, these obligations came to the figure of 20% reductions by 2020.

Non Annex I countries are so far left without mandatory targets in their GHG reductions. Republic of Serbia is one of these countries. Serbia has ratified UNFCCC in 2007, but has not signed the Kyoto Protocol. This has stopped Serbia to access some of the mechanisms that could be used to prevent or decrease GHG emissions (Lazić & Marušić 2007).

This puts government of Serbia in unenviable situation. While aiming for EU membership, Serbia is adopting a legal body of a developed country, while still being in the economic transition. According to Zoran Sretić, current wish of the government is to try to preserve the *status quo* as long as possible (2010). This tendency, emphasized Sretić, is not matchable with the membership in the EU and with the *Acquis*. In “The First National Communication of Serbia” it is stated that Serbia is ready to lower its growth from 29% to 18% compared with business as usual scenario by 2020, thus being a part of strategy for the Eurointegration (Vučićević, et al., 2010). The question here is whether this scenario is something reasonable and feasible at this stage, and if the parameters are set rationally? This is especially important having in mind that energy pricing is, at this stage in Serbia, still a social category, emphasises Sretić (2010). This means that low price of energy is not market based, but created based on governmental subventions. Prices are thus low in order to avoid big social disturbances and dissatisfaction, and it is considered that changing them could reflect on the elections, making changes on the political scene. So far, different governments have been hesitating with introducing changes in this area. According to Sretić (2010), the situation created for Serbia is hard, since now the country is obliged to comply with the obligations in the field of energy, but, not being a member state, many of the funds, which are otherwise available to the members, are not opened for Serbia. Thus, the country is struggling in the position of being developing country with legislation of developed country, without being able to fully use the benefits of EU membership.

At this stage, Serbia is balancing between *Acquis* and the obligation that come from it and the self need for the development.

However, having in mind the existing opportunities that arise from the Kyoto Protocol, Serbia developed “Criteria of Sustainable Development and Table of National CDM Indicators”, a document specifically adapted to the needs of development in the country and in accordance with the countries social, economic and environmental conditions (Government of Serbia, 2010).



So far no projects of wind energy have been approved for the CDM scheme. Most of the successful projects target biomass or the small hydropower plants. This could potentially be a great opportunity for the wind farms as well and something that actors involved in wind energy should definitely consider.

To qualify for the CDM scheme, a project needs to match the criteria of sustainable development. In Serbia, these projects are graded through the specific indicators developed for this purpose. The following section contains the analysis of these criteria and will explore their potential to be applied for the wind projects.

## 4.1 Testing the Criteria

Three groups of criteria, which DNA Serbia created to test the potential of a project to qualify as a CDM project, are tested. For a windmill project to qualify as a CDM project, it needs to be benchmarked against social, economic and environmental criteria. In general, these criteria, in accordance with Kyoto Protocol, test potentials of a project to help solving problems of climate change and global challenges, such as gender equality, poverty reduction, employment, energy use, waste management. Additionally, the project does not need to meet all of the listed areas and criteria. To enter the CDM scheme, a project needs to satisfy at least one the listed criteria in each of the three groups (Government of Serbia, 2010)

In the following paragraphs these criteria are elaborated with more details. As their details are discovered, they are one by one tested with the potential windmill projects. The next paragraphs present the authors analysis on how do these project meet the CDM criteria and in which segments they need to be revised in order to be supported through this scheme.

### 4.1.1 Economic criteria

The first category to be tested is the economic. The economic criteria for CDM projects are divided in six areas. For every area several indicators have been elaborated.

The first area in this category is the area of investment conditions. To qualify for the CDM scheme, a project needs to involve local partners and describe in which way this involvement is realised (Government of Serbia, 2010). The wind energy projects in their definition have to involve local partners. To be able to obtain necessary permits, first of all, the municipality has to be considered as the main partner. Without this cooperation, wind investment will not be able to come to life. Further local partners can be found in local auditing companies and in the end, one of the biggest local partners can be the producers of certain parts of the wind technology, found locally. In the same area, the project needs to contribute to increase of foreign investments (Ibid.). Being that mostly the foreign investors are interested in this field, their expectations for the return of the investments in wind are significant. Further, the governmental measures, such as Feed-In Tariffs, should further secure these investments and these criteria can thus be considered as fulfilled. The last indicator in this area is the contribution to the existing activities in a certain area (Ibid.). The wind energy projects in Serbia do not aim to be platforms for testing new technologies or bringing advancement in these technologies, but they are still pioneer attempts to establish renewable energy and renewable energy of wind as a form of energy production in Serbia, bringing about more favourable conditions in energy scene, dwindling away dependence on energy imports and making a solid base for energy security of the country.

The following area concerns the need for securing sustainable transfer of technologies. One of the indicators is interested in how would a project secure the use of the best available technologies (Government of Serbia, 2010). To secure fulfilment of this criterion, the investor

has to, even according to the national legislation, which was discussed in the previous section, prove the quality of the origin of his product and provide insurances that the product is accredited to be used in the country of origin. Another indicator that needs to be satisfied in this area is the technology should be in compliance to the local standards and demands (Ibid.). For wind energy projects, this field is also regulated by the national legislation and standards for starting the production of energy from this source.

The next area of concern inquires about economic development of the region. Firstly, the indicators test the contribution that a certain project gives to the development of undeveloped regions (Government of Serbia, 2010). In some cases, these projects are intended to be built in more developed, in other cases in less developed region. The contribution to development of a region ranges from direct financial inflows to softer benefits, such as regional promotion, which could help attract other potential investors. If the project is to be built in more developed region, this indicator would test negatively for an envisioned design. Still, failing in one criterion, does not make one project inapplicable for the CDM, as long as it fulfils other requirements from this category. In this area, the following indicator concerns about the impact of the specific project to the price of electric energy (Ibid.). This issue was broadly elaborated in this paper, but what can be said here is that it is expected that the price of wind energy in Serbia will partially impact the increase of total energy price. But here we have to remember the Feed-In Tariffs for these projects and also the fact that the price of wind technology is drastically decreasing in these years, with expectation that this trend will further continue. Another issue, discussed before, is that the energy price in Serbia is social category and that thus the impact that the wind energy will have on the prices can be consider as relative and not reflecting the reality (Stojadinović, 2011). Further a project, fulfilling the criteria in the area of the regional economic development needs to contribute to the development of the infrastructure in the region of in a local community (Government of Serbia, 2010). This is easily matched with the wind energy, being that the investors, in order to be able to transmit the energy, need to build more facilities and empower electrical grid, for the total system to be able to take additional inputs of this energy.

The area that follows in the economic criteria concerns employment possibilities (Government of Serbia, 2010). It is to be said here that employment impact of these projects is not particularly large. The project will, for sure not bring to an increase in unemployment rates, which is one of the concerns of the indicators, but potential new working places are rare. For the operating of wind farm several technicians and skilled people are needed. Also, people will be temporarily employed in the construction phase.

The consequent area of this section concerns whether a project contributes to the priorities of the its sector (Government of Serbia, 2010). Since wind energy belongs to energy sectors, these projects should provide evidence of contributing to the priorities of this sector. National priorities in energy sector were discussed earlier in this paper. As one of the most important drivers of the energy policy in Serbia, government defined issues such as energy security, security of supply and introducing renewable energy. Wind energy sector is significant contributor for development of renewable energy sector in the country. Its impact on the energy security modest, being that it is just one small portion of the energy mix, but it contributes to the expectations of the EU in this sense.

Another great area of concern of national indicators is costs and production. The first indicator in this group is energy intensity. What this criteria is concerned about is the relation of the energy consumed in total compared to the GDP that was realized based on this project (Government of Serbia, 2010). However, data for accessing this indicator are so far not available. The next criteria inquire about the project contribution how much can an envisioned

project contribute to the reduction of dependence for energy imports, on the local or regional level (Ibid.). The core of the idea behind the wind project is to bring greater independence from the import of energy. Wind energy projects aim creating self-sufficiency of a local community or a region, by reinforcing existing capacities. It should be understood that the main driver for most investments, and same for investment in wind energy, is profit, but the benefit created for the community is immense. Project should further, according to the criteria of this area, contribute to the increasing and fulfilling the targets of renewable energy for the total energy mix (Ibid.). This criterion absolutely hits the spot when it comes to the wind energy. Namely, the EU energy targets consider both targets for renewable energy in total and for wind energy in specific. Serbian national targets aim transposing in total the norms of the *Acquis*, which makes investments and support to development of wind energy very appealing. Further criterion requires of a project to contribute to reduction of waste generation (Ibid.). Energy of wind is a clean energy. It does not create or generate waste. It is the type of energy that makes no emissions and also creates no waste. However, it cannot be said that this type of energy helps in reduction of generated waste and these types of problems are not reached by the wind energy scheme. Although it fails to match this criterion, many others in this area are still met, which makes this type of investments eligible for the CDM scheme. The following criterion in this area also concerns about waste issues. The project should, base on this criteria, contribute that the waste management practice goes in line with the need for environmental protection (Ibid.). As it was mentioned, when discussing the previous criterion, wind energy does not have clear strings with the waste management problem attached. But, in order to obtain all necessary licenses for building a windmill, the investor and project designer have to take all necessary precaution measures, which imply conducting an EIA as well as the strategic EIA, which were discussed in the previous sections of the paper. The final criteria in this area refers to the consumption of energy for transport purposes (Government of Serbia, 2010). Windmills do not consume energy in this way, which makes the inquiries of this criterion not applicable for this case.

#### **4.1.2 Social criteria**

The next areas of concern, for the DNA, are the social criteria. The windmill projects are tested here against proposed criteria in several areas and the results of these tests are presented in the following lines.

To fulfil the social criteria, the project has to involve all of the stakeholders in the preparation of the project itself and the same should be done in the implementation phase. The stakeholders should be consulted and involved and their interests and ideas heard (Government of Serbia, 2010). In the projects of wind farms, it seems that this kind of cooperation of stakeholders is necessary and vital. Without mutual understanding these projects will remain only paper ideas. But, the successful cooperation in this regard qualifies these projects, at least in this aspect, for the CDM scheme. Additionally, the projects need to have the support from the local community, or from the stakeholders on the local level (Ibid.). For the windmill project, this kind of support is vital and the project is not able to come to life without this support. This is why these projects match the abovementioned criteria.

Further these projects need to bring about better quality of life in the area they are intended to be conducted. This means, first of all they should create employment opportunities at the local or regional level (Government of Serbia, 2010). This point challenges a bit wind farm projects. The investors in this type of energy do not promise many job openings, but they offer some. Indeed, the wind farm operation and maintenance does not require significant support in human capital. These are simple projects that function independently and need to be maintained only occasionally. Jobs would be created only at the construction phase, but these are only short term work contracts. If we look on this project broader, in the sense of

equipment production, some job creating can be seen here. Many of the equipment for the wind farm will be imported, but some parts, such as rotor, pillar or transformer could be used from local producers. One such is Siemens factory in Subotica, AR Vojvodina, which is one of the largest regional manufacturers for mechanical parts. The indirect job creation can be noted here. Another way of looking at this issue is observing the fact that most of the investors in wind energy in Serbia are foreign companies. But, many of these companies actually function as branches of foreign companies, listed as enterprises in Serbia. This means that they are also creating job openings within the country itself. Further, on the social side, the project that qualifies for CDM scheme needs to bring revenues to the local community, in this case to the municipality and to the society as a whole (Ibid.). Investors in wind energy need to calculate with this, if they want their project to be accepted by the local government and other stakeholders. This thus makes it potentially good candidate for the CDM project scheme. The next criteria in this area requires of a project to bring better life conditions to the poor and vulnerable areas (Ibid.). This demand fits the profile of the wind farm projects. Namely, the wind farms decrease the dependence of the local community on the fossil fuels or other non renewable resources, making it thus energy independent and bringing less pollution to the region. This consequently creates better living conditions in the community. The next criteria challenges many of the potential CDM projects, as it refers to improvement of gender equality (Ibid.). The wind projects are gender neutral, since they can, at each stage, the technical, monitoring, legislative, be performed equally by both women and men. CDM projects, according to the criteria of issued by the Government of Serbia (2010), must have positive impact on the public health. As it was mentioned when discussing the benefits for the local community, the positive implications to the public health, coming from the wind farm projects cannot be neglected. The wind farms impact positively the decrease on dependence on energy sources which pollute the environment and thus bring better quality of air, directly creating better health and living conditions.

