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The Green Influence: Exploring the Impact of Political Systems on Renewable Energy Transition in Oil Countries

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Abstract

This thesis explores the following question: How do political systems in oil-rich countries affect the adoption of environmental sustainability practices aligned with the UN Sustainable Development Goals? Existing research suggests that democratic countries better adopt sustainable environmental policies. Nevertheless, some oil-authoritarian countries can also implement clean energy practices. This thesis reaches this conclusion following different steps. First, the analytical framework, establishing the research structure, explores the economic equation of the production function, the clean democracy hypothesis, the economic model of the environmental Kuznets curve, and the ideology of eco-authoritarianism. Then, while finding a positive correlation between democracy and environmental performance, the methodology section that tests these theories also shows the existence of environmental initiatives in some authoritarian oil-dependent countries: the UAE, Saudi Arabia, and Qatar. This is demonstrated using a quantitative analysis of environmental performance, democracy index scores, oil rent percentage, and GDP per capita across 156 countries and a qualitative examination of policy initiatives in these three Gulf Cooperation Council countries. These findings encourage the international community to reconsider biases on authoritarian rich countries dependent on oil revenues and their possibility to adopt environmentally sustainable policies. Also, this research fills a significant gap in the literature by linking different theories to assess how political systems shape environmental initiatives in oil-rich countries. Until now, research looking at different spectrums, such as the relationship between political systems and oil or environment and oil, existed. Thus, linking these three aspects, this thesis enriches the academic research on political economy and environmental policy, offering insights for future assessments on oil, political systems, and their effectiveness on environmental initiatives.

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List of Abbreviations

CO2	Carbon Dioxide
EPI	Environmental Performance Index
GCC	Gulf Cooperation Council
GHG	Greenhouse Gases
IPCC	Intergovernmental Panel on Climate Change
SDGs	Sustainable Development Goals
UN	United Nations

I. Introduction

As societies have become dependent on petroleum, its use has led to significant environmental issues, including air pollution, GHG emissions, and climate change, along with devastating oil spills affecting wetlands, wildlife, and biodiversity (Olawuyi, 2013). This fueled a shift towards clean energy and climate action, embodied in the UN' Sustainable Development Goals (UNDSGs) 7 and 13 for sustainable energy and climate action. While the worldwide sustainability agenda has primarily been influenced by OECD[1] democratic countries, the Middle East has been rapidly making progress in recent years (Mohammadi et al., 2023). This intriguing phenomenon of undemocratic oil-dependent countries increasingly embracing sustainability is also indicated by their score in the EPI.

Thus, this research attempts to address an intriguing question: How do political systems in oil-rich countries affect the adoption of environmental sustainability practices aligned with the UN SDGs? Given the growing environmental concerns in the world today and the imperative for achieving environmental sustainability, extending existing research by focusing on oil-rich countries, may provide insights regarding these countries and their contribution (or not) to the UN development goals. This question extends the research in political economy that examines the relationship between having a valuable natural resource, such as oil, with the political system and follows the work of Barro (1999), Ross (2001), and Tsui (2011) who consider the negative relationship between oil-rich countries and democratization.

Usually, democracy is seen as the channel for development, which sets the basis for welfare (Haggard & Kaufman, 2008). This is exemplified by path dependence, a key concept of

[1] The Organization for Economic Cooperation and Development (OECD) is an organization where the governments of 37 democracies work together to create policy guidelines that promote sustainable economic growth.

historical institutionalism and political economy. Path dependence essentially promotes the idea that initial conditions in institutional choices initiate a gradual process that can reinforce itself. For instance, starting with a democratic system, the choices made at the beginning initiate a gradual process that reinforces itself and solidifies the commitment to citizen welfare. Indeed, the evolution of a welfare state often begins with recognizing individual rights within a democratic framework. Similarly, as democratic institutions establish themselves, there is a rising recognition of the importance of addressing social inequalities and providing a safety net for citizens. According to this logic, sustainable policy adoption is a natural evolution happening over time as democratic societies grow and desire to address sustainable development as a goal. This is because environmental policies impact both the environment and, over time, human welfare.

Also, examining issues related to temporality is crucial in this context, given that many political processes display inertia and are unable to advance. From this, even modest power inequalities can strengthen over time, becoming deeply ingrained in organizations and prevailing political actions. For instance, if environmental policies aim to restrict oil production in countries that have developed an economy mainly based on oil over the years, it is unlikely that an energy shift to clean energy would happen. Hence, path dependence encapsulates the idea that historical trajectory and initial choices play a significant role in shaping the development and persistence of institutions. As noted by Levi:

> "Once a country or region has started down a track, the costs of reversal are very high. There will be other choice points, but the entrenchments of certain institutional arrangements obstruct an easy reversal of the initial choice. Perhaps the better metaphor is a tree, rather than a path. From the same trunk, there are many different branches and smaller branches. Although it is possible to turn around or to clamber from one to the other–and essential if the chosen branch dies - the branch on which a climber begins is the one she tends to follow." (1997, p. 28)

Considering this, while there is evidence that democracy supports the government's implementation of sustainable environmental policies, this thesis will advance an innovative answer that shows how the shift toward clean energies may also occur in some countries without democracy, but with authoritarian regimes, and heavily dependent on oil revenues as a source of government funds.

A. Thesis Structure

To address the research question, this thesis will first conduct an analysis of existing literature on sustainability and sustainable development, oil's influence on political systems (e.g. oil impedes democracy), and existing research on how environmental policies are executed differently in authoritarian and democratic regimes. Then this research will present an analytical framework that examines the main theories on growth, environmental sustainability, natural resources, and political systems. This framework will cover the production function, the clean democracy hypothesis, the emerging theory of *eco-authoritarianism*, and the Environmental Kuznets Curve. Third, the methodology section is divided into two parts: the first employs a 'macro' and quantitative approach across different groups of countries to analyze the hypothesis concerning oil dependence, democracy, growth, and their influence on countries' environmental performance. The second part conducts a micro and qualitative analysis of the GCC countries, a group focused on economic and policy integration made by Bahrain, Kuwait, Qatar, Oman, Saudi Arabia, and the United Arab Emirates.

The findings show that authoritarian systems can also positively adopt sustainable policies. The qualitative analysis will particularly focus on the efforts of the UAE, Saudi Arabia, and Qatar to adopt sustainable practices despite their reliance on fossil fuels. Fourth, a brief discussion of these findings will follow. This part explores the main findings and their broader

limitations and implications, which extend beyond regime type to include other factors. Oil-rich authoritarian regimes might not uniformly align with adopting sustainable practices. Consequently, this discussion will address the research limitations, considering nominal GDP, regime types, and state capacity through the government effectiveness index. Finally, a conclusion chapter will follow.

II. Literature Review

This literature review explores existing research on sustainable growth, oil allocation, political systems, and implementation of environmental policies. First, it examines what is meant for sustainability, providing a basis for an in-depth analysis of the 'resource curse' theory and its implications for sustainable development. Second, it analyses the relationship between resource wealth, specifically oil, and political structures, highlighting how the quantity of oil in a region can shape governance models ranging from democracies to authoritarian systems. Third, the analysis further reviews how these two different political systems may impact sustainability efforts and adoption.

A. Sustainability and Sustainable Development

The term 'sustainability' has become a common mantra as its importance grows, being used to express a wide range of goals to achieve; for example, economic sustainability, environmental sustainability, and, eventually, sustainable development (Du Pisani, 2007). These ideas are not only deeply interconnected, but they also set the basis of discussions for state and non-state actors in the international arena, ranging from nations to international organizations such as the UN and individuals around the globe. This widespread engagement highlights the role of sustainability in creating a more resilient world. Considering this context, it is crucial to explore what exactly is meant by sustainability.

The English terms ‘sustainable’ and ‘sustainability’ appeared for the first time in the Oxford English Dictionary in the second half of the 20th century (Müller, 2023). However, in German, French, and Dutch, equivalent terms meaning lastingness such as ‘nachhaltigkeit,’ ‘durabilité,’ and ‘duurzaamheid’ respectively, have been used for centuries (Van Zon, 2002). Interestingly, ancient Greeks and Romans had already discussed issues related to ecological degradation and sustainability; in the 4th century BC, the Greek physician Hippocrates observed the “effect of climate on human health, temperament, and intelligence and remarked that civilizations arose in lands of moderate or warm climate with light rainfall, where water supply was a major challenge” (Hughes 1975, 3). As of today, sustainability relates to the economic, social, institutional, and environmental aspects of human society and the non-human environment (Srivastava 2012).

Essentially, sustainability aims to provide the best outcomes for the human and natural environments now and into the indefinite future. Considering this, the first definition of sustainable development is given by the Brundtland Report (1987). Although officially titled *Our Common Future* by the World Commission on Environment and Development, this report was informally named after Norway's Prime Minister, Gro Harlem Brundtland. It stands as one of the earliest documents acknowledging the necessity of sustainable development, defined as:

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (p. 1).

This definition is fundamental as it inspired the core international initiatives on sustainability and human development. For example, the global development goals of Agenda 21, a program of action agreed at the UNCED at the Earth Summit in Rio de Janeiro in 1992, called for innovative approaches to achieve overall sustainable development in the 21st century (UN, 1992). Similarly, the Millennium Development Goals, established by the UN in New York

in 2000, set targets for achieving sustainability globally by 2015; among these were eradicating hunger and extreme poverty and promoting environmental sustainability (MDG Monitor, 2017). However, the most significant achievement driven by the desire for sustainable development is The 2030 Agenda, released by the UN General Assembly in 2015, which outlines the 17 Sustainable Development Goals (SDGs), including 169 targets intended to be achieved by 2030; 193 countries have committed to supporting these goals. (UN, 2015a). This agenda, effective from January 1, 2016, aims to eradicate poverty, ensure economic growth, and meet social needs like education, health, and employment, all while ensuring environmental protection. Thus, the SDGs, rooted in the principles of 'people, planet, prosperity, peace, and partnership,' aim at harmonizing economic, social, and environmental sustainability (UN, 2015b).

Figure 1: UNSDGs.

Note: Retrieved from United Nations. (2018). *Communications materials - United Nations Sustainable Development*. United Nations Sustainable Development; United Nations. https://www.un.org/sustainabledevelopment/news/communications-material/

In particular, Goal 7 is worth mentioning for this research as it aims to ensure global access to affordable, reliable, sustainable, and modern energy by 2030 (The Global Goals, 2023). Recognizing energy as a cornerstone for nearly every major challenge and yet opportunity the world faces today, Goal 7 emphasizes the need for a drastic increase in the share of renewable energy globally, the improvement of energy efficiency, and the enhancement of international cooperation to easy access clean energy research and technology (Walesiak & Dehnel, 2024; Dornier Group, 2024). Consequently, while supporting the growth of new market opportunities, Goal 7 also promotes environmental sustainability and climate action.

Considering climate action, Goal 13 is also relevant for this thesis as it focuses on the urgent need to combat climate change and its impacts, aiming to integrate climate change measures into national policies and planning (UN, 2023a). This goal underscores the need for climate change mitigation and adaptation, as achieving it is crucial for a sustainable future. It aligns with the 2015 Paris Agreement, which aims at reinforcing the global response to climate change by binding signing countries to keep a global temperature rise well below 2 degrees Celsius above pre-industrial levels (UNFCCC, 2015). Additionally, the IPCC reports that global warming should be even more limited to 1.5°C, requiring rapid and unprecedented changes in all aspects of society, further emphasizing the need for action outlined in SDG 13 (2018).

Considering this, central to the effort of the UN to address climate change and achieve sustainable development is the recognition of oil, a non-renewable mineral natural resource, as a primary contributor to GHG gas emissions and environmental degradation (UN, 2023b). In this context, it is worth mentioning the term ‘resource curse,’ coined by Auty and Warhurst (1993), which, in general, refers to the paradox that, over the long run, countries rich in natural resources, such as oil, perform worse economically than countries where natural resources are

scarce. However, this term can also convey how oil-rich countries face difficulties in achieving overall sustainable development (including the environmental one) if they rely exclusively on oil. Therefore, other types of assets, such as clean energy, must mitigate the depletion of mineral resources- in this case, oil- to achieve sustainable development (Lange & Wright 6).

B. Oil's Influence on Political Systems and Growth: The Way to Authoritarianism

Focusing on oil and its influence, previous research has demonstrated the impact of oil on the rise of authoritarian regimes in several nations. Barro (1999) and Ross (2001) provide the first examples of how oil impedes democracy's rise, showing a statistically significant negative correlation between the percentage of a nation's GDP coming from fuel exports and democracy. In his study *Determinants of Democracy*, Robert J. Barro (1999) finds that democracy tends to decline with greater dependence on natural resources. His regression analysis includes a dummy for oil-exporting countries that adjusts the Gross Domestic Product to account for natural resource contributions, implying that income from resources like oil may exert less democratization pressure than income from human and physical capital accumulation. He finds that the high per capita GDP from oil production does not translate into the expected positive effect on democracy, which suggests that, holding per capita GDP and other variables constant, an oil country would have a lower electoral rights indicator (Barro, 1999).

