RENEWABLE ENERGY POLICY: A COMPARATIVE CASE STUDY OF LATVIA AND SWEDEN

Dissertation in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE WITH A MAJOR IN WIND POWER PROJECT MANAGEMENT

Uppsala University
Department of Earth Sciences, Campus Gotland

Approved by:
Supervisor, Sanna Mels

Examiner, Andrew Barney

30.07.2019
ABSTRACT

In autumn 2017, a news scandal surfaced in the Latvian media about a potential subsidy scam by the renewable energy generating companies. The scandal bought the attention of the Latvian government towards the renewable energy policy in Latvia with thoughts to research the existing support system and potentially change it to a new one. This situation provided the ground for reviewing the Latvian renewable energy policy in a comparison study with another European Union (EU) member country with an example of a good renewable energy policy implementation. Sweden was selected as the subject for the studies. This study was performed through a qualitative empirical data review, using documents and journal articles as the main information sources.

The study has shown that both Sweden and Latvia take a leading position within the EU when it comes to the renewable energy share in the final energy mix regardless of the considerable gap in the quality of governance index that has an impact on the sustainable development of a country.

A comparison of Latvian and Swedish policy also shows a difference in the policy consistency and stability. Lack of coherent policy terminology throughout the different authoritative information sources, more frequent policy revisions than in Sweden and general lack of data availability summarizes the situation in Latvia.

The research has identified that the main difference between Latvian and Swedish renewable energy policy is the administrative processes surrounding it. In general, it can be said that Sweden has a more transparent system with less bureaucracy whereas in Latvia the process is more complex and therefore is more susceptible to corruption.
ACKNOWLEDGEMENTS

There is so much gratefulness that goes to everyone who has supported me during the time of studies and the thesis work.

First, I would like to thank all of my study colleagues who made this study year unforgettable and the graduates of the study year 2016-2017 who shared their experiences with us.

Second, I would like to thank the teachers of the Wind Power Project Management Masters programme for the provided knowledge, motivation and encouragement.

Next, a big thank you goes to my new colleagues at Nordex Sweden AB for being there for me at the finish line.

And finally, I want to thank me parents who have always believed in me, supported and guided me. Thank you!
# NOMENCLATURE

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIT</td>
<td>Feed-in Tariff</td>
</tr>
<tr>
<td>RE</td>
<td>Renewable Energy</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>IRENA</td>
<td>International Renewable Energy Agency</td>
</tr>
<tr>
<td>OECD</td>
<td>The Organization for Economic Co-operation and Development</td>
</tr>
<tr>
<td>COEP</td>
<td>Component of Obligatory Electricity Purchase</td>
</tr>
<tr>
<td>TGC</td>
<td>Tradable Green Certificates</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iv</td>
</tr>
<tr>
<td>NOMENCLATURE</td>
<td>v</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>viii</td>
</tr>
<tr>
<td>CHAPTER 1. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1. Research aim</td>
<td>1</td>
</tr>
<tr>
<td>1.2. Latvian case study background</td>
<td>3</td>
</tr>
<tr>
<td>1.3. Swedish case study background</td>
<td>4</td>
</tr>
<tr>
<td>1.4. Paper Structure</td>
<td>5</td>
</tr>
<tr>
<td>CHAPTER 2. LITERATURE REVIEW</td>
<td>6</td>
</tr>
<tr>
<td>2.1. Renewable energy policy and the quality of governance</td>
<td>6</td>
</tr>
<tr>
<td>2.2. Policy and corruption</td>
<td>7</td>
</tr>
<tr>
<td>2.2.1. Anti-corruption principles</td>
<td>8</td>
</tr>
<tr>
<td>2.3. Renewable energy policy and the role of the European Union</td>
<td>9</td>
</tr>
<tr>
<td>2.4. Renewable energy policy and institutional barriers</td>
<td>11</td>
</tr>
<tr>
<td>2.5. Division of renewable energy policy</td>
<td>11</td>
</tr>
<tr>
<td>2.6. Popular/ most widely used policy review</td>
<td>13</td>
</tr>
<tr>
<td>2.6.1. Feed-in tariff</td>
<td>13</td>
</tr>
<tr>
<td>2.6.2. Feed-in premium</td>
<td>13</td>
</tr>
<tr>
<td>2.6.3. Green certificates and quota obligations</td>
<td>14</td>
</tr>
<tr>
<td>2.6.4. Tenders</td>
<td>15</td>
</tr>
<tr>
<td>2.6.5. Tax exemptions and investment aid</td>
<td>15</td>
</tr>
<tr>
<td>2.7. Pre conditions (Requirements) for effective policy</td>
<td>16</td>
</tr>
<tr>
<td>2.8. Summary</td>
<td>17</td>
</tr>
<tr>
<td>CHAPTER 3. MATERIALS AND METHODS</td>
<td>18</td>
</tr>
<tr>
<td>3.1. Research methodology</td>
<td>18</td>
</tr>
<tr>
<td>3.2. Data sources</td>
<td>20</td>
</tr>
<tr>
<td>3.3. Limitation</td>
<td>20</td>
</tr>
</tbody>
</table>
3.4. Summary .................................................................................................................. 20

CHAPTER 4. RESULTS ................................................................................................. 22

4.1. Latvia and Sweden quality of governance and share of renewable energy in the final energy mix data ............................................................................................................. 22
   4.1.1. Quality of governance ......................................................................................... 22
   4.1.2. Share of renewable energy in gross final energy consumption and the EU 2020 target .................................................................................................................. 22

4.2. Latvian and Swedish renewable energy policy review and its compliance according to the effectiveness requirements and transparency ............................................. 24
   4.2.1. Renewable energy policy consistency and stability in Latvia ......................... 24
   4.2.2. Renewable energy policy consistency and stability in Sweden ...................... 26
   4.2.3. Public access to information in Latvia and Sweden ........................................... 28

4.3. Renewable energy bureaucracy in administrative procedures in Latvia and Sweden ................................................................................................................................. 29

CHAPTER 5. DISCUSSION AND ANALYSIS .......................................................... 31

5.1. Difference in the development status, renewable energy mix, EU set targets and quality of governance between Latvia and Sweden ............................................. 31
   5.1.1. Quality of governance ......................................................................................... 31
   5.1.2. Renewable energy mix and the European Union set targets ............................ 31
   5.1.3. Summary ............................................................................................................. 32

5.2. Renewable energy policy difference between Latvia and Sweden in terms of consistency, stability and public access to information ................................................. 32
   5.2.1. Consistency and stability ..................................................................................... 32
   5.2.2. Public access to information ............................................................................... 33
   5.2.3. Summary ............................................................................................................. 34

5.3. The difference in administrative procedures between Latvia and Sweden ................ 34
   5.3.1. Summary ............................................................................................................. 35

CHAPTER 6. CONCLUSIONS ...................................................................................... 36

6.1. Research Limitations ............................................................................................. 37
6.2 Further research ....................................................................................................... 37

REFERENCES ............................................................................................................ 38
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Data analysis process. Source: Ahmed, 2010</td>
<td>199</td>
</tr>
</tbody>
</table>
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Country profile key indicators. Source: European Commission 2015a,b.</td>
<td>23</td>
</tr>
<tr>
<td>Table 2</td>
<td>Latvian policy changes timeline.</td>
<td>26</td>
</tr>
<tr>
<td>Table 3</td>
<td>Swedish policy changes timeline.</td>
<td>28</td>
</tr>
<tr>
<td>Table 4</td>
<td>Assessment of the administrative procedures in Latvia and Sweden. Source:</td>
<td>30</td>
</tr>
</tbody>
</table>
CHAPTER 1. INTRODUCTION

Today the wind industry is the fastest developing renewable energy market, slowly becoming an equal competitor to fossil fuel energy (REN 21, 2016, p.20). Some countries are still in the development stage and are stimulating the renewable energy market growth through different policies with a focus on different support schemes as the main driving force for the investment.

