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INFLUENCE OF VALUES ON ENVIRONMENTAL PERFORMANCE IN DEVELOPED ECONOMIES

How influential are values on environmental performance in countries with higher economic development?

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ABSTRACT

Environmental problems have become a more and more important topic in the political science research. In order to stop exploiting natural resources and worsening living conditions, an answer to what is needed for improving environmental performance needs to be found. This master's thesis focuses on how environmental performance is influenced by pro-environmental values in countries with higher economic performance. Literature review shows that only specific values, such as biospheric and liberal values, have more influence on pro-environmental behaviour. However, pro-environmental values can show their influence only in countries with higher economic development. This is first theoretically discussed with the Schwartz's theory of basic values and post-materialist theory. The aim of this master's thesis is to get an answer whether pro-environmental values can be considered as a plausible explanation for environmental performance in countries with higher economic development. Hypothesis that guides this analysis is that *in countries with higher economical development it is likely to expect that pro-environmental values will have high and positive influence on environmental performance*. Statistical analysis using ordinary least squares (OLS) multivariate linear regression showed different results than put forth by the theoretical discussion and thus the hypothesis was rejected. This could indicate that pro-environmental values could not be found as an influential factor for environmental performance in countries with higher economic development. This analysis leaves room and potential for future research to find a much-needed plausible explanation and later possible solution for current environmental problems.

CONTENTS

1. INTRODUCTION

Human behaviour has been heavily harming the environment. People have shaped the planet to suit their comfort and perceived needs. 'They have very heavily exploited many of the world's natural resources, pushed aside other species and left the by-products of their efforts to improve their lifestyles in oceans, lakes, rivers and landfills around the world, on the highest mountains, and in the air' (Nilsson and Gifford 2014, 141). This trend of environmental exploitation has been increasing in the recent decades and heavily gained on the importance. Politicians and researches have been trying to make plans how to stop misusing the environment and start taking active care for the environment, while giving high environmental performance higher importance.

'Despite dozens of international conferences and growing urgency, most comprehensive and binding plans to address climate change have remained elusive'. (Running 2012, 20). There remains a question what needs to be more researched for people to behave environmentally friendly and help protecting environment. To find a solution for achieving higher environmental performance, many possible alternatives have been proposed, including a variety of theories, policies and interventions. Moreover, several attempts have been made to describe the categories of factors that result in pro-environmental behaviour or the lack thereof (Nilsson and Gifford 2014, 141). However, given the range of possible explanations, determining what factors may be associated with higher levels of national environmental performance is a challenge. Until now it is among the explanations possible to find nation´s level of development and economic structure, aspects of its political institutions, its technical and scientific capabilities, characteristics of civil society, its natural endowments and resources, and international commitments (Fioriono 2011, 368).

In the past, research on that topic put focus mainly on the economic and legal aspects of the problem and how to solve problems in connection to that, although individuals have also been considered as part of the researches which is seen in the development of environmental psychology, sociology, political science and behavioural economic theories, which put focus on the individual level. Some authors have argued that environmental research should develop better understanding of what drives concern for climate change at different levels of economic

development and be guided by the concerns of all people rather than just the well-represented few (*ibid.*). Human behaviour and what is behind the latter should be more researched if higher environmental performance is to be achieved. It is nevertheless to human behaviour that some authors give the most contribution for climate change. As Geller (1995, 184) states, 'human behaviour contributes significantly to the degradation of our environment, and certain changes in human behaviour can contribute significantly to environmental protection'. Furthermore, authors claim that pollution caused by human activities is an imminent threat to the environment (Nilsson *et al.* 2016, 176). Therefore, in the environmental debate it would be important to research human behaviour.

People choose their behaviour according to the values that they share (Fraj and Martinez 2004, 134). 'Values are considered as the criterion that individuals use to select and justify their actions and to value objects and the other's conducts' (*ibid.*). People's values play a key role in economic development, the emergence and flourishing of democratic institutions and the extent to which societies have effective government. One of its characteristic is however also that they can change in different circumstances, for example in response to different socio-economic conditions.

The aim of this research is to try to find a possible understanding of global environmental problems[1] while researching the importance of values for pro-environmental behaviour. It is supposed to find out whether people follow environmental standards because of their values, focusing on economic development as an important factor. This is important because 'if we can understand why some countries are more successful at controlling air or water pollution, more efficient in use of energy or water, or more effective in protecting habitat, we may be able to know exactly which factors associated with environmental success need to be improved and on which failures should people take care on' (Fioriono 2011, 368).

Research question that is going to guide me in my research is as follows.

[1] Environmental problems are here meant as general environmental problems and not any specific environmental problem.

'How influential are values on environmental performance in countries with higher economic development'

Thesis is organized as following. Firstly, I will look at the literature that has examined connection between the values and pro-environmental behaviour and environmental performance and to what conclusions have authors until now come up with, based on which I will identify gap that would emerge from the literature review. Secondly, in the theoretical discussion, I will describe theories that will guide me in forming hypotheses and define key concepts used in this study. After these two part I will, based on the hypotheses, present a statistical methodological design, conduct an analysis, provide results and discuss the limitations of my study. The paper will conclude with summing up all the previous parts and provide intentions for the future research.

2. REVIEW OF EXISTING LITERATURE

'In the last decades, attention has been given to the role of values in motivating pro-environmental behaviour to promote collectively beneficial decision making' (Karp 1996, 112). The aforementioned author is not the only one that has in the last decades given special attention to the values, while researching which factor has the most influence on pro-environmental behaviour. Stern (1992 in Karp 1996, 12)[2] has also identified multiple factors that influence pro-environmental behaviour, with attitudes and values playing a significant role in his psychological research on environmental behaviour. In this section I will in more detail present to what conclusions have different authors come up with in their research on influence of values on environmental behaviour. Based on the previous research I will be able to see where the gap in the current literature is.

While going through the literature until now it is possible to see in many cases that values affect environmental behaviour in different ways. Some authors have marked that with researching which values are best to have to obey the law, such as environmental law, and therefore behave pro-environmentally. Nilsson *et. al.* (2016) are one of those that have researched this very topic. They concluded that people differ in their environmental behaviour based on what kind of values define them. Namely, there is a difference whether people have egoistic value orientation or biospheric value orientation. It is assumed that people with strong biospheric values orientation[3] will be more persuaded with political arguments that stress environmental concern such as protecting the environment, unity with nature and respecting the earth and will behave more environmentally friendly (Nilsson *et al.* 2016, 177−8). While on the other side, people who share more egoistic values[4] are more influenced by arguments emphasizing personal and general benefits and will therefore not have behaving pro-environmentally as their first priority (Nilsson *et al.* 2016, 178). Nilsson *et al.* (2016) have showed support for their points stating

[2] Stern, P. C. 1992. Psychological Dimensions of Global Environmental Change. *Annual Review of Psychology* 43: 269 – 302. In Karp (1996, 112).

[3] Biospheric values share those people who more strongly base their decisions to engage in particular actions on the consequences of their behaviour for nature and the environment (Wreff and Keizer 2013, 56).

[4] People with an egoistic value orientation will especially consider costs and benefits of environmental significant behaviour for them personally and will have an environmentally friendly intention when perceived benefits exceed the perceived costs (de Groot and Steg 2008, 333).

that people mostly obey the law, such as environmental law, when arguments for obeying it are focusing on industrial applications or economic growth since they value that more than values associated with environmental health. There are people sharing biospheric values that believe in the last-mentioned values and therefore behave more environmentally friendly than those mentioned firstly. This research supported that values have a positive influence on obeying the law and pro-environmental behaviour, however the latter is not true in all cases. According to that research, a person has to believe in such values that promote pro-environmental behaviour. This is saying that values can also lead to negative influence on environmentally behaviour in cases where people share values not compatible with such behaviour. I will discuss more about negative influence later in the text.

Fraj and Martinez (2004) have also done similar research and presented which values are those that best explain some ecological behaviour patterns. In order to expect from a person to behave environmentally friendly, it is most likely that a person will share liberal values, live moderate lifestyle and could be described with values such as self-respect, self-fulfilment and respect to others as those that were most determinant (Fraj and Martinez 2004, 134). Such persons have ecologic lifestyle, recycle products and take part in events to protect the environment (Fraj and Martinez 2004, 141). 'Moreover, they found that the more important enthusiasm and enjoyment values were, the more important this kind of ecological conduct would be (Fraj and Martinez 2004, 134). On the contrary, there are values connected to power achievement and close to self-enhancement dimension. People who have beliefs close to such values are negatively related to an environmental action *(ibid.*). From this article it can be seen that research until now has been focusing on finding out characteristic of particular consumers. In the research it has been important to find out what values and lifestyles best explain environmentally friendly behaviour in order to be able to describe what constitutes the ecological consumer profile of people. A similar line of thinking can be found in Dobson (2003 in Harring and Jagers 2013, 212)[5] who argues 'that people adapt more pro-environmental behaviour due to fundamental changes in their personal values and beliefs'. All this has showed how values have been presented in person's lifestyle and behaviour.

[5] Dobson, A. 2003. *Citzenship and the Environment*. Oxford University Press: Oxford, UK. In Harring and Jagers (2013, 212).

On the other hand, there exists a literature that basically presents how values are used in climate impacts and adaptation research. Tschakert *et al.* (2017) present in their article such views. Academic research has in the recent decades changed environmental debate from financial and economic point of view to more personal aspects. 'What people value in their daily lives and what they deem worth preserving in the face of climate change' has become increasingly more important than what economic consequences environmental problems have (Tschakert *et al.* 2017, 2). Such perspective has redirected 'the core of the valuation debate from biophysical and financial assessments toward people-place relationships and grounded understandings of what losses matter and to whom' (*ibid.*). The role of values in the field of climate risk perception has been well established and there are at least five different ways in which the term values is used in environmental research (Tschakert *et al.*2017, 5). Those that have until now in the literature showed most support for being influential on the environmental behaviour are understanding of values through psychology lens and human geography perspective (*ibid.*). According to the first one, values are an important source of motivation and are closely related to worldviews and behaviour, which has been proven in some value-based adaptation studies done in Norway and Canada presented in Tschakert *et al.* (2017,5). 'Held values are typically considered relatively stable but change across people's lifespan and in response to different conditions and traumatic experiences (*ibid.*). Based on the previous studies presented in the same article it can be said that based on environmental conditions in a country, people can change their values and adapt their behaviour. According to the human geography perspective presented in the literature, values influence (environmental) behaviour because values can be seen in valuations that individuals make every day about what is important in their lives and the places they live in, which are articulated verbally or expressed through everyday activities (Graham *et al.* 2013 in Tschaker *et al.* 2017, 5)[6]. Therefore, it can be said that environmental research has not only recognized values as an important factor for environmental problems but has also recognized different aspects of values that have been proven to be influential on environmental behaviour in the literature so far. Values serve as a basic guideline for the formation of attitudes and behaviour (Vlek *et al.* 2004, 71).

[6] Graham S, Barnett J, Fincher R, Hurlimann A, Mortreux C, Waters E. 2013. The social values at risk from sea-level rise. *Environmental Impact Assess Review* 2013 41: 45–52. In Tschakert *et al.* (2017, 5).