Further on, in the CDM criteria on the social side, it is listed that a successful CDM project needs to have a dimension of capacity building. In this sense, a project needs to provide adequate conditions for its successful functioning and operation in the future. This can be ensured, according to the CDM project criteria, by providing transfer of knowledge and experience (Government of Serbia, 2010). For these criteria to be met, investors in the wind farms have to make sure that, firstly, the capacities of the municipality involved are brought to adequate level. This means providing training to different departments that will in future be dealing with the issues connected to the wind farms, but also finding and educating personnel for the windmill maintenance. If these are ensured, the listed criteria will be fulfilled. A project further needs to secure that the local companies and firms participate in carrying out the designed project (Ibid.). Wind farm investor can easily meet this criterion. This can be done by hiring local companies for conducting EIA and strategic EIA, involving local manufacturers of technical equipment, auditors, and consultants. The final condition that has to be met in the social criteria of a potential CDM project is that a certain project has to ensure the adequate conditions for the local population to apply these newly gained skills. Project investor has to ensure that people can practice the knowledge gained during the training phase, that they can work on the technologies that they learned about and further build their skills (Ibid.). To satisfy these criteria, investor in wind energy needs to plan and design the long term involvement of local stakeholders and secure their future advancement in the knowledge gained. If this is met, social criteria will be fulfilled and project will, on this side, be good candidate for CDM.

### **4.1.3 Environmental criteria**

This group of indicators tests the state impact of the project on the environment and the natural resources.

The first area of concern in this group refers to the energy resources. Namely, for the criteria of this area to be met, a project investor needs to give a description on how does this project meet the demand for decrease of dependence from non renewable energy sources, such as fossil fuels or how does it contribute to the decrease of the energy import (Government of Serbia, 2010). Wind energy clearly meets this and more than that. Not just that the wind farms do not use fossil fuels, but wind energy is by definition clean energy, which reduces greenhouse gasses (GHGs). Also windmills reduce the dependence on the import of energy. Thus, fulfilling criteria of this indicator, these projects reduce total need for fossil fuels on national level as well as contribute to the decrease of the import of energy. The following indicator in this area inquires about energy intensity (Ibid.), which is not applicable for wind energy, being that a windmill creates energy, thus does not consume additional energy sources. The last criterion of this area refers to somehow similar question from the economic section. It wonders about the energy intensity of the traffic (Ibid.). Being that the wind farms are not mobile, they are not participants of the traffic and thus do not contribute to the energy consumed in traffic.

The following area of concern in the segment of the table that refers to the environment and natural resources inquires about impact on the air. This area measures emissions by two sets of indicators. The first one refers to the GHGs emissions per capita, the second one asks about other polluting matters and particles, about Volatile Organic Compounds (VOC), NO<sub>x</sub>, SO<sub>2</sub> (Government of Serbia, 2010). The wind energy does not contribute to creation of any of these substances, from both the first and the second criterion. On the contrary, the wind energy is considered as one of the solutions, the clean energy which can help decrease GHGs and other pollutants in the air. The subsequent area of concern inquires about the impact that potential CDM project might have on the water. This area is tested through two indicators. These are contribution to the improvement of the water quality and treated sewage water.

The other indicator in this group concerns weather project contributes to the sustainable use of waters (Government of Serbia, 2010). It is easy to conclude that the windmills cannot contribute to the general state of waters, thus this area is not applicable for this type of projects.

The next section inquires about the land use. The first indicator here inquires about the potential changes in the land use that project might lead to (Government of Serbia, 2010). The procedure for constructing a windmill was already discussed in earlier sections of this paper. Here it was elaborated on with details on the way for securing licences. One of the crucial steps on this path was securing construction licence. To obtain this licence requires of a developer to conduct an EIA and a strategic EIA and submit these results to the relevant authority. Thus, to secure licenses, a project needs to satisfy this particular criterion envisioned also by the MESP and DNA Serbia in their criteria. The second indicator in the area of land use inquires about whether a project contributes to prevention of land degradation. The potential CDM project should deliver a plan of measures taken in this sense and explain how are they to be implemented (Ibid.). This indicator is, however, not applicable for wind energy projects, since they do not deal in particular with the land use. Still, to obtain the necessary licences, the windmill has to have a plan of land use and present the plan for minimizing the impact of a project on the environment. The final indicator of this group inquires about the project contribution to the sustainable land use (Ibid.). Many complaints have been made about windmills that jeopardise the sustainable model of living, interfering with nature

protected areas. For this purpose, as mentioned, no windmill will be constructed on the area unfit for that type of construction. In the case of Serbia, the lack of municipal plans grew to be one of the most important barriers to the wind energy projects. This means that these projects cannot happen without adequate documentation. Thus, the need for detailed municipal spatial plans relieves the concern and assures sustainable land use.

The following area of concern in the environmental criteria is biodiversity. Here project needs to satisfy the need for conserving local and regional species of flora and fauna, preserving the given ecosystem (Government of Serbia, 2010). This is a point challenging for wind farms. Studies against this type of energy indicate migrations of species from the area surrounding wind farms, mostly caused by noise and constant vibrations that a windmill emits (EPAW, 2011). Thus, the provisions of this criterion do not go in line with the wind energy projects. The subsequent area tests weather a project would lead to the increase in plant coverage of a local area or a region (Government of Serbia, 2010). This criteria is, however, not applicable for windmills. Similarly, the following indicator inquires about the contribution of a project to the forest coverage (Ibid.). Wind farms do not contribute to the growth in forest body, but, if the EIA is followed through, as required, all potentially negative externalities of a windmill, in this regard, can be avoided. The final indicator in this area is contribution to sustainable use of biomass (Ibid.). Much alike the answer to the second indicator in this area, this issue is not applicable to the windmill projects.

The final area of concern in the environmental section is the natural resources area. This area is tested with a single indicator. This indicator inquires weather a project contributes to sustainable use of resources such as water, forests or mineral resources (Government of Serbia, 2010). As in some other cases, this area is not applicable to wind energy, because the intended projects do not require the use of natural resources. In this respect, they do not create any negative externalities and can be considered neutral with regards to this question.

## 4.2 Section Summary

What can be observed from testing the above mentioned indicators is that wind energy and windmills go in line with national criteria and targets. In many categories, much more than required, these projects mach the DNA criteria and are good potential candidates for CDM project scheme. Moreover, if these ideas would be developed on the level of the municipality and have a private investor as a partner who would bring foreign investments, their potential success would, in opinion of this author be even greater. This is so because they would, per se, coming from state sector, include benefits from the society, such are employment, gender equality or development of technologies and transfer of know-how.

In their study, while testing the applicability of CDM criteria on wind energy projects, Mundaca and Rodhe (2005) find the wind energy projects of up to 15 MW very plausible for CDM scheme in the economic and environmental criteria. Potential problem of the additionality is resolved by emphasising the fact that the binding targets for wind production in Serbia are simply governmental obligations do not impact private sector, which is the sector that is interested in investing in wind. Being that fossil fuels are subsidised beyond all economic margins, investment in wind is risky for project developers and should thus be considered additionality.

Other authors believe that this scheme is applicable to much larger projects (Gamberale, 2011). Mundaca and Rodhe, in their research, suggest that further research should be made in order to determine potential of these projects to contribute to the social part of CDM goals (Mundaca & Rodhe, 2005, p. 405). It is in believe of this author, that the national indicators tested for the purpose of this thesis, give a positive result when tested against designated social

criteria. Here it will be stresses one more time that “proposed project has to meet at least one of given indicators for each of the three sustainable development criteria” (Government of Serbia, 2010). This means that not the whole areas have to be met, but just one of the criteria for entire category. Here lie the chances for wind energy projects. The social criteria that wind projects meet are unquestionably the contribution to better state of public health, contribution to increase in local budget. Additionally they contribute to better living conditions in poor and vulnerable communities, having in mind that most of the municipalities where these projects will be implemented in are considered to be undeveloped and poor municipalities. These projects contribute not only to the improvement of life conditions, but they also carry a significant potential for participation of local enterprises in the implementation of these projects, such as Siemens in Subotica or UnoMartin in Šabac. By conforming to these standards, these projects are good candidates for the CDM projects, even on the social side.

Until today, not many wind energy projects have applied and have been granted CDM project aid. These were several projects in China, Costa Rica, Cyprus, India, Turkey (TÜV SÜD, 2006; UNFCCC, 2011b). In Serbia, so far, none of the windmill designs applied for this scheme of support. However, for Serbia, this should not be discarded as an idea; on the contrary, it should be kept as a very good option for both municipalities and private sector to improve their positions and perspectives.

## 5 Comparative Cases

Comparative case in this thesis are used to presents a deeper view on current trends, comparing them to the regional situation. Comparative cases in this thesis are composed based on a literature review of trends and developments in the field of renewable energy. In this section three cases will be discussed - of the Czech Republic, Slovak Republic and Croatia. Background on selection of the comparative cases was provided in the introductory section of this thesis.

In the case of Slovakia and Czech Republic, examples provided will indicate the path these countries had in the field of energy and their current positions as new member states to the Union. Case of Croatia gives an example of a country in the similar position to Serbia, but more advanced in the Eurointegration path. Moreover, Croatia once formed a Federation with Serbia, which makes this country similar in the structure of energy production – based on non-renewable resources and large scale HPP. Another common factor between these three countries and Serbia is that they are all more or less still developing countries, while being, with the EU, a part of developed community. Having in mind previous paragraph, it is very important to understand similar cases and trying to find examples of best practices. The findings obtained by these comparative cases can help define strategy Serbia could take in the field of renewables and energy of wind.

These studies were based on the National Renewable Energy Action Plans, which these countries submitted to the European Commission in 2010. Serbia also submitted this plan to the Commission, establishing the provisions for obtaining status of privileged energy producers and Feed-In Tariffs. Yet, numerous provisions need to be transposed in the coming period (EC, 2009c). So far progress in the implementation of *Acquis* on renewables, EU marks as moderate (Popovici, 2010). The slow process of harmonization of legal provisions can be sought in the need for balancing the EU strive for restructuring the energy scene and internal need for maintaining social stability by controlling the prices of energy (Sretić, 2010; Stojadinović, 2011). New energy strategy and revision on the Law on Energy should reaffirm the commitment to and reflect the positions of the EU legislation (Simurdić, 2010).

### 5.1 Slovakia

In their negotiation with the EU, Slovakia has defined their goals to be: energy coming from renewable presenting 14% of total energy mix when compared to the figures from 2005 – 6.7%, calculate by the formula  $S_{2005} + 0,2 (S_{2020} - S_{2005})$ , as an average for 2011-2012,  $S_{2005} + 0,3 (S_{2020} - S_{2005})$ , as an average for 2013-2015 and so on further (EC, 2009a). Slovakia negotiated to set its own measure within these 14%, with the envisioned growth of 13% out of the sector of emission trading and lowering emission by 21% in areas that are covered by emission trading scheme (Ibid.). These targets should be met by 2020. Slovakia realized that defending national interests must remain the priority of governmental politic, even if energy targets fail to match envisioned goals (Zakova, 2010). Making the process faster than the economy can handle could result in decisions that are not in the countries best interest. Slovakian government recognizes that it is often hard balancing between sometimes conflicting economic and national interests (Ibid.). This is interesting to note for the experience of Serbia, since Slovakia has, only after entering the EU started negotiating more binding obligations. This fact would probably be used by governmental officials when negotiating with EU about binding targets and achieving the goals of Kyoto. Serbia could thus have more time to restructure energy sector, while having more time to use price of energy as a social category.

Besant-Jones et al. (2010) in their study, explain the success of wind energy and renewables in Slovakia through strong commitment of the government to putting Slovakia on the global



map of renewable energy producers. By using Feed-In Tariffs for wind, national energy producers are forced to purchase electricity from wind energy producers. This energy is often sold above market prices, which guarantees a steady revenue for investors in wind energy (Besant-Jones, et al., 2010)

A great support for any efforts in introducing more renewables to the national energy system, Slovakia draws from Cohesion Fund of the European Union. This fund targets new member states. It provides financial supports worth of several billion of Euros in subsidies for developing renewable energy projects. The available funds resulted in significant total increase energy produced by renewables for all new member states (Besant-Jones, et al., 2010). Still, according to World Wind Energy Association Report on progress in installed capacity of wind farms, in 2010 Slovakia has made no progress when compared to the previous year (WWEA, 2011). Moreover, although this sector enjoys governmental support, wind energy in Slovakia reaches modest 6 MW of total installed capacity (Ibid.). The forecast for 2020 suggests that TIC will reach 350 MW (MoEC SR, 2010). WWEA (2011) in its Report puts Slovakia on the 60<sup>th</sup> place of global wind energy producers.

