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**UNIVERSITY OF PARDUBICE
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SUSTAINABLE DEVELOPMENT OF EU COUNTRIES

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Sustainable development is widely recognised as development that meets the needs of the present without restricting the ability of the future generations from fulfilling their own needs. The aim of the thesis is to analyse sustainable development of EU countries based on the Sustainable Development Indicators (SDI's) which are used to monitor the EU Sustainable Development Strategy (EU SDS). The main issues to be analysed are: socio-economic development, sustainable consumption and production, social inclusion, demographic changes and good governance. Namely statistical methods, cartographic methods and spatial analyses methods will be used. The thesis will be based on Eurostat data.

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- Analysis of the level of sustainable development of the selected EU countries.
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DECLARATION

I hereby declare:

This thesis was prepared separately. All the literary sources and the information I used in the thesis are listed in the bibliography.

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ANNOTATIONS

With the 21st-century globalization, worldwide dangers to humankind coming from hundreds of years of expansionist, self-absorbed utilization practice are progressively perceived by the global community. Global warming, pollution, poverty, and other forms of biological and ecological problems becomes a modern issue, influencing international bodies and governments to create methods of sustainable living and keep up conventional human presence conditions in the world.

The thesis is devoted to comparison of sustainability indicators of four selected European countries, Sweden, Estonia, The Czech Republic and Poland, to uncover depict methods for sustainability fulfillment at the national level. By comparing these four counties with Eurostat's ten sustainable indicators sets, the thesis reveals the irregularities and barriers to sustainability. Ramifications of poor adherence to EU sustainability development rules and proposals for consistence change are examined in the last segments of the thesis.

Keywords: Sustainability, Sustainability Indicators, Global warming, Poverty, Pollution, Environmental.

NÁZEV

Udržitelný rozvoj zemí EU

ANOTACE

Globální komunita v rámci globalizace 21. století stále více vnímá celosvětové nebezpečí pro lidstvo, které vychází ze stovek let expanzivního a na sebe soustředěného využívání zdrojů. Globální oteplování, znečištění, chudoba a další formy biologických a ekologických problémů patří k moderním otázkám, které ovlivňují mezinárodní orgány a vlády, aby vytvořily metody pro rozvoj udržitelného života a zachování tradičních podmínek pro život lidské společnosti ve světě.

Práce je zaměřena na porovnání ukazatelů udržitelnosti čtyř vybraných evropských zemí, Švédska, Estonska, České republiky a Polska, tak aby identifikovala metody používané pro naplňování myšlenky udržitelnosti na národní úrovni. Porovnáním těchto čtyř států na základě deseti sad indikátorů udržitelnosti získaných z Eurostatu práce odhaluje nerovnoměrnosti a překážky v rozvoji udržitelnosti. V poslední části práce jsou popsány důsledky nedůsledného dodržování pravidel EU pro rozvoj udržitelnosti a návrhy na změny zajišťující konzistenci.

Klíčová slova: udržitelnost, indikátory udržitelnosti, globální oteplování, chudoba, znečištění, životní prostředí.

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LIST OF ABBREVIATIONS

CMEPSP – Commission on the Measurement of Economic and Social Progress

CSD – Commission on Sustainable Development

DRP – Domestic Resource Productivity

ESDN – European Sustainable Development Network

EU – European Union

GDP – Gross Domestic Product

GNI – Gross national income

MDG – Millennium Development Goals

NSDS – National Sustainable Development Strategies

OECD – Organization for Economic Co-operation and Development

PPS – Purchasing Power Standard

SDG – Sustainable Development Goals

SDS – Sustainable Development Strategy

TBL – Triple Bottom Line

UNCSD – United Nations Commission for Sustainable Development

UNECE – United Nations Economic Commission for Europe

UNESCO – United Nations Educational, Scientific and Cultural Organization

UN – United Nations

WCED – World Commission on Environment and Development

WSSD – World Summit on Sustainable Development

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INTRODUCTION

Sustainable development is a concept that was fully developed from the 1960s to the 1990s in the international community and today influences the economies of numerous countries. Its implementation is currently ongoing with the concept evolving continuously in the international community. It defines the concept of economic development in the present without impacting future generations (Emas 2015, p.1). There are numerous definitions as to the meaning of sustainable development however the main ideas of the ideology champion the utilization of natural or current resources in a responsible manner that ensures the survival of future generations and protects the environment at the same time. However, the primary constituents of sustainability include social-cultural development, economic development and environmental conservation. Per the Director-General of UNESCO Koïchiro Matsuura, sustainable development is a moral as well as a scientific concept (Perrot-Lanaud 2005). We all have a moral responsibility to achieve current social justice while protecting the earth for the future generations.

The ideology is widely accepted by different countries and is in various stages of implementation all over the world. In fact, the sustainable advancement agenda is so important that it is set to predict future trends for the next decade. The UN continues to champion the sustainable development agenda not only in countries but in business practices as well. In specific UNESCO (United Nations Educational, Scientific and Cultural Organization) involves itself in creating strategies for holistic and integrated development. The United Nations has developed different strategies that support and enhance the goals of sustainable development in its member countries. Sustainable development focuses on culture, education, and the environment among many other developmental concerns in countries. In addition, there are diverse modes or frameworks of measuring the progress of sustainable development in member countries with some countries showing better outcomes than others. Arguably, sustainable development is crucial developmental concept of the 21st century.

European Union (EU), for example, has been committed to promoting sustainable development of its members by developing the common strategy and encouraging the countries to introduce and follow the national sustainability plans (Barnes &

Hoerber, 2013). Some of the EU states like Sweden have been particularly successful in addressing the issues of sustainability whereas less developed countries such as Poland, The Czech Republic, Romania, Bulgaria, for example, still lag in terms of embracing sustainable development as a guiding political concept. The EU surpasses all other continents in terms of sustainable development with many members ranking in the top 20 countries in the world. The EU supports the concept by creating Sustainable Development Strategies that apply to member countries with acceding states also included. Almost all European Union countries have been aware of the concept of sustainable development and have incorporated it to their governmental policies.

This thesis aims to compare sustainability indicators of the most and least sustainably developed EU countries based on the example of Sweden, Estonia, Poland and The Czech Republic. This analysis will help determine differences in sustainable indicators taken by different EU members and develop practical recommendations for enhancing the sustainability policies.

1.1 Background of the study

Even though sustainability is often characterized as the stability of the environment, it has a more profound meaning. It is a complex notion including social, ecological, economic, political, scientific and philosophical dimensions (Blewitt & Cullingford, 2013). However, (Brinkmann, 2016) also argues that sustainability is the notion that embraces all aspects of the physical environment that directly influence the safety, economic stability, health and progress of people.

The descriptive word ‘**sustainability**’ is more used in various areas to portray anything from business methodologies to government's fiscal strategies. Roosa (2010) says sustainable development provides an opportunity for environmentally safe development; allows for the efficient and responsible use of natural resources; helps ensure equal social opportunities and supports manageable urban growth whereas Rogers, Jalal, and Boyd (2012), added that sustainable development is “a dynamic process of change in which the exploitation of resources, the direction of investment, the orientation of technological

development, and institutional change are made consistent with future as well as present needs” (p. 42).

To maintain the ecosystems in the world, preservation and enhancement of the natural resources are required. The three pillars of sustainable development are Ecological, Social and Economic. ***Ecological*** sustainability has been recognized by the world as a precondition to save future and development due to its importance from the fact that the economy and society solemnly depends on the integrity of ecological process and biosphere. Furthermore, ***Social sustainability*** as described by Rogers, Jalal, & Boyd (2012) says it is concerned with increasing the standards of living by addressing healthcare, income, education, sanitation, and other issues. The social dimension of sustainable development focuses on investments in services that improve human welfare and create the basic framework for the society (Parsa & Narapareddy, 2015). Lastly, ***Economic sustainability*** describes using available resources to ensure stable economic development.

Even though sustainability is a trickery concept, there are some generally-accepted indicators for measuring this notion on the organizational, country and regional levels. (United Nations, 2007a) opines that, these indicators can help detect areas of weakness to prevent ecological, social and economic setbacks; evaluate separate country's efforts and identify leaders and outsiders in sustainable development and UN provided the list of indicators that include governance, poverty, health, demographics, education, natural hazards, land, atmosphere, freshwater, oceans and coasts, biodiversity, economic development, consumption and production patterns and global economic partnership whiles Ostasiewicz (2012) accessing EU countries' says sustainable development used several other criteria, such as sustainable transport (energy consumption), climate change and social inclusion. The selection procedure rest on the scale of scale of research and resources available to acquire and process data.

Sustainability is difficult to measure in practice since some researchers rely on different definitions of sustainability. Some researchers focus on ***ecology*** only, whiles others view it as a two-way dimensional concept of ecological and social development whiles others uses the three pillars of sustainability. There is no

agreed method for the assessment of sustainability, in a report by (OECD, 2008), one group of scholars maintains that the goal of sustainable development is to ensure the well-being of both the current and future generations. The other group, however, argues that sustainable development should be concerned with future only. Hence assessment may differ depending on the approach used.

The European unions has been successful in addressing the indicators mentioned previously. (Graute, 2012) assesses that, sustainable development has been one of the major driving forces behind social, ecological and economic changes and related policies in the European Union. (Ostasiewicz's,2012) study comparing EU countries' efforts in committing to sustainability development placed Sweden at the top of the ranking. The scholar has found that this country is the leader in all sustainability indicators and is truly committed to adjusting its policies to bring long-lasting and effective changes to the ecological, social and economic spheres. Similarly, Norway, Germany, the Netherlands, and several other countries have made the substantial effort to include sustainable development into their economic, environmental and social policies.

1.2 Problem Statement

Even though the EU has been promoting and implementing principles on sustainable development, Eastern European countries in transition, such as Poland, Hungary, Bulgaria, Romania, etc. are still struggling to address sustainable development issues. The most concerns are political will and scarcity of resources to achieve sustainability goals. (Mangalagiu & Jaeger, 2012) opines that, financial instability, underdeveloped political institutions and mismatch between the national and European economies prevent these countries from incorporating environmental goals into national policies whiles the UN (2012) report on sustainable development in Eastern Europe and Central Asia identified that Eastern European countries are still lagging in relation to fossil fuel, investment in green jobs, and establishment of social protection floors. Equally, developed countries also experience some challenges, mostly in terms of social inclusion, natural resources and global partnership (Eurostat, 2015).Even though they have the determination in achieving long-term sustainability goals, the strategy implementation policies has not been fully achieved.

Additionally, there are challenges in policy coordination between EU member states. Countries often have their own goals to achieve rather than the standards set by the EU which stems from a high-level of political will and a gap exist between the Lisbon treaty and that of the EU sustainable development policy. There needs to be an understanding that, there is an issue of seeing sustainability as a multi-dimensional idea that incorporates social, economic and environmental viewpoints.

Finally, innovations and information technology are barely utilized, which slows down the economic growth and decreases productivity. All these issues stress the need to adjust existing methodologies and level out the huge contrasts between EU nations' environmental performances, which could be accomplished by utilizing the experience of the most economically and sustainably effective nations.

1.3 Objectives of the Study

The following thesis objectives were identified based on the problem statement. These include:

1. Determination of indicators for measuring sustainability.
2. Compare and analyze sustainable development strategies of developed and developing EU countries based on the examples of Sweden, Estonia, The Czech Republic and Poland.
3. Identify the reasons behind underdeveloped countries' hesitance towards implementing sustainability initiatives.
4. Based on the experience of developed countries such as Sweden, design evidence-based further recommendations to facilitate other countries' sustainability efforts and address the prospects for progress in this area.

1.4 Research Questions

1. What are criteria for measuring sustainable development indicators and how do we compare?
2. How different is sustainability indicators progress of selected countries?

3. What recommendations can be given to less sustainable countries based on sustainability comparison?

2 LITERATURE REVIEW

This literature review illustrates the important and recent literature on sustainable development. More particularly, consideration is drawn on the part of maintainability in the advanced society; give definitions and conceptualization of manageability and talk about parameters and markers used to evaluate this idea. Besides, this literature review concentrates on the global enactment and procedures concerning sustainable development and examinations how the European Union addresses this issue in its strategy articulations, settlements and announcements. The last segment of this survey gives an examination of the present difficulties nations confront as far as guaranteeing the short-and long-term sustainability.

2.1 Definition and Development of Sustainable Development

The idea of sustainable development has a generous relevant in universal talk. The primary intergovernmental endeavor to accommodate the idea of improvement and ecological assurance happened in an UNESCO gathering in 1968 (Perrot-Lanaud 2005, p. 2). Sustainable development is a multi-faceted amalgamation of ideas that expect to enhance the present world. Previously, the attention was on world advancement meaning the improvement of the public while overlooking the impacts of these activities on different parts of the public. Improvement was an equivalent word for financial or fiscal pick up as opposed to a comprehensive perspective of the human mind. For instance, exceedingly industrialized countries already occupied with expansive ventures expending bounteous measures of fuel that have affected the atmosphere, for example, creating corrosive rain. Advancement objectives were made for fleeting objectives while natural objectives were made for longer-term situations. By and large, the improvement objectives additionally brought on negative effects on the earth making a circumstance where numerous ecologically agreeable systems were overlooked for financial headway. This brought about a distinction prompting to the production of the economical convictions in universal improvement. Supportability addresses financial, social and natural issues as interrelated angles that decide security and human advance. Along these lines, this

idea is normally measured by utilizing different pointers, for example, financial advancement, general wellbeing, administration, characteristic assets, and so on. (Ostasiewicz, 2012).

The working meaning of sustainable development was initially proposed by the Brundtland Commission in 1987 amid the World Commission on Environment and Development (European Commission 2004, p.3). The Brundtland Commission characterized feasible improvement as the advancement of the public through an amalgamation of social improvement, monetary headway and fitting utilization of normal assets to such an extent that the present era benefits while the future eras are accommodated (European Commission 2004). The definition concentrates on intra-generational and between generational formative flow. Per the Eurostat Working Group, these two elements can be coordinated (Eurostat, 2008). On one hand, intra-generational improvement implies ensuring the accomplishment of the present society. Here, the present society makes progress toward socio-social, monetary and natural advancement that advantages them. The objectives are to accomplish the greatest potential for the present era in all angles. In any case, a hefty portion of the improvements right now occurring negatively affect the earth making a test in the execution of practical progression. Then again, between generational improvement implies guaranteeing that future eras can accomplish their objectives. This implies even as the present era endeavors to accomplish their points, they should likewise ensure the interests without bounds eras. By making an equivalent and dependable society today, the earth can be shielded from further damage and saved for what's to come.

The Convention for Cooperation in the Protection and Sustainable Development of the Marine and Coastal Environment of the Northeast Pacific provided a detailed definition of sustainable development. In article 3(1) (a), as

“... Progressive change in the quality of life of human beings, which places them as the Centre and primary subjects of development, by means of economic growth with social equity and transformation of production methods and consumption patterns, sustained by the ecological balance and life support systems of the region.”

The Rio Earth Summit of 1992 was the primary changing point for sustainable advancement in the world. The summit was significant in its involvement of a wide range of stakeholders including 170 countries, 2400 non-governmental organizations and over 10000 journalists and Member countries were encouraged to develop National Sustainable Development Strategies (NSDS) specific to their countries environmental challenges (Perrot-Lanaud 2005, p. 3). Out of these countries, the European union had the highest number of middle income members and the concentration was moving toward the insurance of characteristic assets in various countries, it was the first run through a coordinated way to deal with maintainable advancement was talked about in an inside and out way. These NSDSs were intended to be utilized as a part of the making of techniques, their execution, coordination, and estimation of economical ideas in their countries. Moreover, it was the main sort of participation among UN nations and beneficent associations that concentrated on the mainstays of manageable advancement.

(Perrot-Lanaud 2005, p.4) clarifies that, the growth of sustainable development continued with the Millennium Declaration and the adoption of the **Millennium Development Goals (MDGs)**. The MDGs were fundamentally centered around the annihilation of neediness on a worldwide point of view. The global group reaffirmed its before duty to dependable and manageable advancement. The ideas of destitution, sexual orientation correspondence, nature protection, arrangement of water for all, and instruction were a portion of the key ideas of the Millennium Development Goals. Guaranteeing maintainable improvement was the seventh thousand years' advancement objective and demonstrated the significance of the idea to future eras. A few objectives were point by point under the MDGs. The main objective was the inversion or end of abuse of regular assets from the worldwide patterns. The second issue was to coordinate the supportable advancement ideas on legislative arrangements among UN individuals. Another objective was to expand the number individuals with access to maintainable water in the public by 2020.

Sustainable Development Goals (SDGs) replaced the **Millennium Development Goals** after a sanction demonstrating the significance of sustainable development as the main development goals for UN members in 2015.

The SDGs were more detailed in their objectives in contrast with the wide points of the Millennium Summit. They gave clearer direction on the most proficient method to accomplish the most all-encompassing maintainable advancement in nations by separating the MDGs into constituent angles. For instance, in annihilation of neediness, the SDGs facilitate highlight finishing craving, destitution, and more advantageous lives. Today, supportable improvement is at the cutting edge of worldwide talk and execution. It is normal that the Sustainable Development Goals will affect the strategies of UN individuals in connection to supportable headway. *Appendix one shows a correlation between the MDGs and the SDGs.*

2.2 Sustainability: History and Conceptualization

The concept of sustainability needs to be analyzed from the perspective of theoretical debates because some scholars perceive this notion as “contestable by its very nature” (Baker, 2012, p. 1). Per the widely-accepted definition of sustainability, this notion is characterized as the process that addresses the needs of the present generations while simultaneously leaving the potential for future development (Miller, 2011). As explained by Keller (2010), this definition emphasizes the moral obligation and views sustainability as a process ensuring each generation equal opportunities for undiminished welfare. However, this definition of sustainability is contested, with some scholars overemphasizing the ecological aspect of sustainability and others embracing a more philosophical orientation (Corcoran & Wals, 2007). Some may use this term to define the process of returning to the pre-industrialization period, while many corporations use it simply to signify their intention to work in the future (Aras & Crowther, 2012).

2.3 Weak and strong sustainable development

Furthermore, Keller (2010) differentiated between **weak sustainability** and **strong sustainability**. The first concept is based on the idea that the present generation needs to avoid actions that will make the following generations poorer in terms of opportunities to achieve welfare. Weak sustainability focuses mainly on the balance between investment and consumption and postulates that each generation has a moral obligation to maintain the critical level of their total capital

stock to pass to their successors. In this context, total capital stock includes human capital (skills and knowledge), manufactured capital (results of material production), social and organizational capital (viable social networks) and natural capital (natural resources) (Hák, Moldan, & Dahl, 2012). **Strong sustainability**, in turn, is a more rigorous notion because it requires that all types of capital are maintained above critical levels and increased if possible (Keller, 2010).