In several studies has been shown that values have contributed to different aspects of environmental behaviour and have influenced different environmental spheres of interest. 'It is relevant to differentiate between several types of environmental behaviour' because they are related to different types of variables such as impact-oriented measures that directly influence environmental qualities (like home and transport use) and intent-oriented measures that indirectly affect the environment (like support for governmental and market policies) (Vlek *et al.* 2004, 87). Karp (1996) has in his study demonstrated that Schwarz's values were significantly correlated to various self-reported behaviours such as recycling behaviour, consumer behaviour, and political behaviours related to protection of the environment. Some more studies such as the one from Dunlap *et al.* (1983) have even before showed that values are related to recycling behaviour; and to people's willingness to act to protect the environment (Stern and Dietz 1994). Values could also significantly contribute to the explanation of activist's work as well as various nonactivist environmental behaviours such as consumer behaviour, policy acceptance of environmental behaviour and feelings about environmental citizenship (Stern *et al.* 1999). Only from the brief look from different studies can be concluded that authors have in the research until now given high importance to values while looking in detailed behaviour as their consequence. Though more research has been done on general environmental behaviour.

Detailed explanation on how values influence general environmental behaviour is described in Stern's own hierarchical model which examines the relationship between values and environmental behaviour (Stern *et al.* 1995). 'In this model, environmental behaviour is linked to values through a casual chain of intermediate variables' (Vlek *et al.* 2004, 72). In this model, values are represented as filters for new information so that attitudes and beliefs (like concern about specific environmental problems or attitudes toward certain behaviour, such as recycling and using public transport) are more likely to emerge. As a consequence, these specific attitudes and beliefs determine whether people will behave environmentally friendly or not. As such values become situation-transcending belief and motivators for behaviour (*ibid.*). They influence how are people likely to believe.

However, influence of values on environmental behaviour have not been studied only from the perspective of pure values but research has also focused on concepts that are influenced by values. Self-identity has been one of them. It has been likely influenced especially by previous mentioned biospheric values (Werff *et al.* 2013, 56). 'For example, if you think protecting the environment is a guiding principle in your life, you are likely to think that you should act upon your values and to see yourself as a person who acts environmentally friendly' (*ibid.*). Studies that have researched environmental self-identity, defined as the extent to which people see themselves as the type of person who performs particular environmental behaviour, found support in positive statistical correlation between self-identity and environmental behaviour since specific self-identities indeed predicted the expected behaviours (*ibid.*). Such examples of studies in the literature by now are a study where recycling self-identity appeared to be related to recycling behaviour (Nigbur *et al.* 2010), a study where general environmental activism self-identity was related to environmental activism (Fielding *et al.* 2008) and the one concerning food where it was found that people with genetically modified food self-identity were found to be related to the intention to purchase genetically modified food (Cook *et al.* 2002). These researches, similarly to some presented before, showed that researchers have seen the influence of values on many different life aspects and that there are not only basic values but also concepts that have been influenced by values that are showing the importance of values in the environmental research.

Mostly all researches that I have presented until now have showed positive correlations between values on one side and environmental behaviour on the other side. However, in the literature it is possible to mark also some that have proven the opposite and showed that it is not necessarily true to see positive influence between these two variables. Some researchers have proven exactly the opposite of the usual. Homer and Kahle (1988 in Fraj and Martinez 2004, 132)[7] have in their study proved that externally oriented values such as sense of property, self- respect and safety are negatively related to some favourable attitudes towards ecological consumption. It has been found that the relationship between values and the adoption of sustainable behaviour

[7] Beatty, S. E., Homer, P. M. and Kahle, L. R. 1988. Problems with VALS in international marketing research: an example from an application of the empirical mirror technique. *Advances in Consumer Research* 15 375−80. In Fraj and Martinez (2004, 132).

patterns is not so significant when values reflected power aspects, such as self-enhancement (Fraj and Martinez 2004, 132). Therefore, I can say that it depends on what kind of values is research done and it cannot be expected that environmental behaviour is going to be evident in all cases. Moreover, some research concluded that values are too narrow concept to be able to predict (environmental) behaviour of people only with them.

Many authors have tried to explain that looking only at the values, though they are an important factor, is definitely too narrow. It cannot be stated that having strong pro-environmental orientation is the only thing needed to overcome environmental collective action problem (Harring and Jagers 2013, 213). What brings the latter to the question is the fact that there has been demonstrated that there are truly environmentally conscious individuals who nevertheless refuse to accept many pro-environmental policy instruments (Harring and Jagers 2013, 213−4). People who otherwise do not share environmental values can on the side demonstrate both strong pro-environmental behaviour and willingness to accept pro-environmental policy measures (Harring and Jagers 2013, 214). 'Thus, the fact that I may have strong green empathies and concerns is no guarantee that I am willing to accept political initiatives aimed at improving the environment' (*ibid.*). Vlek *et al.* (2004) have done a research on values and environmental behaviour and concluded that using only values, may be too limited to explain all types of environmental behaviour. As it has been said, there exist several different types of environmental behaviour. More specifically, it has been proven that environmental awareness and environmental behaviour defined from an impact-oriented perspective cannot be explained with values (Vlek *et al.* 2004, 88−9). Such environmental behaviours are home and transport energy usage (*ibid.*). More than values are for those aspects influential sociodemographic factors such as household size and income (*ibid.*). While examining current literature on values in environmental debate it is possible to see that values are influential factor, however there are also other factors that have significant influence.

As has the last-mentioned article already indicated are sociodemographic variables, such as income status, an important factor while examining value's importance on environmental behaviour. In the literature is possible to find even more support for the last statement. 'The subjective values explanation receives more support, particularly in countries at the most

advanced stage of economic development' (Running 2012, 1). That is saying that it has to be considered in which stage of economic development a country is to correctly see which values receive most support in explaining environmental behaviour. According to some scholars (Guha and Martinez-Alier 1997 in Running 2012, 3)[8], economic inequality is fundamental for both how environmental problems are understood and valued. Another author that underlines such statement is Tschakert (2017, 5) when exposing that held values are typically considered relatively stable but do change across people's lifespan and in response to socioeconomic conditions. In other words, values can be changed based on the economic development of their country. Apart from values, or even better, together with values, is including more variables than only values enriching the results and understanding on what factors have influence on environmental behaviour.

To sum up what has been researched regarding influence of values on environmental behaviour, I can conclude this part with different interesting points. Literature has until now presented which values are needed for people to behave as striving to higher environmental performance in a country and divided values into biospheric and egoistic values while presenting also liberal values and explaining that people having such are those that most behave pro-environmentally. Furthermore, there is research that has examined how values have been used in environmental research and showed that the academic debate has turned from looking at the economic aspects of climate change to more personal levels such as values of individuals. It is possible to discern different behavioural practices that are influenced by values, from how people vote with regards to environmental policies and whether people rather choose to drive a bicycle or travel with a car. Until now there has been made some models that link values and environmental behaviour like Stern's own model. Values influence different concepts like self-identity which can have influence on how people behave. However, in the literature has been also discovered that values can also have negative influence on behaviour, especially when people have externally oriented values. While going through the research dealing with values and environment, the literature leads to the finding that it is too narrow to look only at the values since there are also other factors that influence environmental performance such as socio-economic conditions in a

[8] Guha, R. and Martinez-Alier, J. 1997. *Varieties of environmentalism: Essays north and south*. London: Earthscan. In Running (2012, 3).

country. Therefore, have I in the literature review presented also the views on the influence of economic development on environmental behaviour and consequently environmental performance.

Until now have authors researched different aspects of the connection between values influence and environment. Nevertheless, there can still be found some points that have been forgotten or under-researched. I can identify the following shortcomings of the present literature and the gap that stems from it. Authors have until now recognized different types of values and considered them as one variable - pro-environmental values. But they have mostly researched its influence on one specific environmental behaviour, for example use of public transport, and did not consider it as one aggregate variable. Secondly, I have not come across a study that would analyse the influence of pro-environmental values only in higher income countries, which gives a new aspect to the existing research. According to the presented gap I will formulate hypotheses of this research which I will present right after the description of the theories that are going to be used.

3. THEORETHICAL DISCUSSION

In this section I will in more detail present theories on which this research is based on. These are Schwartz's theory of basic values which explains how values are connected to the environment, and post-materialist theory which is explaining how environmental performance differs regarding different economic standards analysed together with values. In the theoretical part, definitions of main concepts are also going to be described in detail. Described theories are later going to help me to build hypothesis.

Here I should note that I am aware of other theories in the literature such as The Big Five personality factors including openness to experience, conscientiousness, extraversion, agreeableness and emotional stability. They represent much of the normal personality domain and some of them (openness) have showed support for being related to pro-environmental activities and associated with pro-environmental behaviour (Nilsson and Gifford 2014, 143). However, this theory is not so broad as Schwartz's theory of basic values which takes into consideration broader range of values and explores how is each value connected to environmental performance.

Let me now first begin with describing Schwartz's theory of basic values and its main characteristics and connections to (environmental) values. According to Schwartz is explaining social science with values the most central and crucial concept.

'*Values have been a central concept in the social science since their inception. /.../ They are used to characterize cultural groups, societies, and individuals, to trace change over time, and to explain the motivational bases of attitudes and behaviour.*' *(Schwartz 2012, 3). 'Personal values convey what is important to us in our lives. Each person holds numerous values with varying degree of importance since a particular value may be important to one person but unimportant to another (Bardi and Schwartz 2003, 1208).*

Values have been easily defined as what people think is important in life to them (*ibid.*). People have values according to what they feel is important in their life. According to the value theory

is a conception of values specified by six main features of values. As a belief they are inextricably linked to affect, transcend specific actions and situations, serve as standard or criteria, guide action according to the relative importance of multiple values as they are ordered by importance and refer to desirable goal (Schwartz 2012, 3−4). For example, according to the last characteristic, people who value social order, justice and helpfulness as important are motivated to pursue these goals (Schwartz 2012, 3). 'Values influence action when they are relevant in the context (hence likely to be activated) and important to the actor.' As it is clear, values provoke behaviour. For that to happen are important two mechanisms (Schwartz 2012, 14). First, values have a function of a server with internalized guides for individuals (*ibid.*). Second, values are invoked by people to define particular behaviours as socially appropriate, to justify their demands on others, and to elicit desired behaviours (*ibid.*). To present it shortly, 'values are critical motivators of behaviours and attitudes.' (Schwartz 2012, 17). In Schwartz's theory values are two motivational dimensions, which are openness to change versus conservation and self-enhancement versus self-transcendence (Nilsson and Gifford 2014, 144). The latter dimension taps the tendency to enhance one 's own interest versus the extent to which one transcends selfish concerns to promote the welfare of others and nature (*ibid.*). This dimension has been associated with environmental concern because it is saying that in this dimension people are more concerned about the nature than for their selfish needs.

This has been the general presentation of values theory, in the next paragraph I will present how is this theory connected to environment, that is how are values influencing environmental behaviour based on the predispositions of the theory.

