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Europeanization of Kosovo's energy sector: Endorsing clean energy solutions (CES) with smart and sustainable transitions

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Vienna

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ABSTRACT OF THESIS submitted by:

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Abstract

To achieve stability of energy sector in Kosovo, the state has to tackle its disputes regarding inefficient energy consumption with coal based source (lignite). It is the target goal of the European Green New Deal that the environmental protection standards must be embraced from all prospective states for a clean environment. There are various environmental concerns that arise from Kosovo's old methodology of energy consumption which ought to terminate by complying with the environmental principles that the EU positions for all countries. The sustainability aspect for a smart energy transition postulates that Kosovo with its relevant stakeholders phase out of coal utilization for power production; and transition its energy usage to a more reliable energy source, namely renewable energy source utilization. Moreover, a spirit of energy transitions presence in the Republic of Kosovo ought to be evidenced with energy efficiency measures that are prescribed within the EU standards. There are numerous opinions and pathways on how Kosovo can sustainably change its energy sector, undoubtedly attentive to energy transitions theory. In addition, Kosovo needs to absorb energy security by presenting its main reliance on innovative ways of energy production and consumption, which are determined by the EU and its directives on clean energy use. All of this method on Kosovo's Europeanization will be determined on a case study of Latvia by detecting the feasible transition and drawing on success stories that the country has. Additionally, experts' opinions, private company and public governmental participants will be interviewed for illustrating the best feasible way of endorsing such a transition of the energy sector. The interview results will be answering the main research question on how can Kosovo follow energy transitions policies and rather their applications to the field with the renewable energy sources and energy efficiency measures being analogous to the represented potential that Kosovo has.

Keywords: Kosovo, renewable energy, energy security, smart energy transitions, sustainable development

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1. Introduction

Environmental security topic should be extended from the conventional definition of security in the sense of the physical presence of harm and uncertainty to a specific entity, to encompass a better and an utmost understanding of the framework of the environmental protection forming an interconnection of the definition. This novelty of the definition of environmental security must be hand-in-hand related to the events of the risks that the human factor together with other universal stakeholders such as the 'mother nature' playing their role into the rising uncertainty of environmental protection and enhancement of sustainability to the desired levels. Such desired levels in a neo-liberal frame would denote zero carbon and carbon equivalent gases emitted by the human factor created industries into the atmosphere. Moreover, matters of deforestation, climate change, and poor management of water resources need to be following a declination process and eventually seizing to exist. Hence, while encompassing the environmental security framework with smart and sustainable transition factors in the state of Kosovo, this study will engrave a transitional pathway that will ensure for Kosovo clean energy solutions.

The motivation for doing this research came from detecting the wrongful methodology of functionality in the state of Kosovo when it comes to the energy sector and EU directives that prescribe sustainability pathways towards green states. There are some discrepancies that occur in the energy sector in Kosovo, serving as a motivational tool for creating a different aspect of capturing the policy practicality into shifting towards a smart and sustainable energy transitions. Therefore, this study will question to specifics pathways on how can the state of Kosovo follow energy transition policies and its applications to the field? That is followed by the question on how can Kosovo foster the proper usage of renewable energy sources and energy efficiency measures to be in dominance with the applicable capacity/potential that Kosovo represents?

The CEO of Enel x, leading energy transformation company, Francesco Venturini shortly explained how to build transition in the global sense. He elaborated on the concept of energy transitions, which is applicable to the scope of the study for the state of Kosovo, particularly the pathway to renewable electrification of the industry in Kosovo. Venturini explained that "we are in the right industry at the right moment, which is quire incredible the change we are going through. Energy transitions is linked with digital transition, with clean, cheap, and efficient energy coming from renewable energy resources. Lastly, solar and wind will definitely become the generation of the most well-presented and most used energy generation in the world" (Interview data 2021). The IAE predictions are extremely aggressive on RES utilization and the approach is extremely conservative. Venturini's opinion is that everything will be faster and easier because of the fast technological developments and the prosumer activism on choosing renewable clean efficient and cheap energy, especially electricity. Making more investments is going to be more difficult, e.g. gas fired plant is going to take 10 years, but a solar plant shall take 10 months and is done. Hence there is a push for more renewables as the transition occurs.

3 pillars of electrification

Three main electrifications should be occurring for the embracement of energy transition policies and methodologies. 1) Electrifying transport sector; 2) Electrifying buildings; 3) Electrifying industry (Interview data 2021). The first pillar consists of electrification of the transportation sector with electrical vehicles taking the most interest of the vehicles industry. A first step to electrical vehicles (EV) is hybrid cars with an integrated EV system, working in a mixed approach while using green gases that emit less CO2 into the atmosphere. While a strong battery system for EV with high range of transport is being worked out, the infrastructure for charging those vehicles has to be built. The second pillar is the electrification of buildings with the energy efficiency technology that has to be implemented in every building, and also educative measures for utilizing efficient energy. It will take time for the social aspect of people's understanding on what it means and how to actually do it. The

third pillar is electrification of industry, with the most difficult challenge on how to train people and teach them how to do it. Moreover, regulatory framework and structure is substantially the same, there is just a need of people's trainings and teach them how to do it. Finally, the value proposition of the energy sector needs to change from security of energy no matter the costs to energy security to clean, smart, and sustainable transitions (Interview data 2021).

The 5 dimensions of energy sector in the European Union

The European Union represents five different dimensions that must occur for energy transitions occurrence and availability in the union. The EU relies on cooperation between all the state members with a transparent and solidarity approach for exercising the right to energy transitions (European Commission 2021).

- 1) Security, solidarity and trust
- 2) An integrated energy market (market coupling)
- 3) Energy efficiency measures
- 4) Taking climate actions, decarbonizing the economy
- 5) Research, innovation and competitiveness

This approach shows the most significant energy transition pathways into integrating a sustainable approach for all the countries in the world that must agree on energy transitions pathways. The energy strategy that the European Union entails integrates the sustainable energy utilization and ambitious goals to combat climate change by introducing renewable energy sources as the primary energy solutions for clean, smart, and sustainable transition pathway. The change towards environmentally friendly energy is advancing at various rates among EU member states. This pattern mirrors their disparate national energy security interests and prompts distinctive energy (international strategy) systems inside the Energy Union setting. This arrangement viewpoint features how a multi-speed energy progress among EU Member States influences European energy relations and energy security and investigates what the European Commission (EC) can do to protect the Energy Union (Perez et al. 2019).

Sustainable energy based on renewable utilization has gained impressive headway over the most recent 25 years in the European Union. Financial investments in environmentally friendly power is a significant key to accomplishing the 2030 and 2050 objectives of a low carbon economy with expanded energy productivity and efficiency. Changing energy frameworks from petroleum products (fossil fuels) to RES requires monetary, specialized and social advancement (Lowitzch 2019). Another energy foundation should be emerged and people ought to be motivated to receive adaptable utilization habits in order to coordinate with request with the supply of unstable fuel sources. In a market generally overwhelmed by enormous providers vigorously put resources into petroleum derivatives, residents putting resources into RES have become another classification of market members and a significant catalyst for meeting this challenge. Hence, the dilemma of necessary consumer ownership of renewable energy utilization is raised, on the scope of whether there is the distributive justice on the investing on such infrastructural projects for the ownership in renewable energy sources (Lowitzch 2019).

Background information: Kosovo

The inevitable appeal by the international community put forward is the shift to renewable energy for combating climate change and reducing greenhouse gas emissions. Changes in Kosovo are vital, as the current energy situation is chaotic and produces crisis in the scope of climate change. The Republic of Kosovo entails a diverse energy production history, dating since 1960s after the end of World War II. At the time, Kosovo was part of the Yugoslav Federation, with an autonomous status controlled by Serbia. The president of Yugoslavia Josip Broz Tito, saw the need for a coal fired power plant construction as the demand for electricity were increasing in the country and also in the Balkan region.

Detecting that Kosovo has a vast reserve of coal (lignite) as a raw material, two coal fired power plants were constructed for domestic energy production The power plants are divided into two, Kosovo A and Kosovo B, where they generate on average 1500 GWh and 3750 GWh yearly (KEK 2020). Throughout the years, the coal reserves of approximately 12 billion tons were exploited strategically for the energy production in Kosovo to secure the electricity supply (MED 2017). The latest reports on the energy situation in Kosovo illustrate that 97% of the energy production comes from coal (lignite) as the primary source for energy production (MED 2017). Subsequently, the country should observe the targets set by the European Union directives on following the transition train.



Table 1. Electricity supply for Kosovo 2008 – 2018 (ERO 2019)

Table 1 illustrates the current situation of the electricity supply over the years for the Kosovo's energy mix, currently supported by two coal fired power plants covering 97% of the power consumption and small hydropower plants and other RES covering 3% of the power consumption (ERO 2019). The trend of coal fired power plants will be decreasing with the new energy strategy that will come up in

2021/2022, covering more policies that pertain to renewable energy solutions, the decommissioning of Kosovo A thermal power plant and revitalization of Kosovo B power plant. This will serve to Kosovo's energy situation in the appropriation of its energy policies with *acquis* community. Thereafter, the other section will describe the specifics of the EU directives, and where does Kosovo stand in regards to those directives.

Kosovo and EU policies

Kosovo aims to harmonize its legislation with the EU policies and *acquis* community, thus it is a signatory country to the Energy Community Treaty from 2006. The European Union (EU) is not in favor of the current energy situation pertaining to the country. Therefore, it invested numerous efforts into establishing institutions that are responsible for maintaining, controlling, and containing the carbon emissions released by the two coal fired power plants. The Energy Community Secretariat was established in 2006 with the purpose of obliging Kosovo to harmonize its legislation with the European legal system and bodies of law, called acquis community under the Article 114 of Stabilization and Association Agreement (European Council 2015). With a focus on the energy sector, the Energy Community Tractate is supervising Kosovo's energy sector and the most recent annual report puts Kosovo in a promising situation in its harmonization status of the legal system with the European one. The report is based on the degrees of implementation in the fields of market unbundling, access to the system, retail market, regional integration, and wholesale market (Energy Community Secretariat 2020).

The Energy Community report shows that the best results were achieved in the unbundling of the market, with 100% (full) implementation rate. That encompasses that different market stakeholders taking care of different activities in the energy sector. This progress also opens up new opportunities to the wholesale and retail market, and ensures competition among energy actors in Kosovo. Moreover, Kosovo as a potential candidate to joining the European Union is de facto obliged to

follow the European Green Deal regulation, even though de jure is not obligated to do so. The European Green Deal is a treaty done by EU member states to follow strict guidelines on null emissions by 2050, protection of human life, animal and plants by reducing pollution by various factors that contribute to it (European Commission 2019). Additionally, this study entails certain difficulties that the Government of Kosovo is uncertain, as they demand Kosovo a decommissioning process to end while constructing a standardized new coal fired power plant, so that one replaces the other with energy generation capacities. This is not in line with the directives of the European Commission as the target goal is to reach null emissions by 2050, with the implementation and monitoring of the Green Deal 2050. This deal starts in its first paragraphs with the objective that the EU must achieve climate neutrality by 2050, "where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use" (European Commission 2019 pg.2).

Current situation in Kosovo

Kosovo as a country with almost all its energy production relying on coal (lignite) has an utmost urgent need for a disruption in its energy sector. It is recognized that these changes ought to entail "radical, systemic shifts in deeply held values and beliefs, patterns of social behavior, and multi-level governance and management regimes" (Westley et al. 2011 pg.762). Hence, Kosovo needs to follow the transition pathway towards sustainable solutions and green environment, tackling problemsolutions characteristics in order to follow with the transitioning train they are joining in. The fundamental ideas for the disruptive energy in Kosovo would involve innovation in the energy market, including a better decoupled (unbundled) energy system which will allow the free market functioning and boost competition between different stakeholders. These stakeholders in order to be considered as sustainable, must comply with the environmental standards of renewable energy source utilization.

In the case of Kosovo, the highest RES capacities include solar, water, and wind as the sources for renewable energy production and export. Solar energy is the most reliable energy capacity in Kosovo

visible in Appendix A, with an estimation of 278 days of sunny days in Kosovo with an average of 6 hours of sun per day in a yearly average (INDEP 2020). Moreover, it is estimated that one solar photovoltaic panel (PV) within the capacity of Kosovo at the sites exemplified in results chapter, can generate approximately 1600 kWh/m2 per year (Kammen et al. 2012). Hydropower plants are also fulfilling capacities in Kosovo visible in results chapter, with a yearly turnout of 377 gWh in a year. Furthermore, windmill technology installation in Kosovo visible in results chapter, could produce the source for 105 mWh per one desirable location installed (Kosovo Energy 2020). In addition, energy efficiency measures are also the key tickets for the transition train to continue be in acceleration, progress, and development.