To understand the conceptualization of sustainability better, one needs to trace the development of this term from the **historical perspective**. The first attempts to define this notion dates back in the 1970s when the increasing concerns about air pollution prompted scientists and activists to attract attention to the need of responsible use of resources (Baker, 2012). During that time, people began realizing that ecological problems stem from the uncontrolled economic and social development that does not consider the environmental stability and threatens the future of subsequent generations. Questions of acceptability of conventional developmental strategies were brought to the forefront of political and public debate, prompting governments to reconsider their approaches to the economic growth. Thus, in 1972, the UN Conference on the Human Environment first raised a central question about what is more important: economic development or environmental protection (Blackburn, 2007). Interestingly, that same year, a publication called *The Limits to Growth* was presented by Meadows (1972), in which the author suggested that economic development and environmental protection are mutually exclusive.

However, there were many critics of this point of view, who introduced the concept of sustainable development as a process that addresses both economic growth and preservation of natural resources (Baker, 2012). In 1973, for example, Schumacher (1973) published the book *Small is Beautiful: Economics as if People Mattered*, in which the economist argued that continuous and uncontrolled economic growth is not sustainable. The author suggested that people should think about the connection between economic, social and environmental aspects to achieve the sustainable progress. Schumacher (1973) also introduced the concept of non-renewable natural resources and suggested that they should be treated as capital that needs to be used responsibly. Generally, the 1972 Stockholm Conference sparked active debate among scholars and researchers and

provided a powerful impetus for governments, so in the following years, some countries including the USA and India introduced first sustainable development strategies and legislation (Blackburn, 2007).

In 1980, the International Union for the Conservation of Nature and Natural Resources presented its World Conservation Strategy. Although it focused mainly on the issues of ecological protection and conservation, it managed to attract the public's attention to the problem of sustainability. The main aims identified in this strategy were to use natural resources responsibly, preserve biodiversity and genetic diversity and do not endanger the stability of the physical environment (Schmandt, 2010). Notably, the Strategy emphasized that "for the development to be sustainable it must take account of social and ecological factors, as well as economic ones; of the living and non-living resources base; and of the long-term as well as the short-term advantages and disadvantages of alternative actions" (WCS, 1980, Par. 2). One needs to note, however, that at that time, the connection between social and economic development and ecological conservation was not fully established and understood (Bosselmann, 2016).

The major progress in understanding of the sustainable development came with the publication Our Common Future presented by the World Commission on Environment and Development in 1987 (WCED, 1987). This report, which is also known as the, provided a comprehensive description of the economic, social and environmental problems and viewed these issues as "the interlocking crises" (WCED, 1987, Prt.1, Sec.2). Therefore, the Report called for the integration of development strategies and environmental policies, which was contrary to the argument of Meadows (1972) that economic development cannot be achieved without exploiting the environment. The Report stressed the need of seeking to "expand and sustain the ecological basis of development" and highlighted that economic growth should be controlled to preserve the ecological integrity (WCED, 1987, The Commission's Mandate). It also linked the progress in sustainable development with positive political and social changes such as lifestyle changes, industrial changes, reduction of poverty, just distribution of resources, etc. (Baker, 2012). In this way, by the beginning of the 1990s, the development in the debate about sustainability has been the realization that

ecological conditions need to be considered in conjunction with social and economic aspects of development, without which no sustainability is possible.

In 1992, the principles outlined in the Brundtland Report helped the UN Conference on Environment and Development in Rio de Janeiro to adopt the famous **Rio Declaration** (Blackburn, 2007). Rio Conference was a success because more than 100 developed and developing countries participated in the adoption of updated global policy on sustainable development (Hoffman & Rumsey, 2008). They acknowledged the role of integration and the common strategy in pursuing the long-term sustainability and agreed that the developed countries should reconsider their industrial and economic activities to benefit less developed states (Bosselmann, 2016) to ensure a sustainable environment.

The Declaration recited the previously mentioned economic and environmental concerns and added such issues as poverty, peace, gender equality, energy, sustainable cities, food security and sustainable agriculture, water, oceans and disaster readiness to the list of problems that call for priority attention (United Nations, 2013). Interestingly, the period after the Rio Conference was characterized by the increasing international attention to the problems of sustainability. As noted by Fredericks (2013), many studies were published at that time, providing definitions and conceptualization of sustainability for each separate sector of human activity, from agriculture to corporate structures.

Further consideration of the problem of sustainability was given in the UN Millennium Declaration (2000). This Declaration Set Millennium Development Goals (**MDG**) in such areas as poverty eradication, peace and security, good governance and environmental protection (Alam, 2013). Soon after that, the Johannesburg Declaration on Sustainable Development (2002) was adopted, which aimed to develop concrete steps to achieve the goals set at the Rio Conference ten years ago. The Johannesburg Declaration showed a greater understanding of the complexity of sustainability issue, as it once again emphasized the importance of three-dimensional approach and connected sustainable development with international human rights standards (Lee et al., 2011).

Finally, the Rio +20 Conference held in 2012 renewed the urgency of addressing the environmental and economic challenges faced by the global community (Viñuales, 2014). It encouraged both developed and developing countries to stick to their sustainability policies and move towards more sustainable future (OECD, 2012).

2.4 Sustainability in the 21st Century: The Global Trend

In the 21st century, the problem of sustainability is widely recognized by the governments and remains a common topic of discussion by scientists, journalists, and regular citizens both in developed and developing countries (The World Conservation Union, 2006). Governments and private companies actively debate and address issues such as responsible use of resources, global supply chains, water scarcity, corporate diversity and development of sustainable national policies and business models (Bilgramy, 2015). There is a more well-rounded understanding of the importance of sustainability in all industries and business sectors than it was 40-50 years prior. People do realize that aligning their activity with sustainable development can be cost-effective and that responsible approach to sustainability usually results in increased opportunities, steady growth and improved reputation among consumers (McKinsey & Company, 2011). Awareness is growing that natural and business resources are limited and that more efforts should be made to ensure the long-term stability of all sectors. There are more advanced national and international policies and standards guiding sustainability and improved surveillance and monitoring of the use of natural resources (Scherer & Palazzo, 2008).

Accelerated awareness about sustainability concerns all aspects of the human activity, from tourism and agriculture to the financial sector and corporate environment. Thus, for example, companies all over the world have been developing corporate environmental strategies and sustainability programs to track and optimize their contribution to the global sustainable development (Klettner, Clarke, & Boersma, 2014). These “triple-bottom-line” models regulate corporate performance in relation to social, financial and ecological aspects (Scherer & Palazzo, 2008). They include many components, such as racial and

gender diversity, workers' rights, transparency, consumer engagement, responsible use of resources. (Schaltegger et al., 2014) further argues that evidence suggests most large and middle-sized companies have already incorporated sustainability into their core businesses and truly commit to sustainable development as a driver or long-term success).

In Europe, sustainable corporate practices are mandatory due to governmental regulations to comply with sustainability standards such as, for example, the Energy Efficiency Directive, ISO 50001 (Hoekstra et al., 2014). Companies that fail to comply with these standards face increased taxation, whereas those effectively supporting the sustainability policy receive increased funding and incentives. Similarly, sustainability has been determining the development of various industries for the past several decades (United Nations, 2007b). Many studies have been conducted in this relation, which focused on sustainable development of different industries, such as manufacturing (Chen, 2015), energy sector (Henriksen et al., 2012), food service (Hauschmidt & Schulze-Ehlers, 2014), agriculture (Amekawa, 2010), etc. All these studies have recognized sustainability as the main driver of success in the contemporary world and highlighted the central role sustainability issues play in various types of human activity and ways to improve them.

Increasing interest in sustainability problems is determined by the multiple social, economic and environmental issues the contemporary society faces. The latter have been especially important for the past decades because scientists increasingly argue that the society faces steady and irreversible environmental degradation resulting from unsustainable and irresponsible economic practices (Woods, 2010). With the ever-growing population, massive urbanization and uncontrolled use of natural resources, complemented with the climate change and decreasing biodiversity, the humanity must reconsider its approaches to development and stability. There is an increasing awareness both among scholars and the wider public that environmental sustainability plays a central role in all dimensions of human life, directly affecting the economy, social and political stability, health, industrial development, etc. (Laboy-Nieves, 2008). Therefore, environmental sustainability as "the sensitive pursuit of urban development that

synthesizes land and resources use with nature conservation” has been the focus of heated debates and exploration for the past several decades (Ng, 2009, p. 41).

Socioeconomic aspect of sustainability is no less important for the society’s stability and progress in the 21st century. As noted by Henkel (2015), social disruptions like poverty, crime, war, corruption, unemployment, etc. undermine countries’ ability to ensure better quality of life and plans. Complemented with depletion of vital natural resources such as water, these social issues may have devastating consequences for the national and regional stability (Henkel, 2015). Similarly, economic issues such as recession, inadequate allocation of financial resources, the lack of funding for innovation and technology, poor corporate responsibility and many others prevent countries from committing to long-term sustainable development. Notably, Martine and Alves (2015) emphasized that traditionally, economic development has related to the destruction of biological diversity, unsustainable use of non-renewable resources and damaging emission of greenhouse gases. Nowadays, however, countries increasingly recognize that economic growth can be sustainable and that it can successfully balance ecological protection with ambitious developmental goals.

2.5 Parameters and Indicators of Sustainability

Due to the complexity of the notion of sustainability, there has been little unanimity concerning the parameters that can be used to measure this elusive concept (Hák, Moldan, & Dahl, 2012). Baral and Holmgren (2015) explained that there are two schools of thought that view sustainability from different perspectives. *One group of scholars argue that sustainability is an achievement that can be measured with the help of certain parameters and indicators. Another group of scientists disagrees by saying if sustainability is the aspiration rather than a state, which is why it cannot be measured in absolute forms* (Baral & Holmgren, 2015).

Interestingly, both schools of thought prefer to view sustainability as a **three-dimensional concept including social, economic and environmental components**. Indeed, the Rio Conference, the UN World Summit on Sustainable Development (WSSD), as well as many independent scholars and scientists

acknowledged that sustainability refers to three dimensions, or pillars, including social, economic and environmental (Hák, Moldan, & Dahl, 2012). For instance, based on this approach, Elkington (1998) in his book Cannibals with Forks: The Triple Bottom Line of 21st Century Business introduced the term the Triple Bottom Line (TBL) to refer to all three dimensions of organizational and management sustainability. Regardless of the sphere in which sustainability is measured, three-pillar approach implies that three aspects with their related indicators need to be assessed (Ken, 2015). In this context, a sustainability indicator is a measurable aspect of **social, environmental or economic systems** that is applied for monitoring changes in human and environmental well-being.

Fiksel, Eason, and Frederickson (2014) emphasized that indicators may slightly differ but when carefully selected and analyzed, they can help policymakers and scientists to monitor sustainability situation in the setting. OECD explained that, “**indicators can be used to track progress along sustainable paths and provide the foundation for performance targets. They also contribute to policy transparency and accountability in sustainable development strategies**” (OECD 2006, p. 27).

Remarkably, there is another method to sustainability assessment called the principle-based method. Ken (2015) explained that one group of scholar’s views **three aspects** as competing for resources and involving compromises in decision-making, whereas another group embracing the principle-based approach views the interdependencies of pillars without the necessity of trade-offs. Evaluation using the latter approach can use such criteria as **socio-ecological system integrity; intra-generational equity; inter-generational equity; livelihood sufficiency; resource maintenance and efficiency; precaution and adaptation; socio-ecological civility and democratic governance and short- and long-term integration** (Gibson, 2006; Ken, 2015).

In some contexts, a fourth institutional pillar is added because institutions are believed to serve as enabling mechanisms in initiating changes (Hák, Moldan, & Dahl, 2012). Institutional aspect of sustainability was explicitly addressed in the indicator system established by the Commission on Sustainable Development (CSD) in 1995, as well as in the Brundtland Report. Institutional pillar includes

communication and cooperation of the relevant institutions and organizations that help create institutional mechanisms and orientation, which in turn contribute to the sustainable development (Burford et al., 2013).

Eurostat has attempted to provide a unified model for sustainability assessment that could be used in different contexts and countries. Eurostat is a European statistical office concerned with monitoring the progress of EU member states in implementing sustainability policies. It has developed ten basic indicators of sustainability, such as socio-economic development, sustainable consumption and production, social inclusion, public health, demographic changes, energy and climate change, sustainable transport, natural resources, good governance and global partnership (Eurostat, n.d.). Eurostat regularly publishes monitoring reports where it provides carefully analyzed data on each of the indicator, which helps to assess the sustainability commitment of EU countries (Fredericks, 2013; Endres & Radke, 2012). It is important to note that Eurostat continues to improve its indicators to present the most accurate data that will inform the development of the EU and national sustainability programs

However, regardless of the approach selected to evaluate sustainable development, the process of assessment remains challenging. The issues of quantitative and qualitative data availability, the low transparency, imbalance of human and environmental data and many other methodological issues prevent scholars from generating accurate results. There is also no consensus about whether there should be an overall indicator of sustainability and whether it is necessary at all (Bartelmus, 2007). Besides, the results of assessment may differ significantly depending on the approach selected, which leads to different sustainability strategies and outcomes (Ken, 2015). Evidence suggests that a common approach to measuring sustainability in the national and global contexts is strongly required to develop an integrated and shared strategy to sustainable development.

2.5.1 Global Indicators of Sustainable Development

Indicator can be defined as sets are statistical tools that facilitate the observation, measurement and calculation of areas of interest to researchers. In the view of

sustainable development, various indicators take into consideration the gathering and examination of national information on sustainable development and in addition the arrangement of worldwide information on the same. Indicators serve a vital capacity in that they measure a portion of the thoughts connected with sustainable development from a factual viewpoint. Picking and capability of markers is needy upon the objectives of an individual country through broad research and counsel from significant partners including the administration, entrepreneurs, and social or non-governmental associations among others. By and large, indicators set have prompted to more consideration **on environmental protection alongside economic and social development in governments and institutions**. One noteworthy preferred standpoint of pointers is that they give a clearer perspective of the status of maintainable improvement that can't just be characterized through national feasible advancement techniques. Indicators sets take into consideration an inside and out and examination in the distinctive regions influenced by sustainable objectives in a nation.

As said already, the choice of indicators is reliant upon an individual country's objectives. This suggests the way that pointers are connected to government policies; the national approaches and methodologies. For partners being developed, these marker sets permit them to quantify the significance, effect and inadequacies of approaches. Additionally, they are vital in empowering correspondence of advance or scarcity in that department to the universal group and to their own kin as they are frequently upgraded by the overseeing bodies. Ostensibly, the association between government approach and practical development indicators is one of the qualities of sustainable development as a worldwide belief system.

There are a few qualities that characterize a feasible indicator set concerning sustainable development. In the first place, there ought to be a connection between indicator sets and the arrangement structure behind them. Furthermore, there must be satisfactory information for the indicator to be useful. In other instances, absence of important information hinders the development of indicators.

One attribute of indicator sets that causes the assorted qualities of approaches is the way that worldwide bodies, for example, the World Bank and the OECD each characterize diverse arrangements of indicators relying upon their order. This has prompted to the improvement of an extensive variety of indicator sets and structures that make durable research of sustainable development.

The United Nations Commission for Sustainable Development developed a set of recommended indicators that acts as a guide in the development of individual national indicators (UNECE 2012, p.13). In 2009, the Commission on the Measurement of Economic and Social Progress (CMEPSP) developed a report on how well-being and social progress can measured on a national level (UNECE 2012, p. 13). The Stiglitz-Sen-Fitoussi report as it is now popular known is one of the crucial contributions to the cohesion of indicator sets on sustainable development. Its reception and proposals have fundamentally enhanced the estimation of living quality and prosperity and social advance. Activities by the OECD, Eurostat, UNECE, the EU and the World Bank keep on fostering the harmonization of pointer sets among countries. See example of global indicators in Figure 1.

Finished harmonization is yet to be accomplished because of a few issues. To start with, the gathering of the current markers is as of now tedious and expensive prompting to a few establishments being unwilling to adjust new pointers. Another worry is the practicality of some of these marker sets in a few nations.

Figure 1: Sample of Global Indicators and Exposure

Indicator	Data source	Number of countries
Life Satisfaction	World Happiness Database	135
Final Consumption and Expenditure	United Nations	210
Life Expectancy	United Nations	185
Gross capital Formation	United Nations	156
Income Inequality	United Nations	134
Employment Rate	United Nations	145
Education	United Nations	184
Energy Consumption	United Nations	187
GHG Emissions	World Bank	229

Source: United Nations Economic Commission for Europe (UNECE 2012, p. xxix)

2.5.2 Indicators characterized in the European Union

The European union indicators depend on a various leveled topic structure with the indicators characterized under a few thoughts. (Adelle and Pallemaerts 2009, p. 23) explains that, these indicators are further divided into smaller sub-groups that indicate the goals and activities of the Sustainable Development Strategies. ((Adelle and Pallemaerts 2009) explains them as:

- Level 1 Indicators: Indicators which focus on the goals of the SDS and focus on the educative value. These are the most common indicators for most members in the Union.
- Level 2 Indicators: These are the sub-groups of the framework and combined with those in level 1 to monitor social progress.
- Level 3 Indicators: these are related to the activities mentioned in the Sustainable Development Strategies.

Indicator Types

1. Social Indicators: These comprises of the following criteria: (Adelle and Pallemaerts 2009, p. 27).

- a. ***Indicators for the Social Inclusion Process***
- b. ***The European Foundation for the Improvement of Living and Working Conditions***
- c. ***European Observatory on the Social Situation and Demography***

2. Environmental Policy: These indicators are solemnly based on the environment. Namely

- a. ***Environmental Policy Review:*** Currently, statistics mentions 30 sustainable indicators covering nature, biodiversity, waste, environment and economy. (EEA,2004)
- b. ***European Environment Agency Core Indicators:*** Comprises of about 37 indicators with examples as land management, fisheries, climate change, energy. (EEA,2004, P.8 and 13)
- c. ***Sectorial Environmental Indicators:*** Energy and Environment Indicators, Transport and Environment Reporting Mechanism (TERM), Indicators of Fishing Capacity and Effort. (OECD 2003, p.6)

3. Structural Indicators: These are horizontal indicators which were prevalent in the years 2000 and 2005 respectively and its prime motive was to create an information based economy. These indicators were used in the measurements of the Lisbon strategy progress and consisted of 14 structural indicators. The European statistical system in 2009 reported that these indicators are made up of almost 80 indicators. The indicators cover the following criteria (*EUR-Lex 2005*)

- a. *General Economic Development*
- b. *Social Cohesion*
- c. *Environment*
- d. *Employment*
- e. *Economic Reform*
- f. *Innovation and Research*

Appendix two shows a report on EU's number of indicators per country as at 2007.

2.6 Ensuring Sustainability in the EU: Overview of Regional and National Policies

The European Union is one of the most successful in the implementation of sustainable practices in economic advancement. Prior to 1992, many EU countries had already started becoming environmentally conscious in terms of policy and strategy. However, there was no cohesive strategy or ideologies that unified the concepts of economic advancement and sustainable practices.