Whether a person is going to behave pro-environmentally and with that help to increase higher environmental performance of a country it depends on the sort of values that a person holds. For example, a person which is more people-oriented and less authoritarian, has higher levels of moral development and believes that his actions will make a difference (Nilsson and Gifford 2014, 144. Such values tend to be a characteristic of persons who are environmentally concerned and will contribute to higher environmental performance of a country in which they live in. As values are guiding principles in person's life it can be concluded that values are defined according to what principles people have in their life. At this point they can be clearly

connected to the environment or environmental behaviour. Values can either guide to pro-environmental behaviour or the opposite, depending on what people value as important. In a case where people see environment as important and have as a goal to live in a country with high environmental performance it could be theoretically expected that people will be guided by that principle and behave environmentally friendly to achieve mentioned goal. However, people's values can change, which changes also the guidelines and finally behaviour. '/…/ /r/elations between values and environmental views may not be simple because people have multiple values and they can conflict' (Nilsson and Gifford 2014, 146). 'The pursuit of each value has psychological, practical and social consequences that may conflict or may be congruent with the pursuit of other values (Bardi and Schwartz 2003, 1208). It is important to know what is it that can change values and what theory then explains following events. Researches have until now shown little agreement regarding the role of values in guiding behaviour (Bardi and Schwartz 2003, 1207). Some hold that values guide behaviour and even include this guiding role in their definition of values, while others conclude that values guide behaviour only rarely and not for most people (Allport 1961[9] and McClelland 1985[10] in Bardi and Schwartz 2003, 1207). One of the biggest questions in the research is still whether values relate to behaviour generally or only some values relate to some behaviours (Bardi and Schwartz 2003, 1207).

Pro-environmental behaviour and environmental performance should be defined as concepts in order to better understand the overall theoretical discussion. *'Pro-environmental behaviour is a behaviour that consciously seeks to minimize the negative impact of one's action on the natural and built world, for example minimize resource and energy consumption, use of non-toxic substances, reduce waste production' (Kollmuss and Ageyman 2002, 240). Pro-environmental behaviour as such means higher environmental performance.* The latter concept has also its own definition. *Environmental performance is the measurable outcome of an organization's ability to meet environmental objectives and targets set forth in the organization's environmental plan or policy (NAL Glossary 2014). Environmental*

[9] Allport, G.W. 1961. *Pattern and growth in personality*. New York: Holt, Rinehart & Winston. In Nillson and Gifford 2014, 149.
[10] McClelland, D. C. 1985. Human motivation. Glenview, IL: Scott, Foresman. In Nilsson and Gifford 2014, 149.

performance is actually an outcome or a measure of pro-environmental behaviour of different objects and subjects in a country.

As I have learned from the previous literature, values can change in response to socioeconomic conditions. At this point of theoretical discussion, it is necessary to explain the theory that will expand the explanation how influential are values in countries with different economic development. The theory that is going to be used for this purpose is post-materialist theory. But before turning to the theory the definition of economic development is needed. Economic development has in the literature many different definitions. Ruggiero (2012) gives a definition based on the purpose of economic development. *'/T/he purpose of economic development should be to create an enabling environment for people to enjoy long, healthy and creative lives'. A country with high economic development is a country where people can pursuit material and financial wealth and live long, healthy and creative life.*[11]

Post-materialist theory is a theory arguing that individuals' priority ordering of different sets of values is determined by their socioeconomic environment (Zhang *et al.* 2018, 6). That is saying that people with lover economic standard will prioritize survival concerns, while on the other side, people living in affluence will usually move their priorities from economic concerns to other concerns, which results in the shift of materialist values to post-materialist values. '/T/hose post-materialist values consist of appreciation for social equality, participation in decision-making, freedom of speech, and improvement of life quality including environmental quality' (*ibid.*). The latter theory has been frequently used to explain concern among citizens for natural environment. Post-materialist theory was formulated by Ronald Inglehart who stated that individuals are firstly going to meet basic material needs such as access to enough food, clean water, health care and shelter and only after that they begin focusing on non-essential quality of life issues such as personal freedom, justice, government participation and intellectual development (Running 2012, 5). Inglehart in his theory proposes that people's environmental concern, as a non-economic and higher-order concern, and willingness to take steps to improve the environment, depends on the growth of economic affluence (Zhang *et al.*

[11] Further numerical explanation of economic development is described in the section 5 Method and data where it is explained how have countries with higher economic development been choosen.

2018, 6). Concern about the environment is according to this theory considered as a political priority that goes beyond basic needs (*ibid.*). Therefore, pro-environmental values are mostly shared by people who have higher economic income, that is people who have fulfilled basic needs. They are more likely to prioritize the pursuit of high quality life and the preservation of outdoor areas over basic security and social order, which they already have (*ibid.*). Pro-environmental values can be underprioritized when people have to choose between them and their survival. Therefore, citizens of richer countries seem on average to have or at least report greater environmental performance (Nilsson and Gifford 2014, 149). Increased wealth and welfare generate a change from materialistic to post-materialistic values (*ibid.*). That means that as a result in change of values people start to strive for self-development and well-being values such as environmental well-being instead of just striving for increased income.

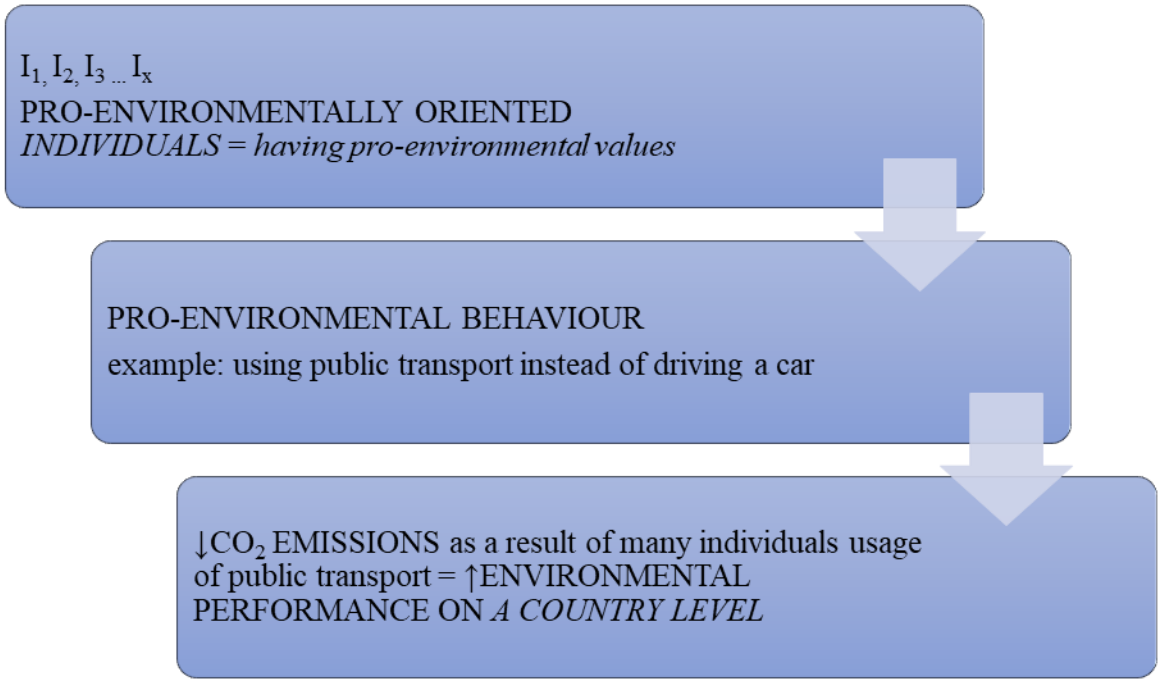
However, some scholars argue that in countries with higher economic development there is more manufacturing, use of fossil fuels, vehicles, urbanization, water, land and materials use and other pollution-intensive activity, therefore there it can be expected that in these countries there will be lower environmental performance (Fioriono 2011, 372). Although some studies have showed that many forms of pollution increase only in the early stages of growth but level off beyond some level of income, at the end some forms of pollution even decline (*ibid.*). 'Wealthier countries have more to invest in pollution control, a stronger legal and administrative infrastructure, and more extensive technical and scientific resources than less developed ones' (*ibid.*). When this is reflected to previously described Inglehart's post-materialist theory it can be said that as societies develop economically, beyond a certain point, citizens start to prefer a better and healthier quality of life. From the last statement it leads that in more economically developed countries it will be more concern for environmental issues and higher environmental performance.

To sum up the theoretical part, I can derive the main assumption of both theories which will guide me in building the hypothesis. Schwartz with his theory claims that persons who are people-oriented and do not share authoritarian values are more likely to be concerned about environment and will behave environmentally friendly. That is saying that if people will share pro-environmental values they will contribute to higher environmental performance of a

country they live in. However, people are sharing many different values that can come into conflict between each other. Post-materialist theory is saying that in countries with lower economic development will people underprioritize environmental concerns for financial concerns. Furthermore, pro-environmental values will have an influence on environmental performance only in cases where people are capable to put higher value on environmental concern than on their income, that is in countries with higher economic development.

To present it clearer I made a graph which is described below based on an example. However, it is important to have in mind that according to the post-materialist theory it is more likely to expect such relations in higher income countries.

Graph 1: Central relations between pro-environmentally oriented individuals and country's environmental performance



If each individual or many individuals have pro-environmentally oriented values this results in pro-environmental behaviour. For example, if one individual or many individuals have pro-environmentally oriented values they will think and take care of environment with using public transport instead of driving a car. This would at the end result in and contribute to lowered CO_2

emissions which contributes to a higher environmental performance on a county level and brings a country higher score in Climate & Energy section of Environmental Performance Index which contributes to overall higher Environmental Performance Index. In such way individuals contribute to better results on a country level.

4. AIM AND HYPOTHESIS

The aim of this master thesis is to get an answer to whether pro-environmental values can be considered as a plausible explanation for environmental performance in countries with higher economical development. That would make personal values an important factor for environmental performance and could be potentially used as an important insight for future environmental policies in countries. Thesis will hopefully show that focusing environmental policies on personal pro-environmental values could increase environmental performance. Exploring such relations between individual and county level is interesting because it gives researches a new insight in looking at the explanations for results on a country level. Such research gives emphasize on the importance of each individuals' behaviour and it enriches existing knowledge with thinking that focusing on the individual level can give us answers for results on country's level. Nevertheless, country's result is influenced by people's behaviour on individual level. This thesis aims to put an emphasis that each individual's behaviour is important contributor for country's overall result.

Based on the knowledge I gained while examining literature that is available on the connection between values and environment and theories that explain such connection I can derive the following hypothesis.

Hypothesis: In countries with higher economical development it is likely to expect that pro-environmental values will have high and positive influence on environmental performance.

To explain more detailed, in countries where people have already met their basic needs, that is in countries with higher economical development it is likely to expect that people will be able to give importance also to values concerning higher quality of life like pro-environmental values and will behave pro-environmentally. This will result in higher pro-environmental behaviour and will give county better score in sections of Environmental Performance Index influenced by individual's behaviour.

For better clarification I should at this point add that hypothesis is written on the state level but is interested in environmental values on individual level. Personal values that are going to be analysed are measured on individual level, but, as explained above, they contribute on the results that are seen on a country level as it is explained in the graph at the end of the precious section. However more about the unit of analysis is described in the following part.

5. METHODOLOGY AND DATA

This study aims to find out whether personal values could be one of the explanations for country's environmental performance. Based on the existing theories on personal values I assume that personal values will show positive influence on environmental performance in countries with higher income, that is in countries where people have already satisfied their basic needs like shelter and can focus on higher values, such as environmental performance. In this part I will present which method and data I will use to test this hypothesis.

5. 1. Method

Method that I am going to use to test if and to what extent there is a positive correlation between personal values and environmental performance is quantitative statistical method OLS multivariate linear regression. There are several reasons why I am using this method. Firstly, this method tests the relationship between one dependent variable and one[12] independent variable. Secondly, it examines whether it is possible to predict an outcome of depend variable with the set of independent variables. Thirdly, with the help of this method it is possible to see which variables can explain the dependent variable and in which magnitude they impact the outcome variable. And fourthly, this method is good for predicting what will the future trend of connection between the variables be, which is good to predict future policy measures (Field 2013). Since I am interested to find out an answer to all the previous mentioned arguments for linear regression I decided to use this method.