One of the reasons for low rates of wind energy in present are the problems for the grid arising from the fluctuations of the wind (MoEC SR, 2010). For this purpose detailed studies of grid capacities and adaptation measures are needed. This concern goes in line with the fear of the relevant Serbian authorities (Stojadinović, 2011). In Slovakia, the stability of the grid is examined for every project, as a part of process of obtaining building permit (MoEC SR, 2010). In Serbia, the stability and the capacity of the grid is examined only after the construction of the farm, when a project developer reaches out for connecting to the grid (Gamberale, 2011). This is something that can be a major turn-off for the investors, making possible additional costs and insecurity of their investment.

## 5.2 Croatia

Croatia has signed and ratified Kyoto and set its targets to reduce CO<sub>2</sub> emissions by 5% by 2012, when compared to 1990 levels. Significant efforts have been made to achieve this, but carbon levels are still high. Being in the advanced stage of Eurointegration, Croatia developed a strong institutional framework in the field of energy. What Croatia faces as a problem is lack of human capital which will work on implementation of this framework (IEA, 2008). In terms of renewable energy, these figures are marginal. Still, energy import dependence of Croatia is lower than of other Balkan states. Energy structure is mostly based on the large scale HPP, but this is projected to fall in the coming years. In 2005, renewables made to about 4% of total energy share, with the idea to come to 12% by 2020. Producers are encouraged by the Feed-In Tariffs, the status of privileged producers and by guarantying minimal purchase, while providing soft loans for investments in this area. This is expected to result in attracting investors, securing energy supply and better environmental performance (IEA 2008). Croatia, being in more advanced stage of Eurointegration than Serbia, has already set some norms to be followed in other Balkan countries. Unlike the case of Slovakia, this has all been done pre-accession. For Serbia, having similar energetic structure as Croatia, this would make a pressure from the EU to make more serious commitments.

In June 2010, Croatia adopted National Renewable Action Plan, which sets the targets for development of this sector according to the EU Directives (AEA, 2011). In Serbia, this process is constantly postponed and prolonged (Gamberale, 2011).

Having in mind harmonized legal framework in energy sector, the EC notes Croatia needs to have a stronger commitment to renewables. This should be obtained through resolving administrative inconsistencies in the licensing process (Popovici, 2010). This goes in line with

the similar problems noted in the case of Serbia, elaborated throughout this paper. However, Croatia today has a total installed capacity (TIC) which equals 69.8 MW (WWEA, 2011). According to WWEA (2011), compared to the year 2009, in 2010, TIC of Croatia faced a significant increase of 161%. According to the same report, this increase in TIC puts Croatia on the 46<sup>th</sup> place in the global rank of countries that invest in wind energy.

### 5.3 Czech Republic

Czech Republic, as a new member state to the EU, has also negotiated its renewables targets. In these negotiations, Czech Republic defined their own targets for percentage of renewable energy in the total energy mix. The year 2005 is taken as a benchmark year, and based on the existing situation, Czech Republic calculated its targets. This calculation is based on the EU Directive 2009/EC/28 on promotion of energy from renewable resources. In 2005, in Czech Republic, share of renewables in the total energy mix was 6.1% (EC, 2009a). Formula for calculating the percentage of renewables, for 2020, given in this Directive is elaborated in the case of Slovakia. Based on the previously presented formula, in 2020 Czech Republic should have 13% of renewable energy in their total energy mix (Ibid.).

Similarly to the case of Slovakia, Czech Republic disposes of the EU Cohesion Fund. As mentioned, this fund provides countries to secure finance for serious investments into renewables. These favourable opportunities are reinforced by strong commitment of the Czech government to fully develop its potential in renewable resources (Besant-Jones, et al., 2010). In 2010, the Czech Republic faced growth rate of 12.6 percentage, compared to the previous year (WWEA, 2011). TIC in Czech Republic came to 215 MW, with the expectations that this capacity reaches 443 MW by 2014 (Ibid.). The Government of Czech Republic introduced two measures to stimulate development of renewables. These are Feed-In Tariffs and Green Bonuses.

Feed-In Tariffs for wind energy are set to be 8.9 €c per kWh (MIT, 2010) and they are guaranteed to the producer for the entire lifespan of a plant (Knápek & Vašíček, 2009). For wind power plants, this is considered to be 20 years (Knápek & Vašíček, 2009; MIT, 2010). These prices are lower than given in Serbia for this sector. However, compared to Serbia, in Czech Republic there is no cap on the wind energy produced. In Serbia this cap is 450 MW. Existing Feed-In Tariffs and guaranty of purchase for renewables produced, encourages investors to enter and stay in this market, which ensures steady stream of revenue (Besant-Jones, et al., 2010). Czech Republic also introduced green bonuses (MIT, 2010). This scheme allows energy producer to sell energy on the market and get Green Bonuses, which come as an extra revenue (Knápek & Vašíček, 2009). These bonuses are guaranteed for one year, for 7.2 €c per kWh (MIT, 2010).

Energy producers choose one of these two available schemes. These schemes cannot be combined (MIT, 2010). The financial support for the energy of wind is available for projects over 20 MW occupying more than 1 km<sup>2</sup> of the land (Ibid).

What sparkles in the case of Czech Republic is no income tax for wind energy producers (MIT, 2010). According to the National Renewable Action Plan, Czech Republic provides tax exception for the producers of renewable energy, regulated by the Income Tax Act (Ibid.)

On one broader level, the Government of Czech Republic believes that this country can offer experience in the field of energy, competent people and even possibilities for manufacturing wind power plants (MIT, 2010). This would ensure significant technological step forward for this country and ensure new working places.

## 5.4 Section Summary

Experiences of different Slovakia, Czech Republic and Croatia, elaborated in this section, suggest different strategies that national governments have taken in meeting the EU and Kyoto targets. Serbia is still trying to define its interests in the sphere of energy. Balancing between the need for economic development and keeping the social order, Serbia is trying to find more time for restructuring the state of economy and overall energy picture. New Energy Law and energy strategy should further define this field and stream the road for further development.

The road of Eurointegration opens up numerous funds. One of the funds is the Cohesion Fund, which provides significant financial support for the projects for renewables (Besant-Jones, et al., 2010). This fund resulted in TIC 447 MW in 2008 (Ibid.).

Although Slovakia has no cap on Feed-In Tariffs for wind energy, wind energy development still did not go over 10 MW of TIC. With this in mind, Serbia having a cap on first 450MW of installed capacity does not create stimulating measures for development of this sector.

The comparative cases indicate the need for harmonizing and consolidating processes of obtaining licences with the steps needed for constructing the power plant. One of the examples of discrepancy is the process of obtaining licences to connect to the grid. In Serbia, the feasibility study of possibilities to connect to the grid comes only after the wind farm is constructed. Inconsistencies of this type have to be resolved so that the investments in wind farms can be resolved.

## **6 SWOT Analysis on the Position of the Municipalities**

Every local community holds certain potential and capacity for development (Vujadinović, Pavlović, & Šabić, 2010). The capital these communities have presents their comparative advantage, when compared to other areas (Ibid.). In their study, Vujadinović, Pavlović and Šabić suggest that this comparative advantage is reflected in the interest of developers, investors and entrepreneurs to direct their capital towards certain areas. The potential and competitive advantage, explored in the context of this thesis, is deployment of wind energy and developing wind farms on favourable geographic locations.

The research conducted for the purpose of this thesis indicates that the municipalities are one of, if not the key stakeholder for developing, implementing and starting the production of energy of renewable energy and in the scope of this paper, for renewable energy of wind. The municipalities should be the main beneficiaries of investments into renewables, being that they are the recipients of incomes gained in the energy production. However, many obstacles can be found on this road, and it is the aim of this section to explore the effects of these investments. Positions of the municipalities, their problems and concerns have not been elaborated enough in the previous researches. Some researches focus on the problem of obtaining licenses; others explore general potential of renewables in Serbia. So far, existing researches did not focus on exploring the position of municipalities towards these projects.

To discover expectations of municipalities and their positions this author takes a qualitative approach. This study opens the questions of discovering what the interest of municipalities for entering these projects is. What benefits do they expect and what can they get? Why should they get involved and what prevents them from getting more actively engaged in renewables? These are some of the issues that the author tries to cover by SWOT analysis. By displacing on most relevant strengths, weaknesses, opportunities and threats SWOT analysis is an effective tool for analyzing current trends and problems (Terrados, Almonacid, & Hontoria, 2007). SWOT analysis is technique designed to help identify best strategies that an actor, company or an organisation can follow, according to existing or potentially arising circumstances (Hollensen, 2010). Also, this analysis can offer guidance for future action plans problems (Terrados, et al., 2007). This analysis can, according to Chermack and Kasshanna (2007) indicated how can opportunities and threats, which are the trends shaped by the external environment be matched to give best results when combined with internal characteristics and capabilities of an organisation – its strengths and weaknesses.

This section consulted previous SWOT based researches. The journal paper “Stakeholder based SWOT analysis for successful municipal solid waste management in Lucknow, India” (Srivastava, Kulshreshtha, Mohantya, Pushpangadana, & Singh, 2005) is used for developing the SWOT question sheep. This paper was further adapted to the issue of implementing wind farm projects in Serbia and reinforced with other relevant studies. In addition, this paper consults SWOT analysis of Hong and Chan on ecotourism management and Chermack and Kasshanna (2007) paper on the use and misuse of SWOT analysis. This paper consults also a SWOT analysis in the area relevant to this thesis topic was consulted – “Regional energy planning through SWOT analysis and strategic planning tools: Impact on renewables development” of Terrados, Almonacid and Hontoria (2007). Finally, a study of the USAID is consulted in the analytical part to reinforce findings in the field. This study “Serbian Wind Energy Sector SWOTT analysis” analyses general trends in the energy sector and potential for wind investment realisation (Gamberale, 2010b).

First step was finding the adequate municipalities to access. The ‘adequate’ was determined as the ones that have expressed interest in investment in wind energy throughout media or that

were found on the Energy License list of MME (MME, 2010b), which is more than just expressing the will to start developing these projects. Since data on potential of wind energy are not complete and are still being done, wind maps, enclosed in the Appendix I, could not be seen as the most adequate source, since it is expected to change as measuring continue. The consulted sources were thus found as the most adequate ones. And indeed, the ten municipalities that were contacted based on this preliminary research were very much involved in resolving the issues around investment in wind energy. Municipalities were further contacted in order to get first-hand data.

By developing a SWOT analysis questionnaire, this research aimed at discovering the strengths, weaknesses, opportunities as well as threats that municipalities observe. It is based on their self-assessment of own positions. The result of this analysis indicates the present situation the municipalities are and the prospects. The analysis of the present situation is used further as guide to give suggestions for improving further positions and elaborate on trends and developments. The findings of SWOT analysis are presented also in a visual manner in the *Figure 6-1* and *Figure 6-2*.

The Questions developed and exercised for the purpose of this research can be found in the Appendix IV of this paper.

The first stage of the SWOT analysis involves aligning and compiling the answers in a qualitative manner in order to clearly determine main strengths, weaknesses, opportunities and threats. Determining these key factors was done based on the designed SWOT Questions, presented in the Appendix and consisting of the analysis of the answers given by the relevant actors in the municipalities involved. While strengths and weaknesses indicate current trends and affairs, opportunities and threats indicate future prospects of the actor (Chermack & Kasshanna, 2007). Further, strengths and weaknesses present inner inherent characteristic, while the opportunities and threats can be observed as an external characteristic exposed to the influences of the environment (Chermack & Kasshanna, 2007) Hong & Chan 2010). Chermack and Kasshanna (2007) additionally stress that strengths and opportunities can contain hidden weakness and threats respectively. And contrary, analysed weaknesses and threats can contain concealed strengths and opportunities, in that order (Ibid.).

The second stage of a SWOT analysis is cross-referencing pre-assessed factors developed in the first step analysis. This means that this stage involves combining together analysed factors: strengths and opportunities, weaknesses and opportunities, strengths and threats; and finally weaknesses and threats and presenting their results. This result in disclosing a more interconnected relationship between factors involved in a process of developing wind energy projects.