Sustainable development is one of the central objectives of the European Union, and the EU has been continuously improving and advancing its sustainability legislation and strategy. The first step to incorporate sustainability issues into the political and economic agenda was taken in 1992. Article 3 of the Treaty on European Union emphasized that the member states are determined to achieve the sustainable development of Europe by ensuring the price stability and balanced economic development; building a competitive economy; fighting unemployment and promoting social progress and protecting the environment and natural resources. The EU sustainable development strategy (SDS), which was adopted

by the European Council in Gothenburg in June 2001 and updated in 2006, also acknowledged the crucial role of sustainability in future development and stability of the region (EU, 2001). The EU SDS of 2001 focused on two key aspects: addressing of unsustainable trends in economic policy and a new manner of creating policies that uphold the three pillars of sustainability (European Commission 2015).

In 2006, SDS was updated, with the increased attention paid to clean energy and climate change, transport, production and consumption patterns, social inclusion, etc. (Larson, 2007).

Furthermore, in 2005, the European Council adopted the Declaration on the Guiding Principles for Sustainable Development (Pallemans & Azmanova, 2006). It stressed the importance of using the best available knowledge in sustainability, incorporate the precautionary principle and make the polluters pay to reduce the carbon dioxide emissions (Christie, 2008). Although this Declaration has some limitations, it serves as a source of knowledge on sustainable development and helps member states resolve public interest conflicts over sustainability issues. The high-level political consensus concerning sustainable development also found its way in Article 11 of the 2007 Treaty on the Functioning of the European Union, which acknowledged that environmental protection must be integrated into all EU policies and activities. Since the adoption of these major documents, the European Commission has been publishing progress reports to monitor the compliance with the sustainability standards. The first report published in 2007 determined that there were significant positive changes in national policies on sustainability. However, it stressed that there was still a lack of political will to implement these policies into practice (Progress report, 2007). Many reports were published by Eurostat since 2007, showing progress not only in the regional context but also in relation to national sustainability efforts.

Progress reports and regular assessments of national strategies are extremely important to identify leaders in sustainability developments and determine outsiders who need to pay more attention to their sustainability legislation, policies and actions. Hametner and Steurer (2007), demonstrates that only a few

countries including the UK, Ireland, Finland, Iceland and Switzerland were the first to develop their sustainable development strategies in the mid-1990s to comply with the standards set by the 1992 Rio Earth Summit. Many more countries including Denmark, France, Germany, Italy, Norway, Sweden, etc. followed the 2002 Johannesburg World Summit. However, there were some countries that joined the European-wide sustainability strategy much later, in 2005-2007. These included Malta, Portugal, Spain, Hungary, Cyprus, Bulgaria and Estonia (Hametner & Steurer, 2007). Since the first SDS adopted in all these countries, some of the governments successfully revised their approaches and continue to develop sustainability plans and relevant legislation to comply with the highest regional standards.

There is a huge gap between the most and least advanced countries in terms of sustainability approaches and outreach. Both leaders in sustainability developments, such as Sweden, Netherlands, Germany, Ireland, etc., as well as outsiders and less developed in terms of sustainable development implementations such as Hungary, Poland, Bulgaria and Romania view sustainability as a priority issue and incorporate this aspect in legislation and planning of economic, social and environmental programs. However, the most striking difference between leaders and outsiders is the degree to which adopted policies and strategies are implemented in practice. Thus, the most successful countries manage to make sustainability the integral part of any policy implementation, whereas underdeveloped countries do little to reduce the gap between words and actions (Ostasiewicz, 2012). Notably, some countries choose to focus on one of the dimensions of sustainability, whereas others equally cover economic, social and environmental concerns. Moreover, governments often choose additional priority areas of sustainable development, such as governance, international relations, culture, education, and so on.

2.7 Sustainability Challenges

Although the EU has made significant efforts in addressing the sustainability issues, many challenges still exist. One of the Sustainable Development Goals developed by the EU acknowledges that sustainability is not possible without peace and good governance (EU, 2016). However, the European Union is

currently in the crisis, faced with the increasing risks of disintegration, Euroscepticism, terrorism, refugee crisis and social tensions. Economic power disparities among the most developed countries and least developed members from the Eastern Europe serve as a destructive force that prevents governments from pursuing the common goals (German Development Institute, 2016). Blurring the lines between national and regional sustainability policies creates confusion, and political actors are often reluctant to implement standards adopted because of time-consuming regional negotiations. Besides, poorer countries are lagging in terms of social and economic development, which decreases their capability to comply with the regional policies and legislation (German Development Institute, 2016). Despite legally binding documents and the EU-wide sustainability policy, there remains a gap between the regional sustainability expectations and separate countries' capabilities and political will.

The EU members experience challenges in all three major aspects of sustainability including social, economic and environmental. For example, the study conducted by Zaidi (2009) found that many European countries were saddled with considerable structural debts and reported the problem of high unemployment that stems from the 2008-2009 global economic crisis. Moreover, the scholar argued that population aging may create a serious problem for European countries because of the increasing budget spending on pensions. Complemented with the growth of living standards and unemployment among younger generations, this issue may undermine the sustainability of the EU public welfare systems (Zaidi, 2009). A more recent study by Berlin et al. (2012) also highlighted the problem of aging population in the European Union. Authors argued that this demographic problem will likely cause a recruitment and skills crisis in the industry, which in turn will negatively affect the EU economy. Liaropoulos and Goranitis (2015) added that the EU's social sustainability may be threatened because of the lack of financing of the healthcare systems. Scholars suggested that to achieve long-term sustainability, more attention should be paid to revising and improving the national insurance systems. Rebba (2014) also attracted attention to the problem of healthcare sustainability in the EU and noted that currently, governments are struggling to secure the economic and financial

sustainability of their health care systems without compromising the principles of universal coverage.

Similarly, economic challenges are raising serious concerns because of the potential threat to the Europe's current and future sustainability. (Nowotny, Mooslechner and Ritzberger-Grunwald 2010) argued that the fiscal sustainability is under threat and noted that the average debt ratio is too high. Authors suggested that a comprehensive strategy on overcoming the consequences of the economic crisis and addressing the current economic challenges is strongly required. Bökemeier and Stoian (2016) explored debt sustainability issues in the Central and Eastern European countries and found that 2015 debt ratio of Romania and Bulgaria was not sustainable. Unstable economic situation in these countries, as well as in other underdeveloped states, puts the whole EU at danger in terms of pursuing the long-term sustainability goals.

Finally, despite the great progress made regarding raising awareness about the environmental problems and reducing the negative impact on ecology, European countries are not taking equal action in relation to environmental sustainability. Many countries still give priority to economic issues when drafting developmental goals, while consistently overseeing the ecological needs. A study conducted by Geels (2013) revealed that the economic crisis distracted public attention from the environmental issues, especially the climate change. Results have demonstrated that although governments are much more concerned with ecology than they were several decades ago, they are reluctant to make the environmental sustainability the central point of any social and economic change. Geels (2013) stressed that the environmental policy is too slow and limited to bring any significant changes and advocated for the increase of renewable support and feed-in tariffs. In the face of the Europe's growing need for energy, this may be beneficial not only for the environment but also for the long-term economic sustainability of the region (Lewis, 2013).

In this way, although one may suggest that all the described issues are not related to each other and should be addressed separately, the multi-pillar approach to sustainability postulates that these aspects are closely connected. Evidence clearly shows that negative trends in the social sphere, such as aging of the population,

may adversely affect the industry, which in turns affects the economy (Berlin, 2012; Rebba, 2016). Economic challenges and crises inevitably affect the social sphere, which is being left without proper financing, as well as the environmental sustainability, which is given little attention (Geels, 2013). Lastly, ecology and environment issues are pervasive and affect all spheres of human activities. This means that sustainable development in the EU needs to be pursued by addressing all three components simultaneously and incorporating additional priorities such as institutional and international stability.

2.7.1 Vertical Policy Coordination in Europe

The vertical policy coordination alludes to the joining over all levels of administration from the nearby level to every other level. For this situation, the coordination of NSDSs over all levels varies from nation to nation. Nations with cutting edge vertical coordination additionally include various prescribed procedures in practical improvement. Vertical strategy coordination happens through broad meeting and apparatuses, for example, gatherings, gatherings and advance reports that guarantee the saturation of supportable practices over all levels. As indicated by a report by the European Sustainable Development Network (ESDN), European nations with high vertical arrangement are Switzerland, Austria, Germany, United Kingdom, Belgium, France and Finland (Gjoski, Berger and Sedlacko 2010, p.12). For some of these nations, their central governments as of now highlight the auxiliary capacity of dispersing maintainable improvement hones over every single political level. For others, their unified frameworks permit them to create specific organizations to handle manageable advancement at all administration levels. In these countries, there is a high mindfulness with regards to the pertinence of incorporating economic improvement columns in arrangement making and usage.

Be that as it may, there are a few nations in Europe including either direct vertical arrangement participation or no strategy coordination by any stretch of the imagination. A portion of the direct nations includes Sweden, Czech Republic, Estonia, Norway, Italy, Malta, Lithuania, and Luxembourg (Gjoski, Berger and Sedlacko 2010, p.12). At times, the presence of prior lawful statutes constrains

the joining of sustainable practices over all levels. In any case, the greater part of these nations manages vertical strategy coordination relying upon the need of the activity instead of a sweeping methodology. One case is the utilization of key systems and coordinated effort through the National Councils for Sustainable Development (Gjoski, Berger and Sedlacko 2010, p.13). European nations with to a great degree little rates of vertical arrangement coordination are Spain, Romania, Bulgaria, Cyprus, Slovakia, Denmark, Greece, Ireland, Hungary, and Portugal. Some of these cases are because of the improvement of NSDSs much later than other European nations.

2.7.2 Horizontal Policy Coordination in Europe

The horizontal policy coordination alludes to the joining of strategies among all areas. As per the 2010 ESDN report, all EU individuals have created between clerical and cross-departmental systems for organizing the usage of NSDSs targets (Gjoski, Berger and Sedlacko 2010, p. 22). The essential elements to consider in flat arrangement coordination incorporate parts and elements of an instrument, its outcomes and in addition the authoritative structure of these systems. There is an assortment of choices in the EU with greater part nations utilizing between ecclesiastical bodies to facilitate flat approach combination. Then again, there are a few systems that include meetings among the political class and official bodies with different partners. As far as parts, the instruments objectives are critical in improving even strategy participation. A portion of the parts can incorporate the part of a guard dog, direction system or estimation of manageable improvement.

2.8 Strategies and implementation initiatives used

There are a few components that characterize a decent practical methodology as talked about beneath. Initially, a successful methodology must concentrate on the advantages and changes it causes in the lives of residents. In this manner, the concentration must be individuals focused. Also, it must be implementable inside the spending limitations of a nation to guarantee consistency in execution. Another component is that reasonable techniques must be established in the

nation's own law or mind with the end goal that usage of such systems is not considering worldwide responsibilities and can along these lines last any longer.

Another trademark is that the technique must join components of existing formative arrangements to guarantee a smooth move into manageable practices. Besides, this can be helpful in empowering a nation to accomplish its national objectives. The usage of broad research and discussion among partners considers the advancement of better methodologies and advancing development and data sharing. From a formative point of view, it is apparent that examination incredibly educates all parts of reasonable advancement and improves an area's capacity to manage rising issues. Thusly, the system for observing the headway of manageability must be founded on an arrangement of markers that are pertinent both locally and universally.

Also, these methodologies must be proper for various levels of administration with the end goal that national objectives are separated to constituent parts that are less complex to handle. These additionally incorporate estimation markers that are clear and applicable in a specific segment. Another attribute of a decent technique is one that can evaluate all parts of economic improvement from political ramifications to social and business concerns. The methodology ought to have the satisfactory ability to handle these differing divisions and strategies. At last, the legislature has the duty of creating national strategy and institutional changes for sustainable advancement. Accordingly, it is fundamental for a nation to create duty toward the reason for supportability with a specific end goal to fulfill the objectives of the technique.

3 METHODOLOGY

This methodological chapter discusses the principal components of the selected thesis design and approaches. It provides rationale for the chosen thesis approach and the system of data collection and analysis. About the pursued thesis cause, the chapter outlines strategies for participant choice and sampling. Furthermore, the chapter shows methodological limitations and risk control techniques taken to make sure quality of the executed findings are accurate.

3.1 Research Design

This thesis aims at conducting an in-depth study of *sustainable development indicators* in Europe by comparing *sustainable indicators* deployed by chosen developed and developing EU states and finding reasons why some EU countries are lagging the implementation of sustainable development initiatives. The *qualitative methodology* was selected to support the thesis design. Merriam & Tisdell, (2015) elaborates that, the naturalist approach of qualitative research serves to explore a given phenomenon in its natural setting through obtaining and investigating individual perceptions, experiences, and observations of it. Thus, the fundamental theme of qualitative research methodology concerns the interdependence between *the world and people*.

To study the practiced reality, McNabb (2015) argues that, qualitative research gets an insight of the examined matter, using a variety of descriptive, synthesizing, and interpretive techniques. The reality here made it possible to use the qualitative approach as an instrument for data collection and analysis. This unique position allows the researcher to capture the ever-changing reality of human experience by adjusting to the situational context (Klenke, 2015). In other words, qualitative research is adaptable, leaving space for changes in techniques amid the exploration procedure to pick up the most significant data for analysis.

Using qualitative research methodology, this thesis deployed a *comparative case study research design* to compare and analyses sustainable development indicators of developed and developing EU states on the examples of Sweden, Estonia, The Czech Republic and Poland. This methodological approach analyses at least two cases that show various normal components alongside a few critical

contrasts. On the ground of similarities, comparative case study examines differences of the selected cases (Creswell, 2014). Comparative case study is a useful method of the in-depth systematic investigation of a process like a policy implementation. Scholars value this methodological approach for a produced insight that enables a direct impact on further research, policy, and practice (Merriam & Tisdell, 2015). Distinctively, comparative case study provides a better evidence and creates more powerful conclusions.

The chosen comparative case study design based on qualitative research methodology suited the pursued thesis aim perfectly. This cross-national study revised sustainability frameworks of selected EU states to identify their compliance rates with the EU-established sustainability standards. About their common relation to the EU membership, the study focused on differences in these countries' enforcement of the EU sustainability development indicator program.

3.2 Participants and Sampling

The chosen comparative case study design and the pursued thesis purpose of investigating sustainable indicator enforcement in developing and developed EU states indicated thesis targeting of EU countries obliged to pursue their sustainable development in compliance with the EU sustainability vision and standards. The European Council distinguished over *130 sustainable development indicators*, grouping them in ten headline indicators (SDI 1-10) (Eurostat, 2016a). In accordance with SDI 1-10 metrics, the European Council assesses performance of each EU state towards sustainable development. Developed EU members with high-income economies demonstrate advantage over developing EU countries with lower-income economies in values of normalized sustainable development indicators (Ostasiewicz, 2012).

The major high-performing countries in sustainability building are Sweden, Austria, the Netherlands, the UK, Luxembourg, and Belgium. Representative of EU developing states, such as Bulgaria, Poland, Hungary, Slovenia, and Romania, display low indicator values (Ostasiewicz, 2012). This thesis selected four EU countries, representing developed and developing EU states each, to narrow the thesis focus and to conduct a comprehensive and detailed analysis of differences

in their *sustainability strategy implementation and effectiveness of indicator sets*. Relying on officially published data on EU states' performance in sustainability development, this comparative study selected Sweden to represent the high-performing group of EU states with its commitment to sustainability since the 1960s (Stratos Inc., 2004). Poland was chosen to represent the bloc of developing EU countries as a state that benefits the most from the EU investment and funding support to its economy transition (Dilba et al., 2015)., *whiles the Czech Republic and Estonia demonstrates a middle development within the EU*. Therefore, the present cross-national comparative case study chose these four EU states, following different paths in the *implementation* of the EU-formulated sustainability development strategy stemming from different country's historical background, location within the EU, population, GDP etc. and chosen indicators.

3.3 Data Collection

This comparative case study was *secondary data* research retrieved from official publications and previous research findings in relation to Sweden, Estonia, The Czech Republic and Poland's performance in sustainable indicators. Underpinned by qualitative research methodology, the present cross-national comparison implied a *three-stage research process which comprises of description, analysis, and interpretation*. The *description stage* was responsible for providing extensive evidence to the knowledge shared, *analysis* – for fostering understanding of the studied issue, and interpretation – for presenting the researcher's perception of the investigated reality (Wolcott, 1992). To make it a success, a large-scale volume of data was retrieved from reliable source (**Eurostat**) which doubles as the main European Union statistical website with statistical computation and plotting of excel graphs and the use of ArcGIS which is a geographic information system (GIS) for working with maps and geographic information.

In addition, digital search engines, such as ProQuest, Elsevier, ScienceDirect, and the selected country's statistical websites along with official websites of the European Council and European Commission to obtain both *primary and secondary data sources*. Mainly, the source of primary data *originated from Official reports, documents, and statistics published by EU agencies, while*

scholarly books, peer-reviewed journal articles, and other academic publications produced secondary data sources.

After characterizing information sources and search strategies, numerous search terms were utilized to discover pertinent literature on sustainable development indicators, its key measurements, and headline indicators recognized by the EU to measure and sustainability performance by EU states. The next source of data concentrated on getting data and sustainable indicator rates reported by the selected countries to create the source for comparative analysis.

3.4 Data Analysis

In accordance with the comparative case study design, systematic, cross-case analysis to process and interpret data, concerning variances in sustainable development indicators in selected countries. This analytical approach serves to assess data for each case and to make cross-case assessments for commonalities and variances between cases (indicators). *Systematic, cross-case analysis processes data* in compliance with the conceptual framework defined or developed at the start of the research process (Hameyer, 1995). The thesis highlights *ten indicators* of sustainable development determined by the European Council as *headline indicators which* constitutes *the conceptual framework for data collection and analysis*.

Saldana (2013), clarifies that qualitative analysis relies on two coding cycles. The first cycle of coding takes place during data collection, when qualitative researcher creates notes, analytical memos, and personal remarks to capture and reflect on the situational context as well as to label data initially. The second cycle of coding occurs during data analysis, when qualitative researcher should translate, summaries, synthesize, and interpret data. At this stage of coding, the application of the chosen conceptual framework to the overall data volume to divide the overall dataset into informational blocks was used. **The procedure enables distinguishing commonalities and differences and detecting emergent themes (Saldana, 2013).** In line with the two-stage coding process and *ten EU sustainable development indicators*, the use of initial labelling of data during the collection process to group data into four sets comprised of ten blocks for Sweden, Estonia, the Czech Republic and Poland respectively. **Thus, each set**

encompasses ten data units reflecting each country's achievement in socio-economic development, sustainable consumption and production, social inclusion, demographic changes, public health, climate change and energy, sustainable transport, natural resources, global partnership, and good governance (Eurostat, 2016a).

3.5 Limitations

Despite careful planning and a holistic approach in the process of researching for this thesis relying on a comparative case study based on qualitative research methodology and secondary data, there were some limitations which needs to be mentioned. The significant methodological limitation concerns high subjectivity of qualitative research results and potentially researcher-biased findings stemming from a one-sided discovery. Qualitative research is time and effort consuming, which results in typically limited participant sample.