This paper looks at the Latvian renewable energy policy system in a comparative study through the lens of the Swedish renewable energy policy case. The aforementioned countries have been selected for two reasons. First, in 2017 a subsidy scam scandal headlined the newspapers in Latvia. A TV news program discovered that a registered combined heat and power plant that was not actually built yet, was feeding the grid with electricity and receiving renewable energy production subsidy money. (Russian TVNET, 2017). Of course, this scandal raised the attention of the Latvian residents and the Latvian government towards the Latvian renewable energy policy and the accuracy of the support system. After all, the money for the subsidy payment was directly gathered from the electricity end-users through the electricity bills resulting in 193, 6 million Euro in 2017 alone. Next, in order to get a perspective on the Latvia renewable energy policy it was decided to do a comparative study including another EU country that is not only bound by the same EU agreements and directives, but also has similar climate conditions for renewable energy development due to geographical proximity and that takes a leading role in the EU in terms of renewable energy development and a strong renewable energy policy. Sweden fits these criteria and therefore was chosen to serve as a suitable benchmark (Cross, et al., 2015, p. 1775).

1.1. Research aim

The research aim of this thesis is to compare Latvian and Swedish renewable energy policy by analyzing it through the quality of governance, policy transparency and policy related administrative procedures.
Charron, et al. (2010) in their paper suggest the quality of governance helps to identify how well a government can formulate and implement policies. The quality of governance has an effect on the environmental matters of the country and its sustainable development. The quality of governance can be measured through the Quality of Governance Index that is compiled of 4 pillars: rule of law, voice and accountability, government effectiveness and control of corruption. The sustainable development is economic development that is achieved through the utilization of renewable resources and without damaging the planet for the future generations. Therefore it is important to look at the share of renewable energy in the energy mix.

A transparent policy needs to be consistent, stable and clear (Mitchell, et al., 2011). To aid policy implementation accompanying administrative procedures should be streamlined (European Parliament, Council of the European Union, 2009).

To facilitate the achievement of the research aim of this paper the research questions, which all focus on the differences between Latvia and Sweden, are:

1. What is the difference regarding the country quality of governance index and the share of renewable energy in the energy mix?
2. How do the renewable energy policies differ in terms of the publics’ access to information, policy stability, and information consistency?
3. How different is the administrative procedure in terms of permitting conditions bureaucracy for the renewable energy policy?

By looking at the differences it will be possible to suggest areas for further investigation of the renewable energy policy limitations in Latvia.

As mentioned above, the renewable energy policy system of Latvia is currently a hot topic due to the subsidy fraud. This recent renewed interest toward the Latvian renewable energy policy has caused the Latvian government to initiate research with the purpose of
examining the current subsidy system and in the end propose a new one (LETA, 2018a). Therefore, it can be argued that this paper can contribute to the government research, as well as serve as a learning experience for other countries who are revising their subsidy systems. Subsection 1.2 provides a more detailed background of the cases.

1.2. Latvian case study background

Latvia is a relatively young country that gained its independence in 1991. Since then Latvia has been working on building up its economic system, along with the utility sector. The goal was to reach standards that would allow Latvia to join the European Union (EU), which happened in 2004 and in 2014 Latvia joined the Eurozone switching from the old Latvian currency to Euros. Under the established framework for the climate change from the EU, Latvia together with the other EU members, is working towards 2020 sustainability targets (European Comission, n.d.), and introducing different mechanisms in order to promote renewable energy. In 2010 Latvia introduced the current feed-in tariff support system. It was calculated that until 2025 electricity renewable energy electricity production prices should sink and, thereafter, would not need the subsidized support any longer (Latvijas Vestnesis, official publisher of the Republic of Latvia, n.d.). The feed-in tariff support system is presented in more detail in section 2.6.1.

In October 2017 a major scandal surfaced in Latvia with headlines reporting a case of fraud where a non-existing renewable energy source electricity generator plant was registered to receive Renewable Energy (RE) subsidy payments. In Latvia the RE subsidy is meant to be paid to hydro power plants, wind power plants and combined heat and power plants. The fraud revelation caused an investigation of the companies receiving the RE subsidy. According the news agency LETA (2018c) thus far it has identified 21 registered electricity producers did not comply with regulation to be able to receive RE subsidies. The Ministry of Economy has published information that a total sum of 193 600 000 euro was paid in subsidy to 403 different RE electricity producers in 2017 (LETA, 2018b).
Today, due to the discovered scam, politicians call the current subsidy system “morally broken”, “morally bankrupt” and a “fundamental mistake” for the macro economy of the country (LETA, 2018a). As a consequence the Latvian Minister of Economy is proposing to look for new ways to support RE sources. In relation to this, two actions have been taken: on 10th of April 2018 the Ministry of Economy adopted a new control plan for those who are receiving subsidies and it was proposed to create a body of 24 specialists who are going to create a new subsidy strategy by the 1st of August 2018.

The research group has proposed a plan on how to fade out the current system within next 3 years and suggested to substitute it with the green certificates. However, the end of 2018 came with a governmental elections and it was up to the new elected government to decide the fate of the current subsidy system. The new government proposed to stop the current system in 2019, however later on found it to be an unfavorable decision for the whole Latvia economy. In March 2019 the government has created a Parliamentary Investigation Commission to evaluate within the next 6 months all the related issues with the current system and who is accountable for them (Latvijas Sabiedriskie Mediji, n.d.).

1.3. Swedish case study background
The Kingdom of Sweden has a long history since its first establishment in 12\textsuperscript{th} century and the year 1523 is considered as the foundation for the modern Sweden. In 1995 Sweden joined the European Union, however decided against joining the Eurozone, hence today Sweden still has its own currency Swedish Krona.

Before adoption the current support system Sweden has gone through a long process of policy development starting from tax incentives, investment grants and other support schemes. In 2003 Sweden introduced green certificates as the main pillar of its renewable energy policy. At first it was aimed to have the system in place until 2010, yet it was decided to extend it until the year 2030 with the intention of providing stability to the
stakeholders (Ministry of Sustainable Development, 2006). The green certificate support system is described in more detail in section 2.6.3.

As with other European countries Sweden has to meet the EU 2020 sustainability targets. Already in 2012 Sweden reached its 2020 target, which was to have 50% of renewable energy in its energy mix. In 2015 the Swedish government decided to aim to become the world’s first fossil-free country (Ministry of Environment and Energy, 2015). Now this aim became a clearly defined target which is to have electricity generated from 100% RE sources by the year 2040 (Sweden, 2019).