It is compulsory to note that "conflicts over renewable resources are essentially political issues concerning: who should have access to and control over resources; whose views should count in identifying and prioritizing issues and problems; and, desirable management goals and rates of use." (UN 2012 pg.25). Moreover, "it is critical to note that disputes and grievances over natural resources are rarely, if ever, the sole cause of violent conflict". (UN 2012 pg.8). Tailoring this to Kosovo, one should know that renewable depletion in Kosovo is a potential scenario which may very likely happen when the transition to RES implementation occurs. However, besides the concern that people will have higher costs on the price of energy, there is the scope on sufficiency and competence of securing this energy. As the previous background information suggested, the capacity for Kosovo exists if there is no illegal exploitation and consumption of RES. Moreover, the free market and competition needs to be in place in order to avoid the illegal trading of RES power. When this is embraced, then the "non-violent resolution of conflicts is possible when the parties have trust in their governing structures and institutions to manage incompatible or competing interests" (UN 2012 pg.25).

The reduction of costs is already a factual point that is happening in the renewable industry, where the prices are dropping at an instant rate. The positive aftermath is the increase of renewable energy generation, where the EIA reports an increase of renewable energy by 15 % in 2020, while a 13% decrease in coal fired power plants (EIA 2020). In addition, "over the last decade, wind energy prices have fallen 70% and solar photovoltaic have fallen 89% on average, according to Lazard's 2019 report" (Marcacci 2020 par.12). This denotes that the costing dispute will not be an issue for Kosovo, as the world is highly concentrating in RES while its prices are increasingly dropping.

Kosovo's progress in energy transitions

The Republic of Kosovo is increasingly attentive towards following the energy transition pathway that is presented by the European Union, as one of the conditions towards joining the Union. There is a high demand for Kosovo to join the transitioning train because the energy mix of the country is heavily dependent on coal, whereas 97% of the electricity produced is coming from coal (lignite). This approach was rationalized in the years before as the mining and mineral independent commission reported that the coal (lignite) exploitable reserves in Kosovo score to be the 5th in the world (Independent commission for mines and minerals 2021). It is definite that the Republic of Kosovo needs a disruptive change in its energy mix, taking into account that the energy generation in the country is mostly dependent on non-renewable energy sources that are not in line with the energy community secretariat directives imposed to the country. The Energy Community Secretariat is an international worldwide organization which united the European Union and its neighbors to make an incorporated European energy market. The association was established by the treaty building up the Energy Community endorsed in October 2005 in Athens, Greece to become in power since July 2006. Its main goal is to develop ways to harmonize *acquis* community rights and obligations to the signatory countries. *Acquis* is the group of rights and commitments that are mandatory for all EU member states.

At the present time, there is a disruptive demand for innovation in the system and presentation of new technology embracement both publicly and privately in Kosovo, solar being one of the most pushed forward technology for such transition occurrence. The energy transition pathway is also an obligation imposed worldwide by many stakeholders coming from the international community, because of the high pollution levels emanated by the country. Therefore, the excessive intensities of greenhouse gas emission by the coal-fired power plants contribute to such pollution levels. Hence, Kosovo energy strategy (KES 2017-2026) encourages solar panel embracement with feed-in tariffs, with the highest incentivizing price of photovoltaic in Europe by 136, 4 EUR/MWh (MED 2017).

Expert John Szabo also mentioned the fact that Kosovo has the highest feed-in tariffs in the whole scheme of this incentivizing tool, which was not a recommended solution judging from his expertise (Szabo 2021). This policy pertinent to the Republic of Kosovo increases the ability for the country to reach the set target of 25% renewable energy source based produced energy (MED 2017). However, it is unjust when it comes to the policy implementation process because the energy regulatory office of Kosovo (ERO) shows biased behaviors towards issuing the license for solar based energy production to only a few companies. Thus, contributing to monopoly creation in Kosovo, in the RES power generation sector8. One powerful company in the country is said to be controlling the solar energy generation, and such a monopolistic approach is portrayed by "Blerim Devolli standing behind six owned companies awarded the rights to produce solar power" (Prebeza & Xharra 2020 par.6).

To avoid such biasness, the Energy Community Secretariat is pushing forward for Kosovo to adopt auctioning as a form of incentivizing tools. To briefly define the auction, a World Bank report encompasses the auction to be the process of defining and picking up the allocated goods and services offered by companies in a competitive way, in accounting for the financial offers that the bidders offer to the allocator (Maurer and Barroso 2011). The auction forces competition between the candidates that are participating in the particular bid, in this case the chance to produce solar based energy in Kosovo, and the lowest price gets the incentive to produce energy based on renewable energy sources. John Szabo's expertise is a valuable opinion matter in this case in the sense that he also argued auctioning as the best case scenario application for the Balkan region, including Kosovo (Szabo 2021). Hence, Kosovo is reported to moving away from the previous incentivizing tool of feed-in tariffs, and adopt auctioning as the best replacement for guaranteeing competition in the energy market in Kosovo. During the auctioning process as a new incentivizing policy, the interested companies make their offer to the government representative (ERO), where the lowest price gets the license and the financial incentive for producing solar based energy. By adopting this regulatory policy, companies sometimes have to pay to the government for the license, as the value is very fluctuant and changing rapidly. Furthermore, IRENA denotes the renewable energy auctions to be focusing on the "potential of auctions to achieve low price … as cost-competitive power generation technologies" demonstrate the real incentive for an international implementation (IRENA 2019 pg.9).

Background information: The case of Latvia

Latvia's energy mix is comprised of a relevant secondary source of example in order to illustrate a heavily dependent fossil fuel country transitioning towards approximately half of the country's energy mix into renewable energy dependence. When analyzing the case of Latvia, it is important to mention that the country has been fully dependent on burning fossil fuels and currently imports tons of fossil fuels for burning purposes. That is illustrated with the argument that "all of the country's oil, gas and coal needs are imported" (OECD 2020 pg. 1). However, when it comes to the energy production, Latvia is presented to be determined on following the European legislation towards the combat of climate change, i.e. the Paris Agreement 2015. The actual share of renewable energy which is produced and therefore consumed by the Latvian citizens and companies scored on the total of 40 % of the energy mix's pie in terms of distribution (Latvian Government 2018). Most of the renewable energy

utilization comes from biofuels and waste treatment and hydropower plants that are in Latvia. The renewable consumption behavior is spread by 37.2% on energy consumption with the 2.8% on transportation. Moreover, the national energy and climate plan is organized in the set of targets that proposes the increase to an estimate of 45 % of final energy consumption and 14 % is proposed to go in transport renewable behavior (Latvian Government 2018). The current energy independence is reliant on biofuels and waste renewable energy consumption. In addition, large scale hydropower plants have taken a vast major role into the building of energy independence for Latvia, as they take up a big chunk of the pie in the energy supply (Leal- Arcas et al. 2020)



Table 2. Energy supply in Latvia 1990- 2019 (IEA, 2021)

The illustrative chart on table 2 gives the frequency distribution of the Latvia's energy mix. This energy supply is presented to show a decrease on the use of fossil fuels, and an incremental increase on renewable energy. On an estimate, nearly 37 % of the total energy supply is reliant on biofuels and waste treatment, followed by oil usage on 30%, 26% of the natural gas mostly supplying electricity

and heat, and the hydro energy with others 7% (IEA 2021). Thus, it can be detected from the chart as well that Latvia even though is highly focused on supplying renewable energy, the country does get support from imported fossil fuels. On another note, Latvia shows progress into the biofuel and waste treatment for energy production purposes, making them score at preferable levels of renewable energy and EU standards. There is a drop down of coal usage during the years considering its CO2 emissions and PM dispersion. Natural gas is another factor which had been having its changes in Latvia's usage, currently in the phase of regression together with oil as a fossil fuel. The eventual regress in the usage of oil and gas is engraved in the Paris Agreement 2015, making Latvia a compliant state of this unique policy framework. This framework leads the way to the new political economy that the EU ought to embrace, by making a "gradual change away from the current hydrocarbon-led global economy, not least breaking free from the negative aspects associated with oil and gas" (Raszewski 2018 pg. 279).

National Energy and Climate Plan 2021 – 2030

The fact that Latvia is still heavily dependent on importing fossil fuels motivates the country to continue its path of EU standard compliant country and create policies and frameworks that benefits that pathway. Latvia invests its resources on sustaining the energy supply graph in the near future accordingly to the European standards. It is examined that a great deal of investments from the Latvian government comes from the decarbonization dimension, which is the country's strategy to reduce the greenhouse gas emissions by 40% in 2030. In addition to the European emission trading schemes covering installations in Latvia, the government pointed out a nationally determined contribution to the cause of reducing GHG's by implementing the decarbonization effort. The main reason for the implementation of such strategy is to push forwards the spread and deployment of the innovative renewable technologies that capture energy in an effective way. Thus, the renewable deployment and utilization by companies is planned to be done without financial support from the government, in order to capture the attention in a push methodology. Moreover, Latvian government with its NECP

2021 – 2030 intends to regulate the taxes in a way that promotes competitive actions towards fossil fuel energy sources. In addition, decarbonization is planned to be followed with the international coordination and cooperation in order to attract renewable energy investors and promote renewable technologies in the country, at that point where the customers consumer their own energy (Latvian Government 2018).

Energy efficiency

In addition to the 45% renewable energy target, Latvia invests in national energy efficiency measures to reduce the final energy consumption from 4.3 Mtoe (million tons of oil equivalent) to 3.6 Mtoe (Latvian Government 2018). The most effective method to reduce the energy consumption behaviors is the efficiency promotion to the Latvian customers, such as energy savings tools i.e. primary energy savings and final energy consumption savings; renovation strategies; the use of energy in an need basis and so on. Moreover, the government plans to ensure the interconnectivity with other Baltic countries by 80%, so that the imports are reduced to minimum levels from other countries. In respect to energy security measures, the core strategy plans on advancing the goal on reducing the energy asset imports from the third countries by 50%, energy which is heavily dependent on fossil fuels.

The draft plan estimated the interconnection policy between the Baltic countries to create an internal market by 2030, in order to reduce the imports of energy and benefit from the overall objectives and targets that interconnection threshold presents. At present, the situation shows that interconnectivity in Latvia's market shows to be in direct link with the Baltic countries (Estonia and Lithuania) and Finland, Norway, Denmaks, and Sweden (Leal-Arcas et al. 2020). However, there are energy security concerns with other European countries which interconnections are lacking behind. Therefore, there is a much needed effort on investments for integrated grids, which will serve both the international interconnection advantages and consumer smart grid dimension on better savings and efficient use of energy.

The research and development, innovation and competitiveness has been one of the crucial aspects on the demand side for Latvia as a country in order to proper in its achievements for the 2030 target goals. For instance, investments needs are prescribed to be a critical point for energy efficiency and renewable energy contributions for the country, considering the major advantages that they bring, including 3% annual GDP rate. It is said by the European Commission report that "the final plan could still take better advantage of the role NEXPs can play in providing clarity to investors and attracting additional investments in the clean energy transition" (European Commission 2018b pg.3). This clears out the way on the national targets contributions to the clean energy solutions, mainly revolving around energy efficiency and innovative renewable utilization.

Smart grids and prosumers in Latvia

There is an important initiative in the European context to start investing in smart grids and selfgeneration aspects for the current energy infrastructure becoming more advanced and efficient. Here comes the definition of prosumers which is an augmented citizen which consumers the energy that they produce themselves in a renewable and efficient method. It derives from the combination of the two words meaningly the production and consumption in an active method (Leal Arcas et al. 2018). Latvia denotes its prosumers as "autonomous producers which is defined as a merchant, an energy supply merchant or a natural person which produces electricity or thermal energy for the purpose of consuming it for personal needs or local heating supply needs" (Latvian Energy Law 2014 pg. 3). Taking into account the current prosumer arrangement followed by Latvian government, when energy is transmitted from a household to the integrated grid it is therefore deducted by the family's receipt for the following billable month. This is a strategy dependent on the utilization of the net settlement framework, which is thus founded on a metering framework allowing net book keeping of the power transmitted and utilized. This allows incentives for both the network and the prosumers benefits in the long run, that it why it functions.

2. Literature Review

The fundamental theory that will correlate and extend to this research will be the energy transition theory. Tailored to three main pillars to be discussed throughout the research, the energy efficiency measures, electrification of transport and household systems, and renewable energy source deployment will serve to the research's aim in order to fulfill the research quest. Supplementary, the domestication theory will offer the incumbent factor for the stakeholders of the energy sector to fulfill and embrace the energy technologies that are to be followed when in the phase of transition. In addition, energy security will show its literature input into this thesis research, considering security of supply as a crucial factor for reaching energy transitions practicality. The crucial concept of sustainability will be also grasped for showing harmonization of Kosovo with the targets and objectives of sustainability.

Energy transitions

To being with, the energy transition theory is examined by authors that elucidate the story on the reasons for such theory embracement by the shareholders in the energy sector. Today the energy transitions theory entail a growing knowledge from the literature and the authors writing about the theory, as the innovation is occurring at a rapid scale in the energy sector and hence the theory evolves together with the disruptive innovation of the energy transitions pathways. The energy transitions involve the transformation of the old and inefficient technologies that are out there in the energy sector, and replace them with the new and efficient technologies and ways of yielding energy in the benefits of the end consumers. The energy transitions theory entail the utility of the renewable energy sources in the positive benefit for the citizens of the country, the energy efficiency measurements in the use of the energy produced and consumed, and the phasing out of the old and ineffective energy production techniques.