(Denzin & Lincoln, 2005)., clarifies that, qualitative research implies researcher's subjective interpretation of meanings generated by people in the ground of their personal observations and experiences that are subjective as well, which invokes the criticism for the lacked objectivity However, this limitation did not pose a greater threat to the theses quality, since both data collection and analysis processes relied on ten sustainability indicators' frameworks. Thus, the thesis focused on the set of officially published data in compliance with the EU SDI 1-10.

In addition to another limitation, due to the use of primary data sources,(Bowie & Buttle, 2013) further explains that, scholars criticize researchers using primary data collected by other researcher for other research aims and purposes in terms of potential manipulations with data by primary researcher, inaccurate data processing, or unindicated data origin and authorship Only reputable primary and secondary data sources constituted the dataset for the present comparative case study, which allows claiming irrelevance of this limitation concern. Furthermore, a vivid review analysis coupled with planned research process which complies with trustworthiness was conducted to ensure credibility and reliability of the expected findings.

Another huge limitation was due to the discrepancies in years for the selected ten indicators sets. While some indicator sets have their statistical figures from the year 1990, other indicator sets have theirs from 2003 and different years which does not make the years “**even**” to compare previous years. However, the ***Good Governance indicator sets*** does not have any Headline indicator sets for all EU states.

3.6 Trustworthiness

Trustworthiness is term used to describe the thesis credibility, transferability, and dependability. However, (Pitney & Parker, 2009) clarifies that, the requirement for credibility implies collection of a large-scale data volume and its accurate processing. In this manner, various credible data sources, European statistical website, statistical websites of selected countries, scholarly literature, and previous empirical studies in the field were accessed to provide rich description and data triangulation, which contributed to the results’ credibility.

Furthermore, plausible findings and a comprehensive perspective on sustainability development building in the EU were achieved due to the support of two-three data sources used indicating the thesis demonstrated the major indicators, measuring sustainability performance by EU states, defined and analyzed the differences in sustainable development indicators between developed and developing selected EU states and explained the barriers fellow developing states faces towards the successful sustainability development implementation.

4 ANALYSES

This chapter illustrates and analyses results of the comparative cross-national study of Sweden, Estonia, The Czech Republic and Polish progress in implementing sustainable development in agreement with *EU indicators*. Primarily, the chapter provides a general overview of selected countries in their sustainable performance and commitment. Furthermore, it focuses on a detailed investigation of each sustainable indicator, comparing its values for selected countries. To highlight the gap between developed and developing EU states in terms of sustainability building, the chapter supports each *indicator analysis* with *illustrative figures*.

4.1 Country Profiles

Sweden

In terms of environmental protection, Sweden far surpasses its counterparts in Europe. It was the first country in Europe to pass legislation in favor of environmental conservation and continues to be a leader in environmental protection even today.

Following the Brundtland Commission report, the country made several changes including joining the European Union and adopting the concept of sustainable development in their policies. Sweden has shown commitment in the sector through legislative and executive actions that support sustainable developed.

Through consultation and research, the Swedish Government decided to form the Environmental Protection Agency in 1967 (Lönnroth 2010, p. 11). This set Sweden apart from other countries as they were one of the first countries to form an agency specifically tasked with the protection of natural resources many years prior to the famous Brundtland Commission's findings. Indeed, the country showed remarkable foresight in comparison to other European nations in terms of environmental policies. Following the formation of the body, the government further indicated their commitment with the introduction of the Environmental Protection Act of 1969 (Lönnroth 2010, p. 11).

Sweden drafted and adopted its first Sustainability Development Strategy (SDS) in 1994 to enforce provisions established by the 1992 United Nations Conference

on Environment and Development in Rio. In 2002 and 2006, the national NSD was subject to review and update in response to emerging trends in the EU sustainable development legislation. The Swedish SDS addresses three sustainable development dimensions (economy, society, and environments) from multiple interlinked perspectives (European Sustainable Development Network, 2012). The key objectives of the Swedish SDS include building sustainable communities, promoting equality and quality in health care, handling demographic challenges, encouraging sustainable growth, engagement in the strategy implementation, leadership and responsibility, inter-sectoral cooperation and coordination, and creation of operational tools (European Sustainable Development Network, 2012). The Ministry of the Environment carries out the primary responsibility for leadership and coordination of the national SDS implementation.

Per the International Institute for Sustainable Development, in 2004 the Swedish government prioritized some of the goals supporting sustainable development in the country (IISD 2004). These included:

- Environmentally driven growth and welfare
- Youth policies
- Coherent policies on sustainable planning
- Better health

Czech Republic

The Czech Republic is a recent addition to the EU in 2004. However, the country has managed to develop strategies for sustainable development comparable with other countries. The reason for its selection in this report is that it is comparable to Sweden in terms of population and environment. Its economic system is very successful within its region with the Czech Republic being ahead of other EU member's similar sizes and populations. The country has a limited experience with environmental protection in comparison to other developing EU states.

The sustainable development ideology indicates an alternative framework of societal development to a strong economy. Its aim is to mirror the natural environmental limits to economic growth. Harmonization of economic and

societal development among different generations is promoted by policies based on the sustainable policies and frameworks. On 8th December 2008, the Czech government approved the first Sustainable Development Strategy of the Czech Republic (CR SDS) (Ministry of Foreign Affairs, Czech Republic 2016). Its development and implementation was aimed at creating a long-term structure affecting economic development and policy making for the country. The strategy aimed at unifying the country's development goals with the global sustainable trend. The development and adoption of the strategy indicated the Czech Republic's commitment to global sustainability and was in line with the resolutions made in the 2002 World Summit. At the same time, this action acknowledged the conclusions of the Earth summit in Rio de Janeiro in 1992, the UN Millennium Development Goals, and the 2003 conclusions of the UN Commission on sustainable development (Adelle and Pallemaerts, 2009).

On 11th January 2010, the Czech government adopted the updated strategy for sustainable development of the Czech Republic following the development of the concept of SDGs. It was under the title "Strategic Framework for Sustainable Development in the Czech Republic" (Czech Republic Ministry of Foreign Affairs, 2016). The Government Council for Sustainable Development is responsible for the development of measuring strategies as well as creating useful progress report. Their main purpose is to map the fulfillment of the sustainable development strategy and inform the politicians and the public about the state and development of the Czech Republic in respect of sustainable development.

Poland

Poland introduced its first national SDS in 2000 that underpinned the state's sustainability initiative until 2007, when it was regarded as outdated. Since 2009, Poland has taken numerous effort to reform its national SDS by adopting multiple strategic documents to constitute a comprehensive System of Management of Poland's Development (European Sustainable Development Network, 2014). Up to date, the state has adopted the Long-Term Development Strategy 2030 and Mid-Term Development Strategy 2020 along with nine integrated strategies. The latter prescribes development in terms of innovation and economic efficiency, human capital, transport, energy safety and environment, state efficiency, society

capital, regional development, national security, and sustainable development. Though all the above-indicated documents are aligned with the EU strategy for sustainable development, none of them gives a direction for implementation (European Sustainable Development Network, 2014).

Estonia

Estonia also entered the EU in May 2004. The reason for comparing Estonia to these countries stems from the level of advancement of technology as being the first country in the world to vote online in 2005 and are quick in understanding computers. Estonia has one of the highest adult literacy rates in the world at 99.8% (UNESCO report 2016).

Sustainable development has been given more consistent consideration since 1995 when the Sustainable Development Act was prepared and adopted by parliament based on the Agenda 21 program approved at the UN Conference on Environment and Development in Rio de Janeiro in 1992. (Estonia Statistical office,2016).

A report by United nations on sustainable development indicates that, in 2005, the Parliament adopted the Estonian Sustainable Development Strategy, Sustainable Estonia 21“(2), which states four main goals for sustainable development:(United Nations sustainable development,2016)

- Viability of Estonian cultural space;
- Growth of welfare;
- Coherent society;
- Ecological balance.

4.2 Indicator Description and Analysis

This section will highlight into details the ten selected sustainable indicators by the European Union as described on Eurostat.

4.2.1 Socio-Economic Development

The headline indicator for socio-economic development is real GDP per capita, growth rate, and totals that calculates the ration of real GDP to the average population for a given year. Eurostat estimates GDP in chain linked volumes (2010), euro per capita and provides GDP ratio for each country annually as states

report their GDPs (Eurostat 2016). For this indicator, Eurostat's latest estimates cover the year of 2016.

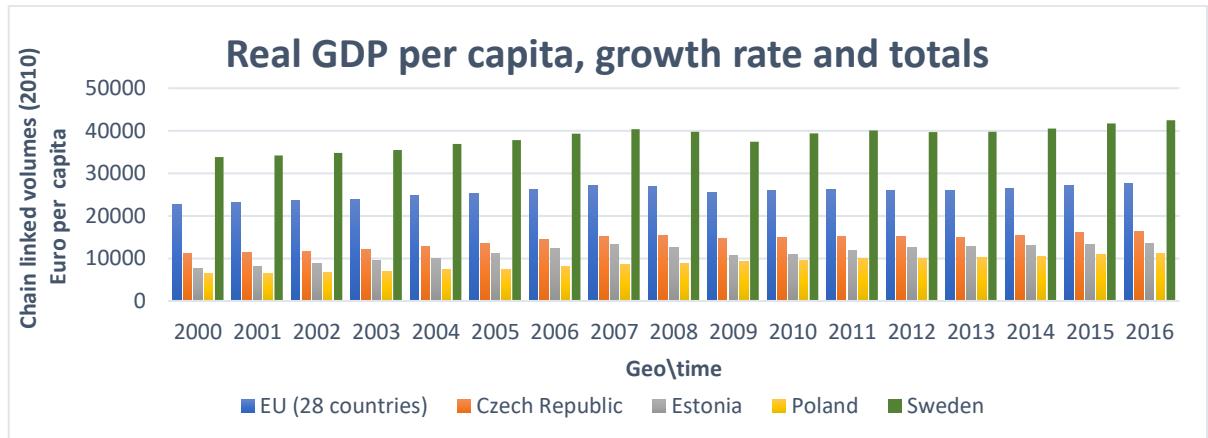


Figure 2: Real GDP per Capita, Growth Rate and Totals in 2016.

Sources: Author based on data from Eurostat (2016).

For the taken years between 2000 – 2016 in figure 2 above, Sweden demonstrated a sharp increase in its GDP from 33,800 EUR/capita in 2000 to 40,400 EUR per capita. There was an insignificant reduction in GDP ratios in 2008 and 2013 with reported 39,800 EUR per capita GDPs in both years but Sweden's GDP supersedes that of the European Union average by far with a difference of 14,986 EUR per capita as at 2016. For the same period, Poland also displayed a steady increase in its GDP ratios, growing from 6,400 EUR per capita in the year 2000 to 11,200 EUR per capita in 2016. Estonia recorded 7,600 EUR per capita as at year 2000 and has had a slight increased with no reduction in GDP whereas at 2016, their GDP has grown up to 13,500 EUR per capita.

The Czech Republic has recorded a steady growth with no declination from 11,100 EUR per capita as at the year 2000 and currently stands at 16,400 EUR per capita as at 2016. During these 16 years, The Czech Republic, Estonia and Poland reported enhancements in its GDP ratios even though the European Union average has not been consistent whiles Sweden has had a rise and fall in its GDP. Therefore, all the four countries seem to continually leverage their gross value added of all national institutional units involved in production, including all taxed-on products and excluding all subsidiaries on them.

To compare the analyzed GDP ratios for the selected countries, it is important to point out the considerable recorded ratios between all the four countries. It can be noted that, Swedish GDP ratios exceeded those of Poland and Estonia by four to five times, which means that the Swedish economy is much more dynamic with a higher capacity to create new jobs than the Polish and Estonian economies. The Swedish economy exceeds that of the Czech Republic economy by three to four times and slightly higher than that of the European union average yearly. High GDP ratios of Sweden indicate the country's capability to generate extra economic resources to fulfil ever-growing needs of society as well as to invest in the future by addressing environmental and social issues. This capability of the Czech Republic, Estonia and Poland is also steady, but remains insufficient so far to promote and support the country's implementation of the sustainable development strategy. Figure 2 illustrates the extensive disparity in the economic development of four economies, signifying the current inability of the Czech Republic, Estonia and Poland to perform within sustainable development at the same level as Sweden.

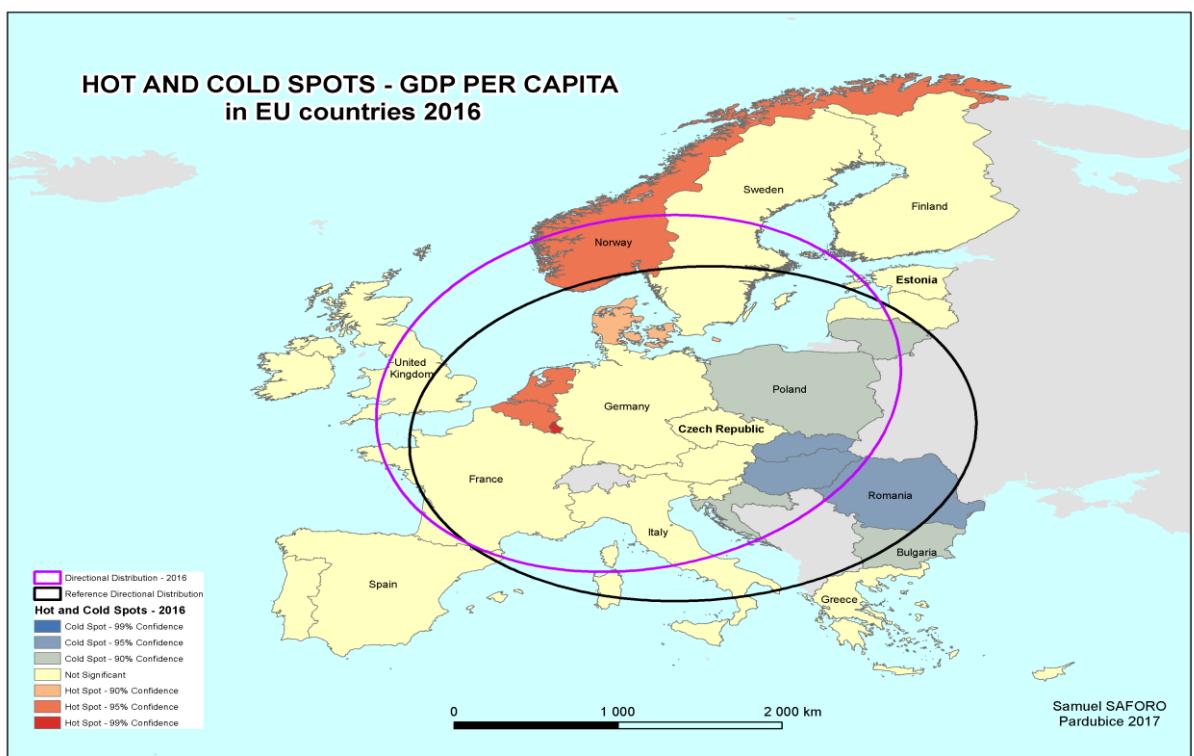


Figure 3: Directional distribution of Socio-Economic Development for European Union in 2016. Sources: Author based on data from Eurostat (2016).

In the above map (Figure 3), The directional distribution of Socio-Economic Development for European (violet) has shifted slightly east from the reference directional distribution (black) towards Norway which shares a common border with Sweden. Sweden shows no significance of economic advancement on sustainable development but neighboring country Norway shows a hotspot with 95 % confidence which means more intense clustering of high values of recorded GDP. Norway is doing better in terms of Socio-Economic Development performance than that of Sweden. However, in terms of retrieved statistical data, Sweden is significantly higher than that of the Czech Republic and Estonia which belongs to the lower region whiles Poland and neighboring Lithuania are in the cold spot region with 90 % confidence due to more intense lower recorded values. *Therefore, the correlation means the higher the GDP, the higher the socio-economic development.*

4.2.2 Sustainable Consumption and Production

The headline indicator for the Sustainable consumption and production is the domestic resource productivity (DRP). This is calculated by dividing country's GDP by domestic material consumption, which measures the total material consumption by the economy. Eurostat expresses this indicator in three forms – euro per kilogram, chain lined volume (2010), index on year 2000, or Purchasing Power Standard (PPS) per kilogram. ***The first measurement (Euro per Kilogram domestic resource productivity)*** provided data for this thesis. Eurostat's latest estimates cover the year of 2015, (Eurostat 2016). The update of Eurostat statistics on resource productivity is regular, thus data used is estimated for the period 2000-2015 for selected countries.

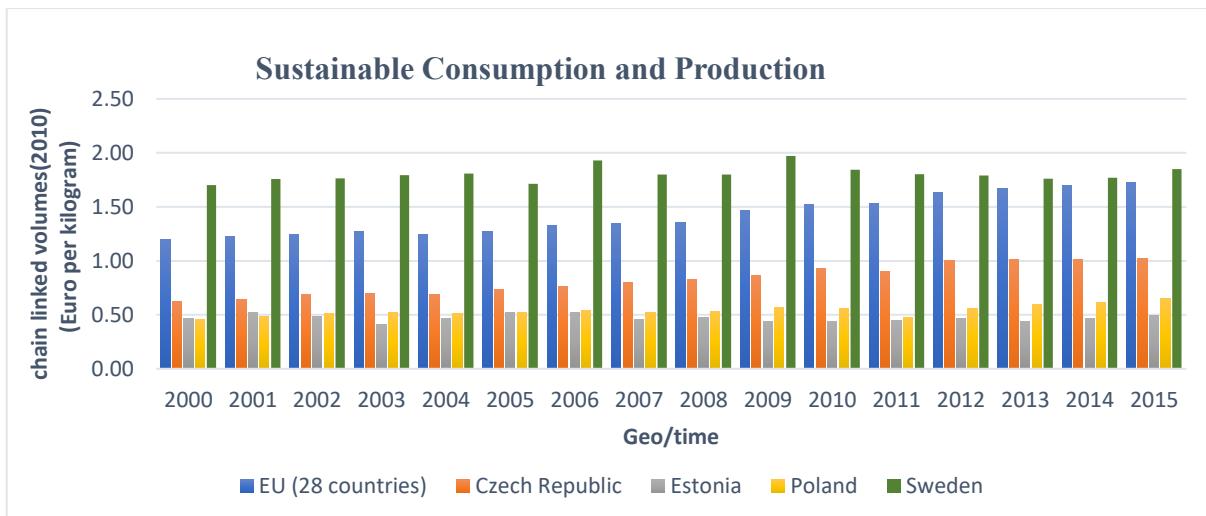


Figure 4: Domestic Material Consumption in 2015.

Sources: Author based on data from Eurostat (Eurostat 2016).

In the above illustrations (figure 4), Sweden has increased slightly even higher than the EU average but Sweden demonstrated a slight decrease in its DRP ratios, comparing 1.7992 *EUR per kg* in 2011 and 1.7442 *EUR per kg* in 2015 and shares common competencies with the Czech Republic which has recorded a steady increment from 1.20 *EUR per kg* in year 2000 to 1.72 *EUR per kg* in 2015. In its turn, Poland and Estonia are on the same level with slight increment and demonstrated a steady increase in its DRP ratios, increasing 0.45 *EUR per kg* and 0.48 *EUR per kg* in 2011 to 0.49 *EUR per kg* and 0.65 *EUR per kg* in 2015.