Swedish electricity suppliers also stimulate the demand for RE by offering Swedish electricity users the choice to purchase 100% renewable energy electricity for their households. Such approach influences the general demand for RE in the country. If the household does not make a deliberate choice of what type of energy to purchase, the household receives the regular electricity generation mix which consists of hydropower, nuclear power, wind power, solar energy, combined heat and power. (EoN, 2018; Vattenfall, 2018; Energimyndigheten, 2019).

1.4. Paper Structure
This paper unfolds as follows: Firstly, in Chapter 2 a review of the literature regarding renewable energy policies is presented. Afterwards, in Chapter 3, the used methodology is described. Chapter 4 unravels the full picture of the Latvia and Swedish case studies including the background of the Latvian and Swedish renewable energy policy development and subsequently the financial support mechanisms and their barriers are described. The discussion chapter (5) presents the comparison results between the two cases. The comparison will allow conclusions to be drawn that are presented in Chapter 6 together with suggestions for further studies.
CHAPTER 2. LITERATURE REVIEW

This chapter will present and discuss how the quality of governance influences the renewable energy policy. Institutional barriers to successful renewable energy policy are presented next followed by a discussion about the role of corruption and the role of the European Union in formulating the renewable energy policy is introduced. Finally, after presenting the possible ways of segmenting renewable energy policy, the review of the most widely utilized policies in the European Union and the requirements of ensuring the policies success will be discussed.

2.1. Renewable energy policy and the quality of governance

Renewable energy policy is a type of a mandatory guideline provided by a national government to influence the renewable energy use or production in a country. “The capacity of the government to effectively formulate and implement sound policies” (Kaufmann, et al., 2005, p.130) is a part of the definition of the quality of government provided by Kaufmann, et al. in 2005. In general, good governance is a fairly new concept that was introduced by the World Bank in 1992. The World Bank divides good governance into three aspects with one of them being “the capacity of governments to design, formulate and implement policies and discharge functions” (International Fund for Agricultural Development, 1999, p.2). Rothstein and Teorell (2008) split the quality of governance into definite elements that could be measured. Charron, et al. (2010) measured for the first time the quality of governance in the EU on the regional level. The measurement includes 4 concepts or pillars: rule of law, voice and accountability, government effectiveness and control of corruption. All together these pillars can be compiled into one index called the Quality of Governance Index.

According to Kaufmann, et al. (2005) rule of law measures “the quality of contract enforcement. The police and the courts, as well as the likelihood of crime and violence”. The voice and accountability measures human, political and civil rights. Government
effectiveness measures the level of bureaucracy and the quality of delivery of the public services. Control of corruption measures the use of publicly granted power for private intentions and gains.

When it comes to renewable energy policy and the quality of governance it has been concluded that quality of governance has an impact not only on sustainable economic development but also on social well-being which includes environmental protection and environmental sustainability. In is not evident how directly the quality of governance influences environmental issues, however care for environment is clearly associated with “the most prevailing proxies for quality of government” (Charron, et al., 2010, p.65). Society’s wellbeing can be correlated to the corruption index, which is also one of the pillars of the quality of governance. However, further research is necessary to assess the relevance between corruption and the quality of governance.

Sustainable development is economic development that is achieved through the utilization of renewable resources and without damaging the planet for the future generations. Therefore it is important to look at the share of renewable energy in the energy mix. The EU target for the share of renewable energy in the energy mix can be used as an indicator as it includes the level of GDP which in turn is a good indicator for the economic development of a country. (Woodruff, 2019).

2.2. Policy and corruption

The Organization for Economic Co-operation and Development (OECD) gives special attention to the relationship between corruption and the utility sector. Government uses public procurement to invest in public infrastructures. A statement published on the OECD website claims that “infrastructure procurement and procurement in the energy sector is complex and vulnerable to corruption” (OECD, 2018).
In the report for Preventing Corruption in Public Procurement by OECD (2016) it is stated that corruption can be found in places lacking transparency. Therefore, these publications suggest that there is a clear relationship between corruption, transparency and the energy sector. As presented in section 2.1, corruption is also related to the quality of governance.

The OECD’s Foreign Bribery report (2014) also supports the claim that corruption appears in public procurement. In this report, it is highlighted that corruption was identified in areas related to licensing and contracts. The OECD report on corruption prevention released in 2016 suggests that decentralization may be one of the ways to scale down corruption, however at a potential cost of slowing down the process.

In its report the OECD (2016) suggests six principles to prevent corruption in public procurement, those are: integrity, transparency, stakeholder involvement, e-procurement, accessibility, oversight and control. The anti-corruption principles are explained in the next 2.2.1 subsection.

2.2.1. Anti-corruption principles

The first anti-corruption principle **integrity** can be guarded by national integrity standards for all public officials. There are different national NGO bodies that fight corruption and monitor integrity (Dahl, 2007).

The **transparency** principle is characterized by open data, full access to information and timely responses to information requests (OECD, 2016). There should be more laws accepted by the governments and civil societies that support free access to information. Such laws not only help to promote transparency, but also reduce space for corruption by increasing the liability. Governments need to be committed to implementing these laws and not just having them as official statements (Transparency International, 2018).
It’s easier to hide corruption where bureaucracy is present as it makes it hard to track the process. Therefore, **public access** in contracts is important. Such measures as having one point of contact in charge of all applications, otherwise known as one-stop shop, can be effective as one of the solutions (OECD, 2016). It is advised by Transparency International (2017) that governments have all information that is relevant to the public in an open access format.

Another way to stimulate transparency is **E-procurement**. Electronic access to various data stimulates visibility. In such a way transparency increases and therefore it becomes harder to hide any type of integrity breach. Electronic procurement goes hand in hand with public data access as it naturally makes it easier to access information.

**Oversight and control** is the founding principle for the OECD that guards the applications of the integrity framework in the whole public sector.

**Stakeholder participation** can be stimulated through an open dialog with those concerned. Stakeholder participation is another important principle that is one of the keystones of the OECD when it comes to promotion of integrity and transparency (OECD, 2016).

Failure to follow anti-corruption principles signals for higher level of corruption. These principles can also be extended to the formulation and implementation of the RE policy.

**2.3. Renewable energy policy and the role of the European Union**

In addition to the countries’ government, RE policies can also be influenced by other authorities and NGOs, such as the European Union (EU), the United Nations and International Conventions such as the Paris Agreement (United Nations, 2015), Kyoto Protocol (United Nations, 1997) and other sustainable development pacts.
Both, Latvia and Sweden come under the common governance of the EU. Therefore, both countries are united by the sustainable framework established by the EU under the Europe 2020 strategy. The strategy includes 5 major points on sustainable development with one of them emphasizing climate change and energy. The climate change and energy target includes a reduction of greenhouse gases by 20%, achieving a 20% share of renewable energy in the energy mix and to improve energy efficiency by 20%. These target numbers are community numbers to achieve on the whole of the EU. However, due to the fact that each individual country varies in its sustainable development the target is broken down to each individual member state (European Commission, 2010).