The results of SWOT analysis indicate that there are great differences in the position of different municipalities throughout Serbia. Some municipalities are only at the beginnings, others are very much involved in the wind project developments. One municipality, Tutin, started a first windmill in Serbia in April of 2011. Their differences will also be discussed.

This analysis was conducted between March and May 2011. It consists of interviews and discussions with five representatives of several municipal authorities. Following paragraphs interpret results and offer findings of SWOT analysis conducted on the field.

## 6.1 Defining SWOT factors

Increasing the standard of living and the quality of life, attracting investments, opening up new working places and general well being of a local community is considered a basic, long-term

goal of every local community (Vujadinović, et al., 2010). These goals are reflected in strives of LSU representatives and their actions.

The following paragraphs present results of the interviews for SWOT analysis, presenting strengths, weaknesses, opportunities and threats, which lie ahead of developing the local wind energy projects. Same results are visually presented in the *Figure 6-1*. The final foal of this analysis would be to help municipalities stream their efforts and ensure the investment flow.

### 6.1.1 Strengths

Strengths are, according to the literature consulted for the SWOT analysis, observed as the inner quality of a certain actor or an organization, in a specific situation or for a specific system (Chermack & Kasshanna, 2007; Hong & Chan, 2010). Strengths are the present, positive factors that influence the functioning of an organisation (Chermack & Kasshanna, 2007). According to the same authors, strengths are factors that an organisation is well aware of and they are under its control. Understanding and analysing strengths that an actor has, is of immense importance, being that understanding strengths can help building more effective strategies and having a more focused planning (Hong & Chan, 2010). Being aware of strengths that LSUs have helps determining better their position and comprehend their negotiation strategies, when it comes to wind energy investments.

#### Favourable geographical position

The number of wind days that some municipalities have is clearly one of their main attributes and one of their biggest strengths. Throughout the country the measuring on wind potential and number of days with wind are conduced. New locations are constantly been discovered. The current numbers far pass the preliminary expectations of the MME, pushing for the revision of original plans for Feed-In tariffs. The municipalities are well aware of their position and are currently observing the best strategies to materialize these strengths (Todorović, 2011; Vukosavljević, 2011).

#### Interest of investors

Another major strength of the municipalities is interest of numerous investors. These are mostly foreign companies interested in expanding their business to eastern markets. These companies are, the research shows, ready to enter the long and complicated procedures for obtaining licenses and willing to invest significant capital in the fulfilment of these future, long-term investments (A. Djordjević, 2011; Todorović, 2011; Vukosavljević, 2011). The officials of the municipalities are aware of their interest and they can, if act prudently, manage to retain great financial resources. They are currently being offered many diverse arrangements and opportunities. Strategically wise approach to these offers can result in great development opportunities, being that the municipalities are key actors for realizing investments into wind energy.

#### Existence of spatial plans (for several LSUs)

Several municipalities have already spatial plans. Many of them are in the process of obtaining them. Investors see this as a great advantage, being that developing a spatial plan is both cost extensive and time consuming. The municipalities that have these plans are more favoured by potential investors. Further, for the municipalities, having these plans is a major strength, being that it shortens the way to fulfilling fruitful investments into their local area, which bring better electrification, better roads and other communal infrastructure.

## Enthusiasm of individuals

In the country that inherited the communist view on the economy and material goods, it can be often hard to find business oriented way of thinking. Thus encountering with the enthusiasm of individuals can be very important for the success of a project. These individuals are normally progress oriented visionaries, wishing to be pioneers of development in some areas. For strengthening further this positive attribute, municipalities should further invest in education, encouraging innovation and creating new employment opportunities.

### **6.1.2 Weaknesses**

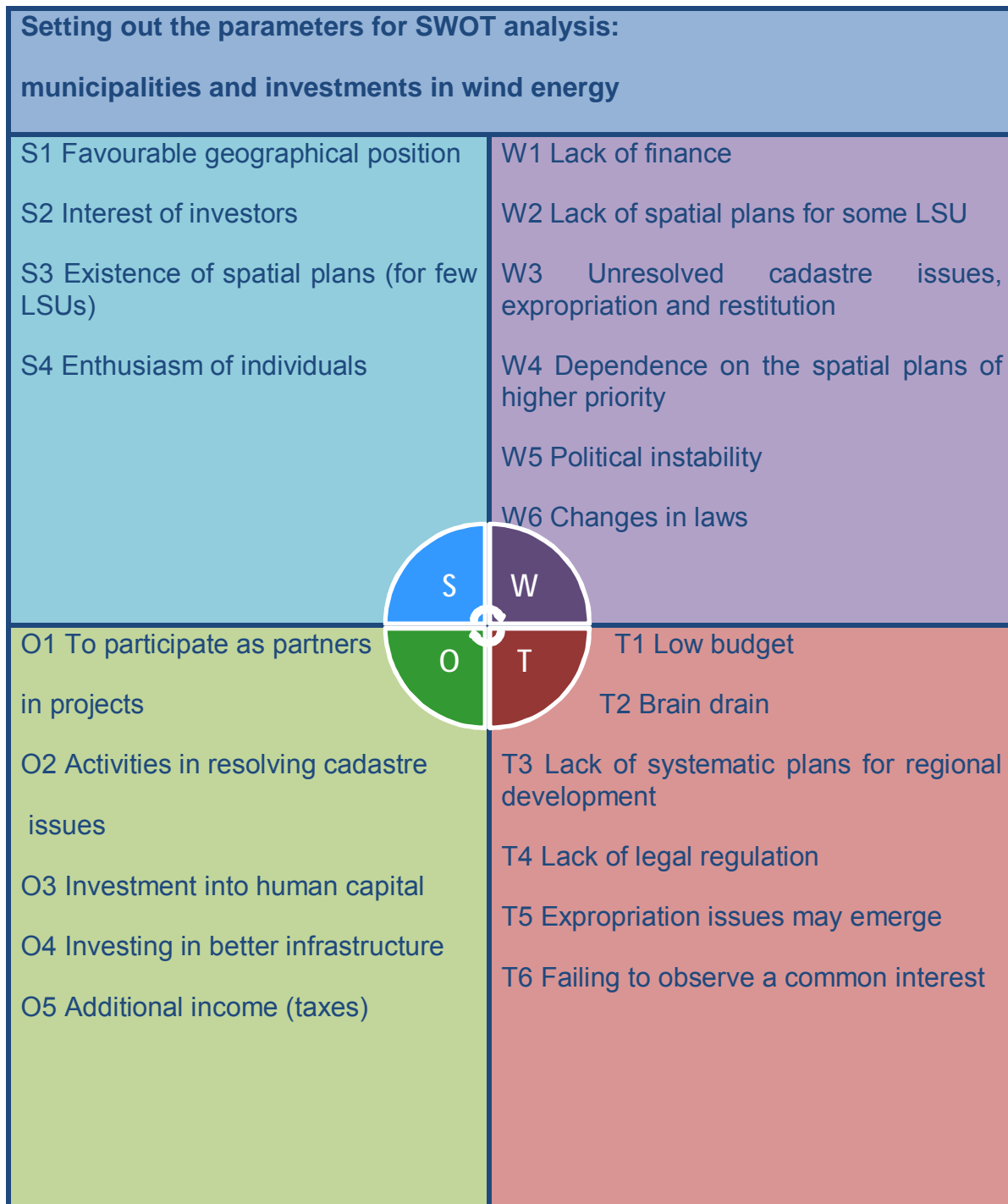
The following category examines weaknesses of actors or their activities. They are of internal character, as well as the strengths (Chermack & Kasshanna, 2007). Because of that, an organisation can react and try to control them (Ibid.). Chermack and Kasshanna (2007) suggest that the weaknesses indicate problems with current performances and results, indicating lack of internal competences of an organisation. They further explain that the weaknesses are those who prevent the organisation of realising its full potential. It is important to be aware of these weaknesses, so that they can be overcome by using adequate opportunities and maximizing existing strengths (Hong & Chan, 2010).

#### Lack of financial independence

As one of the top problems that municipalities face is lack of finance (A. DJordjević, 2011). Municipalities are deeply tied by the strains given by the national framework. The returns to the municipal budget are limited and do not satisfy the needs for development of most municipalities. This is more than just a financial problem. Not having financial independence creates a particular problem when it comes to relationship with potential investors. Namely, lack of financial power prevents municipalities of entering the negotiations with investors from a partner position. Independent and stronger budget, which would more fit the needs of local and regional development, would empower municipalities to act as a much stronger stakeholder in the wind projects, allowing them to ensure better conditions for themselves and secure larger incomes for the community. Some municipalities, such as Kovin municipality, managed to secure through the process of negotiations permanent benefits of power sell (Vukosavljević, 2011). Others, not so successful, like Veliko Gradište, secured only one time profit, through introduction of a tax for measuring wind power, equal to about 8 000 € and later one time income from the project when it comes to the implementation phase (A. DJordjević, 2011; Todorović, 2011).

#### Lack of spatial plans for some LSU

Many LSU do not yet have detail spatial plans. Without having established which area are possible to have construction such as windmill, an investor cannot apply for building or location permit. This requires significant investments, being that these plans are very detailed and, besides of the architectural solutions for development, contain detail description and registries of all geo-topographic characteristics of the land, requiring studies and signatures of various institutes and institutions (G. Kovačević et al., 2011; Todorović, 2011). The problems of municipal financial dependence create considerable problems in plan realisation and development. Other problem can be seen in slow procedures. This is why even if these plans are financed by potential investors, their creation might still be protracted.



*Figure 6-1 'SWOT Analysis*

### Unresolved cadastre issues, expropriation and restitution

The previous communist regime conducted nationalisation of private property. The properties were collectivised and declared public goods. In these processes, the municipalities lost all their properties and the state became the owner of all assets. Based on this system, today, the municipalities are not able to sell the properties in their competence. Although this system collapsed, the full restitution (returning of the properties to the injured parties) has not yet taken place. Partial restitution started by returning the properties to the church and religious communities (Off. Gaz. of RS, 2006). However, the municipalities are not yet the owners of



their land (Vukosavljević, 2011). In the sense of the wind energy projects, this is a significant, inherent weakness of the system, which slows down the entire process of obtaining licences.

Further, the law on the 72/09 envisions that municipalities can sell their properties (Off. Gaz. of RS, 2009e). However, since the full restitution has not taken place, although municipalities can sell their properties, their income cannot be registered as property sold, nor can the land sold be registered by the new owners. Municipalities are trying to come up with innovative strategies how this problem can be solved, while waiting for the legal framework to follow up economic developments. Some properties are sublet for 99 years, some sold for 49 years (Vukosavljević, 2011). Additionally, since in the communist regime also private properties were nationalised, incomes to the municipal budget, while waiting for denationalisation to come into force, are divided into halves, considering the need for solving this problem in the future (Vukosavljević, 2011).

This can be generally considered as a weakness of the system and potential turn down for interested investors. Furthermore, this is definitely an issue that has to be handled with great urgency at all levels, mostly on the national level, by setting the proper legal regulation, followed by the effective implementation on the local level.

#### Dependence on the spatial plans of higher priority

In some cases, municipalities were not the final instance that brings about the spatial plan and thus resolves the issues with the construction possibilities. Several consulted municipalities were declared as parts of national plans of higher instance, which falls under the jurisdiction of the Republic, more specifically of MESPE. For instance, the municipality Veliko Gradište is declared to partially belong to the National Park DJerdap (A. DJordjević, 2011). Although this municipality has its own spatial plan, the plan for National Park is, in this case, the plan of higher instance. Municipality, thus, cannot issue construction permits until it becomes approved by the higher instance plan. However, in this particular case, the DJerdap plan, as well as the plans for many other protected goods, is still not brought (Pajkić, 2011). This prevents both municipalities and investors from entering more practical phases of wind projects development.

#### Political instability

The results of conducted SWOT analysis indicate that political instability can be significant weakness for any project, including here wind energy projects. At this stage the term political instability should be more elaborated on and put in the context of this thesis. Rather than talking about instability or changes on the national level, this thesis observes political instability as a weakness on the local, municipal level. Here, on the small scale levels, among limited number of actors involved in local policy making, political strains can be an obstacle to project development, but also to general LSU development. Local embroilments, based on the vulgar-political disputes can be a major impediment to development (A. DJordjević, 2011).