By comparing DRP ratios for all four countries, one may see a slight, but steady decrease in the absolute use of domestic resources by the Swedish economy and that of the Czech Republic, and a tight increase in the quantity of materials extracted from the domestic territory by the Polish economy. Thus, Sweden and Czech Republic seem to follow opposite directions with Poland and Estonia, which is not directly apparent because of a great disparity in their DRP ratios. ***The least DRP ratio for Sweden (1.70 EUR per kg) recorded in 2000 is over 2.5 times higher than the highest DRP ration recorded for Poland and Estonia in 2015 with 0.49 EUR per kg and 0.65 EUR per kg.*** The gap in the utilization of natural resources for leveraging the national economy's efficiency is apparent in the above illustrated diagram (figure 4).

4.2.3 Social Inclusion

The social inclusion category of the EU sustainable development strategy encourages creation of a socially inclusive society that promotes equity, solidarity, and tolerance between different population groups and generations. The headline indicator in this domain expresses ratios for people at risk of poverty or social inclusion. *Eurostat calculates this indicator ratio by either percentage of total population or thousand persons of people at risk of poverty or social inclusion.* Eurostat's latest estimates cover the year of 2015, (Eurostat 2016).

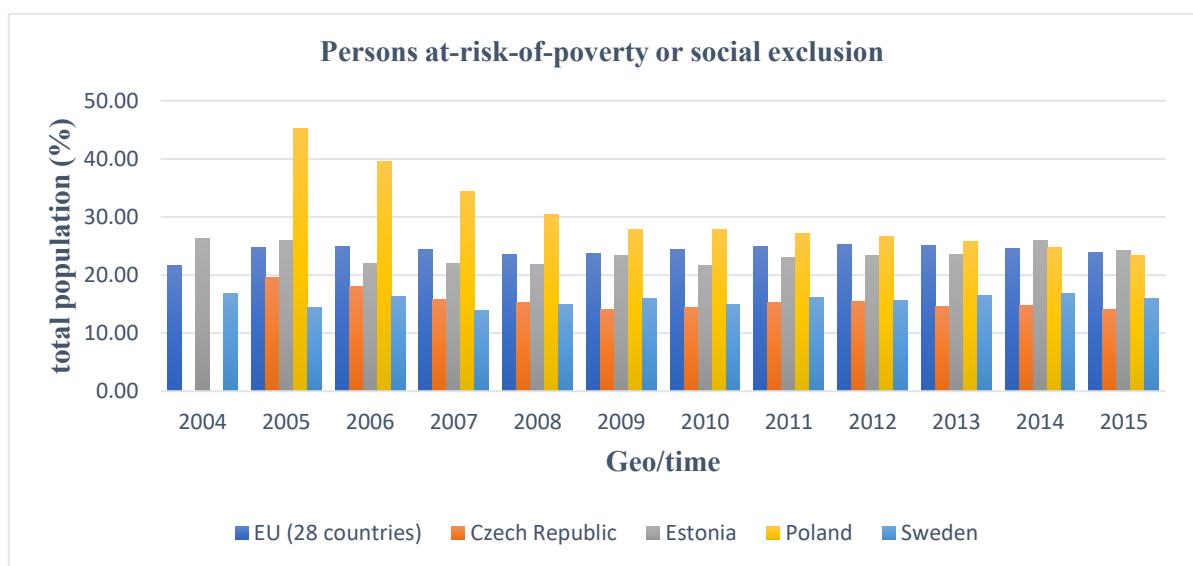


Figure 5: Persons-at-Risk-of-Poverty or Social Exclusion in 2015.

Sources: Author based on data from Eurostat (Eurostat 2016).

For the taken period between 2004-2015, Figure 5 above shows, Sweden displayed a slight increase in its percentage of people at risk of poverty or social exclusion, which was unexpected for this European country. Precisely, the ratio raised from 15 % in 2010 to 16 % in 2015 whiles Poland recorded the highest of its years in 2005 with 45.3 % and demonstrated willingness to reduce the people at risk of poverty with 23.4 % as at 2015. The Czech Republic has also recorded a rapid change from 19.6 % to 14 % which is almost two times of the EU average with Estonia going and off with no steady ratio but almost shares the same ratio with that of the EU and Poland. There seem to have been an attempt to improve the aspect of social inclusion in 2012, when the ratio cut down to 15.6 % in comparison to 16.1 % reported in 2011 in the case of Sweden.

Contrary to Sweden, Poland illustrated a considerable decrease in the quantity of people being at risk of poverty or social exclusion for the chosen period. Thus, the country managed to reduce social vulnerability from 45.3 % in 2005 to 23.4 % in 2015. In line with the premise that the income level is the key precursor to individual standard of living, it is possible to ascertain that Poland has succeeded in enhancing the quality of life for the past ten years and shares common competencies with the Czech Republic. Proactive engagement of Poland in reforming its legislative, institutional, and economic practices to meet EU standards has resulted in extensive social transfers that reduce the amount of people at risk of poverty. Though the social exclusion ratio remains much higher than the one of Sweden (23.4 % versus 16 %), the country illustrates a positive trend in improving well-being of its people and reducing poverty rates.

Appendix 3 shows a directional map of Persons-at-Risk-of-Poverty or Social Exclusion. The directional distribution map of social inclusion indicator (light green) has shifted towards west from the reference directional distribution (black) towards Romania, Bulgaria and Greece of the EU. All four countries under review is located within the not significant range relatively low level of persons at risk of poverty. Countries like Bulgaria and Slovakia which shares border with the Czech republic's shows a hot spot of 95 % confidence signifying a high level of persons at risk of poverty whiles Greece shows a hotspot of 99 % confidence with high level of persons at risk of poverty. ***Significantly, Czech Republic, Estonia, Poland and Sweden shares no lower recorded value for persons at risk of poverty.***

4.2.4 Demographic Changes

The demographic-changes indicator complements the objective of a socially inclusive society by promoting longer working life to increase contribution years, while reducing benefit years. In this manner, the headline indicator measures employment rate of older workers to monitor the progress of EU states in prolonging working life of their citizens. ***Eurostat calculates employment rate for the older for the total population, males only, or females only.*** Data was retrieved concerning the total employment of older employees in selected countries. In this domain, the latest update of Eurostat statistics covers the year

2015, (Eurostat 2016). Thus, analysis on demographic changes in the selected EU states for the period from 2001 to 2016 will be analyzed.

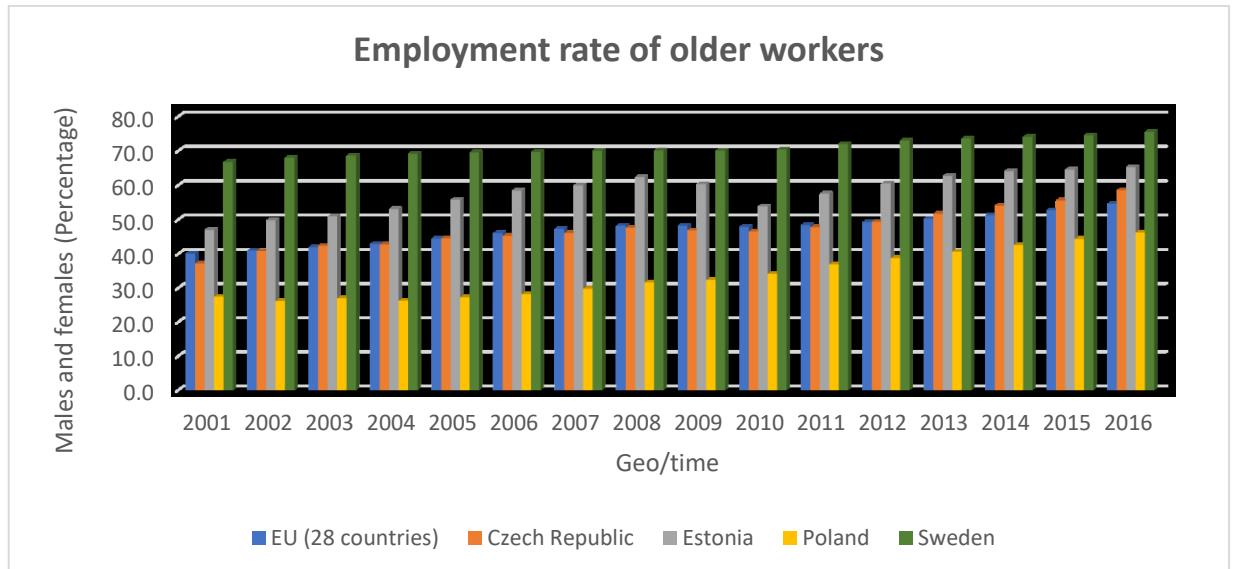


Figure 6: Employment Rate of Older Workers in 2016.

Sources: Author based on data from Eurostat (2016).

The above-placed figure 6 illustrates the current correlation in employment rates of older employees between the chosen countries. In addition, it is a showcase of a positive tendency for all selected countries implementation of the EU strategy aimed at reducing benefit years by increasing one's working years.

During the chosen period, all four countries have demonstrated an achievement. In considerable success in its demographic changes through boosting employment rate of the older from 37.1 % to 58.7 % in the case of the Czech Republic and 46.9 % to 65.2 % with that of Estonia. In its turn, Poland reported an increase in employment rate of its older labor force as well, raising the ratio from 27.4 % in 2000 to 46.2 % in 2016. Sweden has always demonstrated higher ratios from year 2000 until 2016 which even exceeds that of the EU's average over the years. By comparing employment ratios for older employees, one may see a remarkable disparity in the progress achieved by Czech Republic, Estonia, Sweden and Poland in lasting working life of their citizens, thus, increasing their capability to earn for a decent living. **The taken percentage for Sweden is almost two times higher than that of Poland.** However, a steady increase in the headline

demographic changes indicator signifies the country's commitment and pursuit of the employment policy of the EU.

Appendix 4 shows a directional map of employment of older workers in EU states. The directional distribution map of demographic change indicator (pink) has shifted towards the north-west from the reference directional distribution (black) towards Latvia, Lithuania and Estonia. The Czech Republic and Poland shares a no significance level of confidence for employment rate of older workers. However, Sweden and Norway shares both shares a hot spot of 99 % confidence signifying higher recorded values for employment rate of older workers. Estonia and Finland shares a hot spot of 95 % confidence signifying some lower recorded values than that of Sweden. ***Therefore, Sweden has a higher recorded value of employment of older workers than that of Czech Republic, Estonia and Poland.***

4.2.5 Public Health

In the pursuit of promoting good health and equal access to health care services to enhance protection against health threats, the EU introduced the public health indicator. ***This indicator measures the quality of public health in EU states through calculating life expectancy at birth and healthy life years.*** The headline indicator for public health covers these two critical aspects, calculating ratios for each matter separately by sex. Thus, to compare levels of public health in selected countries, this thesis had to examine healthy life years by sex and life expectancy by sex ratios for each country to conclude, which one has succeeded by ensuring equal access and adequate availability of health care service, (Eurostat 2016).

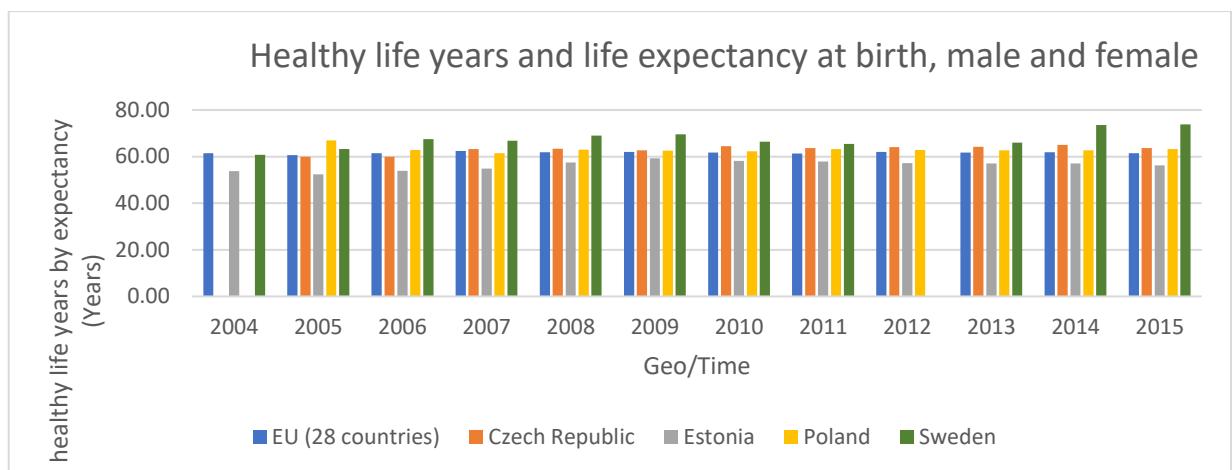


Figure 7: Healthy Life Years –females in 2015.

Sources: Author based on data from Eurostat (2016).

Since the latest available Eurostat update for this indicator dated back to 2014, this study covered the period from 2004 to 2014. In terms of healthy life years for females, Figure 7 above shows Sweden has reported an increase of 60.8 years in 2000 to 65.5 years in 2011 whereas Eurostat does not provide any data for years 2012 but Sweden managed to take control over the matter and increase healthy years of its female population up to 73.8 years as at 2015 surpassing that of the EU's average of 63.3 years in 2015. No given data for the Czech republic and Poland in 2004, however Poland's female life expectancy has been declining with time from 66.9 years in 2005 to 63.2 years in 2015 whereas the Czech republic has had an on and off average from 2005 but has had an increase since 2012. Estonia has recorded the lowest life expectancy for females within this selected countries and has had a poor average and currently has 56.2 years as at 2015. From the above illustrated graph (figure 7), ***it is evident that women in Sweden enjoy a higher life expectancy than that of Czech republic, Estonia and Poland***

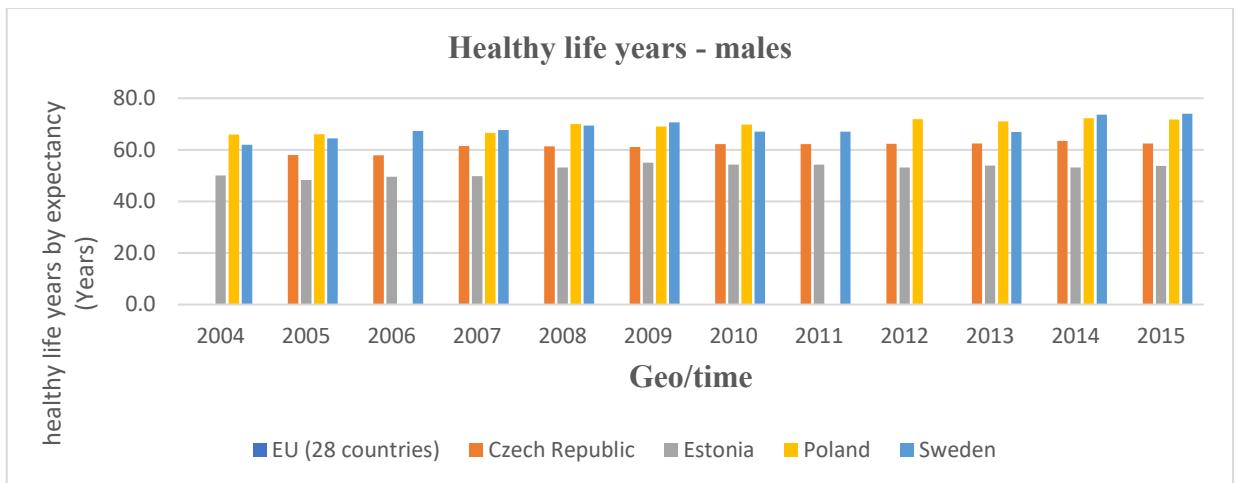


Figure 8: Healthy Life Years – males in 2015.

Sources: Author based on data from Eurostat (2016).

Figure 8 above illustrates Sweden remains advantageous in healthy life for males over the three countries and the EU's average. However, during 2010-2013, Sweden recorded a decline but managed to increase it in 2014 at 73.6 years and shares core competencies with that of Poland who has demonstrated higher ratio steadily over the selected years and 65.9 years in 2004 to 71.8 years in 2015 which indicated a remarkable improvement in the delivery of health care services to the male population for both Sweden and Poland. Though the ratio for healthy life years of men in Czech Republic is higher than that in Estonia, the difference between these two countries in this aspect of public health is not severe. *The experiential tendency agrees that males in both Sweden and Poland enjoy a moderately healthy life than that of Czech Republic and Estonia. In comparison to ratios for female populations in these countries, it is apparent that men live much healthier lives than women in Poland and Sweden but that of the Czech Republic and Estonia is relative.*

4.2.6 Climate Change and Energy

The climate change and energy objective of the EU sustainable development strategy aims at limiting climate change and its outcomes to the environment and society. In this vein, headline indicator is *calculated through greenhouse gas emissions and primary energy consumption*. Eurostat measures greenhouse gas emissions in either CO₂-equaled greenhouse gas emissions indexed to 1990 or CO₂-equaled greenhouse gas emissions indexed to Kyoto base year, excluding

international aviation emissions. The last update of this first climate change and energy indicator covers the year 2015, (Eurostat 2016). Thus, this thesis investigates greenhouse gas emissions of selected countries indexed to 1990 from 2000-2015.

The second indicator measuring and expressing the country's commitment to limit climate change refers to primary energy consumption. This measurement quantifies the true energy consumption by a state and compares the ratio with Europe 2020 targets. Hence, Eurostat calculates energy consumption in million tonnes of oil equivalent (TOE), index 2005=100, and percentage. The first measurement simply assesses consumption of energy resources, while the second compares the number to 2005 ratio, and the third defines percentage to forecast for meeting 2020 targets. This study utilised the first calculation principle to observe trends in primary energy consumption in Sweden and Poland for a period from 2000 to 2015.