In defining the target for the use of RE in the energy mix the following criteria such as the existing level of energy from RE sources in the energy mix and GDP of the country were taking into consideration. For Latvia the target was to achieve 40% renewable energy share as a part of the final energy mix. For Sweden, the set share number was 49%. (European Parliament, Council of the European Union, 2009). In order to ensure the energy is actually coming from the renewable sources it needs to be accompanied with a guarantee of origin document. Directive 2009/28/EC Article 15 provides guidelines of how to secure the guarantee of origin (European Parliament, Council of the European Union, 2009).

Even though it was the EU who established the sustainability framework it is down to the national government of the countries to select the appropriate strategy and set appropriate policy measures in order to be able to achieve the EU targets. According to the 2016 Revised Renewable Energy Directive (RED II) there are consequences for those countries that do not achieve the set target by the year 2020. Not achieving the target will result in a financial contribution to the EU from countries failing to meet the targets. (European Commission, 2016). In order to achieve the target the EU Commission highlights the importance of having stable support schemes (European Commission, n.d.). If a member country fails to achieve the set goals, the EU Commission offers an option of Statistical
Transfers, where the countries that have exceeded their set target can sell the surplus to those who are underperforming (The European Parliament and the Council of the European Union, 2009).

2.4. Renewable energy policy and institutional barriers

According to the paper by Back and Martinot (2004) many RE policies face institutional and regulatory barriers. The institutional barriers can be related to the energy system infrastructure and its regulations (Edenhofer, et al., 2012).

The International Renewable Energy Agency (IRENA) suggests that two of those non-economic barriers is “lengthy administrative process” and lack of alignment of national policy (IRENA, 2012). Another factor that IRENA (2012) brings forward is the degree of involvement from the government in the RE policy. It is highly important to have the level of responsibility of each involved governing organization and body to be clearly defined and it needs to be consistent. This concept presented by IRENA (2012) is similar to that what is measured in quality of governance as a government effectiveness pillar.

To overcome these institutional barriers IRENA (2012) recommended one-stop shops and clearly defined permitting conditions. The European Parliament and the Council of the European Union (2009) in their Directive 2009/28/EC under Article 13 in combination with Article 22 also recommend having one-stop shops or in other words a more streamlined permit application process. In addition it is recommended to use Internet to make online application available. Identified geographical locations where it is acceptable to use the land for RE production also aids the process of obtaining permits.

2.5. Division of renewable energy policy

After reviewing multiple articles, it can be said that there is no single acknowledged way of classifying renewable energy policies. The division/classification of RE policy can be suggested based on, but not limited to, the maturity of technology, the degree of impact or
type of regulation, finance and incentives (see for example Beck & Martinot, 2004; Mitchell, et al., 2011; IRENA, 2012). This conclusion is also confirmed by Edenhofer, et al. (2012, p.44).

Back and Martinot (2004) in their paper divide all policies into two categories: policies that indirectly influence the promotion of the green energy, and policies that have a direct impact on the renewable energy. The indirect impact policies influence the market through restructuring the power sector and controlling the ecological footprint with emission reduction policies. The policies that have a direct impact on the RE sources aim to drive green energy development and to support it through different mechanisms. The paper refers to them as the “support mechanisms specifically made to promote renewable energy” (Beck & Martinot, 2004).

Mitchell et al. (2011) have a different approach in segmenting renewable energy policies. They sort the policies according to main categories such as fiscal incentives, public finance, and regulations. Regulations can be subdivided into quantity or quality driven, price driven, and access regulations.

Regardless of the suggested division by these papers their content essentially is filled with the same policy names simply placed under different categories.

Depending on the stage in the technology’s development some policies are more suitable than others. To elaborate, there are policies that stimulate development starting from the research stage and moving onwards to actual technology application, and there are policies that serve well to sustain the final stage, that is the full competitiveness of the technology in an open market (IRENA, 2012).
2.6. Popular/ most widely used policy review

Studies show that there are multiple combinations and alternatives for policies. However, all of those serve one purpose - to promote renewable energy production and utilization. The most used renewable energy support methods within the European Union are feed-in tariff, feed-in premium, green certificates and quota obligations, tendering, tax reduction and investment aid.

2.6.1. Feed-in tariff

Many recent studies (REN 21, 2016; IRENA, 2012; Canton & Linden, 2010) describe the effectiveness of the feed-in tariff (FIT) as a support mechanism. FIT is a fixed type of support mechanism, where the utility gets paid a fixed sum for their production to compensate for the additional money they spend on the RE source electricity production. The benefits of the FIT are that it is simple to use and understand and it provides utility companies with a more predictable income flow. The disadvantage of the FIT is that it is expensive for the end user in terms of the prices of the electricity or increased taxation and as many other policies, in order to make FIT effective, it requires oversight. According to the REN 21 annual report (2016, p.20), feed-in tariff is the most used support mechanism in the world utilized to promote RE. As a matter of fact in 2012 there were 65 countries using FIT as RE support mechanism. FIT is suitable for driving innovation as well as it has been applied in countries with matured technology (European Commission, 2013). IRENA (2012, p.9) suggests that FIT should be used for 10 – 20 years, however, longer application results in a greater cost of electricity for the consumer.

2.6.2. Feed-in premium

In 2010 Canton and Linden (2010) in their paper for the EU noted the popularity of the FIT as the support mechanism. However, together with FIT they highlighted other common mechanisms such as feed-in premium and tradable green certificates. The difference between FIT and feed-in premium is that the premium has a fixed sum added on top of the electricity market price, so the price can still fluctuate, but the electricity
provider will always receive a bit more than the market price. Similar to FIT, feed-in premium is a simple support system that is easy to implement. Again, same as the FIT, this mechanism needs to be thoroughly overseen and it is costly for the end user. Feed-in premium is recommended to be used as technology develops and matures. According to the information provided in IRENA (2012, p. 10) and European commission (2012, p. 13) FIT and Feed-in premium needs to be phased out with time to reflect the technological progression and hence the changes in the electricity production costs. Canton and Linden (2010) suggest that the best way to switch the policy from FIT and Feed-in premium is to substitute it with the green certificates.

2.6.3. Green certificates and quota obligations

In the literature the green certificates are also known as the renewable energy certificates. Green certificates are well suited to support already mature technology (Edenhofer, et al., 2012). The green certificates are allocated by the government to the electricity producing companies for a certain amount of electricity produced from the renewable energy sources. The way green certificates support the renewable energy production is that not only the electricity producing companies sell their produced electricity at the market price, but also they sell the green certificates and in that way generate additional income. The green certificates are purchased by the electricity supplier companies. In order to stimulate the green certificate purchase by the electricity suppliers the government sets quota obligations for the supplier on of how much renewable electricity needs to be sold to the consumer and the energy supplier needs to purchase an equivalent value of the green certificates. If the quota obligation is not met by the electricity supplier company the company faces financial penalty. In Sweden the fine is 150% of the value of the green certificate (Vågerö, 2019).

The quota obligations are sometimes referred to as the renewable energy portfolio requirements. Renewable Energy Portfolio is actually a policy regulation in itself that goes well together with the green certificates as explained above. The quota obligations are
most often assigned to the electricity supplier companies, however other variations are also possible. In some cases the quota obligations can be assigned to the electricity generators or consumers (IRENA, 2012).