### **6.1.3 Opportunities**

Examining opportunities within the SWOT analysis implies discussion on the future chances and prospects of an organization (Chermack & Kasshanna, 2007). In their discussion on the use and misuse of SWOT analysis, Chermack and Kasshanna (2007) describe the opportunities section of this analysis as an attempt to analyse the external environment and the factors which are beyond control of the organization. They further note that assessing the opportunities opens up new doors. It is, according to these authors, way of introducing

innovation and creativity to the organization (Ibid.). Following on this, the goal of the organization should be maximizing the opportunities that are presented (Hong & Chan, 2010).

### Participate as partners in projects

One of the big opportunities that municipalities should opt for is partner position in wind energy projects. Some investors were already willing to offer this position to some of the municipalities (Vukosavljević, 2011). Others were offer only financial compensation for land use and taxes (A. DJordjević, 2011; Todorović, 2011). Financial support from the central institutions, such as Ministries would significantly improve their position. Furthermore, municipalities should insist in this position, because it is the only one that can offer long term income and prosperity.

### Activities in resolving cadastre issues

Actors involved in the wind energy projects could lobby and push the idea of finishing cadastre issues. These would generally solve the uncertainties about the expropriation and give the ownership rights back to the municipalities. This could confirm and enhance the interest of the investors in conducting activities in Serbia. Further, it would accelerate the development of wind projects, but also other potential investments.

### Investment into human capital

Open up the opportunities for young and educated people are vital for future existence of smaller, remote and rural communities. The strategies for retaining people in these places have to be adopted, dealing also with arrangements for proper remuneration. Fresh investments, attractive and modern project are the right way for creating interesting opportunities for these social groups. Investment into wind energy could potentially push forward these ideas. These investments do not offer *per se* many new working places, but on the side of the municipalities themselves these projects may create various opportunities. Investing in wind energy should provide opportunities for training and retraining of employees and strengthening of human capital. This would finally result in higher level of openness of municipalities, which are considered as a closed, rigid system (Vukosavljević, 2011), and result in final opening towards more modern, market based, selection of staff.

### Investing in better infrastructure

To support investments in wind energy, municipalities need to have better infrastructure. Many of the investors themselves offer investing into expanding national grid, which is essential for their projects. This is very beneficial for remote communities, being that this investment can ensure their better electrification. Investors can further participate in building other communal infrastructure – roads, water pipes – which final users, local population can significantly benefit from.

### Additional income

Investing into wind energy creates great opportunities for municipal development in the sense of additional income. This income can come in the form of different taxes and tariffs, which some municipalities have already introduced (A. DJordjević, 2011; Todorović, 2011). Additional income can be gathered also by receiving a part of profit from the electricity sold, based on pre-established fraction agreement. The additional income flow is very dependent on the position that municipalities are able to negotiate for. However, their negotiation power is

shaped by various factors, among which having spatial plans, resolved property issues, higher financial independence.

#### **6.1.4 Threats**

The SWOT analysis suggests that threats should be approached and assessed as external factors, beyond control of the organisation itself (Chermack & Kasshanna, 2007). These factors have the potential to reduce performance of an organisation if not confronted with (WBI Evaluation Group 2007) and indicate which features an organisation is not prepared to deal with (Chermack & Kasshanna, 2007). However, the threats, together with the opportunities, form the environment within which an organisation has to operate (Ibid.). Threats tell about potential future impacts on an organisation, but unlike opportunities, note Chermack and Kasshanna (2007), they warn about potential negative effects, what should be avoided. Chermack and Kasshanna further stress that the goal of understanding the threats is to mitigate or overcome them, minimise their impact, systematically work against them and potentially turning them into opportunities and strengths (Ibid.).

##### **Low budget**

High dependence on the general budget of the Ministry creates a great threat to the successful and market oriented functioning of municipal organs. This prevents municipalities from having a stronger position when negotiating with project designers and potential investors (Pajkić, 2011).

##### **Brain drain**

This is a serious threat, for which no adequate cure or solution has been found. Brain drain, as migration of educated and younger population towards bigger cities is something that all the smaller and rural areas face. Lack of opportunities and inadequate remuneration is something that distant areas have to cope with in the near future. Guided by better chances for higher income, people leave remote areas and decide for life in cities in Serbia or abroad. National strategies for retaining people in distant and rural areas have to take place. Attracting new investments, such as investments in wind energy can be seen as a step in that direction. It appears though that a much greater support from national bodies is further needed.

On the other hand, although being aware of this problem, municipalities themselves are not doing much to create new opportunities themselves. In some cases, they believe that job openings are not possible within the current structure of organisation. Create new job opportunities would, according to some municipalities create additional ballast for their budget and employment positions defined by the Ministry (Todorović, 2011). Other municipality officials find the problem in old, communist, type of behaviour that individuals manifest. This could be, according to Vukosavljević (2011) described as individuals who, once getting employed in a public institution, do not themselves work on getting additions skills, improving thus the quality of their work, but also fear of competence of young and educated people raised in one more economically competitive environment. Young people can be, according to Vukosavljević (2011) be hired for an internship or traineeship period, but after this period ends, they are never offered to stay. The excuse given here is that they do not have openings at this very moment (Vukosavljević, 2011). The third problem in this area is that often not qualified people are hired for positions. Even today, most people are hired in the public institutions based on belonging to a political party. This all creates resentment with young and educated population, which is keen on not only leaving their original settlements, but leaving the country and looking for better opportunities for professional development abroad.

### Lack of systematic plans for regional development

The state officials debate on the need for regionalisation (Gajić, 2009). In practice, this would mean an establishment of one more even, decentralised development for all areas in Serbia (Pajkić, 2011). But so far, not much has been done in practice. Legal regulations are not following upon these ideas. Not having the plans for regional development adopted by the higher instance makes every local project to be a plan of lower importance, this being that it fails out to obtain so much needed support on the national level.

### Lack of legal regulation

One of the threats for successful future of investment in wind energy is lack of legal regulation (Pajkić, 2011). Although the legislation of the EU is actively being transposed into legal system of Serbia, many fields are not yet regulated. This is the case of directives that refer to renewable energy. These directives should enter the national legislation during the third quarter of 2011. Delay of reforms in this field can also be seen as a part of Governmental strategies for retaining energy pricing on the existing level. It is expected that the new regulations will lead to increase of energy price, which, as discussed in the previous sections of this paper, is considered to be a social category (Pajkić, 2011; Stojadinović, 2011). The lack of legal regulation in this field prevents stops or retains investments and creates almost hostile atmosphere for innovation and development.

### Changes in laws

Some of the Municipalities have, as stated earlier, managed to secure spatial plans, called “General arrangement plan”. These plans required significant investments, born by municipal organs themselves (Vukosavljević, 2011). Vukosavljević (2011) explains how MESPE has adopted amendments on the Law on Construction 72/08 and renamed these plans to “General regulation plans”. This source further explains how only this renaming of same plans will create significant financial burden for the municipalities that have previously adopted these plans. Further, this very same law has been through numerous changes, which are hard to be followed by administration and local authority. Authorities should ensure retraining of the employees on all levels to ensure their familiarity with the changing procedures.

### Slow restitution and expropriation problems

The problem of slow restitution of municipal properties can create barriers when it comes to potential investments. Investors look for purchasing lots with clear documentation. Being that the municipalities are not actual owners of the land, this documentation fails to meet the criteria of clearness and order. Municipalities seek for settling out these problems, but until this is resolved on a higher instance, by finalising restitution, the problems with documentation will remain. Clearly, municipalities still manage to sell or rent their lands, but this has to be now done by seeking for loopholes in the system. One example is renting the land for 99 years of selling it for the period of 49 years.

### Failing to perceive a common goal

Many investors, but also many municipalities themselves face a problem that other actors in the process fail to perceive a common goal or interest. The LSUs mostly try to loosen up procedures for starting windmill construction and energy production. Most of the municipalities are very much interested in potential benefits they may harness based on wind energy. That is why many of them agitate for faster project implementation. One significant

external threat is the fact that other actors, such as local agencies and institutions, cannot find their own interest in pushing forward these projects (Vukosavljević, 2011). Thus, the investors often face long and complicated procedures, for which often months are needed to be reviewed after submission. Not only investors face these problems. The municipalities themselves face these same long waiting procedures. These problems are imposed by agencies and institutions which are not main project beneficiaries and yet have a superficial understanding of the matter (Dulić, 2011). Their lack of interest and lack of knowledge result in prolonged procedures and long waiting times in case of some studies, needed for the project operation. One solution could be rising of awareness, through education and seminars, of relevant actors. Another suggests establishing legal framework and timelines, which need to be met. Ensuring that this timelines are encountered should be connected to legal sanctions for unconscionable actors.

## 6.2 Combining SWOT factors

This part presents an actual analysis of given factors. They present a summary of the results obtained by SWOT. These results are obtained by combining and cross referencing similar data which conflict or support each other in order to come up with stronger conclusions and possible suggestions for further steps. These suggestions present a way forward for municipalities, something they should be aware before commencing wind energy projects. This is done by combining the SWOT fields in following order: strengths and opportunities, weaknesses and opportunities, strengths and threats; and finally weaknesses and threats. This is how one deeper connection between factors can be disclosed and potential solutions suggested. The graphical representation of this section is presented in *Figure 6-2*.

### **Strengths and Opportunities**

Favourable geographic position presents an opportunity for improving economic position of LSUs. Although this is a natural feature of certain areas, it presents a significant development potential for these particular areas. This is something that the municipalities should focus on and use to improve their position and bring benefits to the communities. LSUs should put more efforts to maximize their capacities, to give adequate support for development potentials.

Having municipal spatial plans significantly smoothes the progress of realisation of investment in wind energy. These plans contain detail plans for all areas of under the control of LSU. Working on these plans is thus of great importance. If the budget of municipalities prevents them from realising these plans, LSUs should look for external financial assistance. This could be achieved by approaching special funds for small and undeveloped municipalities or turning to the companies interested in investing in wind energy, offering some tax relieves or other benefits.

Having properties of special purpose facilitates obtaining licences and project initiation. When there is a land, well located, but separated from national parks or urban areas, defined as building area in spatial plans, this helps having easier investment flows. For the investors, this means faster and more secure path for license obtaining. For municipalities this leads to safer, higher incomes.

### **Weaknesses and Opportunities**

Lack of finance and financial independence creates problems for positioning an even debate between representatives of municipalities and project developers. This results in problems for securing a partner position in wind energy projects. Better negotiation, but also consulting

additional funds, such as CDM, could empower municipalities with better base line for negotiation and result in more favourable contracts for local communities.

Municipalities, together with the interested project developers, should lobby to the MESPE and to the other Governmental institution, to push forward and resolve cadastre issue and restitution. This is an important issue, being that it prevents LSU from freely disposing of lands and properties. For investors, this creates a significant barrier, being that they do not feel secure investing in land with unresolved property rights. Insisting on putting an end to this issue promptly should be one of the priorities for LSUs. This would provide security for investors and for local authorities it will provide a stabile legal framework within which they can operate.

### **Strengths and Threats**

Despite of favourable geographic position and interest of investors, problems such as not having municipal spatial plans threaten project realisation. If two municipalities have similar conditions for carrying out the investments in wind energy, the project developer is more likely to turn to the LSU that already has urban and spatial design plan. This significantly shortens the time for investment realisation and is therefore more appealing for project developers. For this reason, municipalities should shorten the time needed for obtaining these plans. They should maximise self-efficiency and optimise procedures for handling project proposals. Additionally, municipalities should influence other relevant institutes, institutions and agencies, which are not under their command, to get more actively engaged in projects of interest for local regions. Ways of cooperation and finding common interests need to be found. Mechanisms for cooperation ought to be established.

Municipal representatives see the projects of wind energy as a chance to come to a significant additional income. These additional incomes could help LSUs elevate from current, low, economic positions. The representatives of local authorities seek to seal these agreements, by ensuring first incomes. This is why some of them tend to put additional financial taxes (Pajkić, 2011; Todorović, 2011). These taxes present first incomes until more significant investments are fulfilled. But, these extensive taxes and financial burdens could exceed potential benefits for the investors. This could make investors reconsider their investments and look for better deals. Local representatives should thus be very conscience about introducing any additional financial implications for big investors, being prudent and patient about explicit project realisation.