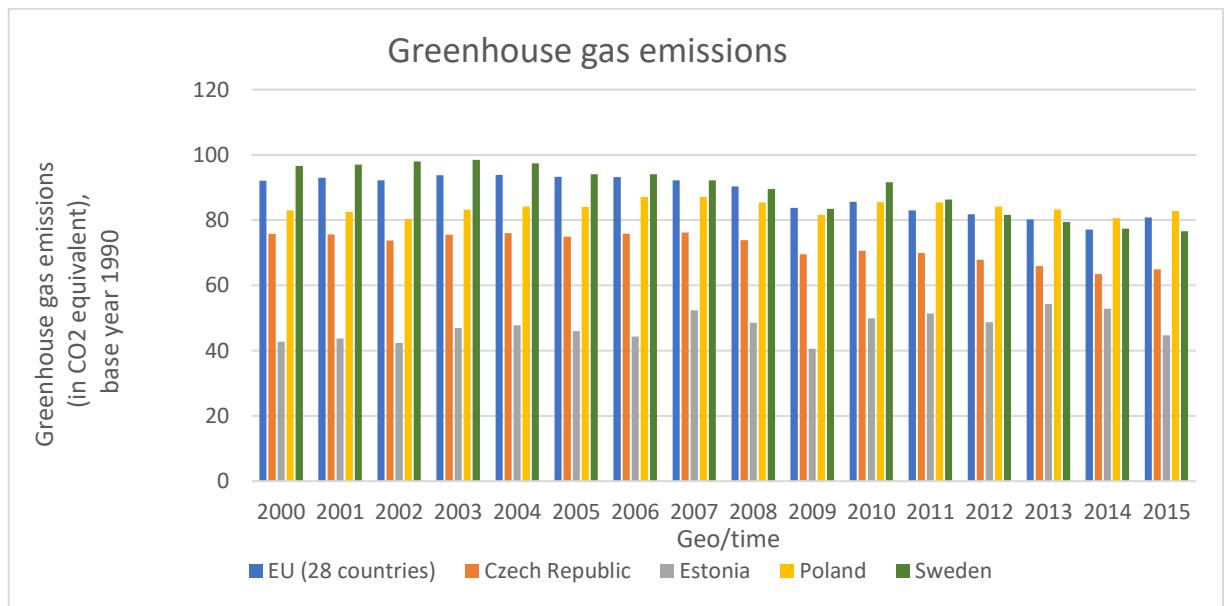


Figure 9: Greenhouse Gas Emissions in 2015.

Sources: Author based on data from Eurostat (2016).

During the 16 years reviewed, figure 9 shows Estonia has succeeded more than Czech republic, Poland and Sweden in reducing its impact on the environment recording a steady C0₂ emissions from 2000. Sweden reduced its greenhouse gas emissions from 96.66 C0₂ emissions in 2000 to 76.57 C0₂ emissions in 2015,

which shows its quest of global warming responsibility by considering environmental, economic, and social consequences of climate change.

The Czech republic is still struggling to tackle C0₂ emissions on its environment even though it has been able to reduce its emissions from 75.83 C0₂ emissions in 2000 to 64.9 C0₂ emissions in 2015. Sweden has had a drop out index of 20 points, Poland has not been able to achieve any progress in limiting its greenhouse gas emissions. Nonetheless, the country demonstrates a positive tendency in limiting its negative impact of the environment, reducing its index from 85.52 C0₂ emissions in 2010 to 82.76 C0₂ emissions in 2015.***Even though Polish reduction in the indicator's index constitutes 3 points, its baseline ratio in 2010 and 2011 was lower than that of Sweden.***

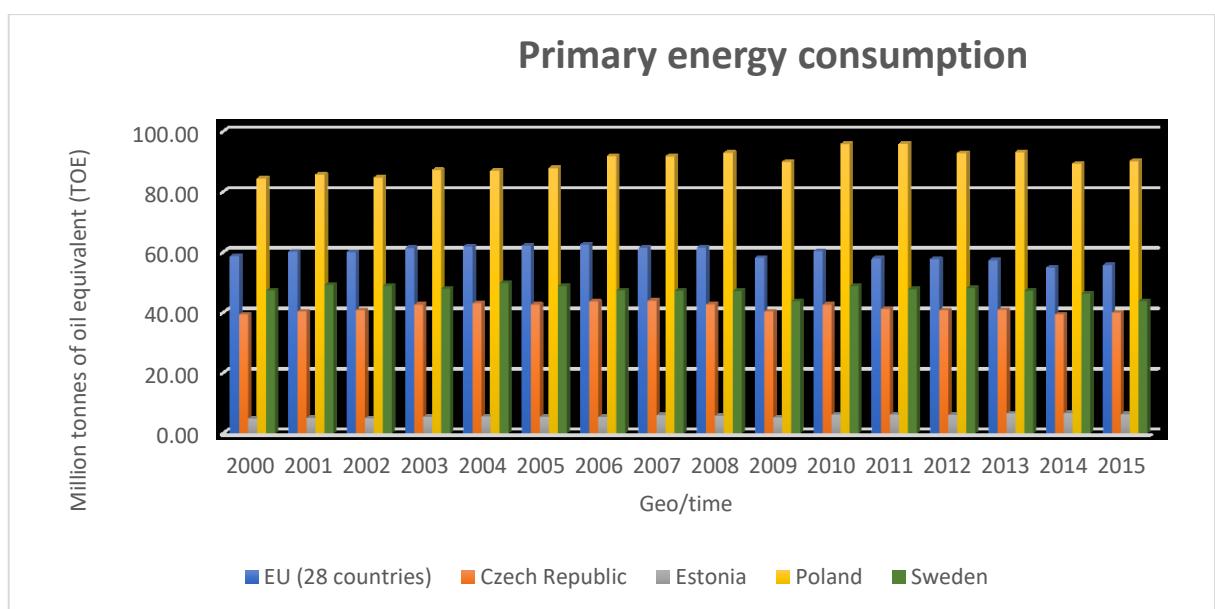


Figure 10 : Primary Energy Consumption in 2015.

Sources: Author based on data from Eurostat (2016).

For the years under review, figure 10 shows Sweden has demonstrated a slight reduction in its energy consumption from 47.2 million TOE in 2000 to 43.7 million TOE in 2015. Poland is still struggling in reducing its energy consumption from year 2000 but had a greater decrease in the indicator ratio from 95.7 million TOE in 2010 to 89.2 million TOE in 2014. Estonia has the lowest energy consumption among these four countries but their ration has been increasing steadily from 4.8 million TOE in 2000 to 6.2 million TOE in 2015. The Czech

republic shares common ratio with Sweden but have not been able to reduce energy consumption rate. The Czech ratio has not been consistent and promising but keeps fluctuating over the years.

Conclusively to the cut-down quantity of consumed energy, Estonia seems to lead as compared to the selected EU countries. In spite of the promising tendency, Poland remains a highly energy-consuming country in Europe, utilising energy resources two times more than Sweden and Czech republic does and 15-20 times to that of Estonia. Thus, in energy consumption and climate change, Estonia has sustained leadership in displaying environmentally approachable performance.

4.2.7 Global Partnership

In the quest of promoting sustainable development globally, the EU encourages countries to coordinate and cooperate in adopting internal and external policies to ensure the cross-national consistency in sustainable development agenda. In this vein, the EU takes the gross national income (GNI) as the headline indicator for the country's commitment to global partnership. The index for official development assistance as share of GNI considers grants and loans ascribed by the official sector to promote economic development and growth in recipient countries, (Eurostat 2016). The latest update for this indicator record on the Eurostat website covers the year 2015, which explains this study's review of selected countries indexes for a period 2005-2015.

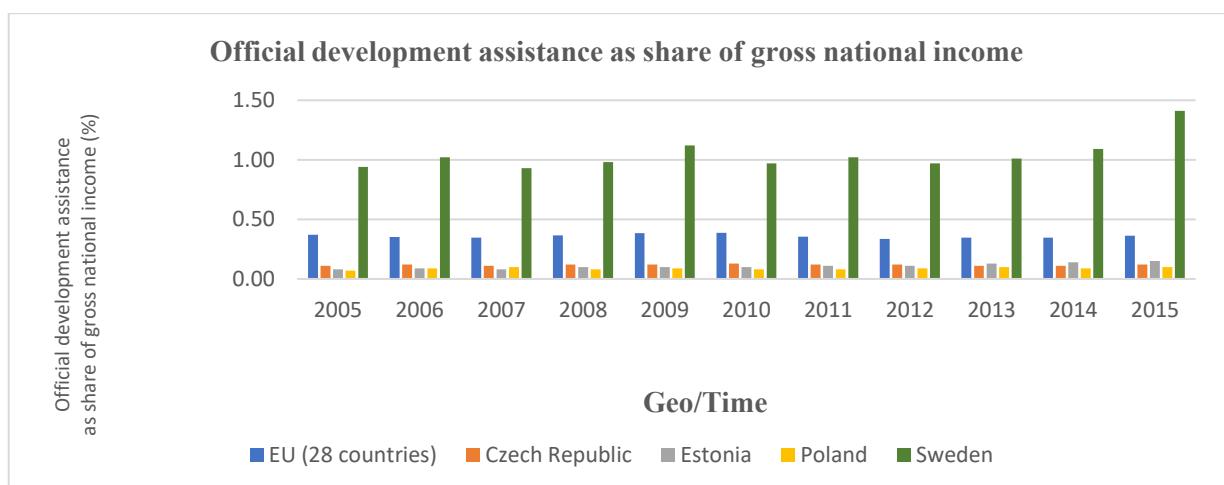


Figure 11: Share of Gross National Income in 2015.

Sources: Author based on data from Eurostat (2016).

Figure 11 above shows from 2005 to 2015, Sweden had two times higher official development assistance as compared to that of the Czech Republic, Estonia. Poland and the EU. From 0.97 % reported in 2010, Sweden increased its official development assistance to 1.41 % in 2015. The EU established 0.7 % target for the collective official development assistance of all member states by 2015. In line with this target, Sweden has met and exceeded the EU expectations greatly whiles the Czech Republic and Estonia are doing good. While the developed Sweden displays high investment in the economic development of weaker EU members, the developing Poland demonstrates the opposite position. The country did not exceed the index of 0.1 % for the studied period with the average official development assistance constituting 0.08 % of GNI.

The above results are reasonable and self-explanatory by different levels of economic development and welfare of the EU, Czech Republic, Estonia, Poland and Sweden. High-income economy of Sweden is capable of allocating funds for official development assistance of the EU membership, while transitional economy of Poland needs financial assistance itself likewise Estonia and the Czech Republic.

Appendix four shows illustrative directional distribution map showing share of gross national income of EU states from the global partnership indicator. The directional distribution map of demographic change indicator (blue) has shifted towards the north-east from the reference directional distribution (black) towards Sweden and Norway. Sweden has a hot spot of 90% confidence which is slightly lower than that of Norway which has a hot spot of 99% confidence of GNI. The Czech Republic, Estonia and Poland are not significant in the GNI index. Czech Republic's neighbor Slovakia shares a cold spot of 99% confidence signifying lower level of values recorded for GNI. Therefore Sweden has a higher level of recorded values than that of Czech Republic, Estonia and Poland.

4.2.8 Sustainable Transport

The issue of sustainable transport concerns building an effective transport system, capable of meeting all economic, social, and environmental needs of society, while minimizing its negative outcomes on economy, environment, and society. The headline indicator for sustainable transport reflects energy consumption by

transport relative to GDP. ***The indicator is calculated as the ratio between GDP and transport energy consumption.*** The measurement covers all types of transport in public, private, and individual use, except for pipeline and maritime transport only. Eurostat indexes the ratio to chain linked volumes, at 2010 exchange rates (2010=100), (Eurostat 2016). The last update of this indicator covers the year 2015, which explains the period taken for the present thesis review from 2000 to 2015.

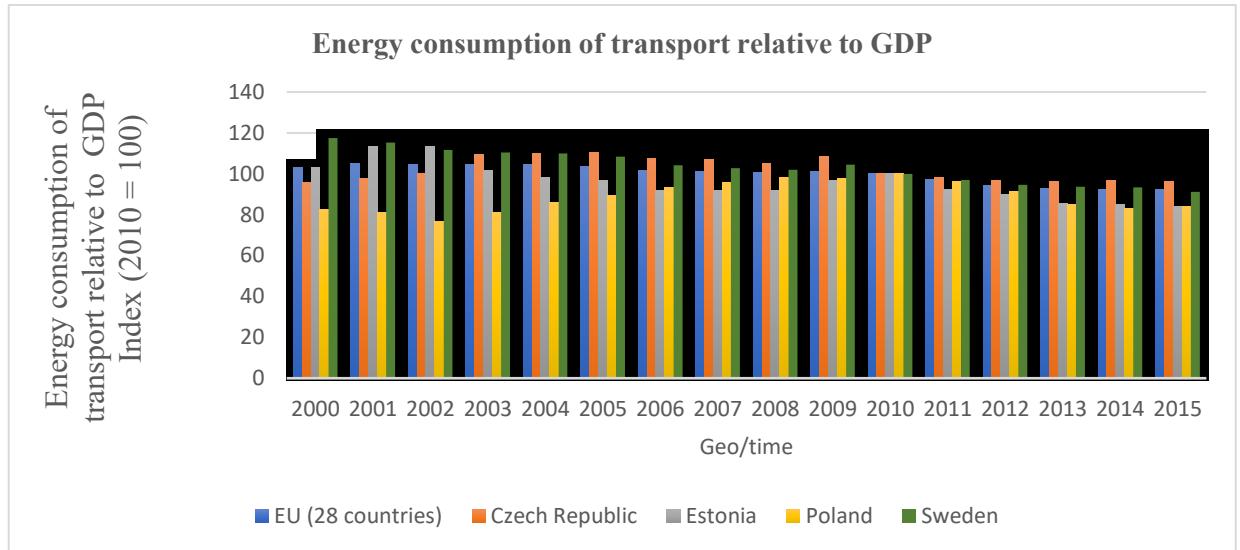


Figure 12: Energy Consumption of Transport Relative to GDP.

Sources: Author based on data from Eurostat (2016).

Figure 12 shows for the selected 15-year period, the Czech Republic and Sweden from year 2000 until 2009 recorded higher energy consumption rate by transport whereas Estonia and Poland from 2000 to 2009 had a reduction in its baseline. In 2010, all four countries recorded 100 GDP index and within 5 consecutive years from 2011, Estonia and Poland has cut down the index up to 84 GDP index from 92 GDP index and 92 GDP index respectively. While the Czech Republic and Sweden has a slight reduction in its baseline index. All four countries reviewed reduced their transport energy consumption per unit of GDP, which shows their commitment to the EU sustainable development strategy by establishment of sustainable transport. ***However, the advantage of Estonia and Sweden was ostensible and pervasive due to their drastic decrease, sustainable transport indicator demonstrates Estonia and Poland as outshining Sweden in reducing energy consumption by its transport system which is unpredicted regarding the***

difference in economic development and the overall development in sustainability structure among these countries.

4.2.9 Natural Resources

Regarding the EU's sustainable development strategy, natural resources appeal to the stipulation of enhancing management and avoiding over-exploitation or ineffective use of natural resources to preserve the world's ecosystem. The **headline indicator** for the natural resources domain is the **common bird index** that aligns population abundance with common bird species' diversity, **excluding rare species**. Interestingly, Eurostat distinguishes 34 common forest species, 39 common farmland species, and other 94 common bird species. Using the common bird monitoring system, the EU determines the general environmental status for each EU country. However, **not all EU member states provide data on their common bird species (Eurostat 2016) including Poland** examined by this thesis. Thus, it seemed impossible to relate Poland in terms of natural resources on the ground of the headline indicator,

Eurostat provides statistics on this biodiversity index with the last update taken for year 2014. The thesis studied sufficiency of selected countries in designing sites under the **EU Habitats directive** for a period 2000-2014.

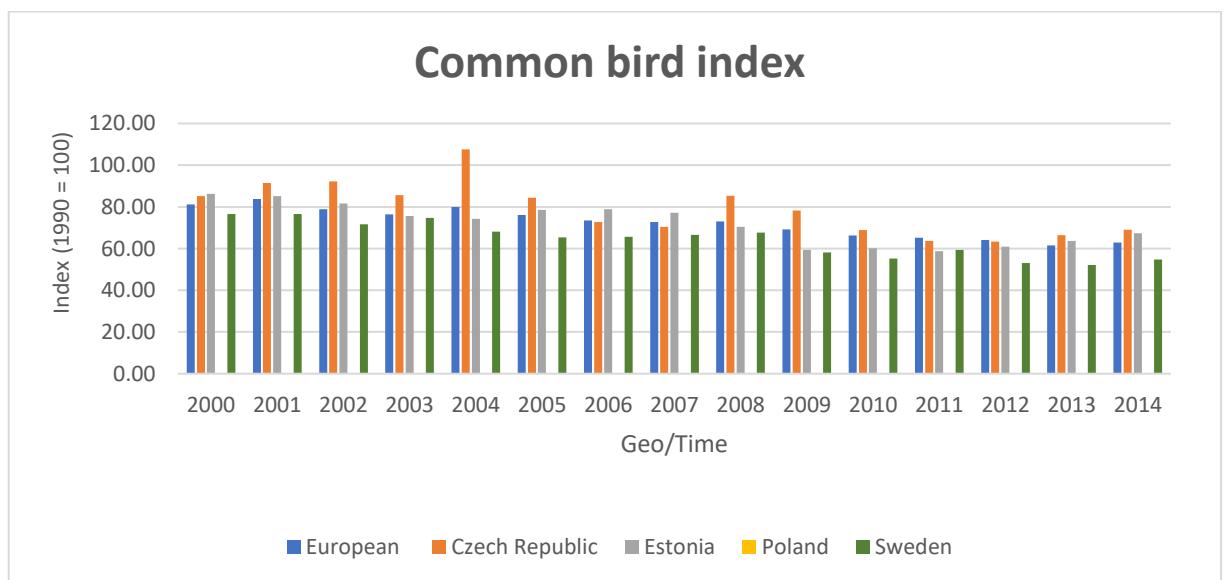


Figure 13: Common farmland species (39 species) in 2016.

Sources: Author based on data from Eurostat (2016).

From 2000-2014, figure 13 shows population abundance and the diversity of a selection of common bird species associated with specific habitats as explained by Eurostat except for rare species. The Czech Republic has a common farmland species (39 species) with higher numbers with specific habitats higher than that of Estonia and Sweden. Eurostat does not have any data for Poland hence makes it difficult to compare their natural habitat with farmland species.

Czech Republic has recorded higher number of bird species even surpassing that of the EU's average which clearly indicates the Czech Republic has more specific habitats with natural environments than the countries compared.

4.2.10 Good Governance

The EU sustainable development strategy distinguishes a good governance objective in the pursuit of coherence between all EU policies as well as local, national, and global effort taken to contribute to sustainable development.

Eurostat does not use a headline indicator to reflect on states' good governance. In its place, the indicator focuses on several ***operational and explanatory indicators*** that address features of policy coherence and effectiveness, openness and participation, economic instruments, and citizens' confidence in EU policies and institutions, (Eurostat 2016). ***Eurostat measures policy coherence and effectiveness through two indexes, such as new infringement cases and transportation deficit.***

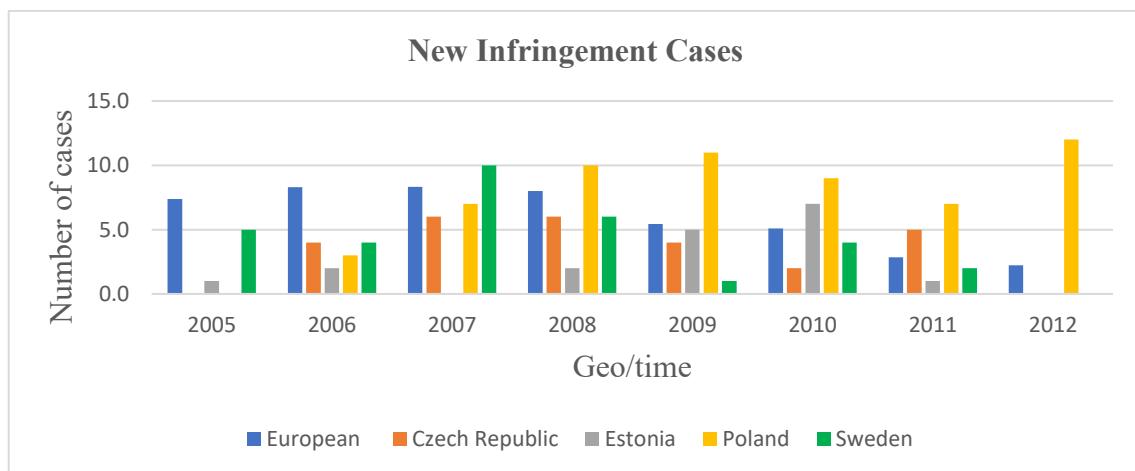


Figure 14: New Infringement Cases in 2012.