5. 2. Research design and data selection

This study includes a study of 41 countries, with good geographical diversification since it is including countries from all continents. As such this study can be defined as a large-N study since it includes more than 30 cases. A statistical analysis is considered large when it includes

[12] OLS multivariate linear regression can also explain a relationship where there is one dependent and one or more independent variables, however in my case there is only one independent variable.

at least 30 cases, which is the threshold to ensure statistical relevance. The reason why there are only 41 countries and not more is in the lack of data availability for personal values variable. Cases are higher income countries, that is high income and upper-middle income countries. More about case selection is described together with the description of the independent variable. A list of countries included in the analysis can be found in the Appendix 8. 1.

Unit of analysis in my study are countries for year 2014, therefore, data is cross-sectional (one calendar year). The reason why I have chosen year 2014 is because I wanted my study to be up-to-date as much as possible. Since the last survey data for personal values is from year 2014 this is the year that I had to choose. All the data in the study are secondary data, which means that I did not gather data on my own, but I got the data from different online available data sources. Source that has been used for dependent variable is gathered form a joint project of Yale Center for Environmental Law and Policy and Columbia University's Earth Institute in the collaboration with World Economic Forum, sources for independent variables are from World Values Survey Database, World Banka Database, United Nations Database and Worldwide Governance Indicators Database, which are all well-known reliable sources. In the next part of this section all variables are explained in more details.

5. 3. Variables

5. 3. 1. 1. Dependent variable: Environmental Performance Index

The dependent variable in this thesis is environmental performance, which is operationalized through *Environmental Performance Index* (Environmental Performance Index 2018). This variable provides data for country's environmental performance in nine different policy categories/sections: health impacts, air quality, water and sanitation, water resources, agriculture, forests, fisheries, biodiversity and habitat, climate and energy. A graph representing what exactly is measured by Environmental Performance Index can be found in the Appendix 8. 2. Each of these categories track performance and progress in environmental health and ecosystem vitality. Environmental Performance Index focuses on two broad environmental

protection objectives, which are firstly, reducing environmental stresses on human health and secondly, promoting ecosystem vitality and sound natural resource management. Based on the performance in these categories are countries given score from 0 to 100, where 0 means that country has no or low environmental performance and 100 means high environmental performance.

Index is calculated with a 4-step method. Firstly, data is collected and examined to see whether any statistical transformations should be applied and secondly possible statistical transformations like logarithmic and inverse are used. Thirdly, each country's performance is calculated for each indicator (all indicators are named in Appendix 8. 2.) and given a score between 0 to 100 where 0 is the worst and 100 is the best. Country scores are determined by how close or far countries are to targets, or what is the proximity to target. Targets are based on international treaties, scientific thresholds and analysis of best performers. Lastly, a country's score on each indicator is weighted based on data accuracy and data relevance and combined into a total score that represents overall performance. (Environmental Performance Index 2011).

Database includes data for 178 countries, however I am in my analysis including only 41 countries, because of the lack of data for independent variable. Data for this variable has been gathered by Yale Centre for Environmental Law and Policy and the Columbia University Centre for International Earth Science Information Network.

5. 3. 1. 2. Independent variable: Pro-environmental values

Pro-environmental Values ´´*Looking after the environment is important to this person, to care for nature and save life resources.*´´ (World Values Survey 2014)

The independent variable in this thesis is pro-environmental values which I obtained from the World Values Survey. The latter is a global network of social scientist studying changing values and their impact on social and political life. The main method they are using to get their data is face-to-face interviews, for each question is the minimum sample size, that is the number of

completed interviews which are included into the national data-set, in the most countries 1200. People have been asked the following question:

Now I will briefly describe some people. Using this card, would you please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you?:

"Looking after the environment is important to this person; to care for nature and save life resources" (*ibid.*).

People could express their belonging to pro-environmental values in 6 different categories[13]. For each answer it has been marked how many people have picked one specific category and based on that a percentage has been made for each of them. However, as it follows from my theoretical part and aim of my thesis I am interested only in the number of people who share pro-environmental values. Therefore, for this specific study only a percentage of people who answered that looking after the environment, taking care for nature and saving life resources is very much like them and like them was considered.

The last available data, which is also the one that I am going to use in my study, is providing data for the surveys done between 2010 – 2014. World Values Survey is the only available data that in such extent provides data on personal values, therefore that was the only available choice for getting data about personal values.

Although in this survey wave data is including only 60 countries it can be said that it is worldwide data since it is including all continents and countries that have really low income per capita to countries with really high income per capita making good diversification of data. However, as it is the aim of the thesis to only observe higher income countries I excluded low income countries for my analysis. A threshold has been made with the help of World Bank Analytical Classifications (World Bank Group 2018) which puts a minimum GNI per capita for

[13] 1) Very much like me 2) like me 3) somewhat like me 4) a little like me 5) not like me 6) not at all like me.

higher middle-income countries at 3976 US$ and classifies as high-income countries those that have GNI per capita higher than 12195 US$. Therefore, I included in the analysis only countries that had income higher than 3976 US$. After that, 41 countries have been left and those are the countries that are included in the analysis, they have fulfilled the income requirement and still represented statistically enough high cases to be able to run linear regression analysis. Moreover, I kept good geographical diversification of data because data still included countries from all continents.

5. 3. 2. Control Variables

5. 3. 2. 1. Democracy Index

The influence of democracy on environmental performance has been tested through the democracy index. I obtained the data for this variable in the Report from The Economist Intelligence Unit *Democracy and its Discontents*, from its seventh edition, measuring democracy for the year 2014 (The Economist 2015). Variable in this report is providing data for the state of democracy worldwide, reflecting the situation at the end of 2014 (*ibid.*). It is based on five categories: electoral process and pluralism, civil liberties, the functioning of government, political participation and political culture (*ibid.*). Based on state of democracy in each specific field countries are given an overall score for the democracy in the range from 0 to 10 where 0 means that a country has very low level of democracy while 10 means that a country has very strong level of democracy.

Democracy has been in the literature recognized as an important variable that has a positive effect on environmental performance (Almeida and Garcia Sanchez 2017). In democratic countries citizens have more access to information and freedom, there is more openness in the relationship between government and citizens, and decision makers are more likely to accept criticism and pay attention to collective problems (environmental problems being one of them (Almeida and Garcia Sanchez 2017, 3009). For example, there is a growing evidence that providing increased voice to vulnerable or disenfranchised population is important to

improving health equity (Kelaher *et al.* 2014 in Gallego Alvarez and Fernando Gomez 2016[14], 31). Democracy is according to Rocheleau 1999, Li and Reuveny 2006, Söderbaum and Brown 2010 necessary for environmental improvement. Namely, it has been confirmed as positively connected to sustainable development and reduces environmental degradation. Therefore, I decide to include democracy index as a control variable and assume that higher level of democracy index results in higher environmental performance.

5. 3. 2. 2. Rule of law

Rule of law reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence (World Governance Indicators 2017). Data for this variable has been extracted from the dataset of the Worldwide Governance Indicators, which is a long-standing research project to develop cross-country indicators of governance (rule of law being one of them). Dataset summarizes the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. Countries are based on that given an index on a range from -2.5 (presenting weak performance) to 2.5 (presenting strong performance).

Gallego Lavarez and Fernandez Gomez (2016) have in their research found out that rule of law has a positive relation to environmental performance, that is saying that when governments and citizens follow the rules established there is a positive effect on environmental performance. Well-functioning institutions, in terms of rule of law, alleviate problems of collective action by providing a structure of rules and sanctions within the institutional realm (Gallego Lavarez and Fernandez Gomez 2016, 31). Therefore, I found rule of law as an appropriate variable since I can assume that higher value of rule of law results in higher value of environmental performance.

[14] Kelaher M., Hana S., Camille LB, Mark L., Dean L., Larry B. 2014. *Does more equitable governance lead to more equitable health care?* A case study based on the implementation of health reform in Aboriginal health Australia Social Science and Medicine. In Gallego Alvarez and Fernando Gomez (2016, 31).

5. 3. 2. 3. Population Density

Population density is a variable providing information on the number of people living per one square meter of land area in a country. Data has been gathered from the World Bank Database (The World Bank 2014).

Scholars have in their researches found out that population density is one of the explanatory variables for environmental performance (Halkos and Zisiadou 2016). Population density is according to their research significant to the environmental performance and is negatively affecting it. For example, in cities with higher population density there is a bigger pollution causing lower environmental performance. Therefore, I included population as one of the control variables with the explanation that higher population density causes lower environmental performance.

5. 3. 2. 4. Mean Years of Schooling

Education has been measured as one of the control variables with the variable that gives data on the mean years of schooling. The latter is one of the components of the Human Development Index. I got information for this variable from United Nations Development Programme Statistical update from 2015 (UN Data 2015).

Education is in the contemporary academic research seen as an influential factor for environmental performance. According to Peng and Lin's (2009) research have countries where there is a higher educational level also a higher capacity to reach higher environmental performance. For example, low level of education or knowledge about environmental problems may reduce the ability of a society to resolve its environmental problems. Therefore, I see education as a variable worth putting in my statistical analysis since I assume that countries who had more mean years of schooling will have higher environmental performance.

5. 3. 2. 5. International Environmental Agreements

International Environmental Agreements have been used as a control variable to include also possible international and legal influences on environmental performance. Its definition is according to Mitchell and IEA Database Project (2016) defined as an intergovernmental document intended as legally binding with a primary stated purpose of preventing or managing human impacts on natural resources. Data for this variable has been gathered from IEA Database Project which provides information on how many international environmental agreements has a country signed/ratified until 2016 where I considered only agreements that were signed or came into force until 2014.

In the literature have been international environmental agreements successfully proven as connected to environmental performance. Yoomi *et al.* (2017) are some of the many authors that have found out that there is a positive correlation between international environmental agreements and environmental performance. Legal aspect of international environmental agreements makes them influential on environmental performance. Beneficial affect comes from a legally binding force that agreements have, besides sanctioning mechanism that is one part of the agreements. Agreements as part of the hard law are supposedly more effective than soft law since the latter has limitations holding delegates accountable (Yoomi *et al.* 2017, 79). Undeveloped regimes require extensive time and cost for decision-making and consultation, besides that they don't have a sanction mechanism such as agreements usually have (*ibid.*). Therefore, I have chosen international environmental agreements and assume that the higher the number of agreements for one country will be the higher will be on the other side environmental performance of a country.

6. ANALYSIS AND RESULTS

In this section I will statistically analyse available data with OLS multivariate linear regression, present results that I got and with their help accept or reject my hypothesis – in higher income countries will values have high and positive influence on environmental performance. Firstly, I will look through preliminary statistics, that is preconditions that will tell whether it is statistically possible to use OLS multivariate linear regression as the method for the analysis. Secondly, I will present post-regression diagnostics that is going to be done to see if multicollinearity is excluded. Thirdly, the regression itself is going to be described. After that, robustness check is going to be described. And finally, limitations of the analysis are going to be discussed.