Dimensions of energy transitions

One perspective of the energy transition theory is primarily schemed into two phases of the theory being evolving, the first phase engraving the deployment of the innovative technologies for the energy production and consumption. While the second phase entails the theory on five different dimensions within itself that elaborate the energy transition theory. It looks at how the technologies emerge, what is the acceptance level of the community living in the state, examines the policies and institutions follow up on the legislation for the emergence of the new technologies that are being utilized, looks at the sector level performance on the functionality aspect, and finally detects the context of the adjacent sectors that are rationalizing with the emergence of the novel technologies (Markard 2018).

All the five dimensions: technology, actors, policies and institutions, sector level performance, and context and adjacent sectors, demonstrate the comprehensiveness of the theory within itself. As there are at least 5 different angles on how the technology can be analyzed, with the social aspect, the economy pillar, the political framework, the technological progress, and the analysis of the situations in the field. Hence, this comprehensive theory will use all of the dimensions that Markard elaborated on in order to follow with application of the energy transition at the case studies that are presented in the research. The five angles that the theory is being examined show the desired knowledge on the acceptance and the embracement of the both shareholders in the energy sector and the citizen's embracement of the technology innovation with the transition coming along it. Markard explains that "there is not a single energy transition, but a multitude of more or less interrelated processes of change that occur in different regions, at different speeds and with different synchronicities" (Markard 2018 pg. 631). Thus, it is important to get an understanding that the energy transition theory work differently when applied to different environments, meaning Kosovo and Latvia.

The aim of presenting this theory is to understand that the energy transitions work in Latvia needs to be looked as a success model for it to be applicable to the Kosovo's terms of its working environment. The sustainability aspect of the application of the energy transitions theory will be determining the dynamics of the technology appliances in the case of Kosovo, differently from Latvia. That is because there are different potentials for the prospects that are being employed to Latvia in comparison with the prospects that have potential in Kosovo.

Energy Security

Energy transition theoretical framework is applicable to the study case as the sustainability need for transforming the energy sector is ought to happen. The energy security including the security of supply and security of demand, shows to the case study that the transition ought to happen. The legislation in Kosovo describes such a shift in technology use to happen, just at Bogdanov entails his energy transition explanation. It is elaborated by his view that "the modeled transition stars from the existing power system structure, and existing capacities are decommissioned only after reaching their technical lifetimes" (Bogdanov et al. 2019 pg. 2). Disintegrating this into the context of Kosovo, this denotes that the energy circumstances should be utilized until they are explicitly non usable anymore. That is, the coal fired power plants dating from the 1970s and 1980s have lived their life and therefore serve no purpose anymore, in the current standing situation.

That is being said because in order to secure the energy supply for the customers, a third of the energy will still be produced from coal fired power plants in Kosovo, a revitalized plan is in place for Kosovo B with its incurred carbon costs and included European standards, values, criteria, norms, principles and schemes. The other third energy will be coming from the renewable energy sources, but the "energy transition will depend not only on RE resource conditions, but also on how various RE sources complement each other in different regions" (Bogdanov et al. 2019 pg. 3).

Energy security: the scope of supply

Involving the energy security theme is another essential framework that needs to be in hand while writing the thesis. Energy security is explained with the quest of the uncertainties for providing oil to

the armies during the 20th century (Yergin 1991). Following that, the 1973 oil crisis made is clear to the world leaders that the oil companies that were present around the world cannot and do not have the capacity to manage the crisis of oil by themselves, as the supply of oil was being compromised. Therefore, the International Energy Agency (IEA) developed an energy security system, "and the strategic stockpiles, such as the U.S. Strategic Petroleum Reserve and similar reserves in Germany and Japan, which can be brought into play and avert a shortfall and counteract a panic. The IEA provides a framework for coordinated response and for the exchange of timely, accurate information among nations—an absolute requirement to head off any such panic. The years of past oil crises have demonstrated that, given time, markets will adjust and allocate" (Yergin 1991 pg. 775).

Thereafter, the interest in energy security was reduced as the market prices for oil has started to drop at a rapid scale. However, the concept of energy security differs today from state to state, as their capacities and technologies, even resources, are distinguishable from the others. That means that if a country is aiming to follow the energy transitions theory and fully comply with the main objective of shifting the current technologies and utilizing alternative renewable resources for energy usage, then whether there would be oil crisis or not would not be applicable to this country's energy security concerns. While, for the others which follow the conservative pathway on energy utility, the technological innovations on new capacities for utilizing renewable energy would not apply, as they need different means for energy security. Therefore, the contexts of the country, the energy mix, the energy capacities, and the resources, among other elements are to be taken into account when applying energy security concept. Meaning that, there is a contextual matter of applying the energy security concept, as it differs from state to state, with the different policy agendas that the state is putting forward.

Dilemmas of energy security

The matter of energy security is one of the many dilemmas that the energy sector is going through, as a topic of the uncertainties for this research. To get a better understanding on the matters for energy security, Wolfers (1952) initiates the debate on determining the security concept by asking the three intriguing questions: 1) security for whom?; 2) Security for which values?; 3) From what threats?. On the scope of values, the decision to be made is pertinent to the ethical standpoint of picking first the qualities which merit security, with public freedom and independence guaranteeing liberty, peace and justice for all. Similarly, the security for whom aspect answers the dilemma on constituting the absolute freedom related to the matters of national security, engraving the security frameworks on policy, economy, and social life. Hence, one of which is the energy security that is essential in the research, revolving the justice aspect on the overall national security of one state. In addition, Wolfers argues that "even if for no other reasons, this difference in the reaction to similar threats suffices to make it probable that nations will differ in their efforts to obtain more security", supplementing for the third questions that the quest for security answers by looking at the energy sector rudiments (Wolfers 1952 pg. 485).

Sustainability concept in energy transitions theory

In order to foster energy security, the theory of energy transitions is necessary for the transformation from the inefficient technologies to innovative ones to happen. This denotes that the emergence of transition studies with the main focus on sustainability and disruptive innovation is required. Throughout the research, the concept of energy security will be complemented by the theory of energy transitions. One of the vital elements in the transitions studies is the use of energy in an efficient scheme, also known as the energy efficiency measures. The use of energy efficiency tools and strategies has been an essential part of the transitions theory, as the studies show that efficiency measures positive correlate to the reduction of imports, usage, and therefore increase in sustainability and environmental progress towards clean energy solutions.

Sustainable practice

The sustainability understanding behind the energy transitions relates to the two themes, "the cost of mitigating greenhouse gas emissions and the diffusion of clean energy technologies" (Berkhout et al. 2012 pg. 109). Sustainability concerns are answered through the actions of energy efficiency, as a stabilizing factor towards fostering energy security. By embracing a low carbon society with the UNFCCC values in mind, reduction of GHG and other toxic matters is done by following the EE tools. That is also factual as market oriented shifts which are elaborated at the UNFCCC, are a probable progressing element to foster energy efficiency. It is argued by several authors that competition increase is a factor to shift the prices of energy and therefore positively improve the impact on efficiency. The transition states have proven to indicate better efficiency measures when it comes to the market paradigm of change.

Nepal gives the conclusion that "greater price liberalization by phasing out state procurement at nonmarket prices; no explicit price control; increased openness in trade and foreign exchange by removing all quantitative and administrative trade restrictions and reducing direct involvement of state in international trade seems to have improved energy efficiency in these countries" (Nepal et al. 2014 pg. 4130). This particular methodology of thinking conservatively correlates with the notion of sustainable development. That is because as regulating models which are utilized in the fields of improvements in the energy sector in particular contemplates with the financial, legislative, and social matters, and thus, pertain to the sustainable development progressions as an evaluator to the transitions that are ought to be made in order to organize energy security.

Sustainable development goals (SDGs)

Theory of sustainable development is the complementary notion that will be utilized throughout this research, as it will be depicted to be the end goal of reaching sustainability in people's lives. This notion has been engraved by early worldwide renowned reports that include the Stockholm declaration on

the human environment 1972; the World Conservation Strategy 1990; and the Brundtland report 1987. The general understanding of the theory entails the "satisfying the needs of the present and those of future generations – recent work has argued that sustainable development includes also the elements of prudence, intergenerational equity, precaution, responsibility and governance" (Sovacool and Hess 2017 pg. 724).

To determine the stance of balancing notions, environmental prudence explains the obligations and duties that the states have in respect to guaranteeing sustainable utilization of natural resources. Equity prescribes the privileges and remedies that future generations have for using the natural resources, in a form of a will left by the present generation which also enjoy the same rights to use resources but not impact on their potential scarcity. Similarly, precaution is a form of prevention that the living people need to have in mind in order to minimize the potential impacts they may exercise in putting scarcity at the natural resources. Moreover, the good government theme points out the key principles of the responsibilities that they have in order to exercise effective measures that formulate the notions of freedom, equality, and liberty. Thus, sustainability is the conceptualization of human utilization of the resources with an embracement for the leaders of the future and rational thoughts of having in mind the aftermaths of overutilization which leads to scarcity. Sustainability ought to be conceptualized with the framework of using as needed while keeping in mind the others even in the present times, evidently thinking for the future of the human civilization, while effectively and commendably exploiting the resources of the earth and always avoiding scarcity.

Sustainable development goal 7: Energy

The act of United Nations in 2015 developing the sustainable development goals is another act that complements the energy transitions theory. This strategy is a plan that has been developed by the UN that prescribes the guidelines for the transition that the world needs, together with its people to embrace it and put it forward by the main theme of having sustainable development. The notion of sustainable development is presented to all nations as an action for the people in order to enjoy prosperity, by taking bold actions that are needed for this world's resilience. This planet is ought to perform the resilient pathway in order to embark the transition to the defined spheres where the change is needed. This agenda has a deadline on the year 2030 when all sustainable goals need to be accomplished (UN 2015). There are 17 assurance goals that promote equality, prosperity, respect, protection, and peaceful and inclusive environment of living for all human beings.

For the scope of this paper, goal 7 on "ensure access to affordable, reliable, sustainable and modern energy for all" is relevant, because it scripts guidelines on the initiative from all countries of the world to end impure energy consumption and embraces clean energy solutions that are focused in renewable energy, energy efficiency measures, and clean transport means (UN 2015 pg. 18). Just as goal 7.2 awards for the increasing share of renewable energy utility in the energy mix of all states, and 7.3 relating to energy efficiency improvements, the overall goal 7 of the sustainable development aims is to ensure the sustainable, affordable and reliable energy for all (UN 2015). The global transition tools of the United Nations therefore call upon energy efficiency and renewable energy targets to be strictly implemented in every state around the world, giving a deadline of 2030. One additional theme of the thesis is also the electrification of transport sector, which is inferred in the point 7.b at the SDG's, by implying infrastructural upgrade to the services that supply energy in the transitioning countries. All three themes contemplate the crucial idea of energy transitions theory with the energy security fostering clause in mind.

1.5*C goal and net zero target

When discussing about the theory of the energy transitions which will foster energy security for the states, one cannot skip the 1.5*C scenario and carbon neutrality/net zero target that is elaborated by many reports. The 1.5*C scenario is an idea to limit the global warming by taking this climate action to ambitiously limit the warmth of the earth to 1.5*C. This is the most discussed element in the

transitions aspect, as the numbers vary from 1.5 - 2, with the most realizable goal of 1.75*C limitations to the global average temperature increase. The International Renewable Energy Agency (IRENA) in 2021 presented a report on the outlook of the energy transitions. It organizes the transitions pathway to changes to be made in current technology solutions that include "all sources of renewable energy, electrification measures and energy efficiency, which can be scaled up at the necessary pace for the 1.5*C goal" (IRENA 2021 pg. 6). Among the three main themes that are being discussed throughout this research, innovation and disruption of the developing clean energy solutions is what is relevant also for their emergence. In concrete steps, energy transitions theory entail different actions that are inscribed in the three main themes of the paper.

- 1) Affordability of the energy prices for the increased forecasted demand in the case study region
- 2) Transport, household and industry sectors must be growing their demand for renewable energy solutions
- Decarbonization of the current power systems that need to be supplied with renewable clean energy solutions to achieve carbon neutrality by 2050
- 4) Energy efficiency measures for household and industry sectors that promise increase in prosperity of the future of energy sector, and clean economic growth
- 5) Required investments by relevant stakeholders to prosper clean energy solutions
- Stabilized political, economic, and social situations for creating the space and desired outcomes to be realized
- 7) Sustainable transition with the three themes of the research paper



Figure 1. 1.5*C climate change targets with the sector by sector limitations of CO2 by 2050 (IRENA 2021)

Figure 1 show the illustration of the sector by sector decrease of carbon dioxide emissions by 2050, with the transport, household industry and power sector being the most CO2 emitting sectors. This scenario shows the global CO2 emissions by 2050 with the current schemes which are present at the developed countries, ETS being the most common one. However, figure 1 is concretely related to the case of Kosovo as there are relatively similar numerical data that must be applicable to its target of environmental protection and life prosperity. The emissions trading scheme which operates in European Union and now United Kingdom (EU ETS & UK ETS), is the alternative solution to reduce the greenhouse gas emissions by introducing the limit of emissions to be made by a relevant agent and price the ton of carbon within that limit.