2.6.4. Tenders
Even though FIT is the most widely used support mechanism, some of the countries started to recognize the effectiveness of tenders. Tenders normally are issued by a governmental body with an idea to find the best offer amongst the service companies through bidding and in that way determine the subsidy amount per unit of power produced. The strong advantage of this support method is that it drives the price of the subsidy down, which in turn drives the prices of electricity down. Yet, this support method also has a potential drawback, where the companies that won the tender do not actually build their projects until technological development allows them to do so at the proposed price of the project. Taking the pros and cons into account, a shift towards the tender mechanism can be still observed in Europe with more and more member countries adopting this policy (REN21, 2016, p.20).

2.6.5. Tax exemptions and investment aid
The latest directory from the European Commission (2013) adds two more support schemes to the already reviewed list above. They add tax exemption and investment aid as the most effective support schemes (European Commission, 2013, p.5). Tax exemption or tax is a straight forward policy that aids the electricity producer or the consumer by reducing tax or completely exempting from it. This could be the value-added tax, the carbon emission tax or tax related to income. Investment aid is a support mechanism where the financing comes directly from the government and in return the government gets equity ownership interest or the government provides repayment guarantees so financing can be found more cheaply.
2.7. Pre conditions (Requirements) for effective policy

Much of the current literature on policy effectiveness pays particular attention to transparency, consistency, stability, clarity, control and systematic review.

According to the IRENA Policy Brief (2012) in order to enable renewable energy policies to function efficiently, they need to be systematically and repeatedly evaluated. Moreover, renewable energy policies require attentive monitoring and thorough control.

It is suggested that RE policy should be adapted and tailored for each country individually. Multiple studies have shown that what suited and worked in one country might not be relevant for another country. It has been found, that for some countries a mix of the RE policies is the best way to push forward the renewable energy development. Noothout, et al. (2016), IRENA (2012, p. 5) and Mitchell, et al. (2011, pp. 869 - 870) specifically highlight that a mix of policies does address various policy barriers.

The ultimate goal of RE policy is to achieve cost-efficient RE technology and to stimulate market penetration. Research by Canton and Linden (2010) suggests that long-term goals and learning from experience is one of the ways to maximize implemented policy.

Other studies on this topic agree that long-term goals are one of the keys to success that depend on the government. The enacting government needs to ensure that the procedures are clear, aim for long-term goals, and have constant improvement in the quality and structure of the public administrative system (Noothout, et al., 2016, p.3). The guidance provided from the European Commission (n.d.) also suggests that retroactive changes can damage confidence for investment in RE technology. IRENA (2012) also supports this statement, indicating that there is a difference in regular reviews and retroactive policy changes. In this case, regular review is a part of the requirement for a well-functioning policy, and retroactive changes are harmful for the investment security which in turn harms RE growth.
According to Noothout, et al. (2016) investment is one of the key drivers in the RE technology development. Investment risk mitigation largely depend on the national government and can be addressed by RE policies. Policies need to be predictable, consistent and transparent that will provide investors sense of security (confidence).

Mitchell, et al. (2011) also mentions that in order to stimulate investment it is necessary to have consistent and transparent policy. Long-term policy goals, information for stakeholders to understand how the policy works and what the market entrance requirements are, as well as clearly defined compliance rules are all components of transparent policy.

2.8. Summary

The reviewed sections above indicate that the quality of governance and the share of the renewable energy in the final energy mix are the important context for well-functioning RE policy. In Europe RE is also influenced by the EU legal frameworks. The most used RE support methods within the EU are feed-in tariff, feed-in premium, green certificates and quota obligations, tendering, tax reduction and investment aid. Regardless of which policy is selected, the policy itself needs to be transparent and stable with streamlined processes.
CHAPTER 3. MATERIALS AND METHODS

In this section the research methodology is discussed followed by the presentation of the data sources used. Next, the limitation of this research is outlined and this section concludes with a summary that includes a suggestion for a possible application of this research.

3.1. Research methodology

The research is based on a comparative case study between two countries. Empirical data is studied to investigate the case with the Latvian RE policy system serving as an object of the research. Swedish RE policy serves as a subject against which the subsidy system in Latvia is compared and explained. The qualitative approach allows for an exploration of the differences and understanding the situation of the presented cases (Ahmed, 2010). For those purposes, qualitative systematic review of existing papers and documentary desk research is performed. This process is presented in more detail later in this section.

The research is performed using an inductive approach, were empirical data is gathered and analyzed to find the patterns and draw conclusions in relation to the theoretical framework of the literature review.
The data analysis is performed in four simultaneous steps proposed by Ahmed (2010) for documentary research.

![Diagram of data analysis process](image)

*Figure 1. Data analysis process. Source: Ahmed, 2010*

1. **Data collection** - Journal data gathering started by using keywords as “energy policy”, “renewable energy policy”, “renewable energy subsidies” and finally “renewable energy support mechanism” articles were collected related to each country individually. Later in the study, as step 2 was performed, new data gathering was performed using the bibliographies of the already reviewed articles, also known as the snowballing method (Wohlin, 2014). It provided new sources of information, including now not only the journal articles but also official documents that are relevant to the case-studies. The official documents helped to gain a deeper understanding of the case and confirm previous findings.

2. **Data reduction step** - It involves summarizing the empirical material individually and labelling it under a category that was taken from the theoretical review. This is followed by data display and lets the conclusions begin to form.

3. **Data display** - In order not to get lost in the accumulated knowledge from step 2 and step 4 (data reduction and data validation) data tables were created and filled simultaneously. Data tables were also an important step to match the data in order to be able to compare it and draw the conclusions later on.
4. Drawing and verifying conclusions - The conclusions started to appear already in step 2 and 3 as the patterns started to emerge through those steps. Yet, the last step is to validate those conclusions through additional data gathering. Data verification is a necessary part of finalizing the findings. The data gaps and final verifications were taken from the documentary data.

3.2. Data sources
The main data sources are scientific journal articles and official documents and reports that were mostly accumulated from Science Direct, Scopus and European Commission websites. Other supportive empirical data was gathered from Latvian and Swedish governmental sources.

3.3. Limitation
The main limitation of most qualitative documentary and systematic paper review studies is that they are hard to replicate and get the same results. Some argue, that this type of study can be subjective based on the documents the researcher selects to review. There might be prejudice involved in this type of research. However, other studies have shown and proven that the qualitative paper review research is a valid research method in social sciences, therefore is an approved research method. The quality of the documents is highly important in this type of research. Therefore, only peer reviewed articles and official (institutional) documents were selected for this research. However, the disadvantage of empirical material review is that the latest information is not always available on the topic and sometimes there is no information available on the topic at all, what makes it challenging to construct an up to date representation of the situation.

3.4. Summary
This comparative case study, using scientific journals and official documents as the main sources can be used as introductory research into the current RE policy of Latvia. This research is not meant to be used as a valid proof of the situation related to the RE policy
is Latvia, but as a suggestion for areas of further research in connection to the potential RE policy reform that the Latvian government is considering today.
CHAPTER 4. RESULTS

In this chapter the research results for the case-study of Latvian and Swedish RE policy are presented through the collection of the empirical data.