On the other side, investing in wind energy is expected to lead to increase of energy prices on national level. The Government is very well aware of this fact and procrastinates in bringing about laws which will empower development of this field. The reason for postponing the expansion of the investments in wind energy is, as discussed throughout the paper, energy pricing as a social category. However, the need for transposing EU regulation will finally lead to adopting measures that favour renewables. Consequences of these policies will be felt on one broader level and will reflect on political stability. However, decades of controlling energy prices inevitably lead to collapse of that system and opening to market based price formation.

SWOT Analysis	Strengths	Weaknesses
Opportunities	<ul style="list-style-type: none"> <li>I. Favourable geographic position is an opportunity for improving economic position</li> <li>II. Having properties of special purpose facilitates obtaining licences and project initiation</li> <li>III. Having municipal spatial plans facilitates realisation of investments</li> </ul>	<ul style="list-style-type: none"> <li>I. Lack of finance and financial independence creates problems for positioning an even debate and achieving a partner position</li> <li>II. Lobby to the Ministry to resolve cadastre issues and restitution.</li> </ul>
Threats	<ul style="list-style-type: none"> <li>I. Despite of favourable geographic position and interest of investors, problems such as not having municipal spatial plans threatens project realisation.</li> <li>II. Extensive taxes and financial burdens could exceed potential benefits for the investors</li> <li>III. Investing in wind energy will potentially lead to increase of energy prices</li> </ul>	<ul style="list-style-type: none"> <li>I. Brain drain and migration of young and educated people can result in chronic problems with human capacities of small and remote areas</li> <li>II. Failing to recognise benefits of opportunities presented combined with lack of information can lead to missing out serious opportunities for attracting investments</li> <li>III. Political instability and the way of choosing municipal delegates create serious barriers to efficient functioning of LSUs.</li> <li>IV. Unfinished restitution prolongs the time for realising investments and can lead to pulling out of investors</li> </ul>

Figure 6-2 'SWOT Analysis – cross-referencing'

### Weaknesses and Threats

One of the biggest threats and inherent weaknesses of small and remote areas is brain drain and migration of young and educated people towards big cities or even abroad. This can result in chronic problems with human capacities of these areas. It appears that this issue is striking all distant areas and because of that it needs to be taken as a very serious and delicate problem. This problem requires bringing about broad national plans and strategies for retaining people in their original habitats or even attracting newcomers. The author finds that precisely this type of investment, such as investments in energy of wind, could be a good strategy in this

direction. It is not so much about direct jobs, but about indirect possibilities that open up. These projects can further attract other investment, being that the spatial plans and procedures are already designed and in place.

Failing to recognise benefits that investing in wind energy brings to the broader community, combined with lack of information on all organisational levels, can lead to missing out serious opportunities for attracting investments. Lack of information about wind energy, its benefits and potential is felt on numerous organisational levels. A broader public campaign, promoting wind energy, followed by details challenges and prospects lying ahead, could be a good strategy forward.

Political instability and procedures for electing municipal representatives create serious threats to efficient functioning of local communities. Namely, the municipal delegates are not elected directly, but indirectly by the parliament of the LSU. This creates opportunities for putting political disputes on a local level, by blocking ideas of opposing parties (A. Djordjević, 2011; Todorović, 2011). One suggestion could be changing the procedures for electing the local representatives. These elections should be direct, meaning that the officials should be chosen on the elections in the local community. This would ensure a more harmonised functioning of the LSU and potentially lead to better decision making.

Unfinished restitution prolongs the time for realising investments and can lead to pulling out of investors. The amendments and changes to the Law 72/08 on Planning and Construction promise to loosen up the strict procedures and offer (Dulić, 2011; Vukosavljević, 2011). They do not offer to solve restitution problems, but they promise to lead to more clear and loose procedures for obtaining licences and starting up work on wind energy production.

### 6.3 Section Summary

The SWOT analysis indicates the vulnerability and fragileness of the position of municipalities. The investment opportunities exist, but numerous factors stand on the path of their development. Lack of understanding and will to act present problems that LSU constantly have to deal with. Further, unconsolidated national interests and lack of support from the central institutions challenge these investments. Although having a favourable position, with steady flow of wind, these physical attributes might not be strong enough incentives to materialise their positions. Investing in wind energy would bring significant benefits to the local communities and ensure their sustainable development. Failing to recognise this can result in loss of opportunities followed by brain drain and dependency on the countries that export their energy resources to Serbia. Using these opportunities means much more than bringing renewable energy to Serbia. It would mean a civilisational step forward, energy stability and potential for technological advancement.



## **7 Drivers and Barriers to Investment Flows**

Previous sections have opened up the debate on drivers and barriers that cross the path of the fulfillment of investments in wind energy. This section is based on the several research methods, such as the literature review, SWOT analysis and interviews conducted with various stakeholders. The triangulation of various qualitative methods ensures avoiding struggle with biased and unreliable data. Finally, this section grasps the most important factors that impact the expansion of wind power sector in Serbia by providing a more elaborated analysis of developments within this area.

### **7.1 Drivers**

#### **Contribution to energy security**

Serbia is highly dependent on the imports of the oil and gas. This goes for about 91% of oil and about 83% of gas. This makes the position of Serbia unenviable, strongly correlated to the developments on the local and European level. This makes the Energy community, which Serbia jointly formed with EU member states and countries of the region, extremely important for stability of energy supply. Being a part of this community is also beneficial for finding support for projects that deal with general increase of energy efficiency and developing strategies for use of energy from renewable resources (Simurdić 2010).

Thus, creating independent sources of renewable energy can be one of the most significant steps for answering the questions of energy security. Still, this area needs to be handled in a politically wise manner, since imprudent and frivolous actions can bring only economic harm of large costs, without bringing benefits, if for example the energy produced from renewables is given to foreign investors on non market based terms, as speculated in many interviews in daily prints with energy experts (B92 2010.)

#### **Contribution to the energy expectations of the EU**

Although adjoining the European Union stays far in the future, accessing the EU stays a long term goal of the Serbian policy. The processes of negotiations are ongoing. They result in commitments of both sides, but for Serbia they mean need for transposing and applying the legislative norms and standards of the EU. This creates favourable conditions for development the sector of renewables. EU Energy targets, in line with Kyoto Protocol, envision growth in use of renewable resources. Guided by the EU targets, Serbia set the goal to ensure 18% growth of the sector of renewables by 2020 (Dulić, 2011). According to earlier elaborated normalisation rule, this growth needs to include wind energy in the total energy mix. This is an important driver for investing in this type of energy.

#### **Good potential for investments into wind energy**

For a region to be considered as favourable for developing wind farms, it is not important to have strong wind. What matters is the steady inflow of wind and number of days with wind (Gamberale, 2011). According to the Law on the Territorial Organisation of Serbia, the land is divided into 174 LSUs (Off. Gaz. of RS, 2007). Conducted measurements have so far determined that about 7% of these municipalities hold desired characteristic. Interest of investors in these municipalities is significant. Measurements continue to find new favourable locations.

The most interest comes from companies from west Europe. Being that the energy market in west Europe is already saturated, these companies aim to spread their business to, so far, undeveloped markets. Serious investors are willing to enter the Serbian energy market with

significant financial resources, untrammelled by the complicated licensing procedures (Rogelj, 2011). Practical and business oriented mind of the municipalities should stream their efforts towards realisation of these investments and thus attract serious financial inflows. This could bring chances for development on the local level.

### **Potential financial input**

It is still yet questionable what kind of benefits will the country have of these projects. Many of these companies already announce that they will be selling the electricity they produce in other countries. Other companies are trying to make deals with the government to build infrastructure and then, for longer period in future, export only to the country that invested in the project. It is questionable how will this impact the economy and the state of energy of the country.

### **Potential for technology transfer and employment opportunities**

The Directive 2009/28/EC envisions the need of the state and the companies involved in the projects to secure (re)training for the technicians and create skilful workers that would be handling these projects (EC & EP 2009). If the companies working on projects on renewables would follow orders of this directive, this would have significant positive impact on the employment image in the country, also having in mind tendency of people leaving the countryside and moving to larger cities.

This process of retraining workers is slowed down by the complicated procedures to secure licences for operating. The lack of transparent rules, as it is stated by Directive 2009/28/EC, hinders the deployment of renewable energy sector (EC & EP 2009).

Direct employment opportunities are not as numerous as when compared to large energy projects, such as a nuclear power plant. However, WWEA (2011) reports that development of wind energy projects creates significant job opportunities in numerous sectors of diverse educational profiles. They report on need for managers and engineers, but also skilled workers. The need exists for lawyers and legal experts, financial and environmental experts and auditors (WWEA, 2011).

### **Kyoto Protocol and CDM**

Kyoto Protocol can be used as a significant driver for realisation of investments in wind energy. CDM, as a Kyoto mechanism creates opportunities for finding additional financial resources. This thesis pointed out, in section 3.4. of this paper, the applicability of CDM scheme for wind energy projects. Testing on these criteria and examples provided of the existing cases suggest that there is no viable reason why this scheme would not be applied in Serbian wind energy sector development. If this scheme would be applied, it would be of utmost importance for municipalities. These additional incomes would provide local authorities with better negotiation positions and finally result in more favourable contracts. This would ensure local and regional development, attracting young people and preventing brain drain and ensuring sustainable development of the regions.

## **7.2 Barriers**

### **Long and complicated procedures for obtaining licences**

Licensing procedures create investment barriers both on national and local level. So far, this has been a major obstacle in the way the interested companies do their business (Rogelj,

2011). Getting permissions for building wind farms has encountered serious bureaucratic complications which result in creating barriers for project developers, preventing them to fulfil investments (Gamberale, 2011). The process of getting a licence for starting actual energy production from a wind farm was described in previous sections where National Law and Policy related to energy scene in Serbia were discussed. However, in the Answers, it is stated that investors in licensing procedures face lack of understanding of basic processes, rules and procedures by institutions in charge (Government of Serbia, 2011b). This is followed by "contradictory procedures and permits and fragmentation of laws" (Ibid.).

In order to fully start their operations, companies need to have 26 different licences (B92, 2010; Stojadinović, 2011). This is further hardened by the fact that some licences can be given by Ministry in charge – MESPE, MAFWM. Other licences have to be obtained from local authorities. Stojadinović (2011) explained that the procedure for getting a license for energy production from the Ministry is uncomplicated and clear. Company can get one such a permit within one month. But after having this license, it is required to have a permit for location and building permit. The same source considers that problem occurs very often on level of local authorities, which have not faced before similar requests, and do not have procedures and the power in them to give these certificates. Another problem is lack of spatial plans for further development (B92, 2010). Further on, for acquiring the status of privileged producer, companies need to get adequate licences for operating on the envisioned projects on renewables.

One the municipal level, every investment plan needs to be approved by local authorities. Firstly, LSU authorities need to come up with the Decision to Access Developing Plan for a specific project. Next steps include creating a concept of a plan, draft of the plan and a plan proposal. The plan proposal is submitted for public inquiry, which lasts 30 days. After the period of 30 days, the plan goes to the Municipal chamber, which adheres on the changes created by the public inquiry. After they reach a decision on final draft of the plan, a plan goes to the parliament, where it is adopted. All of these phases are monitored by the Planning Commission (Vukosavljević, 2011). This process seems long, but also transparent and clear. However, it is very fragile and prone to manipulation and offsetting political interests (Ibid).

So far, only one of the investors interested in starting production of wind energy has a full licence to start operating. This has happened only recently, in April 11, 2011, when the first windmill in Serbia started operating, in Tutin municipality, Southwest Serbia. The rest of the interested investors are still struggling with complicated procedures, lack of capacity, lack of spatial plans and additional transaction costs.

### **Lack of will and understanding of political actors on different levels of power**

One other reasons for prolonging to bring about these legal acts, is that government does not possess a full knowledge on the potentials of renewable energy in the country and does not want to rush into creating legal and binding obligations (Government of Serbia, 2011b). Some studies have been made, but in most of the fields, they are yet to be conducted. Other reason is that the state officials are not yet that familiar with the effects of the EU legislation and the *Acquis* on Energy. Another problem is that governmental officials are currently very devoted to the process of Eurointegration – meaning adoption of *Acquis*, filling in the Questioner, so that many items on the list which are not defined as a priority at the current stage have been left to be dealt at later stages.