Emissions trading scheme

To this end, the investigation on the ETS first and foremost spotlights on the most significant administrative system and specialized parts of the EU cap and trade system, to all the more likely comprehend its motivation, design and highlights. The idea is called cap and trade mechanism, where the agent which emits carbon dioxide and equivalent toxic gases cannot emit more than the set cap, and pays the price for allowances for their company and trade with those allowances. The allowances mean 1 ton of carbon dioxide, and many agents spend a lot of budget to allocate financial means to create the ability to operate in the market, especially EU. The incentivizing tool is not to burden agents to pay for the union and profit the citizens in financial terms. However, this system guarantees that the agents will seek to regulate their emitting factors to a minimum in order to pay the least amount possible, and through time (by 2030) they would have change the technology and shift to renewable and efficient energy solutions. Moreover, the carbon neutrality target is achievable with the ETS being in place.

ETS incentives

Mainly, the motivational spirit behind the ETS is to educate the agents to not use impure energy solutions that devastate the environment, rather invest in clean energy solutions that have the capacity to have further return on investments beneficial for the agent and the environment they live in. With the purpose of investing for the future generations and leaving behind a great will for them, the EU ETS "requires the installations subject to its application to hold a GHG permit and to monitor and report their GHG annual emissions with the obligation to surrender every year a quantity of allowances equal to their GHG emissions occurred in the previous year, as monitored, reported and verified by an independent verifier. Installations subject to the EU ETS may comply with this obligation by improving their environmental performance and cutting their GHG emissions or by buying the EUAs on the related auctioning and trading market (Borghesi et al. 2016 pg. 3). Its methodology is based on agents buy the allowances through auctioning, as the price shifts regularly
they need to be in line with their emissions allowances by March the 30th of every year. The gathered monetary funds by the EU allowances will be forwarded to the agents in terms of investments for generating a higher rate of renewable energy solutions and capacities. It creates the carbon market for allowances trade between agents in the emissions scheme. In addition to that, the market stability reserve is available to the agents for reducing the "surplus of allowances" that erupted due to the economic crisis in the EU (European Commission ETS 2021 par. 4).

Current studies show that if ETS was to be implemented in Kosovo, the results would be devastated for the economy as many businesses would need to close down due to incompetency to pay up for the allowances. Therefore, the notion of free allowances is put forward by EU ETS in order to avoid carbon leakage and also avoid collapse of developing countries' economies. At a sharp look, Kosovo is represented currently by 98 % impure power system production while a portion of the power produced comes from renewable energy sources. A likewise situation is shown in neighboring countries, but the issue is that in Kosovo there is vast potential for investments and change in paradigms. There is an emerging trend for solar PV and wind to be put forward by investors in the power sector, in addition to the energy sector as such (IRENA et al. 2017). Moreover, the national renewable energy action plan is devoted to be focusing in solar PV and wind being the most profitable and with the highest capacity for the prosperity of the energy sector. In addition to that, wind and biomass utility will take part in the transition sequences.

The energy landscape therefore needs to integrate an emissions trading scheme but with a normalized and adopted factors to the case of Kosovo, as the reports show. The integration needs to be at the awareness raising factors with adjusted prices for the economy circumstances in order to present the real results that are desired for the energy transition occurrence. This report enlightens the reader with the steps that the country needs to embark in order to utilize its renewable power potential in a costcompetitive approach.

Technologies	2009	2015		2020 (NREAP)	Additional cost-competitive potential			Technical potential	
	MW	MW	GWh	MW	MW		GWh	MW	GWh
Solar PV	0.0	0.1	0.0	5.0	2016	0 - 436.2	0- 627.7	581.3	834.5
					2030	581.2	834.5		
					2050	581.2	834.5		
Wind	0.0	1.4	0.4	62.2	2016	12.5 - 133.2	36.2 - 286.6	2,328.8	3,849.5
					2030	1,671.9 - 2,313.6	2,909.6 - 3,833.5		
					2050	2,327.4	3,849.1		
Hydro	45.8	49.4	166.5	447.8	137.4		640.6	494.8	1,348.0
≤ 10 MW	10.8	17.4	58.6	107.8	137.4		640.6	144.8	720.0
> 10 MW	35.0	32.0	107.9	340.0	0.0		0.0	350.0	528.0
Pumping	n.a	n.a	n.a	n.a	n.a		n.a	350.0	528.0
Biomass	0.0	0.0	0.0	5.0	14.0 - 36.0		84.2 - 240.3	115.0	715.0
Biogas	0.0	0.0	0.0	5.0	14.0 - 21.0		84.2 - 126.3	70.0	421.0
Solid Biomass	0.0	0.0	0.0	0.0	0.0 - 15.0		0.0 - 114.0	15.0	114.0
Biowaste	0.0	0.0	0.0	0.0	0.0		0.0	30.0	180.0
Geothermal el.	0.0	0.0	0.0	0.0	0.0		0.0	n.a	n.a
Total (2016)	45.8	50.9	166.9	520.0	2016	163.9 - 742.8	761.0 - 1,795.2	3,519.9	6,747.0

Figure 2. Cost-competitive potential of renewable energy investments in Kosovo (IRENA et al. 2017)

Figure 2 present the numerical values of the cost competitive renewable energy generation with the installations that need to be occurring by the upcoming years. This figure illustrates the allocation of the national renewable energy actions plans with its potential results that are coming from the field. It is therefore determined that the 33% (one-third) of the energy consumption by the Kosovo citizens can be devoured by installations of the innovative technologies that produce renewable energy based power. The most competitive technologies that pertain to the Kosovo potential are the solar PV with the highest potential together with the wind mills installations at the desired locations. In addition, hydropower plants are respected resources of energy in Kosovo, with the biomass utilization technologies coming up last at the scale figures 2.

Market coupling idea

As a pathway to follow the transition methodology, renewable energy deployment with its innovative technology is a crucial element to be accounted for. Renewable energy scenario reduces the environmental conflicts to a minimum degree, as there are less environmental concerns when it comes

to utilization of this method of energy use and consumption. A common approach which would prosper the energy connections between the Europe and its developing regions set forward by many stakeholders is the market coupling idea, or the energy connectivity approach. Gathering up southeast European countries together with the central European grid connections would increase the efficiency of the energy transport and would reduce the financial burden of the energy imports for this region to be coupled.

RES in market coupling

The global landscape for the energy connections is being dependent on renewable energy, energy efficiency, and electrification of the system. This is a global trend that is taking place all around the world, as it proved to have high degrees of efficacy that grows faster than any other technology and/or methodology. For the scope of this paper, narrowing down all of this argument to the central and south east Europe energy connectivity is what is needed. There ought to be a hand-in-hand methodology of deployment of such renewable technology with the idea of market coupling. This concept is presented to the reader because in order to foster the trade between this region the coupling shall secure the instant equilibrium between the energy production with the region's demand (Newbery & Strbac 2016). That is because there will be cross border trading of energy between the participant countries and as such this method will increase the energy security concept. That will be illustrated with the policy impact of having a finalized one single regional market with every customer/state being able to purchase power directly from the supplier of their choosing. The IRENA report presents the figures of demand increase in the CESEC region by 24% by 2030 (IRENA 2020).



Table 3. The renewable potential capacity share among the energy consumption in CESESC countries

Table 3 better illustrates all of the state members of CESEC, being Albania, Austria, Bosnia & Hercegovina, Bulgaria, Croatia, Cyprus, Greece, Hungary, Italy, Kosovo, Moldova, Montenegro, North Macedonia, Romania, Serbia, Slovakia, Slovenia, and Ukraine. It presents the percentile distribution of the increase share of renewable energy technology and consumption by the 2030. Moreover, shows the current figures on how each country is doing with their renewable energy shares. That denotes that each country in the CESEC will benefit from the connectivity on the coupled market in a positive way, with not leaving room for bargaining power and influence of better developed countries to unfairly benefit from their economy situation. In addition to that "acceleration a transformation towards a renewables-based energy system is one of the key cost-effective actions available for CESEC members to meet the goals of the Paris Agreement" (IRENA 2020 pg. 12).

This figure present the initial thoughts on the feasibility analysis and creation of the potential for renewable energy deployment in Kosovo. As 33% of the energy sector will be based on wind, solar, biomass, and hydro power renewable energy, which will create saving in all three scopes of political, economic, and social aspects. Hence, "by investing in renewables, CESEC members can build an energy system that is substantially less reliant on imported fossil fuels while delivering energy at

competitive costs" (IRENA 2020 pg. 13). As a region, CESEC countries will save in the political and economic trading benefits of around 3.4 billion EUR a year by 2030; in social aspect energy connectivity will bring savings in air pollution avoiding damages of around 5 to 20 billion EUR a year by 2030; and savings in environmental costs related to climate change of approximately 2 to 12 billion EUR a year by 2030 (IRENA 2020). This means that the total savings by deployment of the energy connectivity framework with the inclusion of crucial deployment of renewable energy technology and consumption, approximately 35 billion EUR a year will be saved from financial burdens by 2030.

3. Methodology

Research Purpose

Kosovo is currently in an ongoing labyrinth in regards to its energy sector, considering that the strong passion of joining the European Union is being tangled by the impure methodology of burning fossil fuels for energy consumption purposes. The paradoxical situation in which Kosovo is currently in poses a significant issue in the practical steps towards change in the energy sector. That is a result of the discrepancy with the EU integration pathway vs. security of supply and energy security as a framework. The most credible and feasible pathway integration that solves the matter of security of supply is following the transitional pathway of concentrating the energy sector in renewable energy sources. The main purpose of this research is to determine the best policy practice that shall serve the Government of Kosovo for fostering smart and sustainable energy transitions theory, while invoking security of supply and sustainable development goals. This policy theme questions how can the state of Kosovo apprehend to the energy transition policies and applications? This policy practice will be searched at the Latvian case study example, considering EU membership, transitions successful pathway, and similarities with Kosovo. The process of identifying the policy practice that involves the three themes of the research will be established in methods. Hence, energy transitions, energy efficiency and energy security.

Methods

This research will involve data collection methods, both primary and secondary data collection, including interviews and secondary source theory approaches respectively. Primarily, the research method for the purpose of enhancing the level of integrity of this research, the semi-structured research interviews will be conducted with knowledgeable experts on the topic of energy transitions. Moreover, research interviews will be conducted with the stakeholders involved in Kosovo and Latvia that have a share in energy transitions, renewable energy deployment, and energy efficiency measures for the advancement of the energy sector. The use of concepts is proven to work because of the

definition of Becker. I relate to his definition when elaborating "the use of concepts, generalized statements about whole classes of phenomena rather than specific statements of fact, statements that apply to people and organizations everywhere rather than just to these people here and now, or there and then", because it shows the value of inductive research. That is because "a systematically related set of criteria surrounding a central issue" is what the concept I use shall serve (Becker 1998 pg. 109).

Since the scope that the research entails involves me as a researcher to present the alternative recommendation for the transition pathway to renewables, a random sampling for interviews and data analysis will not suffice. That is, a random sampling can be utilized in this research when looking at the acceptance level of the populations, because as Becker puts it "there aren't any patterns in the numbers that will give people a greater chance of being chosen" (Becker 1998 pg. 68). In that sense, a random sampling will show an unbiased result for an opinion matter. Moreover, the sampling procedure for this thesis ought to focus on getting the good practical instance that occurred/is occurring in the world as a comparative example applicable to the examined case in the thesis. In other words, the sampling procedure will pick up the case of Latvia as a country that has phased out a great deal of coal, and that methodology must be tailored to Kosovo. In the sense that representatives from a demonstrated institution that showed how to practice the difference will be questions with the reason on showing a "good one" example to increase the credibility and the worthiness of the study (Becker 1998 pg. 94). In addition, the use of the information that others have collected is the complementary procedure that the thesis shall utilize for explaining how the transition must occur. This system will not only reproduce the existing information, but will rather add value to the descriptions that will be gathered from the good case study examples from the field research.

Interviews

I have conducted 17 interviews from the period of May – June 2021, detecting the fraudulent points in both energy sector in Kosovo and Latvia, attempting to determine the understanding on how to create a methodology for energy transitions pathway in Kosovo and the Europeanization of the energy sector there. Representatives from stakeholders of interest were interviewed during this thesis research, with the main goal of getting their understanding and creating an interactive atmosphere while deducing the facts to be utilized for the research. They include representatives from governmental institutions in Kosovo that are responsible for creating the policies and executing them in a professional manner; non-governmental institutions and civil society representatives in Kosovo; experts from the energy sector in Kosovo and Latvia; governmental representatives from the ministry of economy in Latvia; GRETA project managers; private companies of energy industry in Kosovo and Latvia; and regulatory representatives from Kosovo and Latvia for the purpose of having a clear image on where does Kosovo and Latvia stand in regards to its sustainable transitional pathway towards renewables and integrating a pathway to creating a smart and sustainable future for the energy sector in Kosovo.