4.1. Latvia and Sweden quality of governance and share of renewable energy in the final energy mix data

The quality of governance, development status and the data on share of the renewable energy in the final energy mix were taken from the documents prepared by the European Commission in relation to the EU 2020 programme. The purpose of the documents is to provide structured comparable information for the EU 2020 programme progress (European Commission, 2015a; European Commission 2015b).

4.1.1. Quality of governance

In the European Commission document for Country Profile Key Indicators (2015), quality of governance is included as one of the main sections. As discussed in the literature review section 2.1. on the renewable energy policy and the quality of governance, it is clear that in order to be able to evaluate how well the policy can be formulated and implemented in a country it is important to consider the level of quality of governance of that country. This level can be evaluated through the Quality of Government Index that includes the 4 pillars of the quality of governance: rule of law, voice and accountability, government effectiveness, control of corruption.

In Latvia the Quality of Government Index in 2013 was -0.7 and in Sweden 1.5. The average in EU was 0.0. The gap between Latvia and Sweden is 2.2. See Table 1.

4.1.2. Share of renewable energy in gross final energy consumption and the EU 2020 target

It is important to look into the share of RE in the final energy mix to put in perspective the scale of RE development and demand for the RE within the country.
In 2015 the share of RE in the energy mix in Latvia was 37.56% (European Environmental Agency, 2018). The set EU 2020 target is 40%. However, it is important to note here that with in that time Latvia had the case of registered yet non-existing RE power plants, which questions the legitimacy of 37.56% data. Moreover, the research done by Hamelinck, et al. (2014, pp. 296 - 297) suggests that Latvia is not completely following the procedures on ensuring the guarantee of origin and there are no specifications on what the country’s action plan to avoid fraud is.

Swedish RE percentage of the energy mix in 2015 was 53.93% (European Environmental Agency, 2018). The number is already higher than the set EU 2020 target, what was 49%. In Sweden the guarantee of origin is controlled by Affärsverket Svenska Kraftnät. (Hamelinck, et al., 2014)Pp.304-305

Both Sweden and Latvia, score above the average with their percentage share of the RE in the total energy mix. In fact, since 2015 Sweden has had the leading position amongst EU countries with the highest share of RE, followed by Latvia in the third place. Both Latvia and Sweden have a high share of hydropower that bring them into these leading positions (Sweden 2018; Central Statistical Bureau of Latvia, 2017). However, the difference between the countries RE share in the total energy mix is at least 16.37%.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Latvia</th>
<th>Sweden</th>
<th>Difference</th>
<th>EU average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of Government Index (2013)</td>
<td>-0.7</td>
<td>1.5</td>
<td>2.2</td>
<td>0.0</td>
</tr>
<tr>
<td>National EU 2020 target</td>
<td>40 %</td>
<td>49%</td>
<td>9%</td>
<td>20%</td>
</tr>
<tr>
<td>Share of RE in final energy mix (2015)</td>
<td>37.56 %</td>
<td>53.93%</td>
<td>16.37%</td>
<td>15%</td>
</tr>
</tbody>
</table>

*Table 1. Country profile key indicators. Source: European Commission 2015a,b.*
4.2. Latvian and Swedish renewable energy policy review and its compliance according to the effectiveness requirements and transparency

In order to study policy transparency, consistency and stability it was decided to review multiple information sources about the RE policy in both countries. The sources were taken from governmental websites and journal articles.

4.2.1. Renewable energy policy consistency and stability in Latvia

According to the European Commission guidance for the design of renewables support schemes (European Commission, 2013) the main support mechanism present in Latvia up until 2012 was a feed-in tariff (FIT). The same document indicates that in 2001 there was a change of the system to FIT, however it does not state what the system in place before was. Then a revision of the system came in 2003, another revision came in 2006 adding on top of the existing system a tendering mechanism, in 2009 a revision brought the system back to FIT and another revision followed in 2010.

According to Zvanitajs and Denina (2009) Latvia had its first support mechanism in 1995 that guaranteed the purchase of decentralized produced electricity. In order to cover the additional expenses from the guaranteed purchase Latvia introduced “component of obligatory electricity purchase” (COEP) (Zvanitajs & Denina, 2009) in 2005 that was accompanied with two laws in 2006 and then in 2007. The article also mentions tenders that were meant for wind generators above 0,250 MW installed capacity. According to same document the tender was released at the beginning of 2008 and canceled later the same year.

Leikucs and Strikis (2011) refers in their research to Zvanitajs and Denina (2009) paper, however it also adds new insight to the topic. Their paper states that only hydropower plants were receiving FIT in 1995. In 1998 a new “Energy Law” came into effect that abolished the previous one. In 2007 a new law with FIT came in power that included
support for all kinds of RE sources that was amended in 2009. The paper also discussed tax exemptions for biomass power plants and biogas.

Legal Sources on the Renewable Energy website initiated by the European Commission under the overall summary about the Latvia states that Latvia has FIT as its support mechanism that is complemented with tendering and quota system. The text on the same page also states that the current FIT is “on hold until 01.01.2020 due to concerns about corruption and a lack of transparency in the way it was carried out since 2007” (Legal Sources on Renewable Energy, n.d.). After the fraud discovery the control for the provided financial support got increased and the regulations got revised to strengthen the control and limit the time to build the actual RE generation plants (LETA, 2018a; Legal Sources on Renewable Energy, n.d.). It is not stated when the current system was put in place. It is also not clear when the current mechanism was placed on hold due to the indicated reasons. However, the text on the webpage does add on that Latvia also has net-metering since 2014 as a support system for electricity produced from RE. Net-metering is a way of compensating the producer for the amount previously consumed when the producer is feeding the grid with own electricity (IRENA, 2012).

According to the Latvian grid operator Sadales Tikls AS, the current support mechanism is called Mandatory Procurement Components (Sadales Tikls, n.d.).

Table 2 visually represents the timeline of the policy changes in Latvia according to the reviewed sources and the terminology used across those sources.
### Table 2. Latvian policy changes timeline

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
<th>Year 11</th>
<th>Year 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>Change of the system. Start of FIT</td>
<td>Adaptation of the system. FIT</td>
<td>FIT + Tender</td>
<td>FIT + Tender</td>
<td>Adaptation of the system. FIT + Tender</td>
<td>Adaptation of the system. FIT</td>
<td>FIT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zvanitajs &amp; Denina, 2009</td>
<td>guaranteed purchase of produced electricity</td>
<td>COEP</td>
<td></td>
<td></td>
<td>COEP + tenders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leikucs &amp; Strikis, 2011</td>
<td>guaranteed purchase of produced electricity for HPP</td>
<td>Energy Law</td>
<td>New FIT law</td>
<td></td>
<td>Last adaptation of the system FIT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legal Sources on Renewable Energy, n.d.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 4.2.2. Renewable energy policy consistency and stability in Sweden

According to the European Commission guidance for the design of renewables support schemes (European Commission, 2013) the main support system in Sweden up until 2012 is Tradable Green Certificates (TGC)/Quota obligations. This system was introduced in 2003 and revision of the system happened in 2011. Before the change of the system in 2003 Sweden had tax incentives and investment grants dating back to at least 1997.