Also, a fundamental piece in this context is Michael Ross's work *Does Oil Hinder Democracy?* (2001), which negatively links oil wealth to democratic developments. Ross argues that although oil wealth can drive economic growth, it challenges the evolution of democratic institutions. He argues: "Oil and mineral wealth tends to make states less democratic" (Ross, 2001, p. 328). He includes statistical analysis to support this assertion, including economic regressions that show oil's impact on democratic development compared to other minerals and

commodities. In particular, Ross's research examines the democratic deficit in 113 Middle Eastern and North African countries reliant on oil, finding three causal mechanisms that might explain this relationship: the rentier effect, the repression effect, and the modernization effect. The rentier effect suggests that oil-rich governments use oil revenues to avoid taxation, reducing public accountability and promoting an authoritarian social contract, opposing the Western principle of 'taxation with representation,' where citizens trade taxes for rights.

Reliance on oil revenues weakens civic rights and prevents the emergence of independent social organizations, hindering the development of the social capital required for democracy. Furthermore, the repression effect explains how governments in oil-abundant countries focus their revenues on enhancing public security to mitigate political dissent and discourage democratic aspirations. Finally, the modernization effect demonstrates how oil-rich countries' limited economic diversification, because of the heavy reliance on oil as an economic asset, causes a limited labor force participation rate, hinders the growth of the middle class, and the prospect of democratic reforms. In contrast, in the West during the 18th and 19th centuries, labor movements contributed to the advancement of democracy during the Industrial Revolution. Consequently, without the cultural and social changes caused by industrialization, Ross contends that economic progress in heavily oil-reliant countries does not lead to democracy. This is primarily because the oil industry, largely mechanized, employs few people and thus does not produce a labor force that advocates for reforms.

In *More Oil, Less Democracy: Evidence from Worldwide Crude Oil Discoveries* Kevin Tsui uses statistics on worldwide oil discoveries to examine the long-term consequences of oil wealth on democracy, finding a negative link between oil export dependency and democracy (2011). He argues that since oil wealth provides incentives for monopolizing the state, dictators compete

for overall oil wealth rather than just per capita oil rent or export dependency. Contrary to Ross's previous beliefs, he contends that oil-rich rulers impose political barriers or make compromises to purchase political authority to secure oil revenue. His study focuses on the democratic scores for oil-producing and non-oil-producing countries, categorized by type of government, revealing significant differences in oil discoveries among nations. None that emerged before the peak years of oil development is democratic. Three decades later, post-peak, non-democracies with oil are around 10% less democratic than those without. However, discoveries of oil have little effect on democracies. This suggests that the richness of oil and political changes have a complicated relationship, with the influence of oil varying substantially according to the kind of government and the amount of oil discovered.

Expanding on the effects of oil, Keith Myers (2005) argues that it can be both a blessing and a curse, pointing out that while oil benefits heavily populated, oil-rich Gulf states, it has a different effect on less populated, less oil-rich countries like Nigeria because of the limited job creation and volatile revenue from oil. As the title *Not By Oil Alone* suggests, Myers shows that relying only on oil is unsustainable and could cause a nation's collapse, calling for a reevaluation of oil's relevance to national development (2005). This supports the idea of economic diversification, i.e., that a nation cannot rely solely on the oil sector or its earnings. As in Ross' case, Myers does not mention potential environmental effects. On the other hand, earlier works, such as the one Mahmoud H. Fouad published in 1978, predicted that the oil-exporting country's boost in money would have given rise to expectations of rapid acceleration of growth and political development. He contended that, eventually, increased levels of welfare for their people, together with economic diversity, would have been the inevitable result.

Yet it is worth mentioning that decades before Ross, Fouad emphasized that economic development should not only enhance financial growth but also people's capabilities, highlighting the importance of education, attitude shifts, and new modern traditions. This completes Ross's modernization theory, with Fouad concentrating on oil revenue, domestic economic progress, and the petrodollar recycling issue (1978). On this last point, the acronym petrodollars refers to income from crude oil exports priced in US dollars (CBO, 1992). Oil-exporting countries use these revenues for domestic spending; in particular, recycling petrodollars involves investing them in sovreign wealth funds (SWFs,) which are government-owned pools of foreign currency reserves, vital to diversify income sources (Amadeo, 2022).

Finally, in October 2018, the OECD released the report *Resource Curse in Oil Exporting Countries* to show the unsustainable impact of oil wealth on long-term growth, where the results for political systems were quite interesting (Kakanov et al., 2018). The report shows a negative correlation between natural resource wealth and economic development, linking reliance on oil exports to weak growth rates. The report also highlighted that institutional quality only boosts GDP in environments where it is already high, while in places with low institutional quality, its effect on growth is negative (Kakanov et al., 2018). Contrary to Ross's claim that oil wealth and democratization are incompatible, the research finds no significant connection. Instead, it suggests a non-linear relationship between institutional quality—encompassing rights, accountability, judicial independence, democracy, and civil liberties—and economic performance, indicating that powerful institutions boost GDP when high but negatively impact it when low.

C. Environmental Policies: Democracy vs. Authoritarianism

Considering the review made thus far, it should be analyzed how different articles have examined the relationships between political systems—democracy and authoritarianism—and how they react to environmental tasks. First, the *clean democracy hypothesis* supports the idea that democracies have higher environmental standards (Schultz and Crockett, 1990; Payne, 1995; Li and Reuveny, 2007). This theory is grounded in the principles of democracy, which include the freedom of citizens to express their views, the freedom of media to cover political events, and the accountability to which leaders are subject through free and fair elections. Such freedoms ensure that political developments are influenced by citizen preferences, with democracy enhancing coordination and representation via lobbying groups and political entities (Congleton, 1992; Li & Reuveny, 2006). Therefore, this framework influences the implementation of environmental policies since they reflect the citizens' demands for better environmental performance. Moreover, the idea underlying this hypothesis is that democracies display a greater tendency for cooperation and adherence to environmental accords, underscored by their commitment to legal norms. Consequently, this implicitly underscores that authoritarian leaders prioritize environmental concerns less than democratically elected officials, who are accountable to their electorate.

In fact, since authoritarian governments on the left and right have often shown an anti-environmentalist bias, some scholars may still find it impossible for environmentalism and authoritarianism to coexist (Pál & Brain, 2018). Nonetheless, Kammerlander & Schulze challenged this hypothesis using a dataset of 137 countries from 1970 to 2012, finding no consistent evidence supporting the notion that democracies are inherently cleaner, including those with higher incomes (2020). The inherent disadvantages of democracies, particularly social

fragmentation, which reduces cooperative behavior and negatively impacts the distribution of public goods like environmental protection, might explain this. Thus, there is a negative correlation between all indices of social fragmentation and environmental quality metrics, highlighting the obstacles that democracies face when attempting to implement strict environmental regulations (Papyrakis, 2012). Also, the study by Enninga sheds light on public perception of democracy and the environment in Europe; using a robust political economy perspective, Enninga highlights that among young Europeans, there is a growing skepticism towards the capability of market liberal democracies to address environmental issues effectively. More than half of the young European population interviewed, considered authoritarian governments more effective at managing climate change concerns, showing a rising disenchantment with market-liberal democracies' environmental policies (Enninga, 2023).

From this, the ideology of *eco-authoritarianism* is crucial to consider, which positively links environmental performance and authoritarianism. Three core beliefs build this ideology: first, that individuals, if left totally free, will lead to environmental degradation in a world with finite ecological resources; second, democratic societies are incapable of limiting individual autonomy sufficiently to prevent ecological disaster; third, entrusting total power to people who are aware of needed steps and can implement solutions without democratic consent is a more effective strategy for fighting ecological disasters (Shahar, 2015, p. 348). Also, Shahar (2015) identifies two phases of *eco-authoritarianism*. The first, early wave that developed in the 1970s supported the notion that authoritarian regimes were needed to address environmental issues because they were better at obtaining obedience than democratic ones (Heilbroner, 1974). The early eco-authoritarians, relying on the three intuitions listed above, drew on Garrett Hardin's famous *Tragedy of the Commons*, where the environmental 'ruin of all' occurs when citizens act

in their self-interest, contributing to damaging the environment (Hardin, 1968, 1244). Also, early eco-authoritarians viewed citizens as unable to prioritize the ecological collective good, advocating for centralized power and expert officials having unlimited control (Shahar, 2015).

However, the early eco-authoritarian view was contested by many scholars because it failed to consider whether policies made by authoritarian regimes would genuinely and effectively produce more environmentally friendly outcomes (Buck, 1996). Nevertheless, in the last thirty years, the growing threat posed by climate change— perceived as an urgent and impending emergency—has given rise to a second wave of *eco-authoritarianism* ideology. Mittiga (2022) believes that authoritarian methods are acceptable in times of crisis, specifically when they intend to protect the people. He compares the present threat of climate change to the recent COVID-19 pandemic, which led to the imposition of restrictions on mobility and contact as legitimate state measures. Thus, according to Mittiga, "the existential threat posed by climate change warrants similar, if not more urgent, authoritarian interventions to safeguard public well-being" (998). Therefore, he suggests that, under specific conditions, authoritarian strategies to address climate change could be appropriate. However,before considering all the study it should be clarifies that there is no one way to define authoritarianism and democracy.

Based on the articles reviewed, many scholars perceive authoritarian governments as better capable of enforcing environmental regulations due to their characteristic of commanding compliance from their citizens. However, scholarly research on the ability of not only authoritarian but also oil-dependent countries to satisfy environmental standards is lacking. As a result, the thesis's following paragraphs try to fill this gap by linking together politics, economics, the environment, and oil. Consequently, to properly assess the research question, an evaluation of the efficiency of both kinds of political systems should be done. Thus, the

following analytical framework will explore the underlying ideas that have motivated this research and the data processes of collection, selection, and classification.

III. Analytical Framework

The foundational framework for economic growth begins with a production function given by equation (1):

$$(1)\quad \mathrm{Y} = \mathrm{AF}(\mathrm{K}, \mathrm{L}, \mathrm{H}, \mathrm{N})$$

Y represents the output (productivity), the letter A denotes total factor productivity (TFP), and F represents the function showing how inputs are combined. Instead, L stands for labor input, K for physical capital input, H for human capital input, and N for natural resource input, grouped as either renewable or nonrenewable. By this equation, TFP shows the effectiveness with which inputs are converted into output, measuring the increased production produced with equal amounts of K, L, H, and N. Turning this into a model of economic growth, using constant returns to scale we have equation (2):

$$(2)\quad \frac{Y}{L} = AF(\frac{K}{L}, 1, \frac{H}{L}, \frac{N}{L})$$

One key research focus is to ask what determines if economic growth is sustainable considering UN SDGs. This is even more interesting to ask if economic growth is sustainable in the presence of oil as a natural resource. The connection between political structures and sustainable economic growth is vast (Congleton, 1992; Li & Reuveny, 2006). Yet the connection between sustainable economic growth for countries with oil (natural resource curse, Barro,1999; Ross,2001; Tsui,2011) is less developed. Indeed, understanding the relationship between political systems, natural resources, and sustainable growth that aligns with better environmental performance (Payne, 1995; Li and Reuveny, 2007; Pál & Brain, 2018) has encouraged to address

the research question. To approach this question, theoretical arguments for each political system, , and how they lead to UN SDG goals (or not) should be explained.

First, the theoretical process that links democracy to the adoption of environmental policies follows logical reasoning that includes the fundamental pillars that constitute democracy. From the literature review, the main characteristics of democracy essentially are freedom of expression, free and fair elections, leaders accountable to the public, and citizens free to lobby. Thus, these freedoms ensure citizens that each political development will follow their will. Consequently, the characteristics intrinsic to democracy foster the implementation of environmental policies, especially when highly desired by citizens, because of the accountability political leaders owe their electorate. Also, environmental policies are highly legitimized in democratic systems as they come out of collective consensus. Hence, considering the growing recognition of complying with UN SDGs, democracy's tendency for cooperation and adherence to environmental agreements would lead to the successful implementation of SDGs.This is supported by the clean democracy hypothesis (Schultz and Crockett, 1990; Payne, 1995; Li and Reuveny, 2007), which argues that democracies should display higher environmental standards than other types of systems because of the characteristics intrinsically related to them.

This would frame authoritarian systems as opposite to the adoption of SDGs, aligning with the belief of some scholars who still find it impossible for environmentalism and authoritarianism to coexist (Pál & Brain, 2018). A possible explanation for this position is that authoritarian systems legitimize their power through centralization, which unifies all three powers (legislative, executive, and judicial) into one or few hands, eventually dismissing all the characteristics typical of a democracy listed above. In addition, Ross's work suggests that within authoritarian regimes, if sustainable policies conflict with the interests of a ruler, they will not be

successfully implemented or adopted, regardless of the citizens' desire for them (2001). Consequently, the assumption is that authoritarian leaders prioritize environmental concerns less compared to democratically elected officials, making authoritarian systems' traits an obstacle to SDGs' adoption. Nonetheless, some scholars argue that the same characteristics that make an authoritarian system appear to be the primary threat to higher environmental standards also provide authoritarian rulers with a unique ability to enforce sustainable practices.