The interviews were done in a qualitative methodology with the main goal of having an understanding on the matters of interest for the purpose of the research. The targeted goal of the 17 interviews was to get the context out of the interviewees, because it is highly significant for the research to get an understanding of the meaning behind the experiences that the interviewees have in the contexts of the thesis research. Observation, communication with distinct language meaning, interactive statements and additional information were presented in all of the interviews because the necessary information and its understanding derived from it. Concepts were additionally utilized in the interview sessions with representatives from stakeholders of interest, since there is a need to set the ground for the definition of distinct concepts that I wanted to discuss with my interviewees and get their meaning behind what was being communicated (Becker 1998). That is, the professional practitioners of the energy studies have their developing knowledge on certain themes that emerge in my research, because of their constant interaction with the circumstantial changes occurring in the energy sector. Thus, "those involved in the interview come together to form an assemblage that exceeds the individuals themselves. As a result, the interviewer and interviewee, together, are moved through the interview in expected and unexpected ways. An affective examination of interviewing is one that gives credit to the often-imperceptible affective undercurrents at play in these interactions that maintain an interview's rhythm or propel it toward an unexpected direction as well as the atmospheric vibes that may exceed the dyad and yet shape the contour of the encounter" (Willink & Shukri 2018 pg. 2).

This rhythmic ongoing atmosphere was also the targeted goal of interview sessions, and that is why the relationships that emerged during the interview sessions created this integrated conceptual conclusion that is presented later in the thesis research. Enhancing the rhythm of the interview session the profundity of a positive relationship among me and interviewee is required. For a relationship to foster compatibility an association should be set up. It is explained that compatibility can be communicated by the questioner in offering trust and regard for the interviewee and their accounts and by offering a protected and happy with setting in which both parties open-up (McConnel-Henry et al. 2014). Affinity can likewise be improved all through the interview session by posing inquiries at fitting occasions especially when further explanation is required. Thus, the interviewee may start to feel the questioner is truly tuning in and understanding their own story and thusly feel more secure and certain to keep on expressing (McConnel-Henry et al. 2014). Therefore, the understanding of the experience was highly more interactional at the interviews when setting up the proper rapport.

The questions revolve around two main themes that the conceptual framework produces for this research context, the renewable dispersion theme and the energy efficiency theme. Interviewing is purposefully utilized in my research because the conceptualization of storytelling has always proved to work in deducing themes on a particular problem and create a solution. For instance, when I did the expert level interviews I knew that every word that was being communicated represented a significant added value to my research, because every sentence of the storytelling gave me the details of the experience I needed in order to understand the meaning-making of the energy sector both in

Kosovo and Latvia. I strongly relate to Seidman when elaborating the purpose of the interviewing being "not to get answers to questions, nor to test hypotheses, and not to evaluate as the term is normally used. At the root of in-depth-interviewing is an interest in understanding the experience of other people and the meaning they make of that experience" (Seidman 2006 pg. 3). This is elaborated in my research as well, in the analysis and results chapter when explaining the meaning behind what the interviewees explained in regards to energy sector capacities.

Research study question

This study opted to address the main research question, which is supplemented with a clarifying question.

Question 1: How can the state of Kosovo follow energy transition policies and its applications to the field?

Taking into account that Kosovo has started building up its pathway towards renewable utilization and energy efficiency implementation policies, this question clarifies a sustainable energy transition developmental pathway that Kosovo ought to foster.

Question 2: How can Kosovo foster the proper usage of renewable energy sources and energy efficiency measures to be in dominance with the applicable capacity/potential that Kosovo represents?

Getting an understanding that Kosovo has many stakeholders which command renewable energy policies and energy efficiency implementation, there is a need for a mechanism to disperse the concrete measures for such developmental policies. E.g. the energy regulatory office as an authority for licensing and administration of the renewable energy deployment shall be following an easier process for the possibility of project realizations. Moreover, private companies must accept the regulatory policies for innovation and renewable technology utilization that goes hand in hand with the energy efficiency regulatory policies and legislations.

Thematic analysis – patterns of meaning

The research consist of the thematic analysis framework to better grasp the context and crucial meaningful sense out of the themes. The thematic analysis will serve to analyze the gathered data from both the primary and secondary resources. This method is utilized in this research considering the complexity of the themes, since the method flexibly and increasingly breaks down the themes into the necessary information that the qualitative data analysis needs to have. The thematic analysis is chosen because of the insights it offers for creating and hence detecting the "patterns of meaning (themes) across a data set" (Braun and Clarke 2012 pg. 57). The patterns of meaning should be described throughout the research with the thematic analysis method in order to reach the purpose of the analysis, which is to determine the way forward for creating and normalizing energy transition implementation methodology in Kosovo. Thus, numerous patterns of meaning can be detected with the relevant research data collected from experts and stakeholders. For instance, experts shall show their understanding on the theme of energy efficiency to be a comprehensive and multidimensional action from multiple actors, while the stakeholders shall only embrace energy savings and not interconnectivity and/or market coupling concept.

Inductive and deductive approach

Thematic analysis is utilized for reducing the vagueness and complexity of such understandings, including a mix of inductive and deductive approach. The two approaches are explained by Braun and Clarke 2012 as "an inductive approach to data coding and analysis is a bottom-up approach and is driven by what is in the data. What this means is that the codes and themes derive from the content of the data themselves—so that what is mapped by the researcher during analysis closely matches the content of the data. In contrast, a deductive approach to data coding and analysis is a top-down approach, where the researcher brings to the data a series of concepts, ideas, or topics that they use to code and interpret the data". This means that the themes and the coding which come from the ideas and concepts that I bring in this thesis research does not necessarily connect to the semantic

data content in the analysis. Hence, in reality coding and investigation of the themes frequently utilizes a mix of the two methodologies, both inductive and deductive. It is difficult to be simply inductive, as we continually carry something to the information when we examine it, and we once in a while totally overlook the semantic substance of the information when we code for a specific hypothetical construct, at the extremely least, we need to know whether it merits coding the information for that build. One will in general always prevail, and a promise to an inductive or deductive methodology likewise flags a general direction that focuses on one or the other member or information based which means or scientist or hypothesis based significance.

4. Analysis and Results

The central purpose of this chapter is addressing the main research question with its supplementary clarifying question that is based on the results coming from the literature review analysis and interview analysis of the gathered results, as stated earlier in the thesis. The research questions are: how can the state of Kosovo follow energy transition policies and its applications to the field, and how can Kosovo foster the proper usage of renewable energy sources and energy efficiency measures to be in dominance with the applicable capacity/potential that Kosovo represents. A significant result of the findings that were collected in this research is that renewable energy deployment in Kosovo is in line with the potential that the country presents, however, the utilization of such capacity is stagnating. Thus, the trajectory of Kosovo towards embracement of renewable energy utilization will show that such a practice of renewable energy deployment is feasible in Kosovo.

ETS employment in Kosovo

As presented earlier in this study, the emission trading scheme will be analyzed within the scope of the European Union, for better approximation of the energy situations that will be waiting Kosovo in its future endeavors. The interviewees on the topic of emission trading scheme (ETS) pointed out that their position on ETS mechanism employment in the Balkan region would be a devastating event (Interview data 2021). It is emphasized that especially in Kosovo where considering its current economy circumstances, there might occur an economic collapse if ETS is applied. In the case of Latvia, the ETS is currently in place and there are certain companies that still do not meet the needs of the EU ETS, and follow the free allowance allocation mechanism.

The EU ETS has the concept of the free allowance allocations application to some industry stakeholders, invoking a yearly distribution of free allowances to certain stakeholders (emitters) in order to reduce carbon leakage. This phenomenon was present in Latvia as well as any other EU countries, with Germany leading with the most free allowances in 2020 (Interview data 2021).

However, the act of accepting free allowance allocations is being exponentially reduced to the minimal levels, as many EU countries are refraining themselves from it by creating a derogation to their rights on free allowance allocations by EU. That being said, Latvia excluded themselves from this derogation where they did not take away their right in being part of the free allowance schemes (European Commission 2021). Hence, the results show that Latvia still needs free allocation mechanism in order to face the economic challenges on reducing the carbon and respective equivalent gas emissions into the atmosphere.

Similarly, this approach was considered to be allowed in Kosovo as well, because of the current high emissions that are out there deriving from energy, industry, transport, etc. Initially, in Kosovo, the scheme of ETS could be only introduced with the free allowance allocation technique, while going step by step on reducing their distribution.

Following the logic that the European Union described throughout the 4 phases of ETS, the number of free allowance allocation has been drastically reduced. In the first phase, the interviewees explained how the free allowances were mainly distributed to every stakeholder/emitter, so that they embrace the concept of the ETS. As the time passed by, there was a surplus of allowances due to the economic crisis of 2008, which is correspondingly similar to the COVID-19 crisis affecting the countries' abilities to keep up with the ETS. When the same reasoning is applied, Latvia went through the free allowances and has started from the second phase on buying allowances per a fluctuating price. Latvia now has started to reduce its free allowance acceptance, but yet still relies on them on a case by case basis. Therefore, to put it simply, the interviewees concretely explained that "the number of free allowance allocations is being reduced by 2 times its current allocations, since the beginning of free allowance implementation mechanism" (Data interview 2021). If the same pattern of ETS implementation is presented to Kosovo, with free allowance allocation system being on the top of its advertisement goals, the success rate will be approximately analogous to the EU countries.

Energy sector and ETS positionality in Kosovo

Evidently, the energy production sector in Kosovo would be one of the most affected sector by ETS in regards to the energy corporation which is composed of two old coal fired power plants. Kosovo energy corporation (KEK) currently holds the market of supply with energy, serving 97 % of Kosovo customers with coal based energy. Their emissions exceed the limitations of the Directive on Large Combustion Plants (2001/80/EC) and the Industrial Emission Directive (2010/75/EU) by four times, emitting on average from 300 to 700 mg/Nm³ of particulate matter (PM) dust and 700-850 mg of NOx (European Commission 2018; European Parliament 2001; 2010).

The interviewee argued that such emissions are being managed and in short the official investments from coming from the EU funds 76 million EUR - Instrument for pre-accession assistance (IPA) program, will suffice the reduction of such emissions to lower levels meeting EU standards. However, with the ETS implementation the burden of allowance trading will still be present in the budgeting of the company, because emissions will be still affecting the environment. Hence, they positioned their argument to the stance of explaining how the beginning of the ETS implementation in Kosovo will be proposed with the free allowance allocations, until the coal fired power plants will be able to generate the capacity that will meet the proper allowance budgeting.

Renewable/sustainable energy solutions

Results show that ETS-like allowances will be able to enter the Kosovar market by 2027 to 2030, lifting the dilemmas for environmental prospects of low emission technologies to be employed in the energy market. Moreover, such technology employment will be promoting clean energy with lowest emissions possible, entangling 1/3 of the energy market in the state. Approximately, 33% of the market will be based on large combustion power plants which will ensure security of supply to the

Kosovo market, and subscribe to the ETS-like methodology on opening the room for environmental improvements where possible. The prices of ETS in Kosovo per allowance will be based on Kosovo's economy standing point, comparably similar to the initial prices of ETS in the EU. ETS employment in Kosovo will subsequentially ensure renewable energy capacity deployment in Kosovo, scoring 33% of the energy market. Such renewable energy technologies will be based on solar PV installations, wind mills in green parks, green hydropower plants, and biomass utilization. The results from the interviews allow the detection of the renewable energy trend in Kosovo to present a real solution for the devastating environmental degradations that has been ongoing. This finding concretely represents the view on renewable energy deployment that has started its operation and will "allow a sustainable energy transitions pathway for Kosovo" with 1/3 of renewable energy production by 2050 (Data Interview 2021).

RES & EE and regulatory office

During the interview sessions with the energy regulatory office in Kosovo, representatives from this institution showed high transparency in regards to renewable embracement. This resulted in the benefit of flourishing the analysis conduction as transparency was highly promoted in particular to this institution. The information gathered from the interviews conducted in Kosovo at the regulatory office was screened for the purpose of understanding the future of energy transition application in the energy sector, which resulted in a push and pull strategy consideration and accounting for sustainability in application.

The energy regulatory office (ERO) has simple and strict policies that promote the use of renewable utilization in Kosovo, as they are the licensing body for all interested parties that desire to participate in the networking of RES power production in Kosovo. The policies for the application from the energy regulatory office are simple to be followed, with certain bureaucratic taxes and other licenses that needs to be obtained from other institutions in Kosovo, which might be prolonging the procedure of application. As a better incentivizing tool that will replace the current feed – in tariff scheme will be auction introduction to the Kosovo market in RES utilization. Auctions proved to be the best applicable scheme for the promotion of RES power production capacities, also in the case study of this research, namely Latvia. Latvia is also a country that employs renewable energy auctions, in order to determine the best possible methodology for its endorsement in their country, namely biddingoffering-trading scheme that they endorse. A quite similar scheme of approach is applicable in Kosovo as well, with the auction implementation report that is presented by the ERO institution.