My statistical analysis includes one dependent variable and one independent variable. In the first model a bivariate analysis between only these two variables is done. After that is step-by-step introduced each of the control variables. The analysis employs five control variables. Their role is to control for other effects on the independent variable and they are trying to reduce the effect of other factors on a study. At the end there is a model 6 which is the main model including both independent and depend variable as well as all control variables. One of the control variables, population density, had to be log transformed to approximate normal distribution.

In the following table, on the next page, I listed all variables with their descriptive statistics. All variables in the table are continuous measurement and on country level.

Table 1: List of variables with descriptive statistics

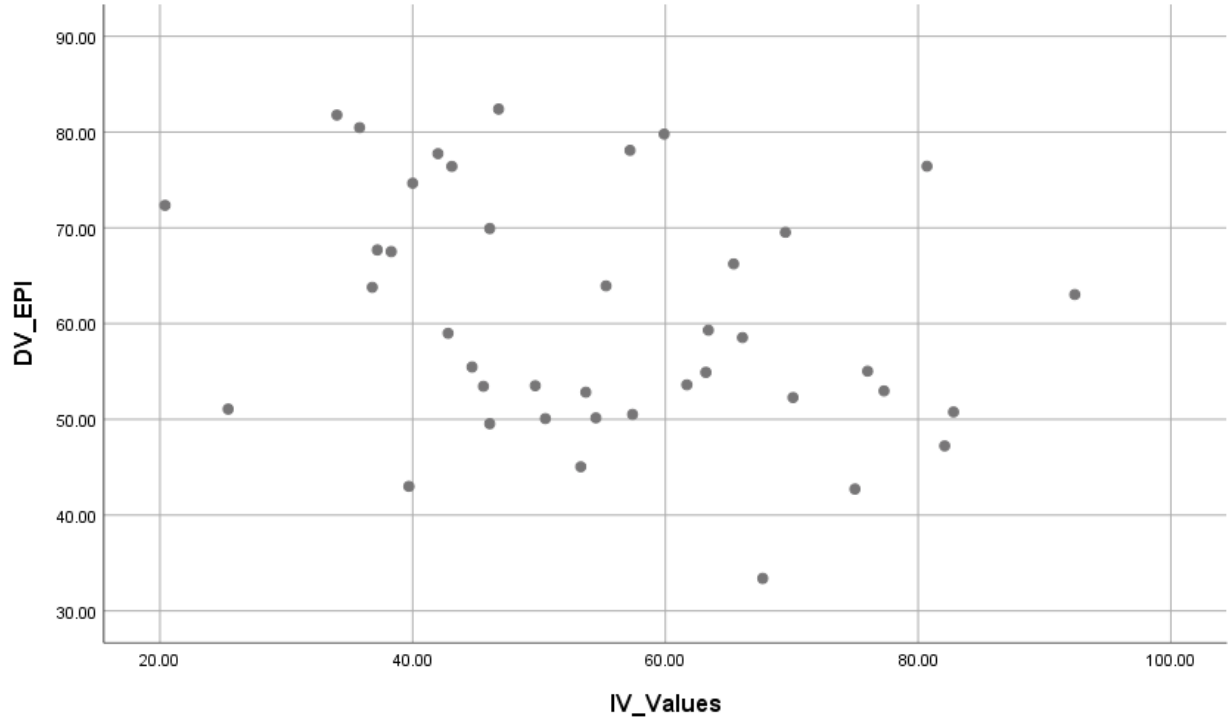
Variable	*Category*	*Number of cases*	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
DV_EPI	dependent variable	41	33.39	82.40	60.64	12.55
IV_values	independent variable	41	20.40	92.40	54.78	16.50
C1_democracy_ index	control variable	41	2.83	9.73	6.36	1.94
C2_rule_of_law	control variable	41	-1.51	2.01	0.38	1.05
C3_log_10_ population	control variable	41	0.48	3.89	10.26	2.03
C4_mean_years_of_ schooling	control variable	41	6.60	13.20	10.26	2.03
C5_IEA	control variable	41	7	607	347.64	115.11

6. 1. PRELIMINIARY STATISTICS

6. 1. 1. LINEARITY

One of the first assumptions for linear regression is that there is linear relationship between independent and dependent variable. To see whether such a relationship exists a scatter plot is presented below. In the scatter plot dots represent individual pieces of data. A linear relationship can be concluded from the scatterplot when it is possible to see an angled straight line connecting most of the dots or being around dots (Field 2013). The following graph is showing linear relationship between personal values and environmental performance. Though the line is not completely linear, on the other side neither it is curvilinear which makes me conclude that the relationship is linear or, eventually, non-existing.

Graph 2: Test for linearity between independent and dependent variable.



6. 1. 2. MULTICOLLINEARITY

Second predisposition for linear regression is that there is no multicollinearity of data. The latter occurs when independent variables are too highly correlated with each other. This occurs when variables are measuring the same things, which makes results of the statistical analysis misleading (*ibid.*). One of the ways how this is checked is with correlation matrix. Multicollinearity is rejected when the magnitude of the correlation coefficients is less than 0.80 when computing a matrix of Pearson's bivariate correlations. The following graph is showing matrix of Pearson's bivariate correlation. None of the numbers exceed 0.80, therefore I conclude that there is no multicollinearity issue between independent variables.

Table 2: Multicollinearity check for explanatory variables

Variable	*IV_ values*	*C1_ democracy_ index*	*C2_rule_ of_law*	*C3_log10_ population*	*C4_mean_ years_of_ schooling*	*C5_IEA*
IV_values	1	-0.089	-0.257	-0.085	-0.395**	-0.129
C1_democracy_ Index		1	0.729**	0.021	0.093**	0.629**
C2_rule_of_law			1	0.316*	0.666**	0.398**
C3_log10_ Population				1	0.093	-0.292
C4_mean_years_ of_schooling					1	0.403**
C5_IEA						1

** Correlation is significant at the 0.05 level (2-tailed)*

*** Correlation is significant at the 0.01 level (2-tailed)*

6. 2. POST REGRESSION DIAGNOSTICS

6. 2. 1. MULTICOLLINEARITY

In the next stage I will present additional test to see if there is any correlation between independent variables. For this purpose, I will use variance inflator factor (VIF) and tolerance (t) test. VIF estimates for how much is the variance of regression inflated due to the multicollinearity in the model (*ibid.*). The numerical value of VIF should be lower than 5 to be able to say that there is no multicollinearity and the value of tolerance test should be higher than 0.2 for all variables. As it is seen from the table 3, none of the variables exceeded allowed value, therefore I can conclude that there is no multicollinearity between variables and I can use all the variables.

Table 3: VIF and tolerance (t) test for multicollinearity between explanatory variables

Variable	*Tolerance (t)*	*VIF*
IV_values	0.825	1.212
C1_democracy_index	0.299	3.349
C2_rule_of_law	0.266	3.763
C3_log10_population	0.816	1.225
C4_mean_years_of_schooling	0.464	2.155
C5_IEA	0.426	2.345

6. 2. 2. LINEARITY

To see if there is linearity I use another graph where studentized regression residuals are plotted to predicted values (in the Appendix 8. 2. 1.). Linear model is suitable for regression when residuals are normally distributed above and below the mean of zero. Looking at the graph I can see that this is a case in my analysis, therefore I conclude that the linear model is suitable for regression.

6. 2. 3. HOMOSCEDASTICITY

It describes a situation in which the error term (that is, the random distribution in the relationship between the independent variables and dependent variable) is the same across for all values of the independent variables (*ibid.*). That is checked in the same graph as for the linearity (graph in Appendix 8. 2. 1.). There is no cone-shaped pattern of plotted values in the graph which means that there is a homoscedasticity, which is needed for a statistically successful multivariate regression.

6. 2. 4. ERROR DISTIRBUTION

Another test that must be done is checking that errors are normally distributed. If that is not the case, then t test and statistical significance are not reliable. Error distribution is showed in the graph in Appendix 8. 2. 2. from which it can be seen that residuals are normally distributed, all being inside the bell shape.

In the Appendix 8. 2. 2. a normal probability plot of regression standardized residuals is presented. It is another graph that is checking if data is normally distributed. Data in my graph is with only some rare exceptions overlapping with the line of theoretical normal distribution which is proving that data is normally distributed.

6. 2. 5. OUTLIERS

The last test is to check whether there are any outliers in my case. Outliers are the cases that do not follow the same model as the rest of the data (*ibid.*). To be able to say that there are no outliers value of studentized deleted residuals should not be higher than 3. None of the cases had a value higher than 3, therefore I can conclude that there are no outliers. I checked that there are no outliers also with the looking at the graph in the Appendix 8. 2. 2. where I could see that none of the dots in the plot is surpassing value 3 on both axes, there I can additionally confirm that there no outliers.

6. 3. MULTIVARIATE OLS REGRESSION

In this section a main statistical analysis for this study is done, that is multivariate OLS regression. Results are firstly, in the following table, presented numerically and secondly, descriptively step by step for each model. In the Appendix 8. 3. results from SPSS are shown.

Table 4: Regression table

DV_EPI	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
	B (st. error)	*B (st. error)*	*B (st. error)*	*B (st. error)*	*B (st. error)*	*B (st. error)*
IV_values	-0.232** (0.115)	-0.193** (0.093)	-0.067 (0.066)	-0.068 (0.067)	-0.040 (0.70)	-0.040 (0.071)
C1_democracy_index		3.688*** (0.790)	-0.392 (0.819)	-0.368 (0.860)	-0.296 (0.854)	-0.306 (1.005)
C2_rule_of_law			10.583*** (1.596)	10.518*** (1.725)	9.227*** (1.986)	9.227*** (2.015)
C3_log10_population				0.193 (1.787)	0.605 (1.801)	0.611 (1.861)
C4_mean_years_of_schooling					0.948 (0.741)	0.945 (0.773)
C5_IEA						0.000 (0.016)
Constant	73.350*** (6.562)	7.795*** (7.616)	63.231*** (5.714)	62.760*** (7.257)	50.083*** (11.799)	50.775*** (12.059)
R^2	0.095	0.425	0.737	0.737	0.749	0.749
N	41	41	41	41	41	41

*Significance levels *p>0.1, **p>0.05, ***p>0.01*

Model 1

First model is a bivariate regression between independent and dependent variable. This model rejects the hypothesis that increase in the values increases the environmental performance because their relationship is negative. Statistical significance of this model is at $p<0.05$ level. Unstandardized beta coefficient is -0.232 what means that one unit increase in the environmental values decreases environmental performance by -0.232. Standard error of the beta coefficient is 0.115. Level of explained variance (R^2) in the data explained by this model is 9.5 %.

Model 2

Model 2 introduces the first control variable: democracy index. This variable is significant to this model at $p<0.01$ level, but its presence did not notably change the relationship between independent and dependent variable. Namely, statistical significance stayed at $p<0.05$ level and beta coefficient decreased from -0.232 to -0.193. Standard error decreased from 0.115 to 0.093 and level of explained variance (R^2) increased to 42,5%.

Model 3

Model 3 introduces the second control variable: rule of law. This variable expressed statistical significance at $p<0.01$ level and caused that independent variable fails the statistical significance test. First control variable democracy index did not pass significance test as well.

Models 4, 5 and 6 (final model)

These models introduced three more control variables: population density, mean years of schooling and international environmental agreements. Introduction of these variables did not change regression results from model 3 since independent variable and all the control variables did not pass significance test. Rule of law is the only variable that remained significant to the dependent variable throughout all the models ($p<0.01$ and R^2 is 74,9%).