Considering this, scholars supporting *eco-authoritarianism* find that the freedoms that make democracies successful, over the long run, will become a threat to sustainable practices, recognizing the need for a centralized authority that rules over people's behavior. This, for instance, finds support in Hardin's Tragedy of the Commons (1968), where he notes that in a world of finite resources, the freedom to deplete them without limits would lead to destruction. Thus, the concepts underlying *eco-authoritarianism* provide theoretical explanations of why, despite its undeniable value, democracy as a political system might not be essential for enacting environmental policies (Shahar, 2015). Instead, authoritarianism is the political system needed since it has a leader who rules over the community, setting limits on them and making fast decisions during emergencies. Second-wave theorists of *eco-authoritarianism* gained popularity since they considered authoritarianism needed since it is successful in emergencies like COVID-19, comparing the pandemic to the ongoing threat of climate change (Mittiga, 2022).

Thus, whether this ideology of *eco-authoritarianism* is only a theoretical concept that has the potential to be implemented or whether it is manifesting itself in authoritarian countries that desire to be greener should be analyzed. An argument in favor of the second hypothesis can be drawn from framing the emergence of *eco-authoritarianism* under a new perspective, being the economic model of the *Environmental Kuznets Curve*, represented by an inverted U curve. First

introduced by Simon Kuznets in the 1950s and '60s, the *Environmental Kuznets Curve* extends the concept of the original *Kuznets Curve*, which showed inequality decreasing as a nation industrializes, with inequality plotted on the Y-axis and time or per-capita income on the X-axis. The *Environmental Kuznets Curve* shows how, starting from a clean environment during the pre-industrial period, as an economy industrializes (e.g. discovers and uses oil), it gives up the untouched environment, which risks being polluted and depleted of its natural resources. However, as this economy reaches its optimum point, the environment becomes cleaner again since no longer restricted by development concerns, governments will aim to sustain growth by investing in the environment. Thus, following this logic, in oil-dependent countries which had achieved growth, whether authoritarian or democratic, resources are allocated to find alternative energy sources.

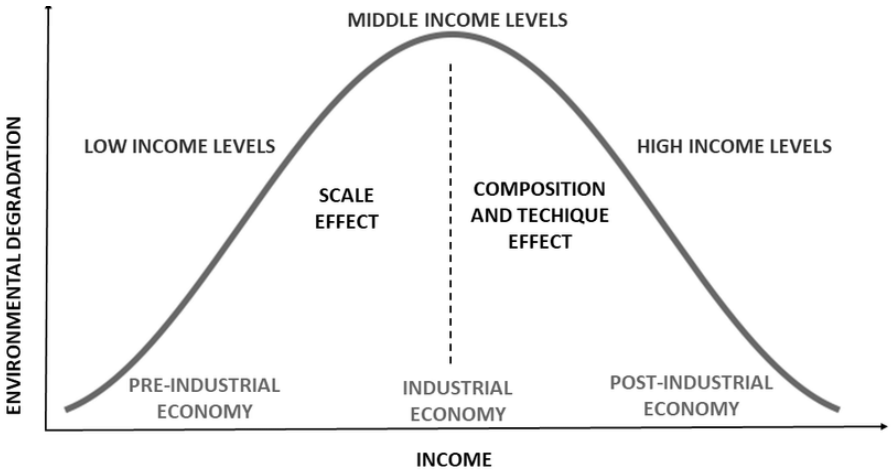

Figure 2: The Environmental Kuznets Curve

Note: Retrieved from Mitić, P., Kresoja, M., & Minović, J. (2019). A Literature Survey of the Environmental Kuznets Curve. Economic Analysis, 52(1), 109–127.. https://doi.org/10.28934/ea.19.52.12.pp109-127

Having outlined how different political systems may or may not lead to the adoption of the UN SDGs, these theories should be examined based on all countries, non-oil countries, and oil countries to determine which country group aligns with the discussed theories and models.

IV. Methodology

The methodology of this thesis will show exploratory data analysis; this will include a quantitative part with a summary of descriptive statistics and multiple linear regressions where the relationship between a single dependent variable and three independent variables will be examined. Specifically, the dependent variable is EPI, and the independent variables are Oil Rents, Democracy, and GDP per capita. Each of these variables has a separate value for each of the 156 countries considered.[2] The second part of the methodology, having a qualitative approach, will use a small selection of authoritarian countries with large oil reliance.[3]

A. Empirical and Quantitative Analysis

It is essential to first define these four variables:

Table 1: The Four Quantitative Variables

EPI: Environmental Performance Index

Definition	Quantitative measure for analyzing the environmental performance of countries worldwide, focusing on how nations manage environmental health protection, enhance ecosystem vitality, and their capacity to mitigate climate change. It ranges from 0 to 100, with the highest representing the performing best nation.
Source	Wolf, M. J., Emerson, J. W., Esty, D. C., de Sherbinin, A., Wendling, Z. A., *et al.* (2022). *2022 Environmental Performance Index.* New Haven, CT: Yale Center for Environmental Law & Policy. epi.yale.edu

[2] See Appendix 1; Table A1: All Countries

[3] The quantitative methodology includes different data visualizations and analytical outputs, such as summary statistics, multiple linear regression models, histograms, and scatterplots, all of which were made by the author using RStudio, a tool for statistical computing and graphics.

Oil Rents (% GDP)

Definition	Oil rents are the difference between the market price of crude oil and its average production cost. This difference highlights the excess profit generated from oil extraction, underlining the economic value derived from this vital natural resource, beyond the expenses faced during its production. Oil rents are measured in terms of their contribution to the GDP, expressed as a percentage.
Source	worldbank.org; https://datacatalog.worldbank.org/public-licenses#cc-b

DI: Democracy Index

Definition	The level of democratization across countries on a scale ranging from 0 to 10, with the highest score representing the most democratic nations. This evaluation is based on indices by the Economist Intelligence Unit, which provides information on the degree to which citizens can elect their leaders through open and fair elections, enjoy civil liberties, participate actively in political processes, and have a functioning government that operates in their best interest, all fundamental requirements for a robust democratic system.
Source	Our World in Data. (2023). Economist Intelligence Unit (2023). *Democracy Index*. [online] Available at: https://ourworldindata.org/grapher/democracy-index-eiu.

GDP (per capita)

Definition	Gross Domestic Product per capita is a variable that assesses economic performance across different countries. It represents the total output of a country, divided by the population, which refers to the nominal GDP per capita. This provides an overview of the economy in current market conditions, measured in US dollars, without adjusting for price levels or inflation.
Source	International Comparison Program of World Bank; Wrd Dev. Indicators database. https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD

The period chosen for all variables is the year 2022.[4] Besides, Oil Rents allow us to assess how significantly a country's economy depends on its natural resources, in this case, oil. In many countries, earnings from oil make up a large part of national income. Thus, exploring the concentration of oil rents is important since reliance on finite natural resources poses challenges for long-term development (e.g., consider the natural resource curse hypothesis). Data from groups in three different countries will be analyzed to ensure accurate exploration. The first group will consider All Countries regardless of their quantity of oil rents. The second group analyzes countries with Minimal or No Oil Rents, while the third examines countries with Oil dependence considered as their quantity of Oil Rents. The second and third groups are subsets of the first one, classified based on Oil Rents. This classification is represented through Oil Rents as a binary (dummy) variable, meaning that a column was created where 'Oil Rents=1' indicates

[4] Oil Rents for 2022 were estimated as a percentage of GDP, computed for the average of 2016-2021, excluding 2020.

countries whose GDP is influenced by oil rents and 'Oil Rents=0' indicates countries with minimal or no oil dependence.

1. All Countries Analysis

First, the number of countries analyzed in this section is 156. Below is a statistical overview of the primary metrics for each variable for all countries, including the mean, standard deviation (Std.Dev.), minimum (Min), and maximum (Max). A detailed analysis of the outcomes for each variable will follow this data presentation.

Table 2: Summary Statistic for All Countries

Variable	Obs.	Mean	Std.Dev.	Min	Max
EPI	156	42,75449	12,87715	18,9	77,9
OilRents	156	2,805678	6,863254	0	40,13392
Democracy	156	5,389423	2,330007	0,32	9,81
GDP	156	22383,46	23155,17	708,1783	117747

From this statistic, the mean EPI score for all countries is 42.75 with a standard deviation of 12.87, suggesting that the countries are moderately clustered toward the mean. The histogram below displays this clustering, highlighting the variation in EPI scores across different countries *(Figure 3).* Additionally, the range of EPI scores extends from a minimum of 18.9, corresponding to India, to a maximum of 77.9, attributed to Denmark. Also, the histogram below displays all the values from the lowest to the highest, complementing the numerical data illustrating the distribution of EPI scores, and facilitating its understanding.

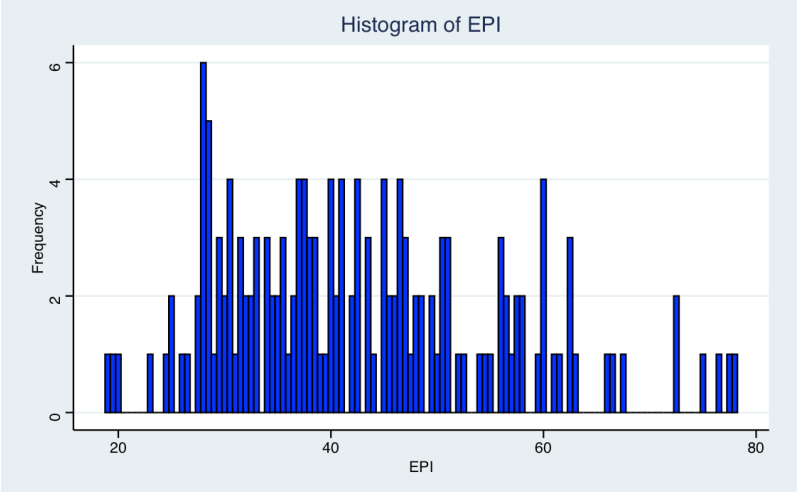

Figure 3: Histogram for EPI in All Countries

For oil rents, the mean proportion in GDP is 2.80, with a standard deviation of 6.86. Thus, while the average is relatively low, there is variation in how much countries rely on oil rents. The histogram below *(Figure 4)* demonstrates this: the minimum value is 0, represented by 40 observations—countries with oil rents close to 0, shown by the high frequency at the left. Conversely, the peak value reaches 40.13, associated with Iraq, followed by Kuwait at 37.59, Congo at 29.2, Angola at 26.19, and Saudi Arabia at 23.9. Oman, at 20.88, rounds out the top six nations, positioned toward the right of the histogram. Also, the poor bars distribution on the right tail shows how few countries have a high proportion of oil rents contributing to their GDP.

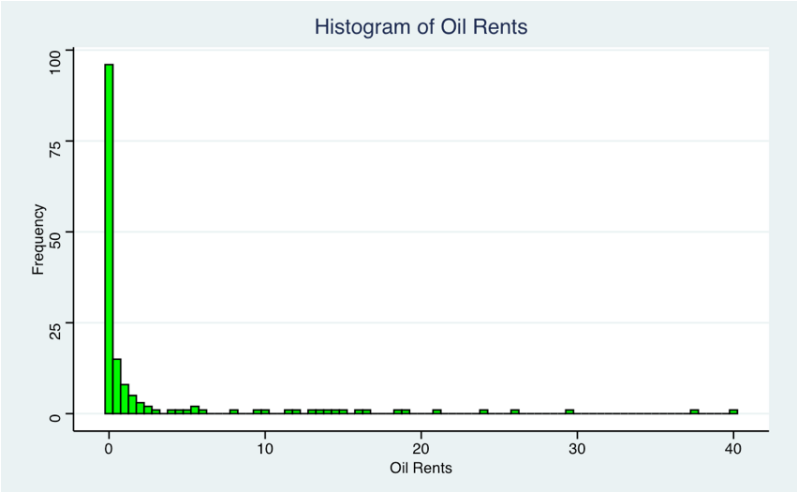

Figure 4:Histogram for Oil Rents in All Countries

Also, the mean DI score is 5.38 with a std. dev. of 2.33. With a minimum score of 0.32, attributed to Afghanistan, and a maximum of 9.81 for Norway, the range is substantial. The histogram below *(Figure 5)* shows this spread; while the shorter bars at the ends reflect the fewer countries with very low or very high democracy ratings, the taller bars surrounding the mean score show a concentration of nations with moderate levels of democracy.