The fact is that the state, so far, found no adequate model that would insure its prosperity in respect of selling-giving permissions for renewable energy exploitation. Without this model,

government is hesitating bring all by-legal documents in the field of energy that would allow potential investors to fulfil their rights as privileged producers (Sretić, 2010).

This had influenced the companies drastically, so much that they have, so far, been postponing their operations.

Thus, it stays on the interested companies to invest and believe that in near future by-legal documents will enter into force, which would give them the status of the privileged producers. Other option for them is to withdraw from the market and wait for some more legally settled surroundings.

If they decide to invest and wait for the status of privileged producer, their worries will not finish when the legal norms get in order. What is already determined, says for B92 Dejan Stojadinović, advisor to the former Minister of Energy for renewable resources, is that only the first comers will get the status of the privileged producers, and only for the first 450MW of the energy produced (B92, 2010). This creates a kind of race for obtaining this status and already hard competition on the newly emerging market. Stojadinović explains that others will thus have hard times in selling their electricity for the lower price, which will make these investments costly and with questionable pay offs.

Additionally, PE EGS and PE EPIS, which are the only electricity and grid providers in Serbia, do not believe in benefits that renewable energy can bring. This attitude of the two PEs is often encountered in media (B92, 2011), but also very familiar to officials (Pajkić, 2011; Vukosavljević, 2011). Their attitude is partially justified by concern for the impact that higher energy prices might have to the citizens. In their

Deeper levels of their refusal to invest in renewables could be a good topic for future researches.

### **Lack of capacities and municipal spatial plans**

Besant-Jones et al. (2010) in their study indicate lack of qualified personnel and lack of reliable information as major barriers to investment flows. Government of Serbia finds this problem, together with lack of experience to be among the biggest problems that the county faces when confronted with renewable energy projects (Government of Serbia, 2011b). One of the problems that they observe is long time to educate consumers, further to have certified energy auditors, manufacturers whose products are competitive, but also to secure good contractors (Besant-Jones, et al., 2010).

Municipal spatial plans are mandatory instrument that LSU must possess prior to any investment. These plans, if detailed, might be very costly. Additionally, caused by frequent changes in governmental regulation, these plans need to be changed as well, which creates additional financial burdening for municipalities. Furthermore, if municipal plans are dependent on other public institutions, procedures for obtaining licenses might be prolonged. This is due to lack of will and understanding of common, public interest created by direct investments.

For financial support, LSU might address MESPE or potential investors. Overcoming procedural barriers will require creating a national policy, which ought to create more strict rules and procedures, and monitor their implementation.

## **Expropriation/ denationalisation**

The questions of expropriation and denationalisation are procedural problems with which stakeholders need to work with. These issues incurred during the communist times, when private properties were collectivised and declared as public goods. Additionally, local authorities lost their possessions, which became state owned. This is still the case. Recent law on restitution raised this question for the first time on the national level. However, this law regulates only restitution as returning the properties to the churches and religious communities. The full restitution is yet to be finalised.

This question concerns wind project developers as well. Namely, to be able to build a wind farm, project developer needs to have land on which to build. To secure their investments, project developers are interested to purchase, not to rent the land. For this, they turn to the authorities, who manage the land. However, property rights for these cases are not solved yet. Because the question of restitution is unresolved, official owners of the land are central authorities.

Being that the process of restitution has started, but not yet finalised, they cannot sell this land. Local authorities, which are the actual owners of the land, do not yet have their rights to dispose it (Vukosavljević, 2011). MESPE is interested in resolving this matter, by allowing the LSU to sell their land (Ibid.). However, cacophonous positions of different ministries are strong, resulting that the Ministry of Finance, does not allow these sails until they are fully resolved by law (Ibid.). LSUs find different solutions for resolving these problems, either by creating long term rental agreements or allowing the purchases and storing the financial income gained, until the restitution is finalised (Ibid.).

Additional procedural problems are created when the question of denationalisation arises. Properties which were taken from the private owners create additional barrier for LSUs, being that they have to find means to remunerate these owners if their land gets sold. In Kovin municipality, they deal with this problem by separating income from properties sold on equal parts, to assure enough solvency for remunerating private owners (Vukosavljević, 2011).

## **Transaction costs (TCs)**

In their study, Mundaca and Rodhe (2005) list transaction costs as one of the barriers for the investment in wind energy. Their opinion is based on the Choase theorem. In 1960, Ronald Choase defined the transaction costs as a nuisance of certain activities (Choase, 1960).

By transaction costs, these authors understand the costs that do not come out of the realisation of a project (Mundaca & Rodhe, 2005). These are the costs that are additional to a project, but must be accounted for. They arise from the negotiations, lobbying, certification, monitoring and other project related activities. They are inherent to the project and their existence creates additional financial burdens for project developers.

Findings indicate that TCs present significant burden for project developers (Mundaca & Rodhe, 2005). For the purpose of minimizing negative effects of transaction costs, Mundaca and Rodhe (2005) recommend simplifying procedures for licensing and project development.

### 7.3 Section Summary

Presented analysis of the drivers and barriers for investing in wind energy in Serbia reflects a struggle between different factors, which block or stipulate development of renewables within the country. The drivers, such as energy security, transposing the EU legislation and Kyoto targets, potential of renewables in Serbia and financial opportunities presented, followed by chances for transfer of technologies, might not be sufficient stimuli for investment realisation. The barriers that investments in renewables face are significant and could lead to withdrawal of investors from Serbian market. Long and complicated licensing procedures followed by transaction costs, lack of will and understanding and lack of capacities create discouraging environment for investments. The issues such as lack of municipal spatial plans and expropriation further hinder development of these projects. Time might be one of the crucial factors to determine the future of these investments. If investment milieu is not enhanced within the coming year, investors would be prone on finding better investment conditions. It is hard to estimate which factors will prevail. Parties interested in realisation of these investments in Serbia, such as municipalities, should work on strengthening the drivers and lobbying for resolving or minimizing the existing barriers.

## 8 Findings and Conclusions

Global energy trends record growth in electricity produced from renewable energy sources and development of related technologies. Investments in wind energy follow this trend. While in Western Europe investing in renewables encounters opened and developed market, for the Eastern Europe, these investments are only at their beginnings. Investors seem interested to start exploring this potential. Serbian market also attracts numerous investors, and it was in the topic of this thesis to elaborate on their positions and drivers and barriers they come across. As the thesis assumes that the main project beneficiaries of deployment of wind energy are the local communities, thesis focused also on municipalities, looking into circumstances that guide and shape their behaviour.

The literature review on the legal and institutional framework indicated significant drivers and barriers to wind energy development. Observing this framework indicated the importance that *Acquis Communautaire* has on legislation of a country even in a pre-accession phase. The EU Directive 2009/28/EC creates a particular impact on national energy framework and on targets for renewable energy development. Guided by this directive and Kyoto targets, Serbia committed to reduce emissions and to increase share of renewable energy in the total energy mix for 18%. Developing on this potential would help Serbia not only to meet the EU targets, but also to assure lower dependency from energy import creating conditions for sustainable development. However, national policy, in particular complicated licensing procedures, high transaction costs and contradicting measures, such as conducting a feasibility study to the grid only after a windfarm project is finalised, create financial and procedural burdens for investors, which might result, if not acted prudently, in their withdrawal from the Serbian energy market. The cases observed in the thesis, of the Czech Republic, Slovakia and Croatia further suggest that for wind investment realisation licensing procedure needs to be consolidated, more clear and transparent. Further on, this procedure needs to be in accordance with project development stages. Other, technical issues, such as lack of spatial plans and expropriation further hinder these procedures. Additionally, the cases observed indicate different roads and commitments taken in meeting the EU targets for fulfilment of goals envisioned by the Kyoto Protocol. The cases were conducted in order to observe and compare different models of approaching the designed EU targets. These findings can help in creating new Energy Law, since they can help understanding potential pitfalls, but also benefits of certain policy measures.

This research encountered with various inconsistencies in laws and bylaws. One of the interesting inconsistencies was the issue of the Feed-In Tariffs. Existing tariffs will expire in 2012, and benefits from them will not be harnessed due to long and complicated procedures. Tariffs that will regulate this area after 2012 are still gloomy and unknown area, creating concernment with the potential investors. Additionally, constant changes in legal regulations create confusion and with all groups of stakeholders, resulting in their chronic unawareness. Additionally, observing the comparative cases indicates that having a cap on Feed-In Tariffs for wind energy does not create an investment friendly atmosphere. This cap in Serbia is placed on first 450 MW of wind energy produced.

Different funds could be used to stimulate development of these investments. Municipalities could find the necessary support in Kyoto Protocol Clean Development Mechanism (CDM). So far, only a small number of wind farms worldwide have been granted CDM support. This thesis explored applicability of CDM scheme for wind farm projects, by testing the criteria given by the Designated National Authority (DNA). Results indicate wind farms have good potential to qualify for this scheme, being that they fulfil enough criteria, in social, economic and environmental sphere. Further on, they contribute to better public health, increase in local

budget and contribute to better living conditions in vulnerable communities. Wind farms can also bring development to local industry, which can manufacture parts for windmills. More support from the central institutions for these projects could help development of these branches of industry. However, since Kyoto Protocol obligations expire in 2012, the Government is not obliged to continue with this scheme after this period. Interestingly enough, the CDM project scheme in Serbia is available only since 2010. Additionally, lack of reliable and accessible information made potential key beneficiaries of wind energy – the municipalities – unaware of this scheme. For their realisation, private-public partnership is vital. Private sector could empower municipalities with capacity needed for qualifying for the CDM scheme. Additional research should establish which size of wind farms is most attractive for the CDM scheme.

A part of this thesis included an analysis of strength-weaknesses-opportunities-threats – a SWOT analysis – of the position of the municipalities for which interest of the investors has been expressed. This analysis indicated vulnerable and fragile position of municipalities and hardness they face in their strive for realising investments in wind energy, which would bring significant economic and social benefits to the local communities. The analysis also indicated problems within municipalities - political bickering and calibration of influences - as a barrier for realising these investments. Lack of awareness and inability to recognise benefits of existing opportunities can lead to deepening the problem of brain drain, where young and educated people abandon original habitats in search for better living conditions.

However, the biggest threat, according to the analysis conducted, comes from unresolved position of the central authorities, which create significant barrier for success of these investments. This mostly refers to the significant differences in understanding of issues of energy security of, on one side Ministry in charge of energy, and on the other, Ministry for the Environment. This relation confirmed that the current policy is balancing between two sides. On one side there are the Eurointegration processes, which bring the need for opening up the energy market; market-based price forming and increasing own supply of energy. On the other side there are opportunities for investing in oil and gas which would, one the short runs, stimulate the development of economy and help, at the present moment, keep the social stability. But, as a result of thinking about present benefits, the Government is directly undermining independent development of regions and local communities, withholding their chances for sustainable development – which renewable energy enables. Lack of interests from Governmental institutions in practice creates loss of opportunities for the municipalities, blocking their development and financial independency. This finally results in creating the dependence of municipalities on the central authorities. But this could be a two-edged sword, having short term positive effect, but can on the long runs result as economically wrong decision. This will cost the country losing of green field investments, chances for local development, recovery of rural areas, technological transfer and their development.

Lack of support from Public Enterprises - Electric Grid of Serbia and Electric Power Industry of Serbia - and their strive for keeping the monopoly on the electricity supply creates significant problems for investing in renewable energy. Controlled by the Government and concerned about the prices of energy, these Public Enterprises create discouraging conditions for investing in energy of wind. The barriers range from procedural to financial. Energy Community reports that prices of energy for the final consumers in Serbia are among the lowest in Europe. Fear from higher energy prices, that investing in wind energy might bring, and potentially political and social instability which would follow growth in these prices creates major barrier for investment in renewables and thus, for investing in energy of wind. However, benefits that these investments offer, such as higher energy independency and local and regional development are important divers that should be considered in decisionmaking.



It is expected that the announced liberalisation of energy market will weaken these barriers and create more favourable climate for wind energy investments. Inability to recognise the benefits from investing in wind energy will further lead to a growing dependence on import of energy, since the national reserves of non-renewable resources are being heavily deployed. But, as Oliver Dulić, the Minister of Environment, Mining and Spatial Planning stated, on a conference recently held - investing in wind energy presents a "civilisational leap forward" (Dulić, 2011). Finally, what these projects can offer is higher energy independency, but also potential technological advancement. Additionally, the global price of wind energy is rapidly decreasing, making it more competitive, when confronted with other types of energy.