Sources: Author based on data from Eurostat (2016).

The Data retrieved from Eurostat covers year 2005 to 2012 and figure 14 shows within the given period, Czech Republic, Estonia and Sweden were subject to only a few direct actions brought before the Court of Justice in regard for its non-fulfilment of the EU membership obligations. Furthermore, the three countries succeeded in its policy-making proved with zero infringement cases recorded in 2012. Contrary, Poland's index increased for the same period from ten in 2008 to 12 infringement cases in 2012. Despite a decrease in 2010 and 2011, the index for 2012 exceeded the baseline amount, signifying poor policy coherence and effectiveness. In comparison with Swedish data for this indicator, the position of Poland is weak and immature.

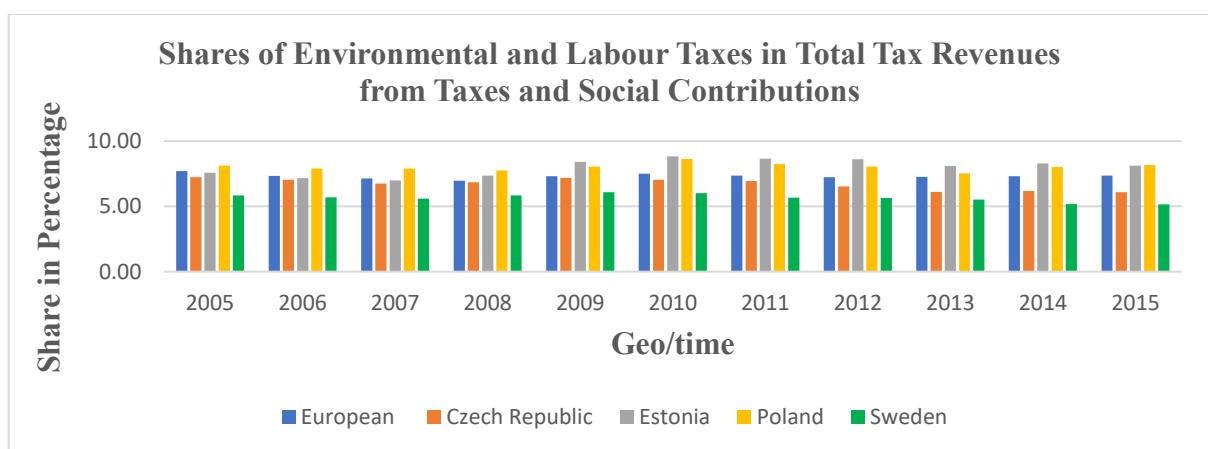


Figure 16: Shares of Environmental and Labor Taxes in Total Tax Revenues from Taxes and Social Contributions in 2015.

Sources: Author based on data from Eurostat (2016).

The openness and participation indicator which Eurostat uses the voter turnout in national land EU parliamentary elections, Eurostat lacks data for most EU countries however, another operational indicator constituting good governance paradigm concerns economic instruments. Its index measures and compares shares of environmental and labor taxes in local tax revenues from taxes and social contributions. With the last Eurostat's update for 2015, this thesis reviewed this index calibrations for 2005-2015. In Sweden, environmental and labor tax shared fell from 6% in 2010 to 5.14% in 2015. In Poland, reduction took place from 8.63 % to 8.17 % for the same period which shares common characteristics

with Estonia with 8.82 % to 8.13 % with the Czech Republic recording 7.03 % to 6.19 % in the same given period. In comparison, Estonia, Czech Republic and Poland demonstrated higher efficiency in generating contributions from environmental and labor taxes to the total tax revenue as compared to Sweden.

5 DISCUSSIONS

Currently, Sustainable development is a global issue with governments of both developed and developing countries paying much concern for use of finite resources, water scarcity, global supply chains, corporate diversity, and adoption of sustainable business models along with regional, national, and international policies (Bilgramy, 2015). In Europe, the multidimensional issue of sustainability is pivotal to ensure states' continuing growth and development in compliance with today's economic needs, while investing in the future through addressing environmental and social concerns (Eurostat, 2016b). Since its formation, the European Union has regarded sustainable development as one of the core objectives with the EU sustainable development strategy adopted in 2001 and updated in 2006 (EU, 2001).

In its commitment to sustainable development, the EU designs, adopts, and continuously enhances its sustainability legislation in support of the corresponding strategy. The Declaration on the Guiding Principles for Sustainable Development and Article 11 of the 2007 Treaty on the Functioning of the European Union constitute the EU legislative framework for sustainable development (Pallemaerts & Azmanova, 2006). Additionally, (Progress Report, 2007) specifically states that, Eurostat is a specially established agency of the European Commission responsible for monitoring states' sustainable performance through ten sustainability indicators and generating regular reports. ***Though united by a combined sustainable development strategy, legislation, and means, EU member states follow different paths in implementing sustainability strategies, policies, and action plans.***

This thesis examined sustainability achievements of four countries – Sweden that represents EU leaders in the field, the Czech Republic and Estonia inside the center range and Poland that is one of the slightest propelled EU states inside sustainable development. On the ground of the Eurostat sustainable indicators, this thesis investigated the advance in sustainable indicators in each domain by each country to compare accomplishments and show the weakest in terms of sustainable indicators in the developing EU states. The results received bolstered the earlier insightful contention that the oldest Member states of the EU were the

first to send the sustainable development methodology in Europe, which empowered their momentum achievement in sustainability legislation, enactment, system, and activities. (Hametner & Steurer, 2007; Ostasiewicz, 2012) argues that, those states admitted to the EU later lack competence and economic wealth of the EU leaders to reach their level of sustainable development.

A precise examination of ten EU-distinguished indicators of sustainability for a period of ten to sixteen illustrated the dominance of Sweden in all sustainability aspects. In the major sustainability indicator – GDP, Sweden appeared as considerably more economically developed state than Czech Republic, Estonia and Poland with 16,400 GDP index, 13,500 GDP index, 11,200 GDP index as at 2016. The inequality in economic resources seems being a baseline for further disparities in sustainability development of the countries compared. Even though Czech Republic, Estonia and Poland displayed a steady increase in its economic growth for the past sixteen years, their recent wealth significantly lags the one of Sweden. The EU sustainable development strategy requires a dynamic economy to be able to generate additional resources in response to social and environmental demands, while fulfilling economic needs of society (Eurostat, 2016a). This implies, socio-economic development of the Czech Republic, Estonia, and Poland remains inadequate to lay a solid foundation for the country's effective performance in sustainability implementation.

Sustainable consumption and production is another gap between the examined countries. The contrast linking Sweden and Czech Republic in terms of PPS indexes measuring total material consumption by domestic economy for year 2015 was 1.85 EUR per kg versus 1.02 which shows a greater ratio and contrary, Estonia and Poland demonstrated EUR per kg, 0.49 EUR per kg and 0.65 EUR per kg respectively which was slightly lower than Sweden and Czech Republic. With this, (Eurostat, 2016a) categorically states that, in line with the EU sustainability development strategy, natural resources require effective utilization to maintain and promote economic growth. This sustainability part in Estonia and Poland needs improvement and alignment with exploitation strategies of the utmost progressive EU states in terms of sustainability development.

Sweden surpassed the Czech Republic, Estonia and Poland in the global partnership indicator which showed failure of the latter countries in terms of sustainability development. The EU sustainability strategy prioritizes harmonization and assistance between states to align their regional and national legislations with the EU vision of sustainable development. In this manner, EU Member states are expected to provide financial and consultancy assistance in the sustainable development of less sustainability sufficient countries. On the ground of the GNI (gross national income) indicator, the thesis discovered the relatively undeveloped domain of official development assistance in Czech Republic, Estonia and Poland with the 0.1% maximum GNI prescribed for the matter. The 1.41% GNI demonstrated by Sweden in 2015 signified the country's commitment and development in supporting less developed EU states in implementing the sustainable development strategy.

Poland has shown a poor response towards sustainable development in good governance domain which comprises of infringement incidence, environmental and labor tax shares, and citizens' confidence in EU institutions. In comparison to Sweden, Czech Republic and Estonia which recorded zero incidence of new infringement cases, (Eurostat, 2016a) states that Poland illustrated a steady increase of direct actions brought before the Court of Justice because of the country's failure to fulfil its obligations of an EU member.

Fascinatingly, *Shares of Environmental and Labour Taxes in Total Tax Revenues from Taxes and Social Contributions* index in **Poland appeared much higher than that of the Czech republic and Sweden, but similar to that of Estonia which signifies the Poland and Estonia has succeeded in generating contributon from envrionmental and labour taxes to the total tax revenue.** There was a failure in positive opinions of their populations in regard for EU institutions in all the four countries. Different ratios for this operational indicator indicated a reduction in the positive image of the EU and its institutions in developed and developing countries of the EU. **However,there inconsistencies in the good governance indicator, preventing the opportunity to generalise data for infringement case, tax shared, and citizens' confidence to define the good governance status for all four countries.**

In terms of social inclusion, Estonia and Poland appeared less effective than the Czech Republic and Sweden in protecting its people from poverty or social exclusion with 24.2 % and 23.4 % in risk versus 14 % and 16. % in 2015. Interestingly, Poland demonstrated a better tendency than Estonia, the Czech Republic and Sweden by recording a sharp decrease of 21 % from 2004 to 2015. For the examined eleven-year period, Czech Republic and Sweden displayed an increase in the number of people at risk of poverty or social exclusion, whiles Estonia and Poland reported the reserve situation by reducing such vulnerability. Though the gap between countries' rates remained significant, the decline-oriented tendency allows claiming the capability of Poland to reach this indicator ratio of Czech Republic and Sweden in the nearest future. (Eurostat, 2016) states that, in accordance with the EU sustainability strategy, Poland is one the right path building a diverse society, while improving the quality of life for its citizens. Within demographic changes, all four countries proved commitment, willingness and a positive tendency in prolonging working years of older workers. Despite the huge disparity in employment ratios, (Eurostat, 2016) opines that Sweden and Estonia recorded 75.5 % and 65.2 % against 46.2 % and 54.6 % from Poland and the Czech Republic, all four countries tend to advance their success in this sustainability aspect, by contributing to building an economically wealthy and diverse society.

The public health domain analyzes indexes for healthy life years and life expectancy for both male and female. Not surprisingly, Estonia, the Czech Republic and demonstrated lower rates of healthy life years of its women as well as life expectancy ratios for both sexes in comparison with Sweden. This means that Czech Republic, Estonia and Poland requires improvement of its legislation and actions concerning promotion of good public health, equal access to health care services, and prevention of threats to health (Eurostat, 2016a). The Czech Republic, Estonia and Poland lacks sufficiency in protecting health of its female and male populations from diseases and other health hazards, thus, prolonging their life. Nevertheless, the Czech Republic, Estonia and Poland proved a steady, but slight increase in its ratios for healthy life years and life expectancy ratios, which allows demanding a certain development in the field of sustainable public health.

All four countries have progressed in climate change and energy was apparent and significant but Poland still lags. All countries reported a substantial reduction in their greenhouse gas emissions. (Dilba et al., 2015) opines that, the EU heavily criticizes Poland for insufficient allocation of EU funds and grants prescribed for the country's sustainability development and environmentally respective function. However, this thesis demonstrated a positive trend in cutting down greenhouse gas emissions for all four countries from 2010 until 2015. However, the achievement of Poland appears insignificant. Nevertheless, the current indexes for this indicator are relatively close, which allows Poland to claim success in this sustainability aspect.

Eurostat, 2016a states that, the EU sustainable development strategy appears to state to reduce their negative impact on the environment and climate through adopting alternative energy consumption approaches and diminishing emissions. Probably, because of a lower economic development or less commitment to sustainability development, Poland consumes primary energy at the twice-higher rate of Sweden and the Czech Republic and fifteen to 20 times that of Estonia. The positive tendency in dropping greenhouse gas emissions did not enable the same progress in terms of primary energy consumption, which constitutes the second dimension of the climate change and energy indicator. Poland lacks capability to use alternative energy resources to minimize the negative impact on the environment and climate.

Sweden has demonstrated advantage over the Czech Republic, Estonia and Poland in all sustainable development domains, Poland has demonstrated commitment and progress in implementing its sustainability strategy even though they are still struggling in some areas. Nevertheless, the Polish PPS index expressing the country's sustainable consumption and production steadily increased during the period 2011-2015, while the same index for Sweden reduced for the same period, although remaining much higher than the one of Poland. The same concerns social inclusion indicator ratio, demographic changes index, and greenhouse gas emissions.

Sustainable transport is the only indicator of the EU sustainable development strategy that demonstrated the advantage of Estonia and Poland and the Czech

Republic over Sweden. For the studied period of 2010-2015, all countries succeeded in reducing its energy consumption ratios by their transport systems relative to GDP. However, Poland's growth in the field outshined the one of Sweden. *This might be interpreted that transitional economy and immature legislation of Poland did not prevent the country from building an effective transportation system, capable of meeting all society's demands, while minimizing negative economic, social, and environmental outcomes of its function (Eurostat, 2016a).*

Particularly, the EU sustainability strategy aims at enhancing management and avoiding over-exploitation of natural resources to recognize and preserve the value of ecosystem services (Eurostat, 2016a). This thesis compared progress of the four countries in this field through *the common bird index associated with specific habitats*. Czech Republic, Estonia and Sweden demonstrated commitment to preserving and efficiently exploiting natural resources but Eurostat showed no data for Poland. In the Czech Republic, Estonia and Sweden, the ratio for sufficiency of sites designated under the EU Habitats directive was high at the baseline of the studied period with a steady decrease for fourteen years reviewed.

In conclusion, comparative analysis of data expressing indexes for ten sustainability indicators for Czech Republic, Estonia, Poland and Sweden showed a significant gap between developing and developed EU Member states. *Briefly speaking, Sweden represents an advanced country in the EU in terms of sustainability and has reported success in implementing its suitability development strategy and reaching positive outcomes. In that light, Poland's progress in sustainability development was insignificant and insufficient whiles the Czech Republic and Estonia are also weak in some indicators but relatively better than that of Poland.*

However, the great gap among states at the starting point may prevent detecting accomplishments of Poland, Czech Republic and Estonia in terms of sustainable transport and designation of sites for habitat. Positive tendency was present in domains of sustainable consumption and production, social inclusion, demographic changes, and greenhouse gas emissions. On this ground, one may claim that Poland realizes the importance of sustainability as a framework

underpinning country's economic development and growth, fulfilment of social needs, and address of environmental concerns.

Despite a relative progress in meeting the EU standard for sustainable development, Poland faces a range of challenges that require consideration and mitigation unlike the Czech Republic, Estonia and Sweden. Poland, Czech Republic and Estonia country requires new approaches and strategies in support of its socio-economic development, sustainable consumption and production, democratic changes, primary energy consumption, global partnership, and good governance (new infringement cases). In the pursuit of better results in these domains of sustainable development, Poland should refer to a positive experience of EU leaders like Sweden. In its turn, Sweden requires reforms of its sustainability strategy and actions to improve social inclusion, forest increment and felling, citizens' confidence in EU institutions, and labor and environmental tax shares. The key point of this discussion is that EU countries should proactively engage in dialogue to align their national and cross-national sustainability policies, strategies, and action and to support one another in the difficult process of sustainable development.

CONCLUSIONS AND RECOMMENDATIONS

Negative manifestations of the climate change caused by human activity invoked an appeal to responsive exploitation of natural resources and the need to address environmental concerns in the pursuit of economic development. Global debates about the importance of balancing economic growth and environmental protection resulted in the multidimensional concept of sustainability. This complex issue implies simultaneous address of social needs, environmental concerns, and economic demands through corresponding policies and institutions. Sustainability is at the core of the strategic vision of the European Union and its legislation that prescribes a road for sustainable development for its Member States. Though being a common strategic development agenda, sustainability is not Europe-wide phenomenon. While EU leaders demonstrate success in implementing the EU sustainable development strategy, developing countries of the Eastern Europe are currently far from the EU sustainability standards.

The disparity in states' progress in developing sustainability invoked the current research interest. Thus, the present study aimed at defining indicators used by the European Commission to measure sustainability of EU Member states, comparing sustainability strategies of developed and developing EU countries, and identifying challenges faced by developing EU states in developing sustainability. In line with the research objectives, the study focused on two EU states, representing the opposite blocs. As one of the leading EU states, Sweden was subject for analysis to illustrate the potential of any European state in terms of sustainability development. Poland represented developing EU states, low-income or transitional economies of which do not provide their governments with necessary resources address all sustainability domains whiles Estonia and the Czech Republic are within the middle range of development.

The in-depth literature review produces a comprehensive perspective on the concept of sustainability and its role in the global agenda for strategic, but environmentally responsive development. Backed by the global sustainability concern, the EU recognizes sustainability as one of the pillars of the modern business model and legislation. Indeed, the EU promotes and encourages sustainability development among its Member states through the corresponding resolutions of the European Council, sustainability measurement of the European

Commission, and monitoring reports of the Eurostat. The EU vision of sustainable development distinguishes ten major sustainability domains on the group of over 130 sustainability indicators. A set of ten key sustainable development indicators constitutes the overall EU strategy for sustainable development.

In the pursuit of sustainability, the EU prioritizes socioeconomic development to build an innovative, knowledge-driven, eco-efficient economy that provides high-quality employment and living standards, while valuing ecosystem services throughout the European Union. Sustainable consumption and production pursued efficient utilization of resources by economy to ensure decoupling between resources' use and economic growth. Social inclusion objective aims at promoting solidarity in society and between generations, social equality, and sufficient living. Demographic changes' pursuit supports the strategy of improving the quality of life by prolonging one's working life and the capability to earn for a decent living. Public health strategy serves to promote public health through equal access to health care service and effective prevention of threats to health.

Climate change and energy indicator seeks to reduce climate change and negative social and environmental outcomes of human activity. In support of the climate change limitation, sustainable transport aims at minimizing negative economic, social, and environmental impacts of a transport system, while meeting society's needs. Natural resources objective promotes effective management and exploitation of natural resources to eliminate their irrational or over-exploitation. Global partnership appeals to the unity, cooperation, and coordination between states in aligning their national sustainability legislations with one another and the EU standard to build a global shared vision. Finally, good governance strategy promotes coherence between EU policies and national sustainability policies to enable each state's contribution to sustainable development.