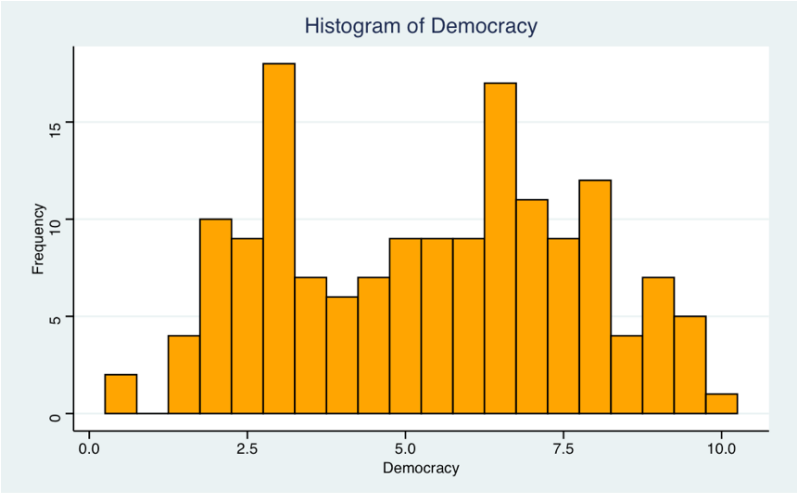

Figure 5:Histogram for Democracy in All Countries

Finally, the mean GDP per capita in 2022 is 22,3883,46 USD with a standard deviation of 23,155,17 USD suggesting wide disparity in income levels across different nations. The range, in fact, has a minimum of 708.17 USD, corresponding to Burundi, and a maximum of 117,747 USD represented by Luxembourg. The histogram below (*Figure 6*) shows that many countries have low GDP per capita, placing them at the lower end of the scale (the taller bars on the left). Additionally, the histogram shows, to the right, the small number of nations with extraordinarily high GDP per capita values that increase the standard deviation. The histogram's bar distribution drastically drops as it moves to the right, highlighting how uncommon high-income levels are in the analyzed countries.

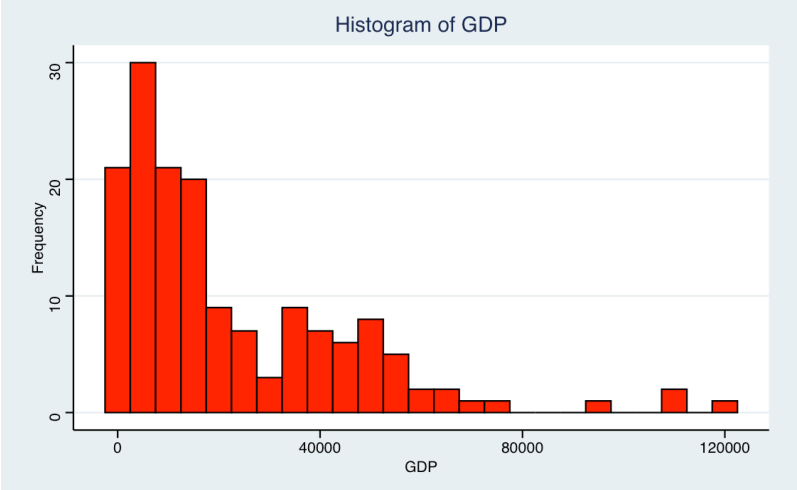

Figure 6: Histogram for GDP in All Countries

Thus, a multiple linear regression is created to examine the interaction between oil rents, democracy, and GDP as independent variables, with the EPI as the dependent variable.

Table 3: Multiple Linear Regression for All Countries

	Dependent variable:
	EPI
Oil Rents	-0.130
	(0.112)
Democracy	1.835***
	(0.398)
GDP	0.0003***
	(0.00004)
Constant	27.054***
	(2.031)
Observations	156
R^2	0.556
Adjusted R^2	0.547
Residual Std. Error	8.669 (df = 152)
F Statistic	63.329*** (df = 3; 152)
Note:	*p<0.1; **p<0.05; ***p<0.01

The coefficient for oil rents is -0.130, suggesting that an increase of one unit in oil rents is associated with a decrease in the EPI. *Figure 7* displays a scatterplot of this relationship. However, while this relationship is negative, it is not statistically significant at traditional levels.

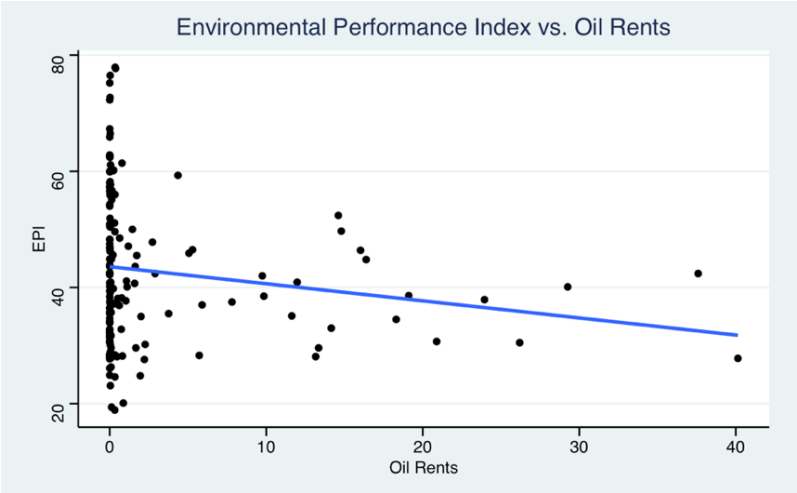

Figure 7: EPI and Oil Rents Relationship for All Countries

Second, for democracy, its coefficient of 1.835 indicates a positive and statistically significant relationship with the EPI; ceteris paribus, a one-unit increase in the democracy index corresponds to an estimated increase of 1.835 in EPI, supporting the clean democracy hypothesis. This is visually described in *Figure 8*, showing a scatterplot of this relationship.

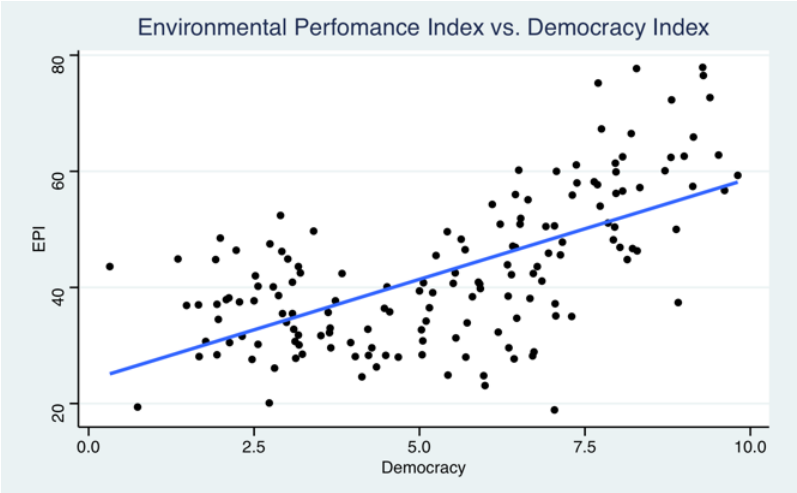

Figure 8: EPI and Demcoracy Relationship for All Countries

Finally, GDP has a coefficient of 0.0003, which is positive and statistically significant, indicating evidence of a positive effect of GDP per capita on the EPI, as shown in the scatterplot below (*Figure 9*). This finding supports a correlation between economic growth and environmental improvements, as argued by the Environmental Kuznets Curve hypothesis.

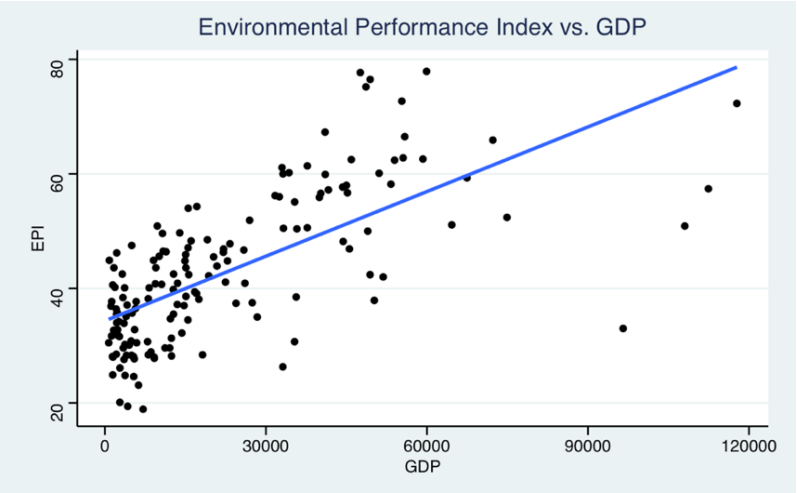

Figure 9: EPI and GDP Relationship for All Countries

2. No Oil Countries (Oil Rents = 0)

The countries selected are a subset of the ones where oil rents = 0.[5] Below is a statistical overview for each variable taken into consideration for no-oil countries.

Table 4: Summary Statistic for No Oil Countries

Variable	Obs.	Mean	Std.Dev.	Min	Max
EPI	40	40,3825	12,2934	24,9	75,2
OilRents	40	0	0	0	0
Democracy	40	5,0495	2,003777	1,35	9,52
GDP	40	13964,28	21967	708,1783	117747

The mean EPI score is 40.38 with a std. dev. of 12.29. This dataset ranges from a min. of 24.9, Liberia, to a75.2, being Malta. The histogram below (*Figure 10*) shows that most scores cluster below the average, implying a skew toward lower EPI values.

[5] The dataset contains observations for 40 countries, listed in the Appendix (Table A2)

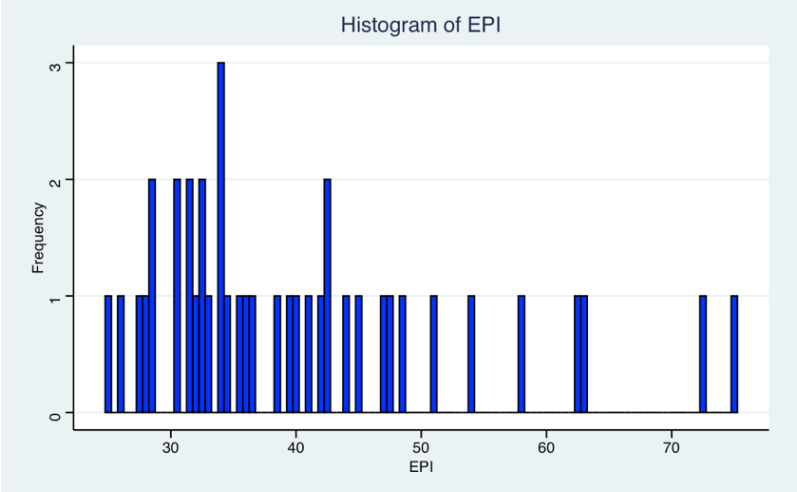

Figure 10:Histogram for EPI in No Oil Countries

The mean for DI is 5.04, with a std. dev. of 2.00. The min. Democracy score, the Central African Republic, is 1.35, while the max, Iceland, is 9.52. *Figure 11* shows concentration near the mean, between 4 and 6; many entities score low, and few reaches high scores.

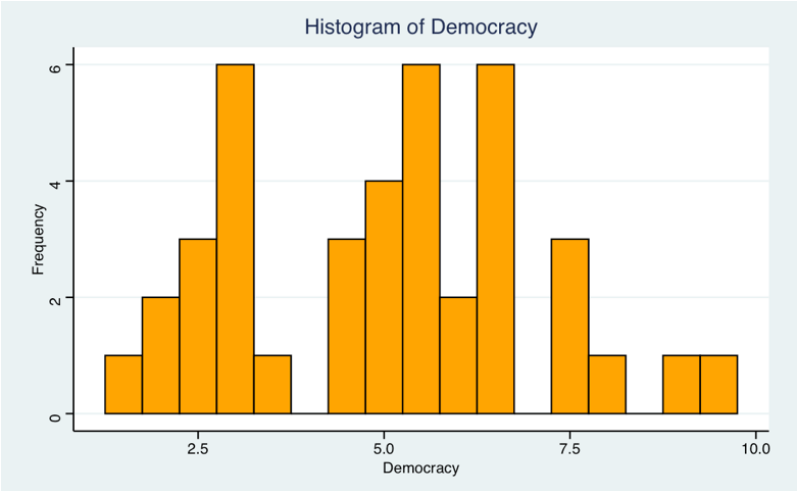

Figure 11: Histogram for Democracy in No Oil Countries

Third, the mean GDP is 13,964.28 USD, with a std. dev. of 21,967. The range extends from a min. GDP of 708.1783 USD, associated with Burundi, to a max. of 117,747.9 USD, Luxembourg's GDP. As reflected in *Figure 12*, there is a right-skewed distribution since most countries' GDP is far below the mean, with many clustered towards the left end. The isolated bars to the right represent the rare instances of much higher GDP values.