As model 6 was insignificant is the hypothesis of this thesis rejected meaning that in countries with higher economical development it is not likely to expect that pro-environmental values will have high influence on environmental performance. Statistical analysis has therefore showed opposite results from theoretical assumptions. Based on these results it is not possible to explain environmental performance in countries with higher economical development with pro-environmental values. Furthermore, the thesis did not accomplish its aim since it is not possible to see that something that happens on the individual level affects country's level result. Based on these statistical results personal values and behaviour as a consequence of values on

individual level did not show expected effect on environmental performance or on a result on a country level.

Such null result is not really surprising while looking at the raw data. For example, in some countries[15] it is possible to see that even though high percentage of people share pro-environmental values their score of Environmental Performance Index is not so high, although there are also countries who score quite high in Environmental Performance Index but people in those countries do not share pro-environmental values. Nevertheless, there are also countries where percentage of people overlaps with the score they got in Environmental Performance Index.

Statistical results are showing that other factors, which have not been dealt in this thesis, are more explanatory for environmental performance. According to the results of the analysis, it is not possible to predict that a country will have higher environmental performance and will get higher score in the Environmental Performance Index measurement because of people having pro-environmental values and behaving pro-environmentally. Factors that I can think of and could be explanatory for people behaving environmentally friendly and with that contributing to environmental performance could for example be climate risk, that is to what extent it is likely to expect that the country will be impacted by the impacts of weather-related loss events, education in being environmentally friendly that reaches the whole population or available infrastructure that makes it possible to recycle. The higher those factors would be the more likely it would be to expect higher environmental performance. However, the reason for null result can also be found in the spurious data used, which can be the case when survey is used to gather data but more on these is discussed together with the limitations of the study.

[15] Table with the list of all countries including the percentage of people sharing pro-environmental values and Environmental Performance Index score is available in Appendix 8. 1.

6. 4. ROBUSTNESS CHECK

To further test the relationship between environmental performance and personal values I carried out a robustness check. In this part I was interested to see whether the main results would change if I change two control variables with two other control variables similar with the previous ones in the area they are measuring. In appendix 3 results of two different OLS multivariate regression analysis are shown. I changed democracy index with the political trust and rule of law with the variable measuring political stability and absence of violence. Results did not change. After using new variables, the relationship between independent and depend variable stayed the same. Only one of the newly introduced variables appeared significant (a*bsence of violence).*

6. 5. LIMITATIONS OF THE STUDY

In the following part are discussed some of the possible limitations of this study.

First of them comes from the data, namely how was the data gathered for the independent variable (pro-environmental values). To remember, this data has been gathered through surveys, which comes with some limitations. It is not possible to completely guarantee that the observed effects of tailored information can qualify as a substitute for authentic behaviour. There is no guarantee that attitudes people stated in the answers were to take an action in a real life, which can mean a measurement error in the data as the data gathered can be considered spurious. Because of that error it can happen that theory cannot be proved since the theory assumes that people's answers having pro-environmental values will indeed lead to pro-environmental behaviour, which is not the casa if the data is spurious. Therefore, when analysing answers got from the survey one cannot be completely sure that people indeed think like they answered and can question the authenticity of data gathered with this method. Nevertheless, because of the possibility of that error it is not possible to clearly state whether the conclusions of the analysis are the result of spurious data or wrong theory.

Secondly, my literature review and theoretical discussion recognizes that pro-environmental values have influence on different kinds of environmental behaviour (use of public transport,

buying ecological food, recycling and much more other behaviours directed to save the nature). However, in order for this study to give more detailed policy applications on specific future environmental policies should environmental performance be studied in its various different sections. With this it would be possible to distinguish how exactly values influence each type of environmental behaviour in each section like water and sanitation. This would give more detailed future policy applications, and it would be possible to say how values influenced one chosen type of environmental behaviour and how this contributed to environmental performance in this section.

Thirdly, one of the important limitations which must be acknowledged and discussed is the possibility of reversed causality. To the reverse causality can in one study come when it could be possible that X (independent variable) and Y (dependent variable) are not associated in the way that it was expected from the beginning, but it comes to the possibility that Y is actually affecting X. In this research that means that in the case of reverse causality it is environmental performance that influences on people having pro-environmental values which is the reason for pro-environmental behaviour. That is saying, that it could be possible to say that in countries where environmental performance is already high people will more likely be more pro-environmental. That could be explainable with saying that people who already enjoy living in good environmental conditions see how good it is to be pro-environmental because that means living in such conditions. Therefore, they are more likely to continue being pro-environmental to keep high environmental performance of their living conditions and their country. However, this would not be in line with the theoretical thinking I presented in my research.

Lastly, a limitation can be seen also in the case on which the analysis has been done. Namely, this statistical analysis has been done with the data for 41 countries. The reason for this was limited availability for data on personal values. This can be understood since gathering data on what people value personally is mostly done with surveys which are expensive since a lot of people and resources are needed, besides that they also take a lot of time. However, such characteristic is usually the case in statistics because data for the whole world's population cannot be obtained. Nevertheless, generalization of results based on a limited number of cases is always an issue and it is absolutely an advantage if the analysis is closer to the whole

population of interest, in this case that would be the whole world's population since environmental problems represent an issue for each person on this planet.

7. CONCLUSION

This master's thesis researched personal values and economic development as important factors for environmental performance. It tried to answer how much influence do values have on environmental performance in countries with high economic development. According to the previous literature research, pro-environmental values could have influence on environmental performance, when taking into consideration countries with higher income.

Literature review has shown that values could be influential factor for environmental performance, however not all values have shown to be positively correlated with environmental performance. Namely, only people sharing biospheric and liberal values have showed tendency to behave pro-environmentally and contribute to higher environmental performance. Values that people have can also have negative influence on pro-environmental behaviour when, for example, people have externally oriented values. Furthermore, it is not enough that people only have pro-environmental values. Many authors state that believing only pro-environmental values can influence person's behaviour to be pro-environmental is too narrow concept. There are also other factors that can influence people's behaviour more than values. Socio-economic conditions in a country have been in the literature presented as a decisive factor whether values will be influential for environmental performance or not. After analysing all the available literature, I could find two gaps in the present research. Firstly, authors have mostly researched only one specific behaviour concerned with the environment, such as using public transport and similar ones, however in their research they have not taken into consideration pro-environmental behaviour as one big variable. Secondly, authors have left under researched how exactly does having larger economic opportunities influence the strength by which values can be influential factor for environmental performance.

Therefore, I tried to find theories that would help me overcome this gap. Schwartz's theory of basic values and post-materialistic theory have been found as the most appropriate for this research. Schwartz's theory of basic needs recognized all values that a person has and divided them in different categories and have seen values as important motivators of person's behaviour. Post-materialist theory states that people firstly need to satisfy their basic needs as

shelter and food and only after that can they focus on higher needs such as high environmental performance and ecology issues.

Aim of this master's thesis was to get an answer whether pro-environmental values can be considered as a plausible explanation for environmental performance in countries with higher economical development. Hypothesis that led my analysis was that in countries with higher economical development it is more likely to expect that pro-environmental values will have high and positive influence on environmental performance.

To check whether this hypothesis is true or not, I conducted a statistical analysis, using multivariate linear regression as a method. The dependent variable was environmental performance index, while independent variable was having pro-environmental values. To check this relationship five control variables were used: democracy index, rule of law, population density, mean years of schooling and signed/ratified international environmental agreements. Data was measuring the influence on environmental performance in year 2014 for being most up to date and because of the non-availability of data for independent variable for later years. To take into consideration economic performance of only countries that had high income were taken take into analysis.

After finishing the statistical analysis, the results did not show significance between having pro-environmental values and higher environmental performance, which made me reject the hypothesis. Therefore, I could not explain environmental performance in developed economies with pro-environmental values. However, this analysis had some limitations such as that interviews were used to gather data for independent variable, looking at the environmental performance as one aggregated variable rather than focusing on improved environmental performance in one field associated with the environment, and doing an analysis on only a limited number of cases because of the non-availability of data.

If the mentioned limitations of my study could be overcome, future research could build further on these findings, resulting in a more intricate research. Developing data in the future and considering environmental performance in more detail in each of its section, considering

climate risk, education on environment and available infrastructure could yield considerable insights in the future. Nevertheless, to put more focus on other factors for environmental performance stays to be successfully researched in the future. Since environmental issues are gaining on importance with each passing day, a solution for how to reach high environmental performance should be reached in the near future.

8. RESOURCES

8. 1. DATA RESOURCES

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8. APPENDIX

8. 1. List of countries with the percentage of people having pro-environmental values, EPI score and GDP per capita

Country	*Percentage of people having pro-environmental values*	*EPI score*	*GDP per capita in US$ (high income or upper middle-income country)*
Tunisia	42.80	58.99	4270.30
Georgia	82.10	47.23	4429.70
Algeria	50.50	50.08	5466.70
Thailand	53.70	52.83	5953.80
Ecuador	66.10	58.54	6396.60
South Africa	49.70	53.51	6433.90
Peru	53.30	45.05	6492.10
Libya	75.00	42.72	6631.50
Iraq	67.70	33.39	6703.10
China	39.70	43.00	7683.50
Azerbaijan	55.47	55.47	7891.30
Colombia	82.80	50.77	7913.40
Belarus	37.20	67.69	8318.50
Lebanon	54.50	50.15	8536.70
Romania	57.40	50.52	10020.30
Mexico	76.00	55.03	10581.00
Malaysia	63.40	59.31	11183.70
Brazil	77.30	52.97	12026.60
Turkey	63.20	54.91	12127.50
Argentina	46.10	49.55	12245.30
Kazahstan	25.40	51.07	12807.30
Russia	45.60	53.45	14125.90
Poland	69.50	69.53	14342.40
Chile	46.10	69.93	14794.30
Uruguay	61.70	53.61	16737.90
Estonia	40.00	74.66	19949.60
Trinidad and Tobago	52.28	52.28	20081.20
Slovenia	80.70	76.43	24202.40
Cyprus	65.40	66.23	27400.80
South Korea	36.80	63.79	27811.40
Spain	59.90	79.79	29623.20
Japan	20.40	72.35	38109.40
Kuwait	55.30	63.94	42996.30
New Zealand	43.10	76.41	44560.60
Germany	35.80	80.47	48042.60
Netherlands	42.00	77.75	52157.40

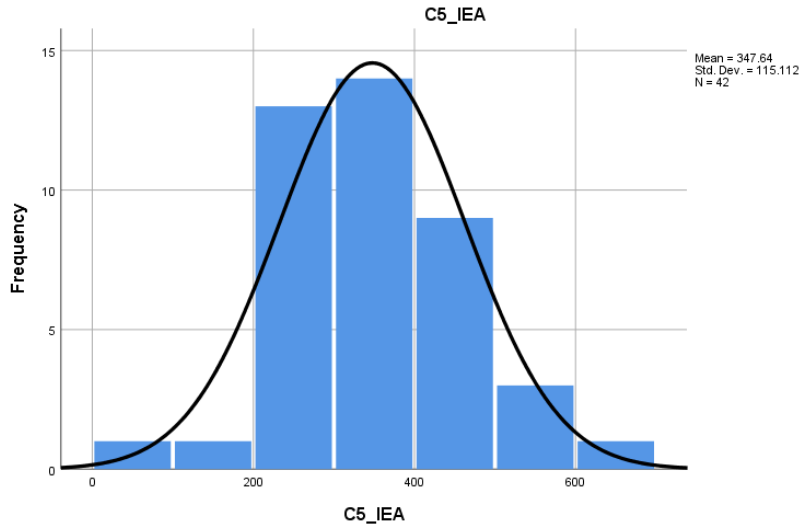
United States	38.30	67.75	54696.70
Singapore	34.00	81.78	56957.10
Sweden	57.20	78.09	59180.20
Australia	46.80	82.40	62327.60
Qatar	92.40	63.03	86852.70