According to Wang (2006), Sweden got its first energy policy after the oil crisis in 1970s. In 1991 Sweden was revising its energy policy for the second time and investment subsidies for wind power and biofuels were introduced. In 1997 this was again revised and an Energy Act was introduced and had a planned energy program for Sweden. After second revision of the energy Act in 2003 the Tradeable Green Certificates were introduced in 2003.

Sweden had the following policies driving renewable energy:

- Investment subsidies that run out by the end of 2002.
- Tax policies including emission taxes (1990s until today) and tax relief for renewable energy (1994 – today “environmental bonus”)
• Quantity forcing policies (quota systems) were adopted by introducing the electricity certificate system in 2003.

According to Söderholm, et al. (2005) Sweden first thought about the renewable energy resources utilization policy after the oil crisis in 1970s. In 1980 during the Swedish nuclear referendum it was decided to invest in research and development. In 1991 a transition to a renewable energy sources was initiated. Next, in 1997 and 2002 additional push for already existing goals and other short-term strategies for the wind power was introduced. The 2002 goal was not explicitly formulated and that resulted in a slowdown of the overall development. However, following those goals, came different support schemes for wind power, such as R&D programs, investment subsidies, and the environmental bonus. In May 2003 Sweden introduced the Green certificate system to promote fair competition between all of the renewable sources with the goal of increasing the quota every year and gradually replacing other incentives, such as the environmental bonus that was planned to be gone by 2010. Environmental bonus is the money that the producer is getting as a refund from the consumer paid tax on the electricity.

The latest published source from the Legal Sources on Renewable Energy website initiated by the European Commission states that Sweden currently has a quota system as the main support system, but also includes tax regulation mechanisms and installation subsidies for solar technology (Poblocka-Dirakis, 2017). No dates are given for when the systems were put in place.

The table 3 visually represents the timeline of the policy changes in Sweden according to the reviewed sources and the terminology used across those sources.
Table 3. Swedish policy changes timeline.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>European Commission, 2013</td>
<td>Tax incentives/Investment grants</td>
<td>Tax incentives/Investment grants</td>
<td>TGC/Quota</td>
<td>TGC/Quota</td>
<td>TGC/Quota</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wang, 2006</td>
<td>Tax incentives</td>
<td>Tax incentives</td>
<td>Tax incentives</td>
<td>Tax incentives</td>
<td>TGC, Tax incentives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Söderholm, et al., 2005</td>
<td>R&amp;D subsidy</td>
<td>R&amp;D subsidies, Investment subsidies, environmental bonus</td>
<td>Green certificate system + environmental bonus</td>
<td>Green certificate system + environmental bonus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legal Sources on Renewable Energy, n.d.</td>
<td>Quota system + Tax regulations + installation subsidies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.2.3. Public access to information in Latvia and Sweden

According to Leikucs and Strikis (2011) there is “information asymmetry” in Latvia between the government and RE production stakeholders. The information asymmetry is referred to distribution of information among the RE stakeholders, with some stakeholders having better accesses to information than others. Leikucs and Strikis (2011) conclude in their paper that in general there is a lack of information on RE policy in Latvia.

When it comes to the fraud case in Latvia, due to the request from the Latvian Parliament, the Latvian Ministry of Economy in June 2017 published a publicly availablereport on the chronological events concerning the allocation of permits with regards the RE support. (Latvian Ministry of Economy, 2017). The same goes for the information about the people who signed the permits. This information became publicly available in June 2018.
According to the Swedish law all governmental documents are available for the public access and can be reviewed at any time by anyone who wishes to do so (Government Offices of Sweden, 2016). No data was found about RE related information unavailability concerns in Sweden.

Public access to information is one of the integrities against corruption moving towards policy transparency. According to the Control of Corruption Index it is one of the pillars of the quality of governance where Latvia scores below the EU average, with -0.8 in 2013. Sweden scores above the average of the EU with a score of 1.6. The gap between Latvia and Sweden is 2.4.

4.3. Renewable energy bureaucracy in administrative procedures in Latvia and Sweden

In order to assess the level of bureaucracy in Latvia and Sweden a review of the administrative procedures was done. An assessment of the administrative procedures in the EU member countries was performed by Hamelinck, et al. (2014) by the request of the European Commission.

According to that data Latvia does not have “one stop shop” for permit application, this means that there are multiple organizations involved. Ideally it is preferred to have one application permit, in Latvia it takes 8 permits to apply for financial support. There is no online application available for permits. There is no information reported by Latvia whether geographical locations are identified for the RE development purposes. Overall the assessment of the Latvian administrative procedures suggests that Latvia require improvement (European Commission, 2013; Hamelinck, et al., 2014).

Sweden partly has a “one-stop shop”, to elaborate there is a streamlined process only for wind power application, RE producers must apply for two permits and there is a possibility for online application for permits with information available online on the procedures for
application. Sweden has identified land for potential RE development. The overall assessment of the administrative procedures is considered to be fair (European Commission, 2013; Hamelinck, et al., 2014).


<table>
<thead>
<tr>
<th>Member State</th>
<th>“One Stop Shop”</th>
<th>One permit (Nr. of permits)</th>
<th>Online application for permit</th>
<th>Identification of geographic sites</th>
<th>Overall assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latvia</td>
<td>No</td>
<td>No (8)</td>
<td>No</td>
<td>N.A.</td>
<td>Needs improvement</td>
</tr>
<tr>
<td>Sweden</td>
<td>Partly</td>
<td>No (2)</td>
<td>Yes</td>
<td>Yes</td>
<td>Fair</td>
</tr>
</tbody>
</table>
CHAPTER 5. DISCUSSION AND ANALYSIS

5.1. Difference in the development status, renewable energy mix, EU set targets and quality of governance between Latvia and Sweden

The first question in this study sought to determine what the difference between Latvia and Sweden is regarding the countries’ quality of governance and renewable energy share in the final renewable energy mix.

5.1.1. Quality of governance

The quality of governance in Latvia is below the average of Europe, and Sweden is on the other spectrum getting the highest score out of all the EU member countries. Prior reviewed studies in the literature chapter highlight the correlation between the quality of governance and the successful formulation and implementation of policy. Quality of governance is the context in which further sustainable development is set. With having a lower score on the Quality of Governance Index than Sweden it can be assumed that Latvian RE policy will be weaker than the Swedish one. However, it is still necessary to review individual country RE policy compliance with effectiveness requirements before making conclusions.

5.1.2. Renewable energy mix and the European Union set targets

Regardless of the at least 16% share difference between Sweden and Latvia, both countries are still among the leading top 3 EU Member States of the EU when it comes to the amount of renewable energy in the total country mix. Based on this it could be said that both countries are taking the lead in sustainable development. It this case it seems that there is a strong basis for RE sources utilization and their further development through the RE policies.

However, when it comes to the 2020 target from the EU, not only is Latvia not reaching that target but might also be required to make a financial contribution to the EU. It is also important to mention here that the known RE share amount needs to be reviewed and
potentially recalculated due to the discovered fraud cases in Latvia. On the contrary, Sweden has already surpassed its EU 2020 49% target. The set target difference between both countries was not that high, that is 9%, meaning that after evaluation the starting points for the development of RE share in the final energy mix including the GDP, both countries had a comparable opportunities to reach the target. Yet Sweden has over performed its set target and Latvia has underperformed.