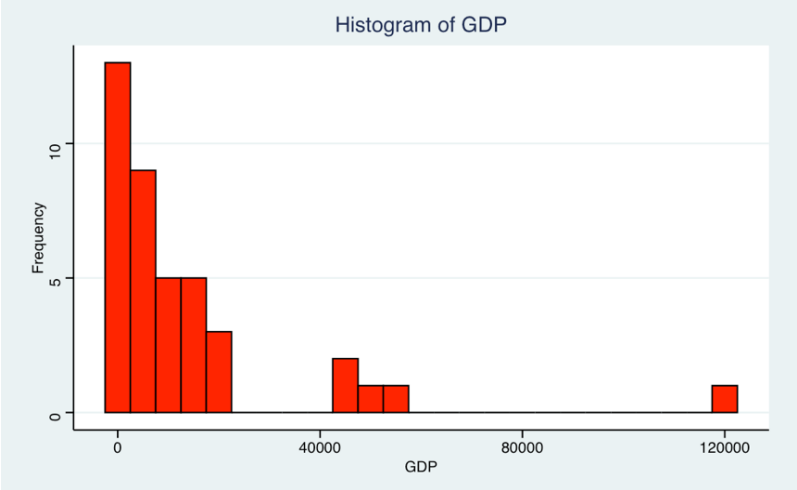

Figure 12: Histogram for GDP in No Oil Countries

Considering this, here is a multiple linear regression that analyzes the interaction between the EPI and each independent variable.

Table 5: Multiple Linear Regression for no Oil Countries

Oil Rents = 0	
	Dependent variable:
	EPI
OilRents	
Democracy	0.907
	(0.789)
GDP	0.0004***
	(0.0001)
Constant	30.278***
	(3.589)
Observations	40
R^2	0.662
Adjusted R^2	0.644
Residual Std. Error	7.338 (df = 37)
F Statistic	36.225*** (df = 2; 37)
Note:	*p<0.1; **p<0.05; ***p<0.01

The variable *OilRents* is excluded from the analysis due to its value being zero (*Figure 13)*.

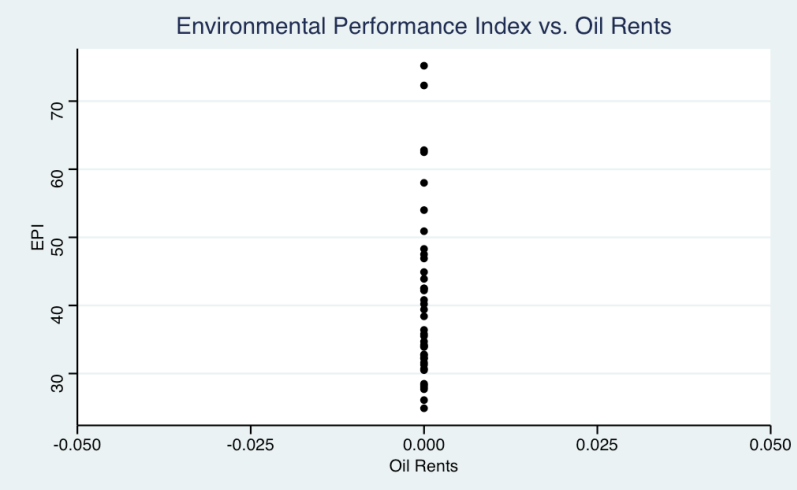

Figure 13: EPI and Oil Rents Relationship for No-Oil Countries

Then the DI coefficient is 0.907, which implies that for every unit increase in the Democracy Index, there is an expected. *Figure 14* displays the relationship between DI and EPI through a scatterplot. This supports the clean democracy hypothesis; however, the relationship is not statistically significant, warning against making definitive judgments about how democracy affects environmental performance in no-oil countries.

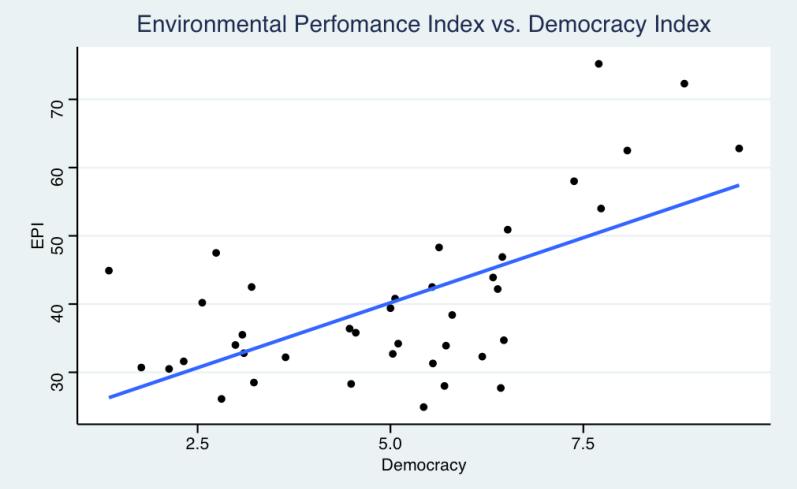

Figure 14: EPI and Democracy Relationship for No-Oil Countries

GDP's relationship to EPI is statistically significant, implying a positive correlation between the wealth of a nation, measured per individual, and its EPI. For every unit increase in GDP, ceteris paribus, there is a rise of about 0.0004 in the EPI, providing empirical evidence for the

environmental Kuznets curve model. The scatterplot in *Figure 15* illustrates the relationship between higher GDPs per capita and improved environmental performance, showing that the data tend to cluster towards the lower end.

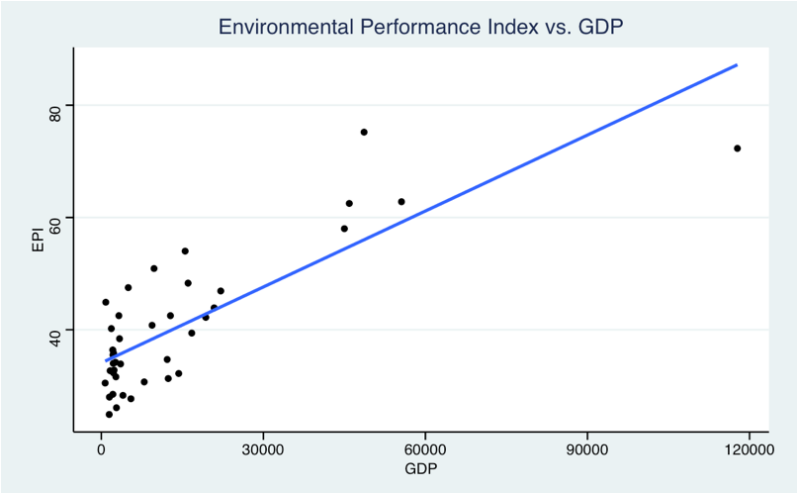

Figure 15: EPI and GDP relationship for No-Oil Countries

3. Oil countries (Oil Rents=1)

In this part of the analysis, the countries selected from all 156 countries are the ones where oil rents=1, meaning that they rely, though with very different intensity, on oil to make GDP grow. Below is a statistical overview of each variable considered for oil countries. An overview of the fundamental metrics, such as the number of observations (Obs.), mean, standard deviation (Std. Dev.), minimum (Min.), and maximum (Max.), will be given in this summary.

Table 6: *Summary Statistic for Oil Countries*

Variable	Obs.	Mean	Std.Dev.	Min	Max
EPI	116	43,57241	13,02359	18,9	77,9
OilRents	116	3,773153	7,733445	0,000115	40,13392
Democracy	116	5,506638	2,429312	0,32	9,81
GDP	116	25286,63	22931,41	1132,654	112445,4

First, the mean for EPI is 43.57, with a std. dev. of 13.02, suggests that some countries have significantly higher or lower environmental performance. The lowest EPI score is 18.9,

attributed to India. Instead, Denmark has the highest EPI score of 77.9, marking it as the best-performing country in environmental standards. *Figure 16* shows that fewer bars indicate lower EPI scores, suggesting that few countries perform low in EPI. Also, remarkably high EPI scores are likewise less common, evidenced by the smaller number of bars at the graph's right.

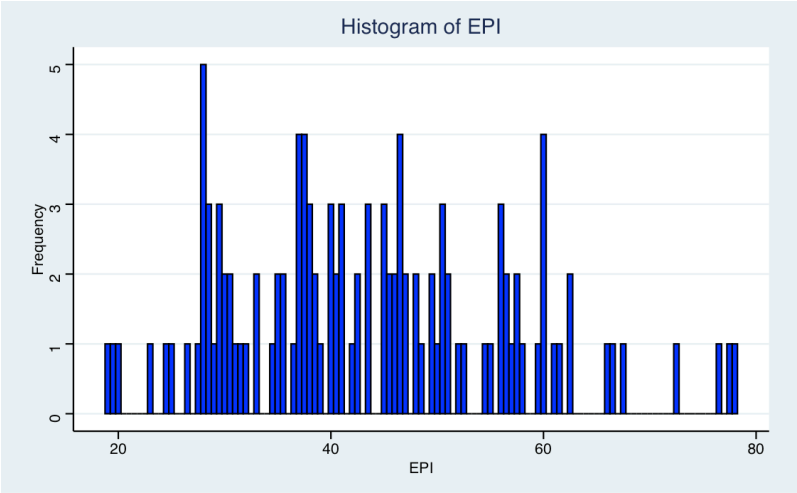

Figure 16: Histogram for EPI in Oil Countries

Second, on average, oil rents contribute about 3.77 to the GDP, with a std. dev. of 7.73, implying a considerable disparity in the extent to which oil rents contribute to GDP across different countries. The minimum oil rent percentage is near 0, meaning that, in some countries, oil rents contribute almost nothing to the GDP, with the lowest being Slovenia at 0.00011. Yet, the maximum oil rent percentage is 40.13, attributed to Iraq, where a significant portion of the GDP comes from oil rents. The histogram displayed below (*Figure 17*) visually demonstrates this variation; most countries have oil rents contributing very little to their GDPs—as indicated by the high frequency of bars near zero—while a few countries show significant reliance on oil rents, as evidenced by the bars further to the right.

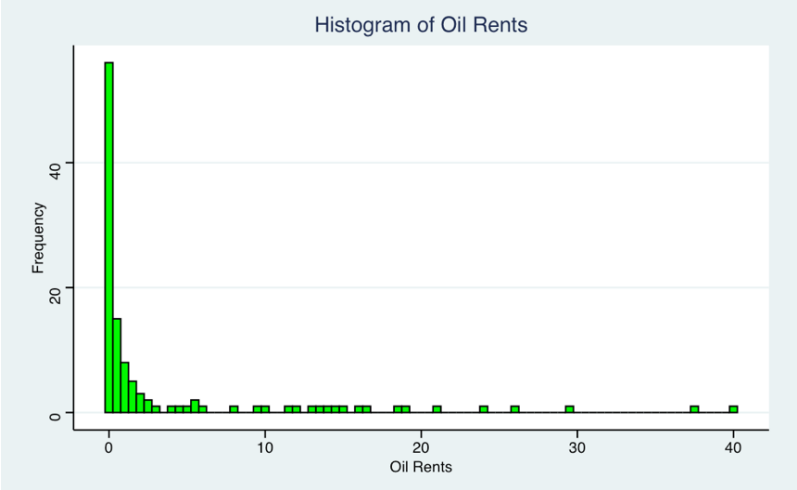

Figure 17:Histogram for Oil Rents in Oil Countries

Besides, the mean for DI is 5.51, with a std. dev. of 2.43, implying a wide range of scores among the countries analyzed. The minimum DI score is 0.32, being Afghanistan, suggesting a powerful authoritarian regime in place. Instead, the maximum score is is 9.81, linked to Norway. The histogram below *(Figure 18)* displays this range, where higher-end bars represent nations with more democratic governance and lower-end bars nations with less democracy.

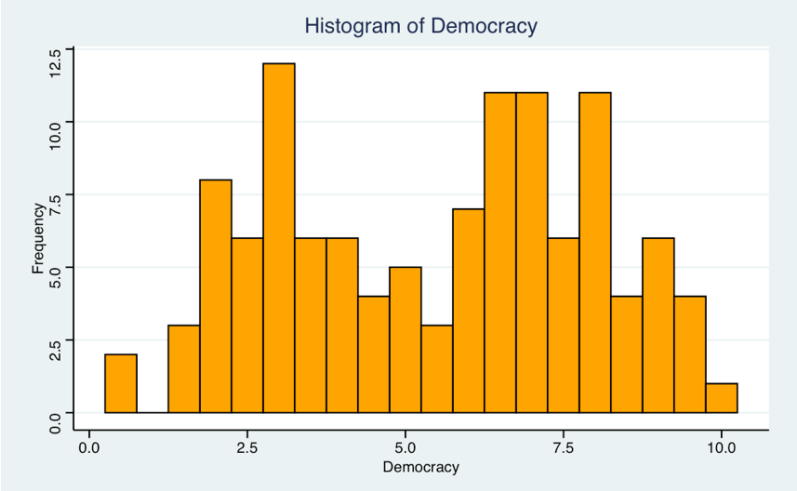

Figure 18: Histogram for Democracy in Oil Countries

Finally, the mean GDP per capita is about 25,286.63 USD, while the std. dev., of 22,931.41 USD, implies a remarkable divergence in values. The lowest GDP per capita is 1,132.654 USD, suggesting extreme poverty in the Democratic Republic of Congo. Instead, the

highest GDP per capita is 112,445.4 USD, signaling high wealth in Ireland. The histogram below shows this, with many countries on the left end and a few on the right *(Figure 19)*.