Auction implementation in Kosovo

Auctions in renewable energy source utilization is one of the crucial factors that will drive energy transitions pathway in Kosovo. One of the mandatory obligations that will increase the usage of renewable energy technologies for the endorsement of clean energy solutions is auction employment in the energy market in Kosovo. Auctions determine the limit capacity (kW) or the power generation (kWh) which is subject for the auction, also the innovative technology used and the geographical location of this technology deployment is determined by auctions. The project engineers can than present a bid to the auction, illustrating their task proposition and expressing the cost per unit of power at which they will actually want to exploit their venture. The public authority at that point in Kosovo assesses the various offers, positioning them dependent on their cost and other predefined measures. The best competitors are then chosen, and the applicable government body consents to a power purchasing agreement or contract for difference with the successful bidders.

Challenges to RES auctions

The challenges that Kosovo is currently facing in terms of its energy sector are the auctioning formulation, regulation, and implementation dilemmas that the government faces. For instance, the criteria for auctioning in RES deployment are still questionable. A study focused on renewable energy utilization is mandatory for realization of concrete and transparent auction implementation. Moreover,

the support for auctioning factors that are to be dispersed to companies in Kosovo is held as another conflicting point that leads to uncertainty, because there is a need for a scheme for auction deployment in substituting feed-in tariffs. The renewable energy source utilization auctions therefore is the scheme that will be mostly used for incentivizing the public and private sector in Kosovo to employ this innovative methodology for endorsement of clean energy solutions. This type of auction is also known as the demand auction because of the support component that barriers within itself for sustainable RES technologies.

Auctions and competitive market promotion

Auctions will in deed increase the competition in the energy market in Kosovo, because of the highly interested companies that will be able to compete in the bidding. Moreover, this type of incentivizing tool from the government will be offering more transparency in the energy market in Kosovo, due to the openness of the interested parties that are willing to participate in the capacity and other dimensions that will be applicable in the auctioning process in Kosovo. As one of the interviewees explained their position towards the renewable energy embracement, they said "a real price means transparency", meaning that with the increase in transparency the price of the RES power will be more realist comparable to other capacity generation in the energy sector in Kosovo (Interview data 2021). In addition, the types of auctions that are applicable in Kosovo, according to the document provided by the managing director at the energy regulatory office in Kosovo, are the 'pay-as-bid' or 'pay-as-clear' auctions.



Figure 3. The pay as bid auction

The pay as bid type of auction is exemplified by the report that was prepared for the energy regulatory office in Kosovo and explains how this type of auction can function in Kosovo. The producers of energy will offer their bid with their estimated process that include the actual costs and their profit margins, and present this to the auction. The structure of the companies' bidding price is only presented to them, without disclosing this information to the other parties involved. Every producer of energy will be paid as they bid, excluding the E and F producers in the above figure 3. That is because their offers are higher than the demanded quantity that the auctions requires.



Figure 4. The pay as clear auctions

The other type of auction that is applicable in Kosovo is the pay as clear type of auction that is also known as the marginal pricing scheme/project, in which all winning bidders that have the same price are awarded, which can either be of the highest offer of the accepted bids, or of the lowest offers of the rejected bids. Thus, the second approach on auctioning will present more transparency, fairness and incentivizing tool to the companies which bid the true actual costs that they have, as it can be seen in the figure 4. Even though the pay as clear type of auction has a higher price outcome, it is more preferable in the energy market in Kosovo compared to the pay as bid type of auction. That is because the latter only seeks to satisfy a certain portion of demand for renewable energy production, while the pay as clear type of auction is more transparent and offer a real price on the bid.

Energy security trajectory in Kosovo

While examining how auctions are applicable in Kosovo's energy market, energy transitions theory enlightened their implementation and a subsequent theme is emerged. That is, the energy security in Kosovo, with the focus on security of supply for its end users. Security of supply for the power sector

in Kosovo is summarized to be the following the energy mix that will include: The energy mix based on the primary energy supply by 2050 in Kosovo:

- Renewable energy technologies (Solar PV, Wind, Hydro, Biomass); 500 MW
- Revitalized coal fired power plant, namely revitalized Kosovo B; 640 MW
- Natural gas employment with TAP connection in Kosovo; TBD
- Market coupling between CESEC countries; transparent energy import-exports

Expert knowledge on the Kosovo's energy mix explained the most realistic application of an energy mix that will offer security of supply to the end consumers in Kosovo, while also conforming to the standardized schemes that the EU promotes.

Roadmap to energy transitions endorsing energy security

The road to energy transitions while endorsing energy security in Kosovo will be on the initial capacity decommissioning of Kosovo A coal fired power plant. Moreover, the revitalization of Kosovo B coal fired power plant needs to happen as soon as possible. This decommission is planned to happen during the summer season, where there is no anticipated extreme weather condition that will collapse the economy of the country. During this period, Kosovo will be dependent on RES, gas, and most importantly imports of energy. On the topic of energy imports, the best solution to reduce their burden is the idea of market coupling which will be explained later in the research thesis. After the decommissioning, the revitalization of Kosovo B also ought to happen during the summer season, where there is no room for weather catastrophes to burden the energy connections and increase the imports, while the demand is lower during the summer time in Kosovo. Both of the projects have a financial burden for the economy situation in Kosovo, where the Instrument for pre-accession assistance (IPA) program will partially cover the costs.

The renewable technology employment is also another factor that will offer security of supply for the energy sector in Kosovo. Their best utilization is covered by the auctioning scheme, mostly covered by the pay as clear type of auction. The renewable energy utilization is also reported to cover 1/3 of the supply of energy in Kosovo, where solar PV, windmills, and hydropower plants are the most covered technologies that are listed, followed by biomass utilization that also belongs to the renewable energy auction incentivizing scheme.

A distinctive factor that must be taken into account in relation to transition of energy sector in Kosovo is the natural gas exploitation. There are serious plans that are coming up for the integration of the Republic of Kosovo in the transatlantic pipeline (TAP), which will be imported gas will less hazardous waste and pollution produced. This gas can be utilized in many different ways, involving the power and heating district sector the most. The interview results show that gas is way cleaner that coal and oil, and evidently emits 6 times less than oil and coal industry of energy production, making it a better alternative for energy transitions pathway (Interview data 2021).In this way, buffer generators of 50 MW capacity which are similar to battery invertors can be storing the energy coming from gas, to be used in emergency cases. This would be serving Kosovo for district heating and other small business operations that requires less capacity of power to regulate their production capacities, based on natural gas.

Renewable energy source utilization

The reliability of the renewable energy source utilization stumbles upon certain vague skepticism in the governmental reports in Kosovo, due to the uncertainty of the data presented related to the RES utilization. Setting the facts straight, the transparency of the public and private institutions in Kosovo to become engaged with the RES technologies is beyond research expectations. The price decline on the RES technologies is one of the main factors that impacted this openness of the stakeholders interviewed to accept the transition to renewable energy usage, including the power sector, transport, and residential building way of living. That is, the power sector representatives are evidently open to transition to renewable power production, not neglecting the mandatory reliability on revitalized coal fired power plant Kosovo B for ensuring security of supply. The mix will be offering great reliability with the presented capacity that the country has. Moreover, an impact factor is also the pushing policies that EU has for Kosovo through Energy Community serving at their best expertise for the best interests for Kosovo. The combination of both these motivational factors brought the openness to embrace clean energy solutions, together with the strong desire of the citizens to joining the EU and becoming a European citizens with the values of open and green societies.

Solar photovoltaic panels in Kosovo

The Paris agreement 2015 pushes forward the mindset of green energy, with solar PV being one of the most mentioned technologies for deployment in countries in order to show renewable energy embracement. A novel idea is explored for the energy sector in Kosovo, involving compliance to the European Green Deal, and the Energy Community directives. The potential for renewable energy production is vast in Kosovo, as the interviewees explained.

The interviewees constructively shower their agreeing position on to the fact that the potential Kosovo has for renewable energy production is at desirable levels, which needs further attention on investments in order to flourish. Using the geographic information system (GIS) provided by the global atlases, Kosovo scores on an average level of renewable energy capacities. Figure 5 points out the strategic locations for solar photovoltaic panel construction, as the capacity for 'sunny days' ranges approximately to 278 days of sun, with 6 hours of sun a day on a yearly average (INDEP 2020). Taking this into consideration, the interview results depict that the solar panels are likely to be highly beneficial for the energy capacity generation, which would comply with all of the directives that the European Commission has for Kosovo. Moreover, it would enhance the level of renewable utilization in Kosovo can

generate up to 800 GWh per year (Bankwatch 2020). This figure is also supported by energy experts that agree on the level of high potential capacity for solar PV installations, including PV in residential buildings, construction of solar parks, and small-medium sized companies get involved in PV installations (Interview data 2021).



Figure 5. Solar photovoltaic capacities in Kosovo (Global Solar Atlas 2019)

Biomass utility in Kosovo

Biomass power generation in Kosovo can be generously increased capacity with a green environmental approach in place. IRENA appraises the long-term practical potential of biomass application at

approximately 47 GW across the CESEC countries (IRENA 2020). Bioenergy power utilization is a significant resource for Kosovo as it can improve energy variety and security by diminishing reliance on imported fossil fuels, while increasing the country's statistical figures in exploitation in frameworks with high portions of variability of renewables (IRENA 2020). In addition, bioenergy empowers collaborations between power and district heating system. Biomass generated power can therefore be conveyed proficiently through power and district heating system frameworks to take care of regional district heating networks that are scarce in Kosovo.

Wind renewable energy in Kosovo

Besides potential for solar energy production, Kosovo has an unexploited capacity of around 105 MWh (Kosovo Energy 2020) for wind energy generation. Experts from the interviews present a different view with the windmill installations in Kosovo, looking forwards for the increase of this number to at least 150 MW (Interview Data 2021). However, the 105 MW numerical value is only related to the planned windmills, without calculating the general capacity presented in figure 6. The reason behind the analysis of the interview results shows the location depiction for this source of RES utilization. The regions where the most wind is present is where the power potential is higher, with the central, north/northeastern, and south/southwestern parts of Kosovo being the most productive and strategic locations for windmill construction (Interview Data 2021). These installations would moreover generate the availability of Kosovo of reaching the 2020 target goal of clean energy production, currently being 25% of the total energy production (MED 2018). These construction sites will be evaluated through environmental impact assessments in order to determine whether there are various environmental costs that might be accounted for, such as bird migration activities. The windmills are not being presented as a way to deteriorate the energy production and cause more issues in the environment. Rather, this is a highly attainable goal for combating the energy crisis and

following the transitioning train that Kosovo has to follow. This train is a mandatory catch for the country, considering all the directives that are presented by the European integration pathway.



Figure 6. Favorable locations for windmill installations in Kosovo (Global Wind Atlas 2020)

Green hydropower plants in Kosovo

The controversy of renewable energy potential in Kosovo with a high level of return on energy is hydro plants because of the wrong implementation of the construction sites that has been going on so far (Interview data 2021). The hydro power plants are less endorsed as the water resources in Kosovo are not as high as the other two resources and in comparison with the region. Currently, the rivers of Kosovo are the recommended sites for dam construction for electricity generation, including Drini I Bardhe, Ibri, Morava e Binces, and Lepenc (Lajqi 2020). Kosovo is described by figure 6 as a country consisting of waterways and streams with a hydropower potential that can be accounted for electricity generation. In the western parts of Kosovo, Drini I Bardhe represents the greater part of Kosovo's hydropower potential. The capability uses of energy produced from water in Kosovo is assessed to be about 700 GWh a year (Lajqi 2020). The primary hydropower plant that may be constructed in Kosovo is the hydropower plant of Zhur, in the surge of Drini I Bardhe, with an expected electric limit age potential 377 GWh per year. The streams of Drini I Bardhe, Ibri, Morava e Binces, Lepenci, and Llapi are portrayed by significant potential for power creation illustrated in figure 7.



Figure 7. Water resources with potential for energy production capacity in Kosovo Statistics Agency 2020)

Market coupling in Kosovo

The market coupling methodology for doing business in the field of energy has been developed by many energy experts around Europe and the world. They have recognized many benefits on market coupling, with focus in the central Europe and the south eastern Balkan region, namely CESEC. The energy experts interviewed for the purpose of this research thesis elaborated that market coupling simply increases the transparency in the trading between countries. Thus, when the market is open to all countries, the price of energy will be real, and no manipulation could/should occur. The more transparent the prices are, the better the trading between countries is, when the idea of market coupling is put into motion. The more the trading there is between countries, the better the security of energy supply will be guaranteed to the citizens. At the end of the day, countries strive for providing for their citizens what they are alleged for. Hence, the term energy security is way more efficiently achieved when all central and south east Europe countries come together in one market and be able to share their output. In addition, market coupling decreases the dependence on energy imports from other regions, as the coupling bring connectivity more effectively when nearby.