5.1.3. Summary
It can be concluded that regardless of Sweden and Latvia’s leading positions in the EU in terms of the share of renewable energy in their final energy mixes, there is a big gap in the quality of governance and the growing gap between the use of the RE in the country. The growing gap can be related to the effectiveness of the current RE polices and that is turn is defined by the quality of governance in the country. Potentially this relationship is evident as Sweden has a better quality of governance index and better development of RE. In contrast, the quality of governance in Latvia is lower and the use of RE is not reaching set targets.

5.2. Renewable energy policy difference between Latvia and Sweden in terms of consistency, stability and public access to information
The second question in this research was how the RE policies differ in terms of policy transparency that include policy stability, information consistency and public access of information?

5.2.1. Consistency and stability
From the empirical review it can be concluded that Latvian RE policy has gone through multiple changes and from the theory it is known that frequent changes have a negative impact on stability. A problem in the clarity of the information can also be observed due to the fact that throughout the authoritative documentation different terms are used to refer
to the RE support mechanism, that is mandatory procurement components, component of obligatory electricity purchase and finally the more common term of feed-in tariff.

In contrast, Sweden seems to have much more consistent information through different articles. Consistency between the time periods of policy change and adaptation can be observed. It is also clear what type of support was provided during which time periods as all of the review sources use the same support mechanism name. Sweden did not have as many policy changes in comparison to Latvia, despite the fact that Sweden first started its RE policy in the 1970s and Latvia in the 1990s.

From the countries background reviews in sections 1.2 and 1.3 it is interesting to note that whilst Sweden has prolonged its support mechanism with the intention to promote investment security and stability, Latvia is planning to have a RE policy reform and substitute its current mechanisms.

5.2.2. Public access to information

From the review of renewable energy policy in Latvia by using different sources it can be suggested that the policy in Latvia is inconsistent and complex. Such assumption comes from the fact that are more mismatches between the provided information than agreement, further suggesting that it was not easy for the scholars to make sense out of the publically available information. This finding is also consistent with the conclusion that was drawn by Leikucs and Strikis (2011) stating there is lack of available information with regards to RE in Latvia.

From analyzing the public’s access to information, as well as consistency of information and policy stability it can be said that Sweden is better following the recommendations from the OECD (2016) for preventing corruption in public procurement than Latvia. This lack of policy transparency creates a positive environment for corruption. This conclusion
is also supported by the Control of Corruption Index provided by the European Commission (2015a) where Latvia has a worse corruption indicators than Sweden.

5.2.3. Summary
It can be concluded that Sweden has better RE policy consistency than Latvia. Sweden seems to show higher policy stability with less changes than Latvia. It can be suggested that this outcome results from the high number of changes in Latvian RE policy and high level of confusion with regards to the type of support mechanism in place due to the use of different policy terminology throughout different authoritative information sources and the general lack of information. In addition to that the lack of public access to information makes Latvia’s system more susceptible to corruption and Sweden’s less so.

5.3. The difference in administrative procedures between Latvia and Sweden
With respect to the final research question how different is the administrative procedure in terms of permitting conditions bureaucracy for the renewable energy policy the following was found.

No online procedures, a high number of permit requirements and no streamlined process is likely going to be followed by a more complex administrative procedures. The empirical data has shown that in Latvia one needs to obtain 8 permits with no online application possibilities available whereas in Sweden there are only 2 with the possibility to apply online.

From the permit number and online possibility for application, Sweden is more closely following the recommendations from the OECD (2016) for preventing corruption in public procurement than Latvia. The same can be concluded based on Sweden having a partial one-stop shop.
To increase the efficiency of permitting Sweden has provided the identification of geographical locations for developing RE projects. However, that information is not provided in Latvia and it is not know whether is its going to be provided.

The overall assessment of the administrative procedures shows that Sweden has a better system in place in comparison to Latvia.

5.3.1. Summary
In conclusion it can be said that that the administrative processes are quite different between Latvia and Sweden. While Sweden is more transparent having a smaller number of permits, possibility for online application and nearly one-stop shops, Latvia is on the other end with relatively complex administrative procedures.
CHAPTER 6. CONCLUSIONS

The study was set out to compare Latvia and Sweden with regards to the RE policy by analyzing it through the quality of governance, policy transparency and policy related administrative procedures.

According to the literature review it could be assumed that the support scheme for Latvia was selected appropriately, as FIT is one of the most used support mechanisms in the world for various technology development phases. The Latvian government however calls the support scheme as morally broken and not the governance situation accompanying it. This research has indicated that there is a relationship between the quality of governance and RE policy success. Sweden has better quality of governance than Latvia and has achieved its EU set renewable energy targets, a potential sign of RE policy success. Latvia has lower quality of governance than Sweden and has not achieved its EU set target.

The results of this study also indicate a difference between the Latvian and Swedish policy consistency and stability. Latvia appears to have had several policy adjustments and uses inspecific policy terminology.

The findings of these studies also suggests that there are differences between the administrative processes in the Latvian and Swedish RE policy. Sweden has a more streamlined process than Latvia.

In general, looking at the differences of policy transparency between Latvia and Sweden, it can be suggested that the Latvian RE policy environment is more susceptible to corruption, which is also supported by the corruption index of the country as a whole.
6.1. Research Limitations
The most important limitation of this research lies in the fact that it was difficult to gather the information about Latvia because of the lack of transparency, which is also part of the findings in this study. As the issues were investigated more closely by the Latvian government more information became publicly available. However, we still do not know what we do not know.

6.2 Further research
Further research could include other case-studies with different EU countries or countries that use the same support system as Latvia. It would also be interesting to compare these study results with the review conducted by the Latvian government on the Latvian renewable energy support system.

It can be suggested for future work to closely investigate the areas where the difference between Latvia and Sweden is larger. These could be indicators of what to work on next for Latvia and were to look for flaws in the governmental investigation for the potential RE policy reform that Latvia is currently planning.
REFERENCES


Available at: https://www.eon.se/privat/for-hemmet/elavtal-och-elpriser/fornybar-el.html 
[Accessed 10 09 2018].

[Accessed 11 09 2018].


Available at: http://ec.europa.eu/regional_policy/sources/docgener/informat/country2020/country_lv_en.pdf 
[Accessed 10 09 2018].

Available at: http://ec.europa.eu/regional_policy/sources/docgener/informat/country2020/country_se_en.pdf 
[Accessed 09 09 2018].


Available at: https://ec.europa.eu/energy/en/topics/renewable-energy/support-schemes 
[Accessed 15 09 2018].


Latvia Ministry of Economy (b), 2017. *Ziņojums. Par izvērtējuma rezultātiem, plānoto rīcību un nepieciešamajām izmaiņām normatīvajos aktos, saistībā ar masu medijos izskanējušajām bažām, ka vairāki uzņēmumi varētu būt krāpušies ar atļaujām elektroenerģijas ražošanai obligātajā iepirkumā*, s.l.: s.n.


Noothout, P. et al., 2016. DiaCore. The impact of risks in renewable energy investment and the role of smart policies, s.l.: DiaCore.


OECD, 2016. Preventing Corruption in Public Procurement, s.l.: OECD.