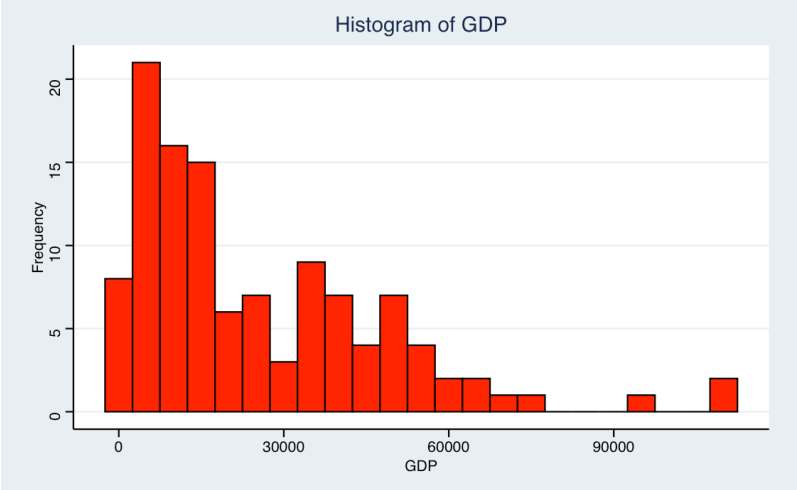

Figure 19: Histogram for GDP in Oil Countries

Consequenlty, a multiple linear regression examining the interaction between the EPI, as the dependent variable, and oil rents, democracy, and GDP as independent ones will follow.

Table 7*:* Multiple Linear Regression for OIl Countries

Oil Rents = 1

	Dependent variable:
	EPI
OilRents	-0.101
	(0.124)
Democracy	2.030***
	(0.462)
GDP	0.0002***
	(0.00004)
Constant	26.526***
	(2.506)
Observations	116
R^2	0.526
Adjusted R^2	0.513
Residual Std. Error	9.085 (df = 112)
F Statistic	41.440*** (df = 3; 112)
Note:	*p<0.1; **p<0.05; ***p<0.01

Oil rents show a coefficient of -1.01, implying that, ceteris paribus, a one-unit increase in oil rents results in a decrease of -1.01 in the EPI, analyzed by the scatterplot in *Figure 20*. However, this relationship is not statistically significant.

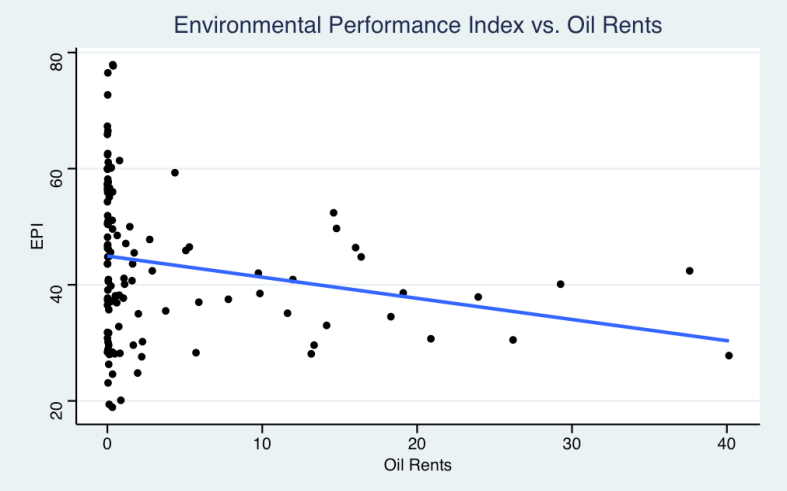

Figure 20:EPI and Oil Rents Relationship for Oil Countries

Instead, democracy has a coefficient of 2.030. This suggests that a one-unit increase in the DI score is associated with an increase of approximately the same value of the EPI coefficient. This relationship is statistically significant, observed in the scatterplot in *Figure 21*.

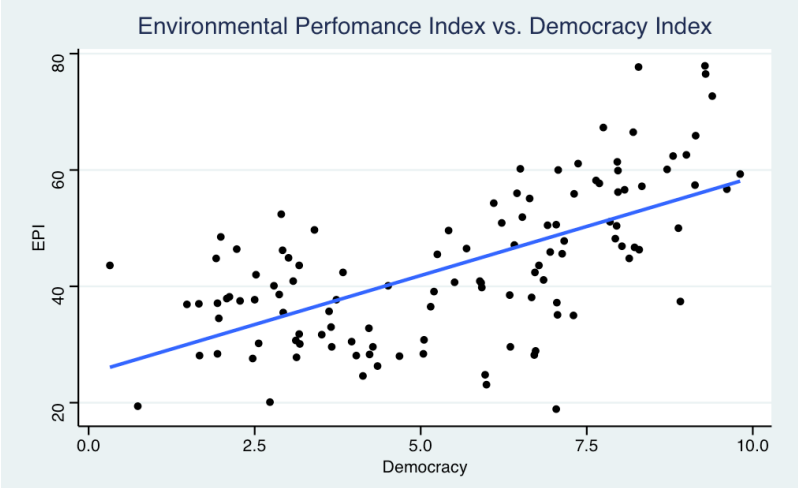

Figure 21: EPI and Democracy Relationship for Oil Countries

Finally, the GDP coefficient of 0.0002 implies that for each one-unit increase in GDP per capita, there is an expected increase of 0.0002 in the EPI, and this relationship is statistically significant, thus confirming the Environmental Kuznets Curve model. *Figure 22* shows a scatterplot analyzing this relationship.

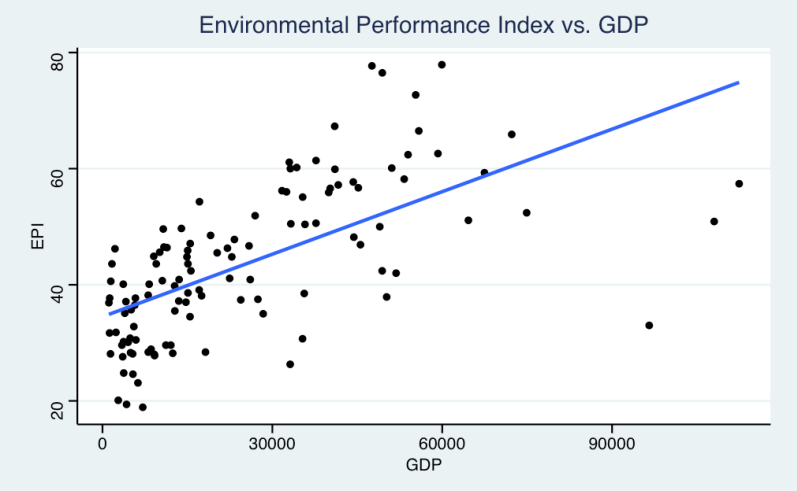

Figure 22: EPI and GDP relationship for Oil Countries

B. Qualitative Analysis

The quantitative data analysis conducted thus far supports the validity of the *Clean Democracy Hypothesis* and the *Environmental Kuznets Curve*. However, not shown in the quantitative methodology was that some oil non-democratic countries had a high EPI. This could be related to eco-authoritarianism as a relevant ideology that shapes environmental policies. Yet empirical data cannot adequately examine this; instead, looking at single countries' scores suggests that, whereas oil-reliant, democratic countries usually show a positive connection between governance and EPI, oil-dependent, wealthy, authoritarian governments also show notable environmental results. To demonstrate this, the table below selects six countries from the oil countries group of 116 observations belonging to the GCC, a group focused on economic and policy integration made by Bahrain, Kuwait, Qatar, Oman, Saudi Arabia, and the United Arab Emirates.

Table 8: GCC countries

	DI	EPI
United Arab Emirates	2,9	52,4
Bahrain	2,52	42
Saudi Arabia	2,08	37,9
Oman	3,12	30,7
Qatar	3, 65	33

Contrary to assumptions that authoritarian, oil-dependent countries would struggle with environmental and sustainability efforts, the data reveals an intriguing outcome: some GCC countries are very close to their democratic, oil-producing counterparts with respect to their EPI. For example, the EPI of UAE is 52.4 compared to Norway's EPI of 59.3 and the United States EPI of 51.1. This outcome is noteworthy, especially if the GCC's historical reliance on oil is considered. Thus, the analysis will narrow its focus to three GCC members: the United Arab Emirates, being the highest EPI with one of the lowest DI; Saudi Arabia, performing in the middle with EPI and with a moderate level of DI; and Qatar, having among these six, the second lowest value in EPI yet the highest, among these three, DI. In addition, they share the same socio-economic and policy challenges, including economic diversification, addressing volatility in global oil prices, and, in particular, managing sustainability and environmental concerns (AlKhars et al., 2020).

1. Analysis of Countries: Insights from Articles

Gathering data is crucial to demonstrate the initiatives taken by the United Arab Emirates, Saudi Arabia, and Qatar.[6] Through qualitative research, this thesis tests the effectiveness of eco-authoritarian ideology, assessing how some oil-rich authoritarian regimes positively engage with the adoption of UN SDGs. Interestingly, there are numerous reasons why authoritarian

[6] This extensive data collection resembles a journalistic investigation, mostly covering the period from 2022 and recent times.

systems might adopt sustainability practices. For instance, these practices can help them achieve strategic goals essential for maintaining power, such as securing energy resources for the future when oil reserves might deplete. Additionally, investing in sustainability can demonstrate a commitment to sustainable economic growth, which can enhance their financial resources and credibility. Nonetheless, it is also important to note that, according to the data gathered, nearly all sources emphasized the significant role that reputation plays within the international relations field, suggesting that authoritarian regimes may pursue sustainability initiatives to improve their global standing and influence. In both local and international affairs, reputation is vital; ideas like honor, status, leadership, power, and prestige enormously impact political choices and frequently encourage states to abide by international rules and regulations (Keohane, 1999).

Table 9: Reputation

Definition	Reputation in international relations refers to how other governments view a nation or its leaders considering previous actions, declarations, and behaviors. Treaty and diplomatic relations are impacted by this view, which shapes expectations about future conduct. States may develop reputations from trustworthy to untrustworthy, impacting international dynamics either positively or negatively (Crescenzi&Donahue, 2017).

Thus, when environmentalist policies offer the possibility of bolstering a country's domestic appeal or its international prestige, authoritarian regimes can endorse and have endorsed environmental protective measures (Pál & Brain, 2018). This connection arises because switching to renewable energy sources improves these countries' reputation, which had historically been reliant on oil and therefore seen as anti-environmentalists. As energy moves

toward sustainable practices and oil countries face challenges, they face global pressure to comply with international agreements to achieve renewable energy penetration targets (Menegaki & Tugcu, 2016). Consequently, UAE, Saudi Arabia, and Qatar joined the global community to diversify their energy sources through significant renewable energy investments (Lahrech et al., 2023). For instance, the number of renewable projects and investments in all three countries has increased remarkably since the beginning of 2021. (Miller et al., 2022). Thus, it is vital to list and explain the efforts made by these countries.

1.1 United Arab Emirates

Table 10: United Arab Emirates

Event	Year
COP28	2023
Uae Energy Strategy: increase share of Clean Energy from 25% to 50%*(European Commission, 2023).*	by 2050
Global Gateway Initiative: support for Renewable Energy Projects in Europe, the Middle East, and North Africa *(European Commission, 2023)*.	Dec. 2022
Collaboration With The Us: agreement with the US to pursue global clean energy projects By 2035 *(Reuters, 2022).*	Nov. 2022
African Carbon Credits Market: plan to acquire $450 million worth of Carbon Credits produced in Africa *(Civillini, 2023).*	by 2030

The United Arab Emirates is a relevant player in the region to promote energy transition. Together with chairing COP28 in 2023, it was the first Gulf country to pledge to achieve net-zero domestic emissions by 2050; the UAE Energy Strategy seeks to boost the share of clean energy in the overall energy mix from 25% to 50% by 2050 and aims to cut the carbon footprint of power generation by 70%, according to a 2023 report by the EU Commission, indicating widespread recognition. Also, while it started with only 3% of its total energy expenditure before 2020, the UAE launched eight major solar plant projects, four hydrogen projects, one decarbonization initiative, and one natural gas-to-methanol project between July 2021 and November 2022 (Miller et al., 2022). Also, concerning its international ties, in November 2022, the UAE and the US agreed to jointly pursue global clean energy projects, aiming to add 100GW for $100 billion by 2035 to provide support for sustainable energy initiatives (Reuters, 2022).[7] Moreover, by supporting renewable energy projects in Europe, the Middle East, and North Africa, UAE is creating opportunities for cooperation through the Global Gateway initiative, which aims to strengthen global health while establishing clean, secure connections in the energy, among other things (European Commission, 2023).