8. 2. Graph 3: Explaining what exactly is measured by Environmental Performance Index

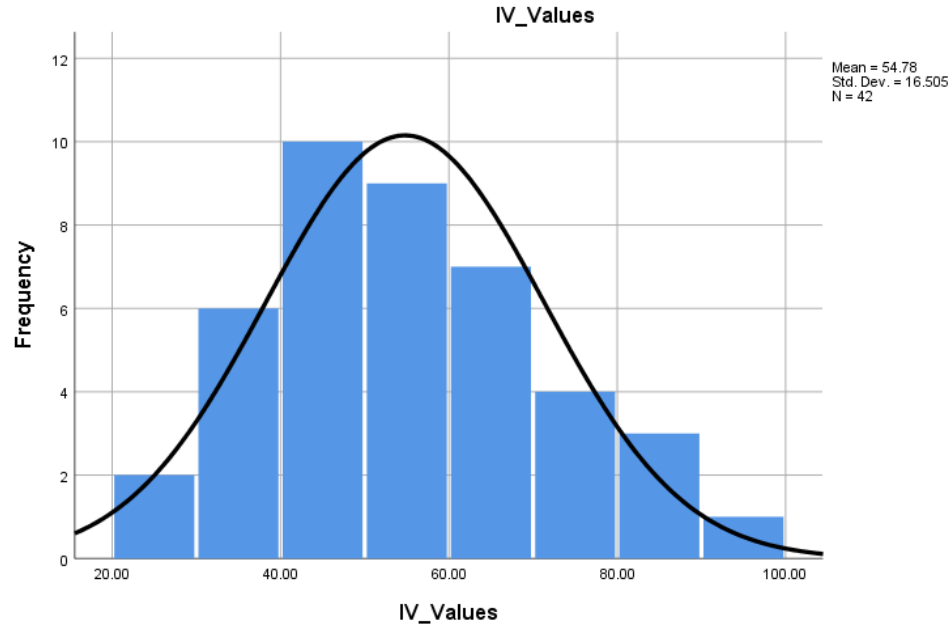
(Environmental Performance Index 2014)