"The CESEC initiative spans nine EU member states (Austria, Bulgaria, Croatia, Greece, Hungary, Italy, Romania, Slovakia and Slovenia) and eight Contracting Parties of the Energy Community (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, the Republic of Moldova, Serbia and Ukraine). This represents a heterogeneous group in terms of economic development, per capita energy consumption, energy sources and current levels of renewable energy use" (IRENA 2020 pg. 8).

There are certain challenges that are emerged from the market coupling, as the interview results show with the implications of the art of assembling a meritorious energy policy in relation to the interconnectivity with the CESEC countries. Initially, the modernization of the grid infrastructure is an inferred obligation that is required to occur. That leads to a better enforcement of the renewable existent potential and its exploitation. Therefore, the determination of what goes where, in terms of what part of energy distribution must be embraced for showing a following constructive mindset towards energy transitions in Kosovo. An inherent determination that the interview results show from the facts that market coupling must bring in Kosovo is the increase competitiveness with an open market in the energy sector. Moreover, sustainability of the energy sector in Kosovo is also ensured with the market coupling because of the mixing of regional initiatives to export-import energy with the cross boarder capacities. Additionally, there are factual evidences from other cases which serve as a proof that market coupling increases the ability of one country to ensure security of supply, as the regional connection brings the complete exchange of energy with the explicit auction mechanism that Kosovo will embrace.

One of the interviewees in the field of environmental protection in Kosovo pointed out that the most common notions that are coming to his mind in the beginning of the process of market integration between the CESEC countries is the commonly known terminology as per his expertise, namely the energy mix. A normal commonly followed pathway by every legislation regardless of whether it is in the context of Kosovo or the European level, is the energy mix distribution to all potential capacities that Kosovo must embrace. All of these policies that are pushing forward the market coupling concept lead to the notion of the energy mix. Hence, not depending on one source of energy, rather invest into opportunities that are applicable in our country. Specifically, everything that can be renewable energy needs to be studied with a proper feasibility analysis and the leftover capacity that is important to support the energy security needs to be coming from revitalized coal industry. In addition, energy imports from other regions is another concept that Kosovo is ought to directly apply for ensuring security of energy supply.

The results here show that market coupling are a definite way for reducing the burden of an increased reliance on imports, while supporting each country with a transparent energy and a transparent price. There are numerous factors that will increase the savings of energy with the implementation of market coupling in Kosovo. The first and foremost fact is that the energy efficiency measures work hand in

hand with the market coupling infrastructure, in terms of cost effective ways of the methodology that coupling presents. Moreover, market coupling with CESEC countries listed above will indefinitely reduce the reliance of imports for oil and gas in Kosovo, and further develop the pathway to energy security. Another direct positive aftermath that comes from the enforcement of coupling of the market is the fact that the gird investments will modernize the old invertors and generators will novel new capacity of renewable energy capacity. This is a significant benefit that will moreover increase the interest of investments into the renewable technology with the current modest potential that Kosovo has.

Example of Italy and Slovenia

Market coupling depends with the understanding that a managed day-ahead market exists in each district (for example at every hub of the improved on transmission model). Subject to the capacity of the transmission model to help the related streams, market coupling empowers the territorial business sectors to exchange with one another in the event that it is monetarily more productive to do as such. Various cycles are important to help the day-ahead markets, for instance by providing information and giving monetary settlement administrations and, additionally, a few proportions of short-term energy adjusting are likewise required. The key benefit of market coupling is stream netting for energy streams booked in the contrary ways. Since streams inverse way drop, the line can be utilized around full limit (Parisio & Pelagatti 2014). On a strategy point of view, the methodology followed by the EU is known as Price Coupling of Regions (PCR) with the goal of building a typical estimating system to facilitate power trades acting in a decentralized network. This methodology is less requesting regarding a completely brought together one, for example in view of an extraordinary container European power market, and permits to keep up some level of administrative autonomy in neighborhood trades.

The new system supplements express closeouts for the assignment of move rights on interconnection lines joining the two nations, namely Italy and Slovenia. Auctions require a different share of transmission rights and actual energy, which are still overseen by CASC-EU for yearly and month to month items. Day by day cross-line limit is apportioned all the while with power when the coupled interconnected business sectors clear. Under the verifiable sale component flawed exchange cannot happen as energy consistently streams towards the exorbitant cost country. Besides streams netting infers that force streams planned in the contrary headings counteract leaving the between connector to be proficiently utilized. The execution of market coupling requires a starter harmonization movement between the electricity trades included. Specifically, coupled business sectors should share the same plan for offering and processing exercises and have viable bid designs. The IT-SL market coupling test has been thought of vital for its exceptional attributes: on the Italian side, we have a very huge and fluid market portrayed by the presence of creating units having high factor costs, though on the Slovenian side we have a similarly more modest market with extremely restricted limit and an alternate fuel mix.

Hence, what can be drawn from this argumentation is that the IT-SL differences in their capacities are not going to present a substantial conflict in the market coupling methodology of trading energy. This is presented with the exponential growth from the 165 MW of power to 526 MW of power between the power exchanges of IT-SL boarder. That is factual with the average increase of the current Italian-Slovenian boarder for the increased liquidity of the exchange (Parisio & Pelagatti 2014). The infrastructure investments done in this market coupling example show that the feasibility study is applicable, with the potential increases in the daily average exchanges that are to happen between all CESEC countries. The successful method of use it of sell it that IT-SL incorporated into their systems brought an increase of 0.2 TWh in 2010 exchange increasing factor to a 1.5 TWh in 2011 and to 4.4 TWh in 2014 (Parisio & Pelagatti 2014).

5. Discussions

Thematic analysis with patterns of meaning

Initially, this study has been developed for the purpose of tacking the best feasible and potential pathway to Europeanize the energy sector of the Republic of Kosovo, for the drives of the state to become a member of the European Union. Within this political meaning, Kosovo must be following the Green New Deal 2050 and its political measures to direct the legislation towards the European standards of consuming and producing clean energy. In order to embrace this legislative measurement, the analysis of the results from the interviews conducted incline to the conceptualization of the clean energy solutions becoming a part of the Europeanization to be happening in Kosovo. In short, energy transitions pathway dedications involve renewable technology deployment for increasing the efficiency in energy deployment shows great potential within the Republic of Kosovo, with a promising increase of a total 33% of renewable energy consumption in Kosovo by 2050 (Interview data 2021). This technology will be distributed to three sectors of interests.

Firstly, that is the self-producer-consumers of small and medium sized businesses and firms that will generate for their own capacities and integrate the leftover output into the system, e.g. solar PV and green hydropower plants. Secondly, the buildings and community residences having their own renewable capacities for the matter of accounting for a portion of their consumption, e.g. biomass, and mobile solar PV systems. Thirdly, the state owned distributed renewable energy technologies that will be dispersed around the geographical hotspots that Kosovo has for solar PV, green hydropower plants, and wind plants. In addition, the state owned technologies will include the revitalized coal fired large combustion plant until 2040 following all of the European standards for carbon emissions. Moreover, gas integration will be happening for the energy sector in Kosovo in order to make energy transition pathway easier and applicable.

Energy transitions pattern

The meaning of energy transitions has been discussed throughout this thesis research to mean a transformative measure towards an alternative pathway of consuming and producing energy in Kosovo. The Latvian pattern of behavior when it comes to detecting their conduit towards energy transitions is drawn with the GRETA project. This project carries out the Green New Deal legislative measures by developing the necessary tools in order to support the economic and social transition which in the end happens to equal to the green transformation as the end strategical goal. The interviewee representatives of the GRETA project has shown that the green change should be a profound progress towards the society and the economy of Latvia and all of the Baltic Sea region where human utilization of the plants' resources must be going through a declination trail and eventually diminished (Interview Data 2021). In order to realize such a reasonable future, Latvia needs the procedural changes of the developmental frameworks of sustainable development for the construction of an environmental friendly system. Hence, this requires the coordination from the distinct mutual factors of interest parties that are going to show their novel perspectives on setting the new foundations towards energy transitions.

Sustainable smart transition: Transformation from heavy reliance on fossil fuels to heavy reliance on renewables

The Greta project is aiming to invest their time into developing policy measurement tools in order to provide a sustainable smart transition in the Baltic Sea region, by involving environmental expertise and institutional guidance. This green growth that GRETA is aiming to build has the focus on energy and circular economy mindset. That is, in order to have their desired outcomes of smart and sustainable transition, Latvia requires the innovative systems and networks' integration to the existing policy instruments for the purpose of reflecting the needed synergy. To sum it up, "smart materials,

smart technologies, smart consumers, and engineering systems of the manufacturing sector" must be the key lookout factors for supporting the policy shifts and have the synergy (Interview Data 2021).

GRETA enhances the sustainability while accounting for collaboration and cooperation between the Baltic Sea region countries. That is, the market coupling idea that Kosovo looks to go forward. In the project, GRETA partners are focusing on their chosen intervention area but all analysis is made by one methodology to elaborate comparable analysis and develop policy recommendations which can use for Baltic Sea region countries. Using transnational learning approach in the project GRETA, project partners follow up partner discoveries, issues, and analysis on different issues. Need to admit that project GRETA partners are both similar and different – more similar is Latvia with its neighboring county Lithuania. And we can see that situation with green transformation is different for partners in Finland and Sweden where in terms of innovations companies are ahead Latvia.

Sustainable smart policy transitions in Kosovo

A similar approach of GRETA project needs to occur for the Republic of Kosovo for seeing the light of energy transitions pathway and sustainable integration of policy measures to occur. These measure must include energy efficiency incentives and prosumerism ideology embracement for Kosovo. At first, energy experts in the field recommend that energy sector in Kosovo needs to go beyond the redcross boarders that the policies are showing to them. Meaning that, the energy sector in Kosovo should not be seen as black and white sector. However, there needs to be a comprehensive integrating solution that offers a sustainable smart policy tools and also a smart initiative from the consumer's side. That is, the government must increase the incentivizing tools for offering a green growth similar to Latvian government for ensuring the prosumer activities bars increase. In the meantime, the civil society also plays a role according to the energy experts, playing their advocacy roles in intermediating this government-prosumer relationship. They will be serving as expert advocacy voices for promoting this type of relationship, so that the transition occurs.

Audit/Controllers enforcing energy efficiency

Energy efficiency tools that must occur in the Republic of Kosovo include energy savings and smart consumption of the available energy for both industry and household usage. Energy savings will be rewarded by the government while smart consumers will be incentivized with constructing their smart and innovative systems. In particular, the government of Kosovo must establish a body of a type-controller-like institution that must carry on with inspecting whether the small and medium sized businesses are following the standards of the energy efficiency measures for ensuring cost-competitive investments. Moreover, the Law on energy efficiency needs to be updated with this type of auditor/controller that gives them the authority to do check-ups and follow-ups with the businesses, so that the data are updated in a way that develops this type of governmental program in the win-win game situation (Interview Data 2021). The interviewees recommended that this institutional body will ensure the environmental concerns are addressed in order to follow up the ongoing incentives for the business constructions of the smart and innovative energy systems (Interview Data 2021). In short, the financial motivators that will be coming from the government subsidiaries must be protected and ensured that they are functioning in the correct manner, in order to justify the economic feasibility of this program.

Moreover, this program of energy efficiency promotion in Kosovo residential buildings shall pertain to specifying the benefits of the end consumers of energy usage, for renovations into their residential buildings such as windows changed, isolation, and smart meters integration into their electronic devices and heaters. The programs specifies that the utilization of the residential customers utilizing power, petroleum gas will be estimated through singular smart meters that precisely mirror the genuine energy utilization and give data on real season of utilization, to the extent that it is in fact possible monetarily sensible and proportionate to the energy investment funds (Interview Data 2021). In addition, customers will be facing promotional activities that will ensure that they become engaged into the active prosumerism, where they themselves become a significant factor towards environmental protection with their decision they make into consuming energy. For instance, the mobility type of situation is pertinent to the fact that when consumers choose what type of vehicles to own/utilize during their daily mobility activities, they will directly affect their sensibility into the environmental protection P.R. activity.

Green energy quotas/certificates

Environmentally friendly power quantities that are referred to as green energy quotas are to be represented in Kosovo as renewable commitments that the country ought to make in order to ensure energy security and a smart and sustainable transition. There green quotas allude to the meaning og the least partaking of environmentally friendly power sources, which are renewable energy sources. They must be incorporated into the Kosovo's energy mix, and by 2030 pertain to the 33% of the total energy consumption in the country. There is also the likelihood to characterize sub-standards for singular RES to animate innovation enhancement. These amounts are characterized by public, territorial or neighborhood governments and are generally expanded after some time to help the improvement of RES technology deployment (Interview Data 2021). These quotas directly apply just to RES plants that are claimed and worked by the actual utility, licensed by the energy regulatory office and followed the auctioning procedure. As a rule that is applicable in Kosovo, utilities have the chance of including RES plants possessed by outsiders in the satisfaction of their portion commitments through a committed market for sustainable power certificates, also known as green certificates. Energy experts interviewed argue that these certificates will be serving for increase the policy targets


that the country has, and have a better determined competition in the market force (Interview Data 2021).