Concerning UAE efforts abroad, carbon credits, incorporated into its emissions reduction strategy for 2030, should be mentioned. Carbon credits are tradable certificates that allow nations and corporations to offset their carbon emissions by funding projects that reduce CO2 levels in the atmosphere, with one credit equivalent to one ton of CO2 removed. This system starts with renewable energy projects, assessed by independent third parties to verify the emissions reductions they achieve. After verification, the projects are awarded carbon credits, then tradable

[7] One gigawatt, or 100 GW, corresponds to one hundred billion watts of electrical power. Large-scale energy generation projects, such as those incorporating renewable energy sources, sometimes use this measurement to describe the overall capacity or output.

in carbon markets. This trading enables entities with emission reduction obligations to meet their targets and invest in green technologies. The UAE is becoming a leader in the African carbon credits market; a coalition of UAE energy and financial corporations, including the Mubadala SWF and First Abu Dhabi Bank, has expressed its plan to acquire $450 million worth of carbon credits produced in Africa by 2030 (Civillini, 2023). Also, Blue Carbon, a UAE company, has entered agreements with African countries: these deals cover significant portions of Zimbabwe, Liberia, Zambia, and Tanzania—an area comparable to the size of the UK (Greenfield, 2023).

1.2 Saudi Arabia

Table 11: Saudi Arabia

Event	Year
Vision 2030: economic diversification to shift to renewable energy, hydrogen, and storage technologies *(Belaïd &Al-Sarihi, 2024).*	Announced: 2016
Renewable Energy Reforms: reduce energy consumption *(Alomari & Heffron, 2021).*	2021
50% Renewable Energy Announcement	by 2030
Investment In Renewable Projects: eight solar power plants, five hydrogen projects, one combined solar and wind power plant, and one hydrogen project.,*(Miller et al., 2022).*	Apr. 2021- Nov. 2022

The Kingdom of Saudi Arabia, the largest economy in the Middle East, demonstrates commitment to the global sustainability agenda, which is noteworthy given its status as the world's second-largest holder of oil reserves (Al-Saidi & Elagib, 2018). Despite its hydrocarbon

abundance, it is diversifying its energy mix to include renewable energy, hydrogen, nuclear, and carbon capture and storage technologies, improving energy efficiency and aligning with its economic diversification plan, Vision 2030 (Belaïd &Al-Sarihi, 2024). International climate agreements fuel these concerns to keep pace with other nations over global energy shifts. Similarly, achieving an image of prestige linked to adopting large-scale renewable energy plays a role (Al-Saidi & Elagib, 2018). Indeed, in response to changing global dynamics, Saudi Arabia has implemented significant reforms to enhance renewable energy use, reducing overall energy consumption and lowering the economy's energy intensity (Alomari & Heffron, 2021).

Saudi Arabia, conveying its willingness to align with the goals set by the Agenda 2030, has announced that it will generate 50% of its power through renewables by that year and, for this reason, has launched new projects (AlShammari, 2021). It invested in eight solar power plants, five hydrogen projects, three sustainable desalination projects, one solar and wind power plant, two wind farms, and one hydrogen project between April 2021 and November 2022 (Miller et al., 2022). However, it should be acknowledged that internal dynamics, such as rising local energy demand, are also driving the energy transition in Saudi Arabia. Thus, the increased domestic consumption influences the country's energy policies, reducing the amount of oil available for export. Saudi Arabia's annual expenditure growth rate has been 5.7%, which is 37% faster than the country's 4.2% income growth rate, conveying a challenge to increasing oil exports because, in the absence of alternative energy sources, as suggested by Gately et al. (2012), rising domestic energy consumption could result in the use of nearly all fossil fuel reserves designated for export by 2030.

1.3 Qatar

Table 12: Qatar

Event	Year
Qatar Vision 2030: long-term plan to manage environmental resources ensuring harmony between economic growth, social development, and environmental protection *(Government Communications Office,2008).*	First Published in 2008
Sustainable Development Agenda: alignment with 199 out of 247 un goals *(Us-Qatar Business Council, 2021).*	Since 2015
Reduction Plan Announcement: Plan to reduce 11 million tonnes of CO2 per year *(Saadi, 2021).*	March 2022 by 2035
GHG Emissions Reduction Target: Qatar Energy's intention to reduce its ghg emissions by 25% *(International Trade Administration, 2022).*	Aug. 2022 by 2030

Finally, in Qatar, oil discovery transformed the tiny peninsula, previously known for its extreme aridity and water shortage, into a a future city-state thanks to oil revenues' ability to finance investments in infrastructure, healthcare, education, and sports (Al-Mohannadi&Al-Mohannadi, 2023). The country's population increased from 28,000 in 1939 to 2.8 million in 2022 thanks to the hydrocarbon industry (Planning and Statistics Authority, 2021). Yet Qatar has chosen to embrace the shift toward sustainable energy, regardless of this recognition it owes to oil. The first reason of this unprecedented entry into the renewable energy sector is that it is a continuation of global patterns, moving in the direction of renewable energy to address climate

change concerns (Al Awsat, 2022). A cornerstone of its commitment is Qatar's Vision 2030, first published in 2008, is:

"The management of the environment to ensure harmony between economic growth, social development, and environmental protection." (Government Communications Office)

Since 2015, Qatar has coordinated the objectives and results of its National Development Strategy with the Sustainable Development Agenda of the UN, being able to match 199 out of the 247 UN goals, aiming to install 2 to 4GW of solar electricity and have 10% of all motor vehicles electrified by 2030 as part of its environmental goals (US-Qatar Business Council, 2021). In March 2022, QatarEnergy[8] further announced its plan to achieve a reduction of 11 million tons of CO2 per year by 2035 (Saadi, 2021). Then, the following August, QatarEnergy announced its intention to reduce its GHC emissions by 25 percent by 2030 (International Trade Administration, 2022).

This part of the methodology has detailed the move of these three GCC countries towards renewable energy, thus providing proof of the relevance of the eco-authoritarianism framework. Also, beyond the evident environmental advantages, the shift towards sustainable energy practices represents a deliberate, eventually strategic effort by Saudi Arabia, the United Arab Emirates, and Qatar that would enhance their transnational reputation. Adopting environmentally friendly approaches assures persistent economic growth and financial stability in addition to gaining international recognition. It also tackles environmental security and offers a safety net to prevent the permanent depletion of oil resources in the face of difficulties in striking a balance between requests for exports and domestic consumption.

[8] Qatari state-owned petroleum corporation. It manages all aspects of the nation's oil and gas industry, including transportation, storage, refining, production, and exploration.

V. Discussion

Considering the outcomes from the methodology section, it is essential to discuss the main results, as they give insightful answers to the research question: How do political systems in oil-rich countries affect the adoption of environmental sustainability practices aligned with the UN SDGs? Starting from the first part of the methodology, which included quantitative analysis on macro-datasets, it provided evidence for all country's theories and hypotheses described in the analytical framework, concluding that democracy and growth positively influences EPI. Second, the quantitative analysis uncovered essential information about the third group of oil countries (OilRents=1). This subset is vital as it provides insights crucial to addressing the research question. First, the linear regression found that within oil countries, an increase by one unit in the DI score corresponds with a similar increase in the EPI. This statistically significant relationship offers partial answers to the thesis question. It highlights the importance of democracy in oil-rich democratic countries, suggesting that democratic political systems are likely to adopt environmental UN SDGs.

In addition, it provides empirical evidence for other theories that establish the foundation of the research's analytical framework. In particular, the statistically significant and positive relationship between GDPs per capita and the EPI supports the Environmental Kuznets Curve; as growth rates increase, governments prioritize environmental policies. The emphasis on environmental policies during economic growth primarily arises from the understanding that the environment underpins all economic activities, making its maintenance and improvement a top priority. Additionally, OilRents=1 based on a macro sample of 116 countries reinforces the assumption that oil-rich democratic countries are effective in adopting sustainable policies. However, based on data from a wide range of countries, the subset of oil countries suggests that

higher DI correlates with higher EPI. Yet this may lead to overlooking the efforts of individual authoritarian oil-rich countries, leading to statistical discrimination.

Thus, to assess the extent to which authoritarian systems in oil countries affect the adoption of environmental policies, the qualitative part of the methodology shows noteworthy trends in three authoritarian, oil-dependent countries. The qualitative analysis highlights micro trends within the GCC: case studies from three oil-authoritarian countries—Saudi Arabia, UAE, and Qatar—reveal that, despite a high reliance on oil, these countries show noteworthy EPI. Also, this is unexpected given that the lower their DI is, the higher the EPI, suggesting a pattern in which authoritarian governments may perform better than anticipated in environmental management. In particular, the efforts of Saudi Arabia, UAE, and Qatar reveal that each of them is committed to increasing EPI, with UAE having EPI above the mean. Among the many initiatives and policy implementations, the UAE's goal to achieve net-zero domestic emissions by 2050, Saudi Arabia's Vision 2030, and Qatar's Vision 2030 are fundamental.

By connecting environmental discourses with authoritarianism, these findings could support the idea of eco-authoritarianism. In societies with limited ecological resources, unrestricted individual freedom can lead to environmental degradation; consequently, entrusting full authority to leaders who can implement policies independently of the democratic process can be an effective strategy. Although this approach enabled oil-producing nations to align with the UN SDGs, these results should also be considered considering the limitations of this research, as these limitations may affect the extent to which the findings can be generalized to all oil-rich authoritarian countries.

A. Limitations and Implications of Findings

The first limitation to consider is the broad categorization of the subset of oil-producing countries (OilRents=1), which includes a wide range of countries without distinguishing them considering specific characteristics that might, instead, reveal intriguing trends different from those previously identified. For instance, a more detailed analysis should categorize those countries according to their nominal GDP, which measures the total market value of all goods and services produced within each country. This metric not only reflects the size of an economy but also its growth velocity, indicating the pace at which the economy is expanding or contracting. Thus, understanding these differences is vital, as variations in economic size and growth rates can lead to diverse developmental outcomes among these countries.

Such an analysis could reveal that not all authoritarian countries perform as well as the three specific case-study countries; this is because, by examining nominal GDP, the evaluation would further assess those countries' position along the Environmental Kuznets Curve. If the nominal GDP, reflecting market economic growth, remains relatively low, this could further reinforce the notion that these countries have not yet reached a stage where economic growth aligns with environmental priorities. In other words, it is essential to assess whether these countries have achieved a balance between environmental sustainability and long-term economic prosperity. For instance, as of 2022, the UAE had a nominal GDP of USD 507.1 billion, Saudi Arabia had USD 1.108 trillion, and Qatar had USD 237.296 billion. For instance, as of 2022, the UAE had a nominal GDP of $507.1 billion USD, Saudi Arabia had $1.108 trillion USD, and Qatar had $237.296 billion USD.[9]

[9] Available at: World Bank. (2023). Gross domestic product 2022. *Main Economic Indicators*, *2021*(8). https://doi.org/10.1787/b04af221-en

In addition, not all types of regimes are the same; there are various forms of democracy, including direct democracy, representative democracy, constitutional democracy, parliamentary democracy, presidential democracy, and autocratic democracy (Brooks, 2023). Similarly, among the typologies of authoritarian regimes are dominant-party regimes, military regimes, personalist regimes, monarchies, oligarchic regimes, indirect military regimes, and hybrids of the first three (Geddes et al., 2014). In this case, Saudi Arabia is an absolute monarchy, Qatar a semi-constitutional one, whereas the UAE is composed of a federal presidential elective constitutional monarchy. Thus, additional research might suggest that, among monarchies, effectiveness varies significantly, given that although they belong to three different types, UAE, Saudi Arabia, and Qatar are all monarchies. Consequently, further research might group countries not only according to their regime type but also assess the specific kind of regime type they represent.

1. State Capacity

There is another factor to address that these findings overlook and that does not always align with the regime in place: state capacity. According to Herre et al. (2024), state capacity refers to the ability of a government to protect citizens and the country against external and internal threats. Furthermore, the reason behind the idea that state capacity is not dependent from the regime in power applies across various systems, ranging from left to right. This is because there is a shared recognition that states need to provide public goods such as the rule of law and a level playing field, and this consensus extends beyond debates about the size of government or where it should intervene (Khemani, 2019). Consequently, this suggests that states may implement environmentally sustainable policies to provide citizens with public welfare, aligning with the levels of state capacity rather than solely on the kind of regime put in place.