Relying on the ten-indicator framework of the EU sustainable development strategy, this research investigated and compared experiences of four selected countries in the EU regarding sustainable development to observe and define differences between developed and developing EU states. On the ground of Eurostat official record for states' annual progress in sustainable development, the present research provided factual evidence to the argument of the sustainability

advancement of developed EU states in comparison to their developing counterparts. Tremendous gaps in ratios for socioeconomic development, sustainable consumption and production, demographic changes, global partnership, primary energy consumption within climate change and energy, new infringement cases within good governance illustrates Poland's lagging behind EU leaders in these sustainability domains.

The detected disparity in all sustainable development indicators indicates the importance of reforming implementation strategies and tactics of developing EU states like Poland in compliance with relatively successful experiences of highly sustainable EU countries like Sweden. Despite the prevailing advancement of Sweden, Estonia and the Czech Republic, in implementing the EU sustainable development vision and strategy, this study revealed some shortages of the developed countries' approach as well. Sweden, Czech Republic and Estonia needs improvement initiatives and solutions in regard for its social inclusion, sustainable transport, forest increment and felling within natural resources, and citizens' confidence and shared of environmental and labor taxes' ratios. In addition, the research discovered gaps in the Eurostat reporting system that challenged analysis of states' achievement in some sustainability indicators, notably natural resources and good governance indicators.

6.1 Recommendations for Practice

The thesis provided evidence to the imperfection of the EU sustainable development agenda. The executed comparative case study investigated achievements in sustainable development of developed and developing EU states on the examples of Sweden, Estonia, the Czech Republic and Poland to identify gaps and shortages in sustainability strategies of both the most and least advanced EU countries in terms of sustainability outreach. Thus, sustainability improvement is subject to all EU states. ***The European Union requires adoption of new approaches and initiatives to promote communication, knowledge sharing, and coordination between all EU states.*** The environment of mutual assistance and cooperation is essential for the alignment of national sustainability strategies with the EU standard and development of effective implementation tactics to succeed in the field.

Considering the huge baseline gap between developed and developing EU states, it seems rational for the EU to develop two different roadmaps for sustainable development. Developing EU countries lack resources and social advancement to reach sustainability levels of developed countries at once. Thus, they require financial, legislative, and subject-matter assistance from the leading EU states to boost their economic growth, social advancements, and environmental protection. Falling ratios for some sustainability indicators discovered for Sweden, Czech Republic and Estonia indicate the importance to review and update the sustainable development strategy for the EU. The ongoing expansion of the EU and emergence of new powers affects the states' sustainable development. While sharing their experiences in sustainable development, developed states should appreciate and consider lessons of their less sustainability advanced EU members.

Apart from increased cooperation and coordination between EU states in terms of sustainable development, the EU sustainability system requires enhancement of reporting. In search for data for cross-nation comparative analysis, the researcher faced the difficulty in building a perceptive on states' progress in natural resources and good governance objective fulfilment. The prevailing amount of EU states does not provide data for the natural resources headline indicator as well as ignoring reporting on some operational indicators. In the absence of a headline indicator for good governance, the Eurostat database lacks data for some operational and contextual indicators, which eliminated the possibility of creating a consistent and complete picture on this sustainability domain. Thus, sustainability reporting procedures require concern and improvement to increase visibility of states' progress in sustainable development.

6.2 Recommendations for Further Research

This comparative case study provided evidence to the disparities in implementing the EU sustainable development strategy by developed and developing EU countries on the examples of the Czech Republic, Estonia, Poland and Sweden. Relying on country-focused Eurostat data, the research outlined general trends and differences in sustainable development in EU. To explain success of Sweden sustainability domains as well as relative success the Czech Republic, Estonia and Poland in other sustainability indicators, it is crucial to conduct an in-depth research of the national legislations of these states in regard for sustainability. The

approach is likely to indicate actual approaches, methods, and means of improving state's sustainability based on a successful example of another EU state.

In addition, further research is required to address sustainability experiences of other EU states to produce more plausible generalizations for developed and developing EU states. In other words, it is relevant to study common trends and features of sustainable development for several developed and developing states. Such research may improve awareness and understanding of the sustainability challenges currently experienced by less developed states, which may in turn help to overcome those barriers systemically, through their examination and targeted development of interventions.

Finally, *it is vital to perform a longitudinal in-depth study of policies' implementation and change towards sustainability*. Even if the unit of analysis is one country, such a study may be very valuable for the overall field of sustainability research, as longitudinal studies are rarely performed in this field. About such a methodological gap, it is recommended to research policy changes and measures' implementation for improvement of sustainability compliance as a part of the national sustainability strategy. Such a case study may become a vital lesson and guidance for other countries' practical transfer to better sustainability practices and integration of sustainability principles into their daily functioning.

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Appendix 1: A correlation between the MDGs and the SDGs.

MDGs	Proposed SDGs
<ol style="list-style-type: none"> 1. Eradicate extreme poverty and hunger 2. Achieve universal primary education 3. Promote gender equality and empower women 4. Reduce child mortality 5. Improve maternal health 6. Combat HIV/AIDS, malaria and other diseases 7. Ensure environmental sustainability 8. Develop a global partnership for development 	<p><i>Goal 1: End poverty in all its forms everywhere</i></p> <p><i>Goal 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture</i></p> <p><i>Goal 3: Ensure healthy lives and promote well-being for all at all ages</i></p> <p><i>Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all</i></p> <p><i>Goal 5: Achieve gender equality and empower all women and girls</i></p> <p><i>Goal 6: Ensure availability and sustainable management of water and sanitation for all</i></p> <p><i>Goal 7: Ensure access to affordable, reliable, sustainable, and modern energy for all</i></p> <p><i>Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all</i></p>

	<p><i>Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</i></p> <p><i>Goal 10: Reduce inequality within and among countries</i></p> <p><i>Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable</i></p> <p><i>Goal 12: Ensure sustainable consumption and production patterns</i></p> <p><i>Goal 13: Take urgent action to combat climate change and its impacts</i></p> <p><i>Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development</i></p> <p><i>Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</i></p> <p><i>Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for</i></p>
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	<p><i>all and build effective, accountable and inclusive institutions at all levels</i></p> <p><i>Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development</i></p>
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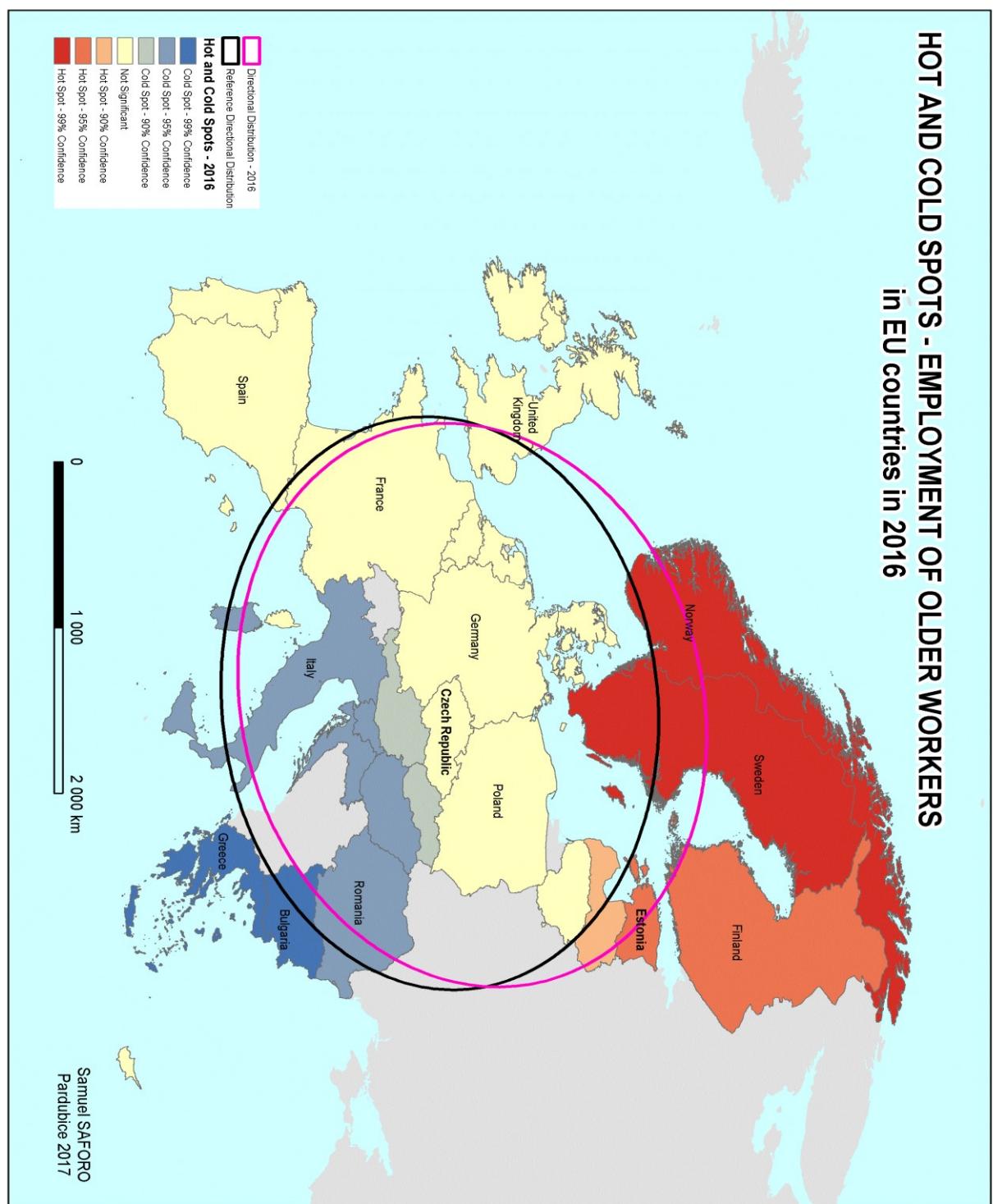
Sources: European Sustainable Development Network (ESDN) Quarterly Report No.35, 2005

Appendix 2: Eurostat (2007) Study Report on European Union Countries.

Country	Number of Indicators	Data Source
Austria	95	Ministerial Council
Belgium	45	Federal Progress Report
Czech Republic	36	Progress Report
Denmark	119	NSDS
Estonia	95	Indicator Report
Finland	35	NSDS
France	12	NSDS
Germany	28	Indicator Report
Greece	70	2003 Report
Iceland	56	NSDS
Ireland	36	2002 Report
Latvia	187	2003 Report
Lithuania	75	NSDS
Luxembourg	27	2006 Indicator Report
Malta	24	NSDS
Netherlands	32	2004 Report
Norway	16	2005 Report
Portugal	125	NSDS
Romania	12	NSDS
Slovakia	71	NSDS
Slovenia	71	Development Report
Spain	74	NSDS
Sweden	91	NSDS
Switzerland	163	Indicator Report
United Kingdom	147	Indicator Report

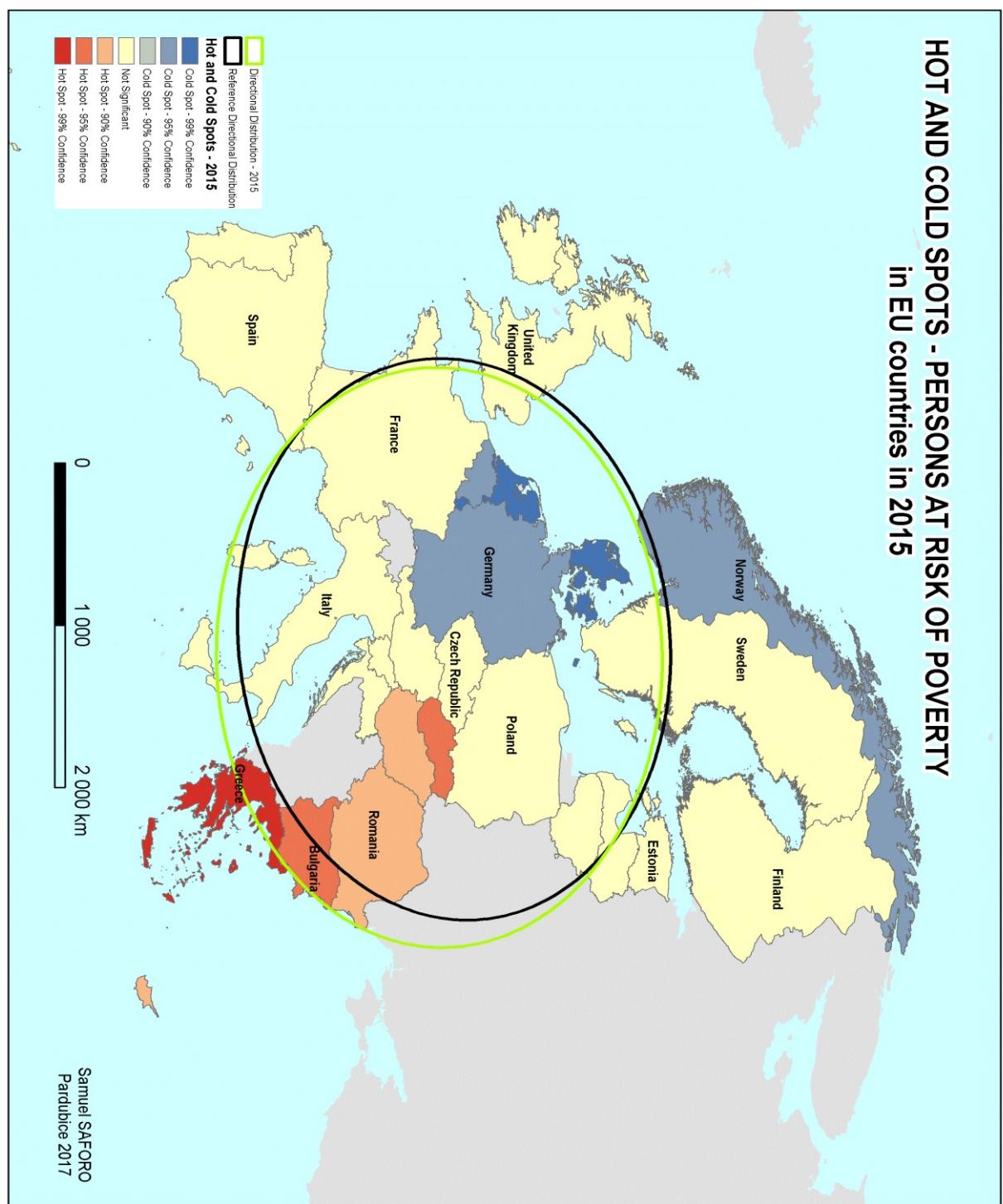
Sources: (WGSSD 2008, p.31).

Appendix 3: Directional distribution showing Employment of older workers of EU states in 2016.



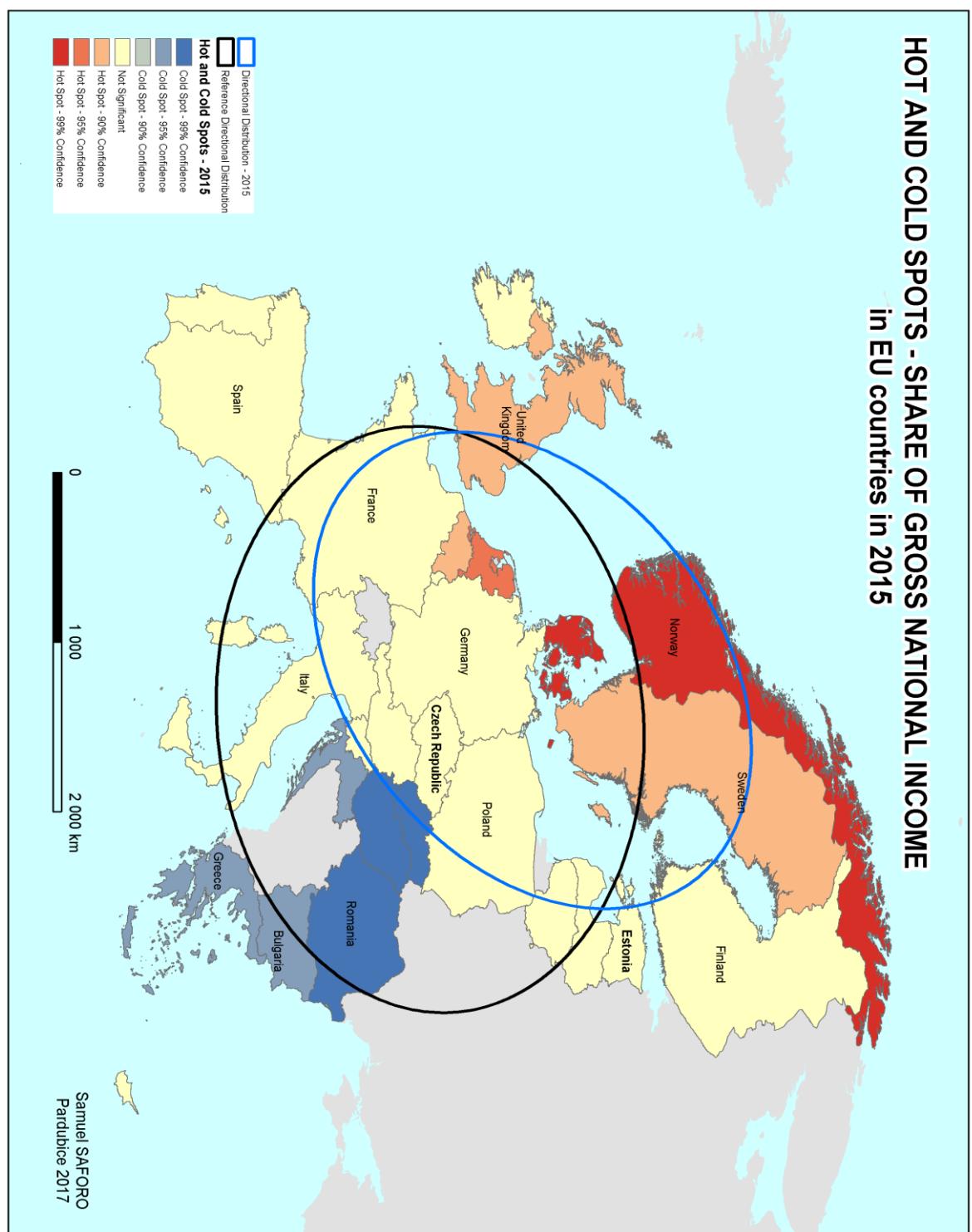
Sources: Author based on data from Eurostat (2016).

Appendix 4: Directional distribution of Persons at Risk of poverty in EU countries in 2015.



Sources: Author based on data from Eurostat (2016).

Appendix 5: Directional distribution showing share of gross national income of EU states in 2015.



Sources: Author based on data from Eurostat (2016).