Figure 8. General RES final consumption in Kosovo 2013 - 2017

As presented in the figure 8 above, the general RES consumption in Kosovo is relatively low and is not having a justifiable progress. The data got from one of the private sector interviewees show that the consumption of renewable energy in Kosovo is alarmingly low. For instance, in the electricity sector Kosovo has 14.6 % rate of total RES consumption; followed by 10% in transportation sector; and 44.4 % of RES consumption in heating sector. This last figure comes from the co-generation factor where the heat coming from the coal fired power plants is being used into conversed into energy for district heating in the Republic of Kosovo. Not to diminish the factor that co-generation is way an acceptable alternative comparing to another small coal fired power plant just for the district heating, however, this is not yet determinately clean way of energy consumption (Interview Data 2021). With the smart and sustainable transition pathway that way elaborated throughout the thesis research, these numbers can be a promising result into increasing the shares of renewable energy in Kosovo.

Energy security resolution policy

Kosovo must present the facts of following the environmental protection doctrine and smart and sustainable transition approach for the purpose of enhancing their status into the European Union. Kosovo must be promoting that their country is consistent to the fellow European citizenship with open values of environmental protection, integration of all state's market with the market coupling mechanism, and ensuring durability in energy efficiency measures.

Currently the state is in constant cooperation and coordination with the private sector and foreign investors into looking the sustainable pathways for investments into clean and smart transitions. There are rigorous investments that are happening for the advancement of wind renewable energy, located in the hotspots that Kosovo has for the utilization of this technology deployment (Interview Data 2021). However, in order to follow the Latvian model of having to surpass most of the European Union countries in renewable energy utilization, Kosovo must be committed to its energy strategy with smart and sustainable transitions.

CAP (MW)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Crosse	4 756	E E 21	6 570	7 672	9.010	0 170	0 424	0 606	0.020	0.905
Hungary	4750	890	724	749	1024	1077	1048	1 10/	1 599	2 153
Iceland	2 458	2 549	2 542	2 651	2 652	2 655	2 655	2 707	2 857	2 857
Ireland	1664	1867	1999	2 312	2 592	2 760	3 101	3 671	4 038	4 555
Italy	29 507	40 824	46 721	48 857	49 526	50 417	51 195	52 128	53 161	55 315
Kosovo*	43	44	44	44	44	44	81	121	140	140
Latvia	1622	1642	1701	1 761	1778	1782	1778	1796	1779	1801

Table 4. Total amount of renewable energy: Kosovo and Latvia 2010 - 2019 (IRENA 2020)

The total amount of renewable energy (MW) – Kosovo and Latvia as a comparative model can be seen that from 2010 to 2019, with the available data from IRENA, Kosovo portrays a progressive method in renewable energy utilization as a whole amount. It started with 43 MW in 2010 and kept the stagnating statistic of 44 MW until 2015. In 2016 these figures almost doubled with 81 MW, and closing the year of 2019 with 140 MW. Just in 2021 there are new investments that are planned, which

will add 105 more MW to the overall statistical measures for the total renewable energy transition pathway.

Latvia starts with 1622 MW in 2010 and approximately keeps having an incremental progress throughout the years. In 2012 it can be detected that only 20MW are added with the score of 1642 MW; 2014 with a better progress of 1778 MW and slowly in 2019 showing a figure of 1801 MW at the overall renewable energy utilization. This slow but steady progress is because Latvia's main resource of renewable energy is biomass, making the progress difficult to materialize at an exponential progress. Yet, the energy sector in Latvia remains the highest emitter of greenhouse gasses, in 2018 GHG emissions were up to 65% of the total emissions (Interview Data 2021). It is quoted by one of the interviewees in the Latvian GRETA project, that "it is so important to transform energy sector to use more renewable energy resources and improve energy efficiency" (Interview Data 2021). Moreover, European Union, including Latvia, is committed to achieving climate neutrality by 2050. One of the ways to achieve climate neutrality is using renewable energy resources to produce electricity and heat, as well as using local renewable energy resources. In 2018, Latvia had the third highest share of renewables (40.3 %) in the energy consumption in the European Union (EU) after Sweden (54.6 %) and Finland (41.2 %) (Interview Data 2021).

One of the most important tools that bring such high figures of renewable energy is the market coupling methodology that the Baltic Sea region countries have between one another, and the EU ETS scheme. The EU ETS has motivated some operators (of stationary installations) to start a transition to renewable energy in their installations, mostly with the use of biomass given that it is currently zero rated; such increased use of renewable energy can allow the installation to more easily reach it's allowance surrender obligations and potentially participate in allowance trading (Interview Data 2021). In Latvia, the proceeds from selling any emissions allowances that were allocated for free,

must be invested back into the installation so that renewable energy can be used, which can also motivate Latvian operators within the EU ETS to start using renewable energy. With regards to energy efficiency and electrification of transport in Latvia it would be highly speculative to try and draw conclusion of EU ETS' impact on these sectors, because currently the EU ETS does not cover these sectors (Interview Data 2021).

In the project GRETA partners are focusing on their chosen intervention area but all analysis is made by one methodology to elaborate comparable analysis and develop policy recommendations which can use for Baltic Sea region countries. Using transnational learning approach in the project GRETA, project partners follow up partner discoveries, issues, and analysis different issues. Need to admit that project GRETA partners are both similar and different – more similar is Latvia with its neighboring county Lithuania. And we can see that situation with green transformation is different for partners in Finland and Sweden where in terms of innovations companies are ahead Latvia (Interview Data 2021).

Three themes: 3rd-3rd-3rd and energy efficiency and policy shifts in Kosovo

Hence, the mixed method of the themes that emerged from this research must be all combined into a systematic yet smart approach for Kosovo's energy transition pathway. Initially, GRETA project can be also beneficial for the enhancement of the policymaking tools that are being presented at times being barriers to follow smart transitions. That is, a similar project can be used in Kosovo as well to create this transnational learning approach that analyzes the different approaches to different countries and apply the best policy alternatives for Kosovo. E.g. the evaluation of environmental policies around the Balkan region can be one of the main takeaways from organizing a GRETA-like project in Kosovo; as such showing interest and goodwill in practicing an alternative methodology for progressing into sustainable transitions. Moreover, the 3rd-3rd approach is also a probable method for the energy solutions in Kosovo. That is, 1/3rd of energy must be coming from renewable energy produced by different renewable technologies that are capable of generating sustainable capacities for supplying energy in Kosovo. $1/3^{rd}$ of energy must be coming from market coupling methodology that will integrate the market between the Balkan and European Union, offering a stabilized market in the energy sector with transparency in price and efficiency in trading. Yet, the last $1/3^{rd}$ of energy in Kosovo must be coming from coal fired power plants, namely thermal power plant Kosovo B that has started its revitalization procedure in summer 2021, with standardized measures that offer less emissions into the atmosphere. This argument leads then to the energy efficiency measures that ought to be applied in the whole territory of Kosovo. Rational way of energy utilization shall equal rational incentive of EU citizen award. The less energy used shall equal the more energy saved, and hence, the less emission from the $1/3^{rd}$ of coal fired power plant, e.g. choices of mobility representing energy efficiency measures, because the prosumerism concept that was elaborated in the beginning of the research.

6. Conclusions

The more extensive the effect of research projects experience considerable attribution issues the more complex is the gap among the study and its impact. As an estimation in the context of Kosovo, there are intriguing lessons to be drawn in the impact assessment of the research. The results of this comprehensive study entail a bright future for the Republic of Kosovo. The future of renewable energy in Kosovo shows extensive potential with a feasible approach towards the construction of this future. Natural security theme is feasible for Kosovo when it comes out of its traditional meaning of safety in the meaning of the actual presence of damage and vulnerability to a particular substance, and needs to involve a superior comprehension of the environmental system of insuring an interconnection framework to the definition of the term. Such wanted interconnection levels, in a neo-liberal case would signify zero carbon emissions into the atmosphere. In Kosovo, the motive for the study showed that the illegitimate approach of fossil fuel industry has an end date, as Kosovo will follow the energy developments towards sustainability pathways, hence being a green state. The study examined how Kosovo might follow particular pathways on energy progress strategies and the renewable application to the field. Followed by the inquiry on how might Kosovo encourage the legitimate utilization of environmental friendly renewable energy and fuel productivity measures to be in strength with the appropriate potential that Kosovo.

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There are 3 pillars of electrification that Kosovo must learn to embrace within its system. 1) Electrifying transport sector; 2) Electrifying buildings; 3) Electrifying industry (Interview data 2021). By showing such commitment to environmental protection doctrine and clean energy solutions, the value proposition of the energy sector needs to change from energy security no matter the costs to energy security of clean, smart and sustainable transitions (Interview data 2021). Moreover, the 5 dimensions of energy sector in the European Union must be followed in order to ensure significant

energy transition pathways into integrating a sustainable approach for Kosovo. 1) Security, solidarity and trust; 2) An integrated energy market (market coupling); 3) Energy efficiency measures; 4) Taking climate actions, decarbonizing the economy; 5) Research, innovation and competitiveness. Sustainable energy based on renewable utilization has gained impressive headway over the most recent 25 years in the European Union. Financial investments in environmentally friendly power is a significant key to accomplishing the 2030 and 2050 objectives of a low carbon economy with expanded energy productivity and efficiency is evident.

This study has been developed for the purpose of tacking the best feasible and potential pathway to Europeanize the energy sector of the Republic of Kosovo, for the drives of the state to become a member of the European Union. Within this political meaning, Kosovo must be following the Green New Deal 2050 and its political measures to direct the legislation towards the European standards of consuming and producing clean energy. To accept this directive, the study outcomes from the interviews conducted showed to the conceptualization of the clean energy arrangements turning into a piece of the Europeanization to occur in Kosovo. Thus, energy advancement pathway commitments include renewable technology embracement for expanding the effectiveness in energy production; while additionally having at the top of the priority list clean energy production and utilization.

The sustainable power organization shows extraordinary potential inside the Republic of Kosovo, with a promising increment of a total of 33% of environmentally friendly power utilization in Kosovo by 2050. That is the renewable energy in Kosovo ought to be 1/3rd of the total energy mix by 2050. This innovation will be disseminated to three areas of interests. First, the self-producers and consumers of small and medium enterprises will produce for their own abilities and incorporate the extra yield into the grid, for instance extra PV and green hydropower plants production must be incorporated into the grid. Second, commercial buildings and community residences shall have their

own renewable capacity generation abilities for their own consumption, e.g. biomass and mobile sandwich panel PV systems. Third, the state owned disseminated renewable power advancements that will be scattered around the geographical areas of interest that Kosovo has for sun based PV, green hydropower plants, and wind plants.

As a conclusive note, getting an arrangement that Kosovo has numerous partners which order environmentally friendly power strategies and energy efficiency execution, there is a requirement for a component to scatter the substantial measures for such formative approaches. For example regulatory office as an expert for authorizing and organization of the environmentally friendly energy arrangement will be following a simpler cycle for the chance of undertaking recognition to renewable energy. Also, privately owned businesses should acknowledge the administrative arrangements for development and renewable innovation usage that goes inseparably with the energy effectiveness administrative strategies. Moreover, the study comprised of the thematic investigation structure to more readily get a handle on the unique situation and urgent significant sense out of the subjects. The thematic investigation served to break down the accumulated information from both the essential and secondary assets. This technique was used in this exploration thinking about the intricacy of the topics, since the strategy progressively separates the subjects into the vital data that the subjective information examination must have. The thematic analysis was picked due to the bits of knowledge it offers for making and consequently distinguishing the examples of importance (subjects) across an informational index of the data sets. The examples of significance ought to be depicted all through the examination with the thematic analysis technique to arrive at the motivation behind the examination, which is to decide the way forward for making and normalizing energy progress execution system in Kosovo. Consequently, various examples of importance can be distinguished with the pertinent exploration information gathered from experts and partners interviewed.

The mixed method proved to be feasible during this study, hence, it is the final conclusion. The 3rd-3rd-3rd approach is feasible methodology for the clean energy solutions with smart and sustainable energy transitions in Kosovo. That is, 1/3rd of energy is generated from renewable energy produced by different renewable technologies that are capable of generating sustainable capacities for supplying energy in Kosovo. 1/3rd of energy is utilized from the market coupling methodology that will integrate the market between the Balkan and European Union, offering a stabilized market in the energy sector with transparency in price and efficiency in trading. The last 1/3rd of energy in Kosovo must be coming from coal fired power plants, namely thermal power plant Kosovo B that has started its revitalization procedure in summer 2021, with standardized measures that offer less emissions into the atmosphere. This argument leads then to the energy efficiency measures that ought to be applied in the whole territory of Kosovo. Rational way of energy utilization equals rational incentive of EU citizen award. The less energy used shall equal the more energy saved, and hence, the less emission from the 1/3rd of coal fired power plant.

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