Also, since environmental degradation can become an internal and external threat, state capacity becomes crucial. Hence, building a powerful government bureaucracy capable of running the state and delivering services is one of the main tasks of every government. Consequently, during the last decade, the Gulf states, including those analyzed in this research, have been increasing their state capacity considerably, penetrating society and mobilizing it in the way they want (Al-Ubaydli, 2020). In particular, one way to measure state capacity is through the government effectiveness index, which captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.[10] Essentially, governance effectiveness reflects the quality of governance in a country, including government performance and broader aspects such as the rule of law, accountability, transparency, and citizen participation.

In particular, the government effectiveness index has estimates that provide the country's score on the aggregate indicator, typically in units of standard normal distribution, ranging from approximately -2.5 to 2.5.[11] Based on the World Bank index, Saudi Arabia has a moderately effective governance system with a score of 0.583; instead, the United Arab Emirates has a more powerful governance system with a score of 1.29. With a score of 1.13, Qatar stands midway between the two. These results are particularly relevant when juxtaposed with the effectiveness

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[10] *Note: From World Bank "**DataBank":** https://databank.worldbank.org/metadataglossary/worldwide-governance-indicators/series/GE.EST#:~:text=Government%20Effectiveness%20captures%20perceptions%20of,government's%20commitment%20to%20such%20policies.n*

[11] Detailed documentation of the WGI, interactive tools for exploring the data, and full access to the underlying source data available at www.govindicators.org.The WGI are produced by Daniel Kaufmann (Natural Resource Governance Institute and Brookings Institution) and Aart Kraay (World Bank Development Research Group). Please cite Kaufmann, Daniel, Aart Kraay and Massimo Mastruzzi (2010). "The Worldwide Governance Indicators: Methodology and Analytical Issues". World Bank Policy Research Working Paper No. 5430 (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1682130). The WGI do not reflect the official views of the Natural Resource Governance Institute, the Brookings Institution, the World Bank, its Executive Directors, or the countries they represent.

of other oil-rich authoritarian nations: Iraq scores a much lower -1.30, implying worrying governance issues, while Iran scores -0.88, showing issues similar to Iraq's. Moreover, despite its enormous resources, Russia has a comparatively low score of -0.69. This suggests that state capacity, along with the government effectiveness index, could further indicate the successful (or not) environmental performance of oil-rich countries, yet not considering their regime as the essential variable to address. Consequently, further research should assess whether state capacity influences alignment with UN SDGs in oil-rich countries and whether other authoritarian oil nations have achieved similar results to the ones of UAE, Saudi Arabia, and, eventually, Qatar.

Taking everything into account, this discussion has described the findings according to which not only do democracies in oil countries perform well in adopting sustainable policies but also some authoritarian oil-reliant countries, as demonstrated by the examples of the three GCC countries and their efforts toward sustainable practices regardless of their reliance. However, limitations and their implications have shown how the broad categorization of oil countries may overlook some aspects like the nominal GDP, the different peculiarities of each regime, and state capacity measured through the government effectiveness index, leaving the conversation open to further research on how these aspects affects the adoption of environmentally sustainable policies in oil countries.

VI. Conclusion

In conclusion, considering the thesis question, the data presented and existing research support the idea that democracy encourages governments to implement sustainable environmental policies. However, this research finds that also some authoritarian, heavily dependent on oil, countries may witness a shift towards clean energy. This is particularly true for leading countries in the GCC, namely, the United Arab Emirates, Saudi Arabia, and Qatar. These nations are progressively improving their image and reinforcing their ties with the West by implementing zero-emissions legislation. Similarly, their initiatives transcend their borders, going into foreign areas to boost their worldwide status. By bridging a gap in existing literature, this thesis also contributes to enriching the theory revolving around eco-authoritarianism. For this reason, while democracy has been analyzed and found to have a positive relationship with environmental outcomes, what has been more intriguing is validating, though to diffeent extents, the theory of eco-authoritarianism.

However, the limitations of this research support the idea that the shift toward clean energy might not be primarily driven by democratic systems or systems in general; rather, with the growing importance of environmental preservation and sustainable growth, the responses of governments to the need for an energy transition have been critical. This is because addressing environmental needs, as outlined by the UN SDGs, has become a top priority for *all* countries today. Furthermore, this research introduces a 'sustainability effect' that differs from traditional approaches, which just link democratic development with high environmental performance and clean energy adoption. Inspired by the ideas underlying eco-authoritarianism, this thesis questions the validity of an intrinsic association that exists solely between democracy and environmental policies.

Similarly, the conclusions drawn from this work emphasize the necessity for the international community, including international organizations, economists, political scientists, and environmentalists, to abandon existing prejudices that have historically linked wealthy, authoritarian, oil-rich countries with poor environmental performance and dependency on oil revenue. Consequently, this thesis enriches the academic research on political economy and environmental policies, and has implications for future evaluations of how political systems influence environmental initiatives. Moreover, this research suggests that as sustainability becomes a universally relevant concept, barriers related to existing systems and interests might be set aside. Sustainability is increasingly becoming integrated into everyday life, from the products people purchase to the choices they make, all aimed at securing a viable environment for future generations. This interesting trend implies that countries with centralized systems are also hearing the global call for environmental sustainability.

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Appendix 1

Table A1: All Countries

1	Iraq	IRQ
2	Kuwait	KWT
3	Congo	COG
4	Angola	AGO
5	Saudi Arabia	SAU
6	Oman	OMN
7	Azerbaijan	AZE
8	Iran	IRN
9	Equatorial Guinea	GNQ
10	Venezuela	VEN
11	Gabon	GAB
12	United Arab Emirates	ARE
13	Qatar	QAT
14	Algeria	DZA
15	Chad	TCD
16	Kazakhstan	KAZ
17	East Timor	TLS
18	Guyana	GUY
19	Bahrain	BHR
20	Russia	RUS
21	Turkmenistan	TKM
22	Nigeria	NGA
23	Ecuador	ECU
24	Suriname	SUR
25	Norway	NOR
26	Egypt	EGY
27	Colombia	COL

79	Zimbabwe	ZWE
80	Cambodia	KHM
81	Philippines	PHL
82	Poland	POL
83	Portugal	PRT
84	Austria	AUT
85	Finland	FIN
86	Singapore	SGP
87	Georgia	GEO
88	Belgium	BEL
89	Mauritius	MUS
90	Netherlands	NLD
91	South Korea	KOR
92	Lithuania	LTU
93	Sweden	SWE
94	Bulgaria	BGR
95	Greece	GRC
96	Nicaragua	NIC
97	Afghanistan	AFG
98	Germany	DEU
99	Chile	CHL
100	Costa Rica	CRI
101	Czechia	CZE
102	Israel	ISR
103	Uruguay	URY
104	Panama	PAN
105	Kenya	KEN

28	Trinidad and Tobago	TTO
29	Cameroon	CMR
30	Sudan	SDN
31	Malaysia	MYS
32	Papua New Guinea	PNG
33	Mexico	MEX
34	Mongolia	MNG
35	Brazil	BRA
36	Tunisia	TUN
37	Canada	CAN
38	Albania	ALB
39	Bolivia	BOL
40	Argentina	ARG
41	Niger	NER
42	Vietnam	VNM
43	Indonesia	IDN
44	Estonia	EST
45	Uzbekistan	UZB
46	Cote d'Ivoire	CIV
47	Belarus	BLR
48	Democratic Republic of Congo	COD
49	Thailand	THA
50	Mauritania	MRT
51	United Kingdom	GBR
52	Denmark	DNK
53	Romania	ROU
54	Ukraine	UKR
55	Pakistan	PAK
56	South Africa	ZAF

106	Jordan	JOR
107	Ethiopia	ETH
108	North Macedonia	MKD
109	Japan	JPN
110	Ireland	IRL
111	Slovakia	SVK
112	Morocco	MAR
113	Spain	ESP
114	Honduras	HND
115	Switzerland	CHE
116	Slovenia	SVN
117	Armenia	ARM
118	Burundi	BDI
119	Burkina Faso	BFA
120	Bosnia and Herzegovina	BIH
121	Bhutan	BTN
122	Botswana	BWA
123	Central African Republic	CAF
124	Comoros	COM
125	Cyprus	CYP
126	Djibouti	DJI
127	Dominican Republic	DOM
128	Fiji	FJI
129	France	FRA
130	Ghana	GHA
131	Guinea	GIN
132	Gambia	GMB
133	Guinea-Bissau	GNB
134	Haiti	HTI

57	India	IND
58	China	CHN
59	United States	USA
60	Croatia	HRV
61	Peru	PER
62	Australia	AUS
63	Jamaica	JAM
64	Tajikistan	TJK
65	New Zealand	NZL
66	Guatemala	GTM
67	Hungary	HUN
68	Eswatini	SWZ
69	Myanmar	MMR
70	Kyrgyzstan	KGZ
71	Benin	BEN
72	Turkey	TUR
73	Mozambique	MOZ
74	Paraguay	PRY
75	Malawi	MWI
76	Italy	ITA
77	Latvia	LVA
78	Bangladesh	BGD

135	Iceland	ISL
136	Laos	LAO
137	Lebanon	LBN
138	Liberia	LBR
139	Sri Lanka	LKA
140	Lesotho	LSO
141	Luxembourg	LUX
142	Madagascar	MDG
143	Mali	MLI
144	Malta	MLT
145	Montenegro	MNE
146	Namibia	NAM
147	Nepal	NPL
148	Rwanda	RWA
149	Senegal	SEN
150	Sierra Leone	SLE
151	El Salvador	SLV
152	Serbia	SRB
153	Togo	TGO
154	Tanzania	TZA
155	Uganda	UGA
156	ZMB	ZMB

Table A2: No Oil Countries

1	Armenia	ARM
2	Burundi	BDI
3	Burkina Faso	BFA
4	Bosnia and Herzegovina	BIH
5	Bhutan	BTN
6	Botswana	BWA
7	Central African Republic	CAF
8	Comoros	COM
9	Cyprus	CYP
10	Djibouti	DJI
11	Dominican Republic	DOM
12	Fiji	FJI
13	France	FRA
14	Ghana	GHA
15	Guinea	GIN
16	Gambia	GMB
17	Guinea-Bissau	GNB
18	Haiti	HTI
19	Iceland	ISL
20	Laos	LAO

21	Lebanon	LBN
22	Liberia	LBR
23	Sri Lanka	LKA
24	Lesotho	LSO
25	Luxembourg	LUX
26	Madagascar	MDG
27	Mali	MLI
28	Malta	MLT
29	Montenegro	MNE
30	Namibia	NAM
31	Nepal	NPL
32	Rwanda	RWA
33	Senegal	SEN
34	Sierra Leone	SLE
35	El Salvador	SLV
36	Serbia	SRB
37	Togo	TGO
38	Tanzania	TZA
39	Uganda	UGA
40	Zambia	ZMB

Table A3: Oil Countries

1	Iraq	IRQ
2	Kuwait	KWT
3	Congo	COG
4	Angola	AGO
5	Saudi Arabia	SAU
6	Oman	OMN
7	Azerbaijan	AZE
8	Iran	IRN
9	Equatorial Guinea	GNQ
10	Venezuela	VEN
11	Gabon	GAB
12	United Arab Emirates	ARE
13	Qatar	QAT
14	Algeria	DZA
15	Chad	TCD
16	Kazakhstan	KAZ
17	East Timor	TLS
18	Guyana	GUY
19	Bahrain	BHR
20	Russia	RUS
21	Turkmenistan	TKM
22	Nigeria	NGA
23	Ecuador	ECU
24	Suriname	SUR
25	Norway	NOR
26	Egypt	EGY
27	Colombia	COL
28	Trinidad and Tobago	TTO
29	Cameroon	CMR

79	Zimbabwe	ZWE
80	Cambodia	KHM
81	Philippines	PHL
82	Poland	POL
83	Portugal	PRT
84	Austria	AUT
85	Finland	FIN
86	Singapore	SGP
87	Georgia	GEO
88	Belgium	BEL
89	Mauritius	MUS
90	Netherlands	NLD
91	South Korea	KOR
92	Lithuania	LTU
93	Sweden	SWE
94	Bulgaria	BGR
95	Greece	GRC
96	Nicaragua	NIC
97	Afghanistan	AFG
98	Germany	DEU
99	Chile	CHL
100	Costa Rica	CRI
101	Czechia	CZE
102	Israel	ISR
103	Uruguay	URY
104	Panama	PAN
105	Kenya	KEN
106	Jordan	JOR
107	Ethiopia	ETH

30	Sudan	SDN
31	Malaysia	MYS
32	Papua New Guinea	PNG
33	Mexico	MEX
34	Mongolia	MNG
35	Brazil	BRA
36	Tunisia	TUN
37	Canada	CAN
38	Albania	ALB

108	North Macedonia	MKD
109	Japan	JPN
110	Ireland	IRL
111	Slovakia	SVK
112	Morocco	MAR
113	Spain	ESP
114	Honduras	HND
115	Switzerland	CHE
116	Slovenia	SVN