Time comes out as an essential dimension for fulfilling the investments in wind energy. Prolonging necessary reforms and support mechanisms discussed throughout the thesis would result in investors withdrawing from Serbian energy market. The biggest beneficiaries off these projects would be local communities – municipalities. This is why they should, together with project developers, stream all their efforts and capacities to realise these investments and ensure their own, local, sustainable development. Otherwise, this will be a lost battle of "Don Quixote against the windmills".

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## Appendix I: Wind Map of Serbia

The enclosed wind maps of Serbia, developed by the Republic Agency for Spatial Planning, exhibit potential of the country in exploiting this potential as an energy source. The map on the left gives average figures for wind energy on the 100 meters above the ground level measured in January. The right side map presents holds same features for month of July (RASP, 2010).

The presented maps indicate the higher potential in eastern Serbia and south regions of Vojvodina, which reflects expressed interest of project developers and potential investors.

Complete Atlas of the Winds for Serbia is not yet developed.

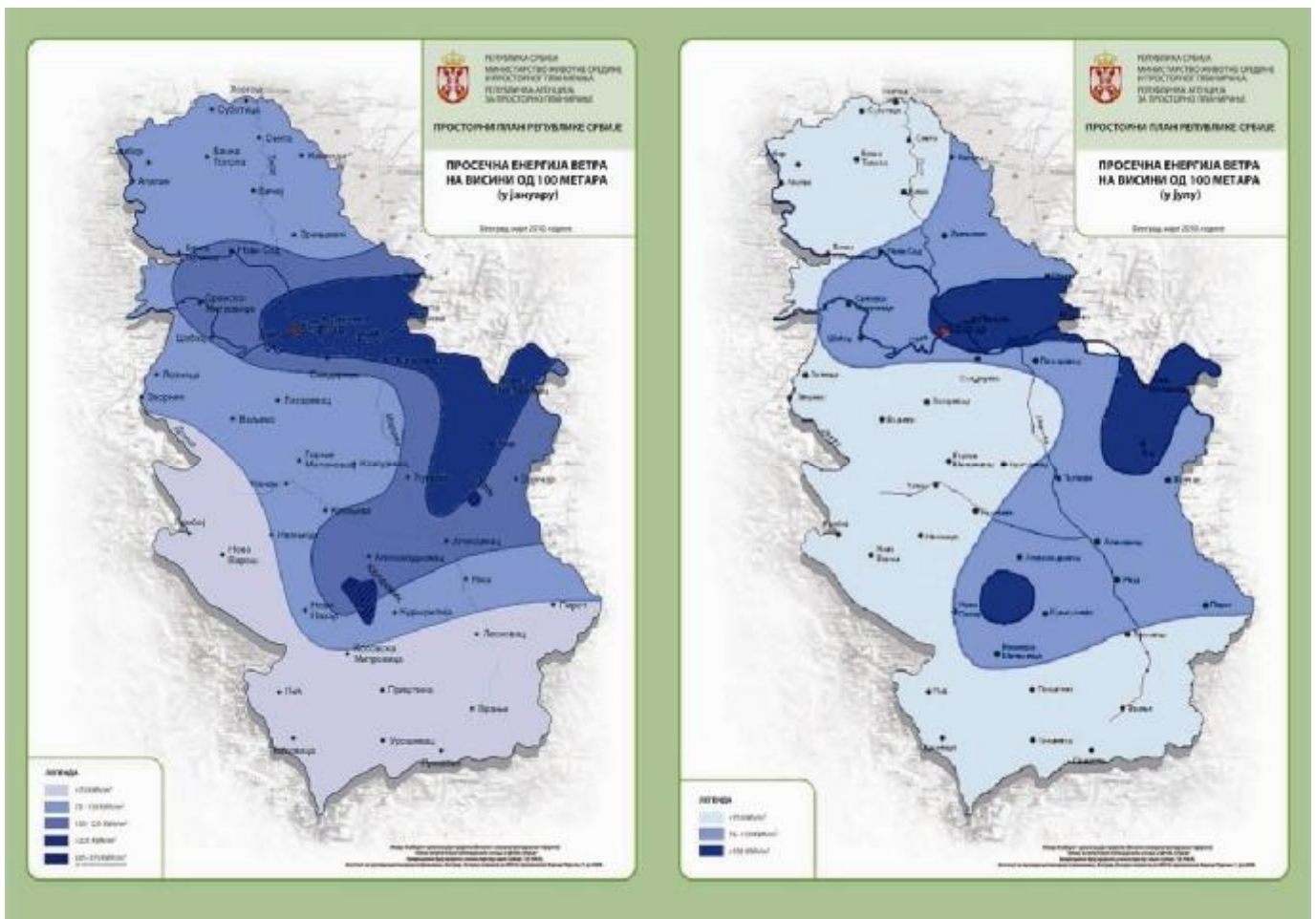


Figure I-1 Wind map of Serbia.

Source: (RASP, 2010), adapted

## **Appendix II: List of Interviewees**

During this research, several interviews have been conducted. These interviews were made with relevant actors in the field of renewable energy in Serbia: representatives of private companies, government and LSUs. Interviews were conducted between December 2010 and May 2011. These interviews were conducted with the individuals listed below (listed alphabetically):

- ✚ Aleksandar Kovačević: energy economist and researcher, advisor for the energy efficiency
- ✚ Aleksandra DJordjević: Head of the Department for Agricultural and Economic Development and Diaspore. Veliko Gradiste Municipality
- ✚ Dejan Stojadinović: Assistant Minister for Renewable Energy Sources (former MME)
- ✚ Dušan Todorović: Municipality Kucevo, member of municipal council
- ✚ Melita Rogelj: project manager for Electrawinds
- ✚ Milan Simurdić: currently ambassador of Serbia to Norway. Was a chairperson for European Movement in Serbia
- ✚ Radovan Vukosavljević: Head of Department for Municipal construction and communal affairs, inspection, legal and agricultural matters. Kovin Municipality
- ✚ Vincent Gamberale: Private sector development Director, USAID Competitiveness Project
- ✚ Zoran Pajkić: President of Golubac Municipality
- ✚ Zoran Sretić: Head of Group for Environment, Agriculture and Rural Development, Serbian European Integration Office



## Appendix III: National CDM Indicators

Criteria	Area	Indicators	Remark
<b>Economic</b>	1. Investment conditions	<ul style="list-style-type: none"> <li>- Involvement of local partners and the way it has been realized</li> <li>- Contribution of the project to the increase of foreign investments</li> <li>- Contribution of the project to existing activities in given area</li> </ul>	
	2. Sustainable transfer of technology	<ul style="list-style-type: none"> <li>- Best available technology</li> <li>- Technology compliant to requirements of a local conditions</li> </ul>	
	3. Economic development of the region	<ul style="list-style-type: none"> <li>- Contribution of the project to development of undeveloped regions</li> <li>- Impact of the project to electric energy price</li> <li>- Contribution of the project to infrastructure regional development/local community</li> </ul>	Will project be implemented in an undeveloped area/region?
	4. Employment	<ul style="list-style-type: none"> <li>- Contribution of the project to the opening of new working places</li> </ul>	Will project contribute to employment/unemployment rate?
	5. Sectoral priorities	<ul style="list-style-type: none"> <li>- Contribution of the project to sectoral priorities</li> </ul>	
	6. Costs and production	<ul style="list-style-type: none"> <li>- Energy intensity</li> <li>- Contribution of the project to reduction of local population/region dependence from import of energy-generating products</li> <li>- Contribution of the project to participation of renewable energy sources in</li> </ul>	Ratio of total energy consumed value and realized GDP  Contribution to

		<p>total energy consumption</p> <ul style="list-style-type: none"> <li>- Contribution of the project to reduction of waste generation</li> <li>- Contribution of the project to waste management in compliance with environmental protection requirements</li> <li>- Energy intensity of traffic</li> </ul>	<p>achievement of national goals regarding the share of renewable sources in total consumption of energy</p> <p>Consumption of energy for transport</p>
<b>Social</b>	1. Stakeholders' participation	<ul style="list-style-type: none"> <li>- Involvement of stakeholders in project preparation and implementation</li> <li>- Support to the project from stakeholders at local level</li> </ul>	
	2. Improvement of life conditions	<ul style="list-style-type: none"> <li>- Increased employment at local/regional level</li> <li>- Increase in revenues at local/regional level</li> <li>- Improvement of life conditions in poor and vulnerable communities</li> <li>- Improvement of gender equality</li> <li>- Contribution of the project to improvement of public health</li> </ul>	
	3. Capacity building	<ul style="list-style-type: none"> <li>- Contribution of the project to transfer of knowledge and experience necessary for use and maintenance of technology/equipment</li> <li>- Participation of local enterprises in project execution</li> <li>- Enabling local population to apply new knowledge, technologies and skills</li> </ul>	
<b>Environment and natural resources</b>	1. Energy resources (fuel switch, energy efficiency, energy savings, renewable energy sources)	<ul style="list-style-type: none"> <li>- Reduction of energy dependence of fossil fuels/import of energy - generating products</li> <li>- Energy intensity</li> <li>- Energy intensity of traffic</li> </ul>	
		<ul style="list-style-type: none"> <li>- Reduction of GHG emissions</li> <li>- Reduction of other</li> </ul>	Emission expressed in

	2. Air	pollutants (VOC, SO <sub>2</sub> , NO <sub>x</sub> )	CO <sub>2</sub> e per capita
	3. Water	<ul style="list-style-type: none"> <li>- Contribution of project to improvement of drinking water quality</li> <li>- Contribution of project to sustainable water use</li> </ul>	Percentage of wastewater being treated
	4. Land	<ul style="list-style-type: none"> <li>- Consequences of changes in land use</li> <li>- Contribution to prevention of land degradation</li> <li>- Contribution of sustainable land use</li> </ul>	<p>In case that there are consequences to change in land use</p> <p>Name measures for prevention of land degradation</p>
	5. Biodiversity	<ul style="list-style-type: none"> <li>- Conservation of local and regional biodiversity</li> <li>- Contribution to conservation/increase in plant coverage</li> <li>- Contribution to conservation/increase in forest coverage</li> <li>- Contribution to sustainable use of biomass</li> </ul>	
	6. Natural resources	<ul style="list-style-type: none"> <li>- Contribution of project to sustainable use of water, forest, mineral resources etc.</li> </ul>	

*Table AIII- 0-1 'National CDM Criteria'*

*Source (Government of Serbia, 2010), adapted*

## Appendix IV: SWOT Analysis Questionnaire

Activity work sheet for SWOT analysis: Questions	
<b>Strengths</b>	
+	What makes the position of the municipalities advantageous, compared to other stakeholders?
+	What can be the role of municipalities in implementing these projects?
+	What are the biggest strengths of the municipalities?
+	What do other actors see as strength of observed municipalities?
<b>Weaknesses</b>	
+	What could be improved in the work of municipalities?
+	Why do municipalities lack of spatial plans and how can the situation be improved?
+	What are the main barriers for implementing innovative strategies in municipalities?
+	What can help and how can the problem of lack of capacities of municipalities be solved?
+	Which elements need to be strengthened?
+	What obstacles prevent progress of municipalities?
+	What should LSU avoid, what is the worst case scenario?
+	Are there any weak links in the chain of LSU functioning?
+	What do other actors see as weakness of observed municipalities?

<i>Opportunities</i>	
+	What are the benefits of implementing the program of wind farms in municipalities in Serbia?
+	What are the relevant trends on global scales with these projects?
+	What opportunities are open for municipalities?
+	How can the municipalities take advantage of the existing opportunities?
+	How can strengths be turned into opportunities?
+	What are the changes that are actually available to happen within the existing capacities or with potential resources?
+	What changes in the Governmental policy, related to the energy of wind, may be possible?
+	Is there any impact on socio-economic changes for the beneficiaries of these projects – municipalities, municipal budget, building of capacities of employees in the municipalities, potential employment, transfer of technologies, attracting more investments?
<i>Threats</i>	
+	What obstacles can these projects face?
+	Is the necessary support for conducting these projects available?
+	Do the actors involved show their interest and willingness to provide all necessary support – retraining, raise of capacities, financial support?
+	Is there understanding of technologies, issues and stakes from the side of municipalities?
+	What could harm the municipalities?

Table AIV-0-1 'SWOT Analysis Questionnaire'