8. 3. Distribution of variables

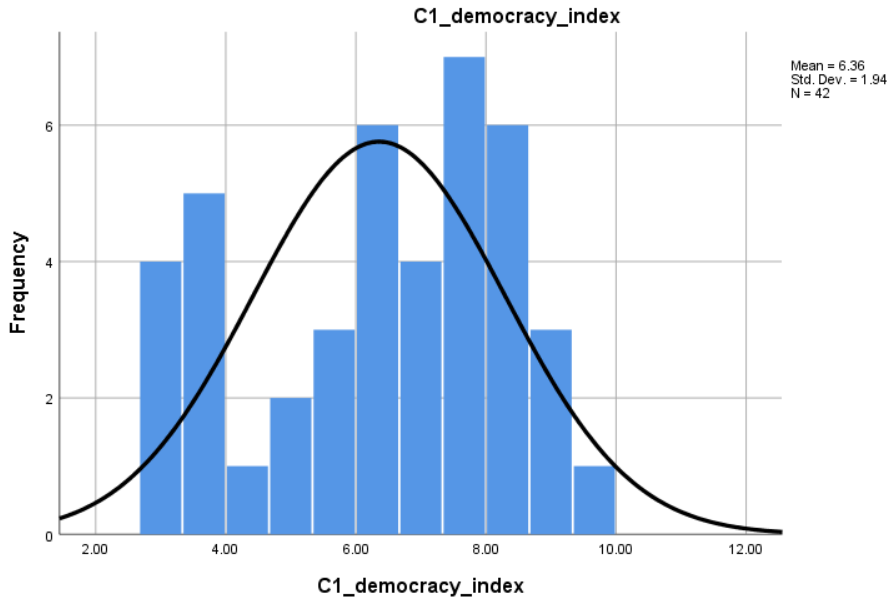
DV Environmental performance



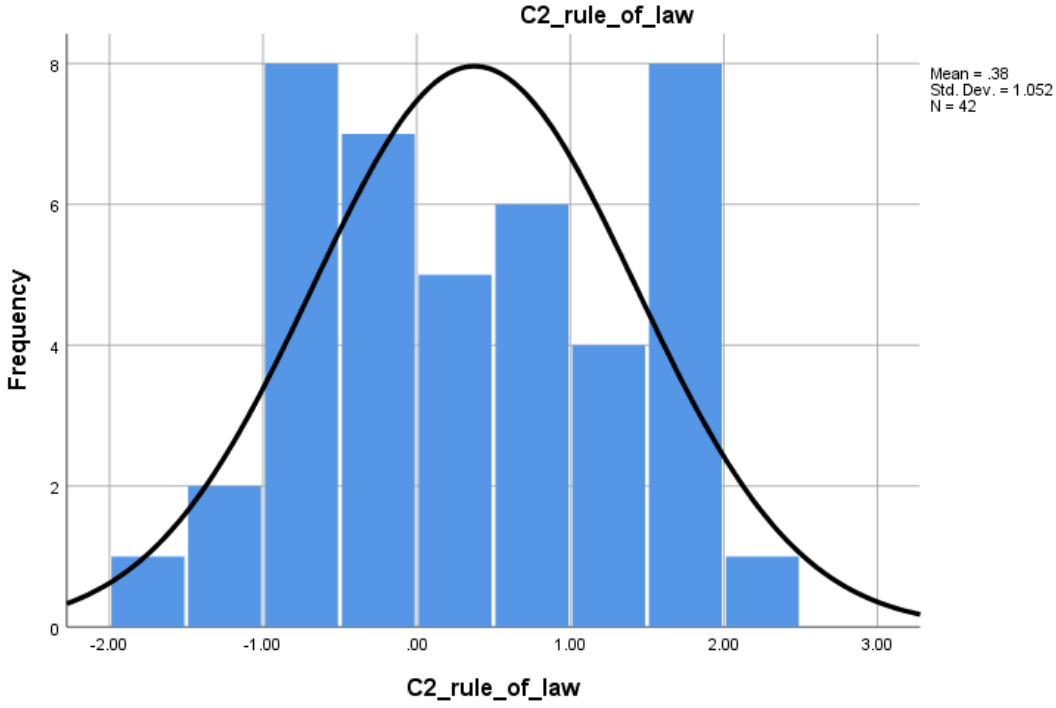
IV Values



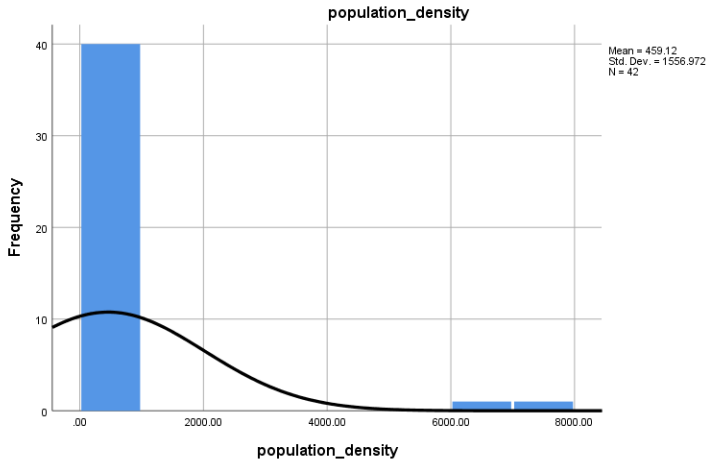
C1 Democracy index



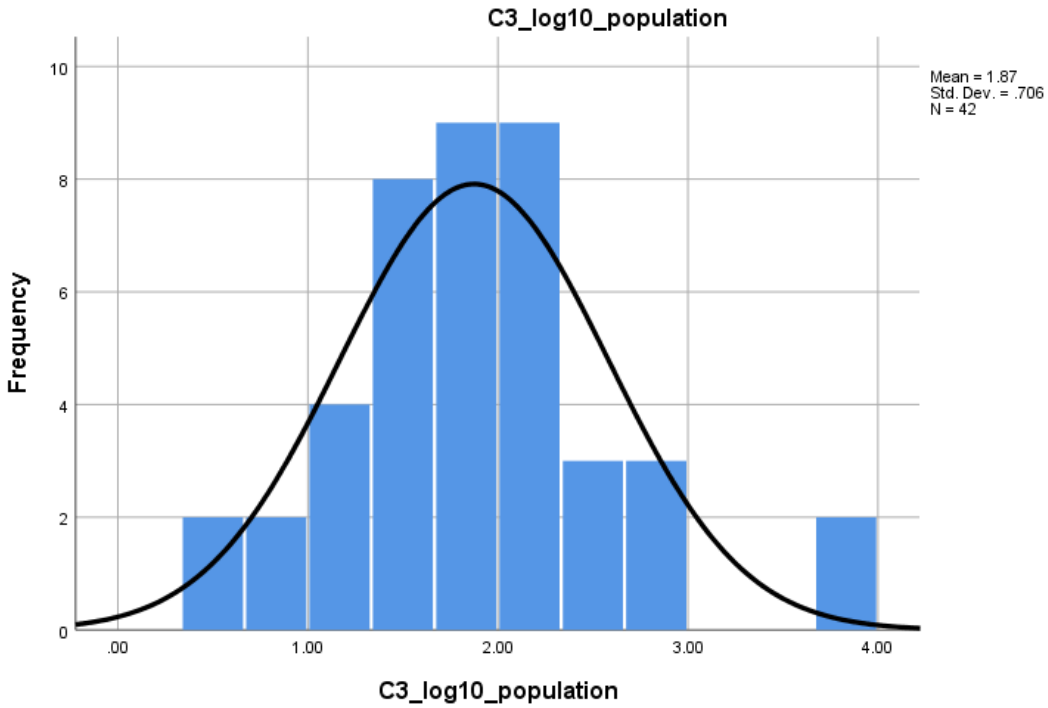
C2 Rule of law



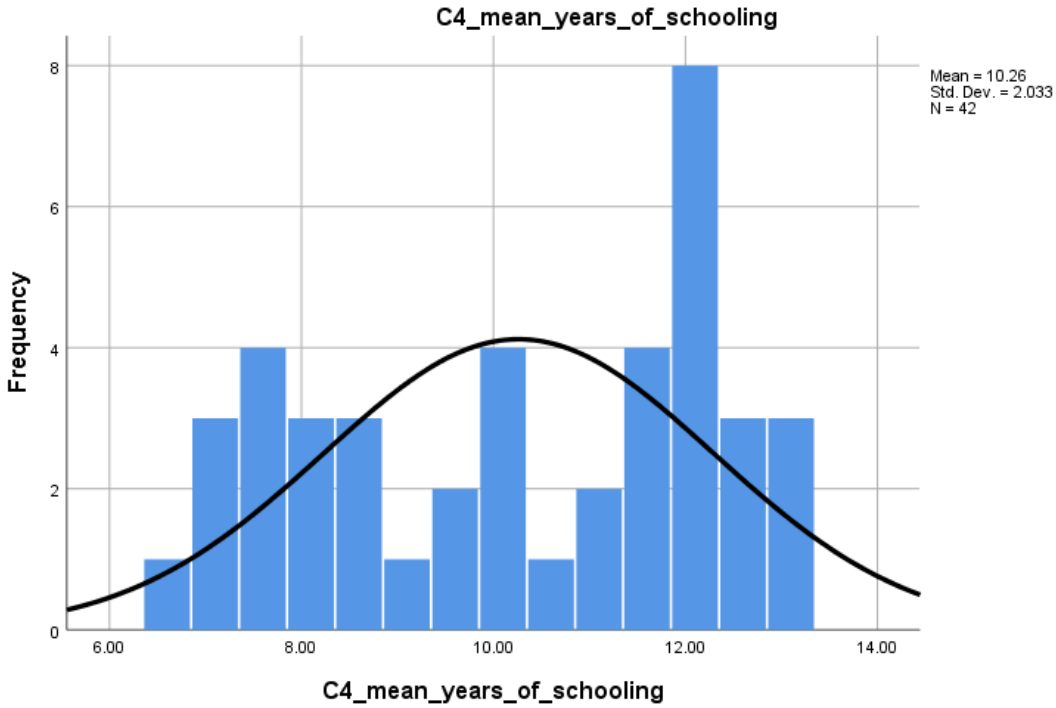
C3 Population density



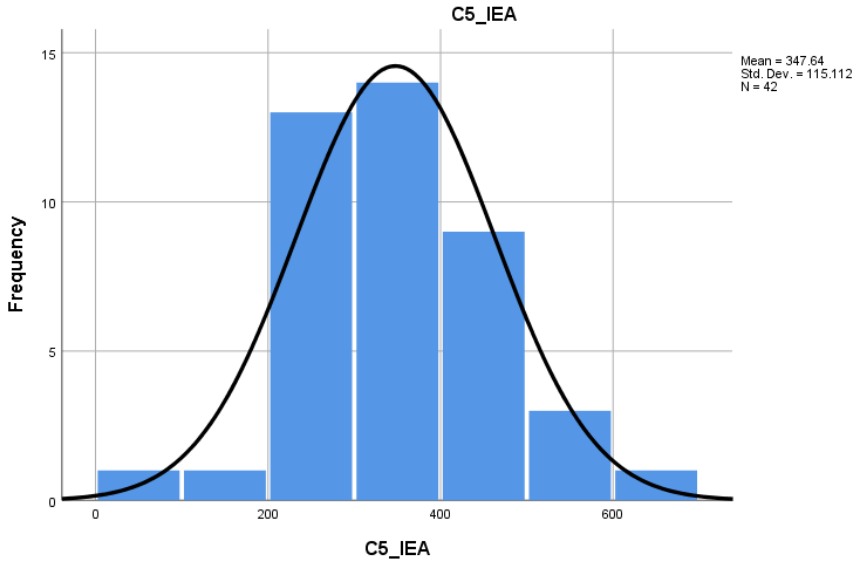
Logged population density



C4 Mean years of schooling

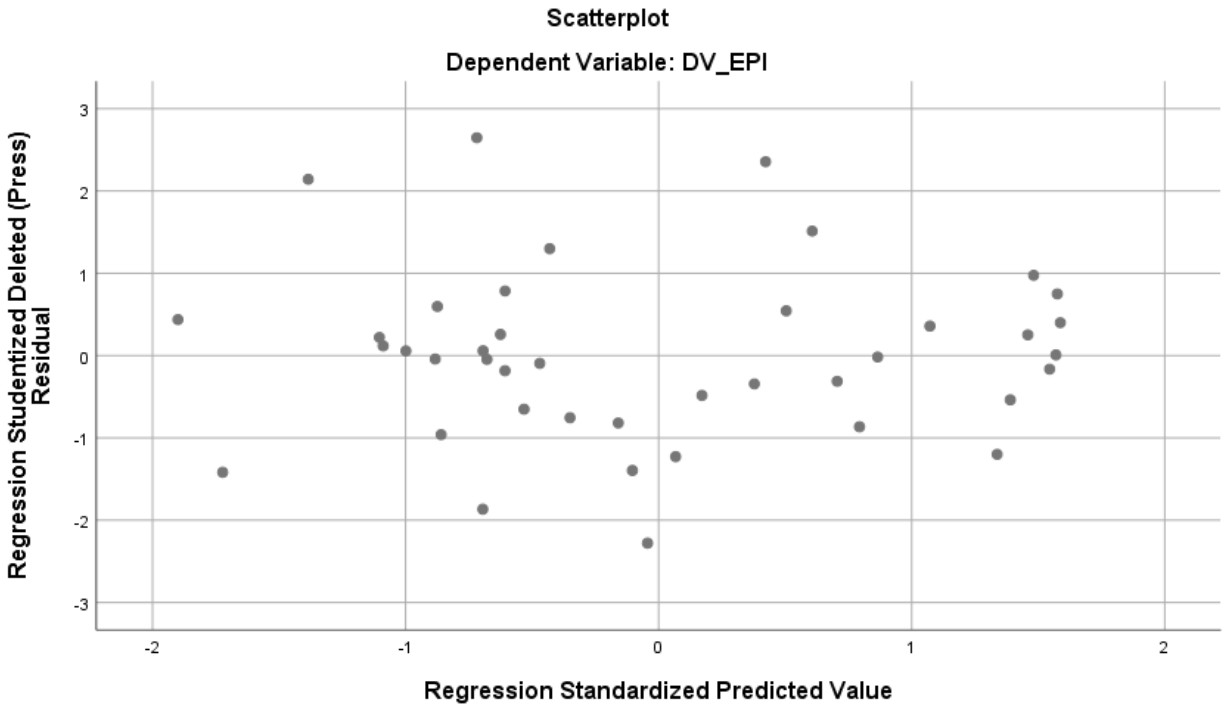


C5 International environmental agreements

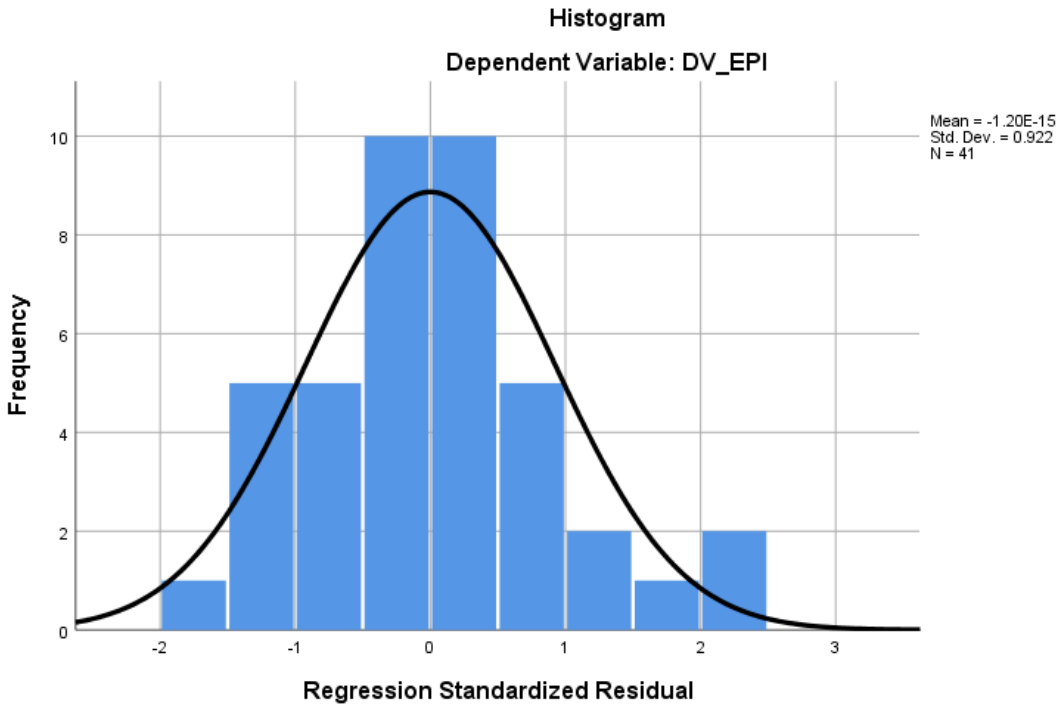


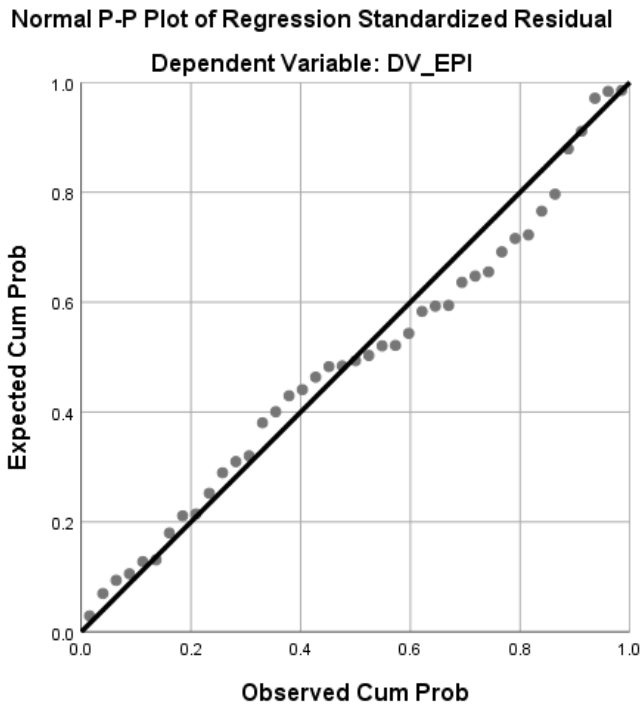
8. 4. OLS ASSUMPTIONS

8. 4. 1. Linearity



8. 4. 2. Error distribution





8. 5. REGRESSION

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.865[a]	.749	.705	6.82190

a. Predictors: (Constant), C5_IEA, C3_log10_population, IV_Values, C4_mean_years_of_schooling, C1_democracy_index, C2_rule_of_law

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4722.445	6	787.074	16.912	.000[b]
	Residual	1582.302	34	46.538		
	Total	6304.747	40			

a. Dependent Variable: DV_EPI

b. Predictors: (Constant), C5_IEA, C3_log10_population, IV_Values, C4_mean_years_of_schooling, C1_democracy_index, C2_rule_of_law

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	50.775	12.059		4.211	.000
	IV_Values	-.040	.071	-.054	-.567	.575
	C1_democracy_index	-.306	1.005	-.048	-.304	.763
	C2_rule_of_law	9.227	2.015	.763	4.580	.000
	C3_log10_population	.611	1.861	.031	.329	.744
	C4_mean_years_of_schooling	.945	.773	.154	1.221	.230
	C5_IEA	.000	.016	.002	.019	.985

a. Dependent Variable: DV_EPI

8. 6. RESULTS OF THE ROBUSTNESS CHECK

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	22.940	12.177		1.884	.069
	IV_Values	-.055	.088	-.077	-.621	.539
	C3_log10_population	2.366	2.160	.127	1.095	.282
	C4_mean_years_of_schooling	.922	.951	.151	.969	.340
	C5_IEA	.013	.017	.105	.740	.465
	political_trust	.738	1.429	.082	.516	.609
	pol_stability_absence_of_violence	.306	.111	.544	2.767	.010

a. Dependent Variable: DV_EPI