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# Analysis of Comprehensive Denmark Country Environmental Policy Success in 2020-2022 (Denmark, from a Many Greenhouses Gas Emission Country to a Green Country That Protects Its Environment)

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#### Abstract

Environmental issues have become the attention of many world countries, especially member countries of the European Union, where the European Union has policies and targets for its region. This agreement binds 27 European countries, making these policies the region's primary law. Member countries, one of which is Denmark, will be discussed in this study. Unlike other European countries, Denmark has a long-term and is committed to protecting the environment. This study aims to analyze Denmark's environmental policy in overcoming environmental damage and its commitment to using renewable resources. It can be seen from the available data that Denmark occupied country number 1 for three years, namely 2020-2022, as the one with the highest score in protecting the environment, of course with active, comprehensive policies and high public awareness to protect the environment.

## **I. Introduction**

In the 21st century, environmental issues have become the talk of many countries and become one of the main focuses of countries in the world. Environmental issues are the third issue after international security and the global economy in studying International Relations (Jackson & Georg Dorensen, 1996). Environmental issues are important issues to be discussed in international forums; this is an urgent and common tragedy, which means "environmental tragedy" in an area resulting in damaging impacts on the environment. According to the concept of green thinking, the problem of negative global environmental impacts can find a bright spot or can be managed through collaboration with a global forum or institutions (Steans & Pettiford, 2009). As we already know, the ozone layer has been depleted. This indeed endangers living things on earth, one of which is easily spread diseases, erratic weather, global warming, etc. Regarding global environmental issues, several factors influence, not only natural factors but also human activities, such as the very rapid world population growth, meaning that this is due to the growth of urban areas, increasing food production needs, and also increasing energy needs, where these three things are related to the environment. (HPLI, n.d.).

To overcome the dangers and minimize the consequences of environmental problems, one of which is climate change, it is necessary to work together with world countries. The author assumes that developed countries have a more significant or dominant role in minimizing the impact of state production, which results in or has an impact on environmental damage, ultimately leading to climate change. The more factories or production activities both for food for the population and the production of goods for

#### Keywords

Denmark policy; environmental policy; renewable resources.



export with the motivation of the national economy to produce a lot, the more pollution will be generated. The more pollution, the more damaging the environment nationally and globally. Developed countries with more populations than developing countries have many developing countries; These developments impact the environment. This is what developing countries think. Developing countries encourage developed countries to take greater responsibilities and obligations in building a low-carbon economy (David, Espagne, & Marx, 2019). Development is a systematic and continuous effort made to realize something that is aspired. Development is a change towards improvement. Changes towards improvement require the mobilization of all human resources and reason to realize what is aspired. In addition, development is also very dependent on the availability of natural resource wealth. The availability of natural resources is one of the keys to economic growth in an area. (Shah, M. et al. 2020)

In this case, the role of regional organizations is very influential in regulating its member countries, one of which is the European Union. The European Union, an intergovernmental organization of European countries, also plays an active role in encouraging European countries to form environmental policies to deal with the impacts of climate change, create global climate governance and adapt to sustainable development (Yiwananda, 2021). Countries in Europe have proven to play an active role and have a high awareness of the importance of protecting the environmental Performance Index) scores, where the first three countries are countries in Europe (Rizaty, 2021)



10 Negara dengan Skor Environmental Performance Index Tertinggi Tahun 2020 (Poin)

From the data above, it can be seen that Denmark is number 1 as the cleanest country in the world. In this study, the author will examine how the Denmark Government's Environmental policy is effective. Denmark, or the Kingdom of Denmark (Denmark: Kongeriget Denmark), is located in Northern Europe; Denmark joined the European Union in 1973. The capital city of Denmark is Copenhagen. Denmark is committed to developing a green program to tackle climate change and support renewable energy and energy efficiency. Since 1973, when it was experiencing the oil crisis, Denmark has had no trouble. It has been able to use guaranteed energy reserves, the result of strengthening the applied energy system, integrating environmentally friendly policies, and progressing savings measures towards energy efficiency (Parajuli, 2012).

This paper analyzes the comprehensive policies of the Denmark Government in realizing its commitment to reduce greenhouse gas emissions and utilize renewable energy sources. The analysis was carried out using qualitative methods, and the theory used was the theory of national interest and environmental security.

## **II. Research Method**

#### **2.1 National Interest Theory**

Hans J. Morgenthau put forward the theory of the national interest; This theory was born from the realism approach. National interest is the ability of the nation-state to protect its identity, whether its physical, political, or cultural identity, from interference by other nation-states (Prakoso, Ardita, & Murtyantoro, 2019). The national interest (raison d'Etat in French) is the economic, military, and cultural goals, objectives, and ambitions (Bainus & Rachman, 2018).

## **2.2 Environmental Safety Theory**

Environmental security focuses on the relationship between human activities and the planet's biosphere, including all ecosystems on earth (Buzan, Waver, & De Wilde, 1998). Buzan says dealing with environmental issues requires a scientific and political agenda. For example, global environmental issues become a threat to a country. In this case, they enter the realm of politics because it requires and involves decision-making at the government or inter-governmental level, where there are specific and practical decisions and policies in dealing with environmental problems in the national and international scope (Yiwananda & Drajati Nugrahani, 2021).

## **2.3 Energy Security Theory**

According to the International Energy Agency (IEA), energy security refers to "uninterrupted physical availability at an affordable price, with due regard to environmental concerns." According to Brown, energy security refers to a robust energy system that can withstand security threats (Brown, 2003). Security, in general, is access to sufficient, affordable, and sustainable energy supplies for needs. The provision of this supply is carried out in an environmentally friendly manner and considers the availability of these energy resources for future consumption (Anthony, Chang, & Putra, 2012).

Some aspects of the concept of Energy Security (Farid, 2017);

1) Threats to energy security from geopolitics, economy, environment, etc.

- 2) Prices and their direct impact on the country. Prices can affect the level of uncontrolled energy fluctuations, which then impact the instability of a country's condition.
- 3) Energy prices significantly affect the availability of funds and capital to invest in exploration and resource development.
- 4) Maintaining the availability of energy sources by diversifying energy sources.
- 5) Exploring new energy sources in the country to reduce dependence on countries producing energy resources.

## **III. Research Method**

In this study, the type of data used is secondary data obtained from literature studies, namely books, scientific journals, internet access, and articles through internet media. The data collection technique is a literature review technique, namely data collection by conducting a literature study. The data analysis technique is a qualitative analysis technique that explains and analyzes research data on the comprehensive Denmark state environmental policy in 2020-2022.

## **IV. Result and Discussion**

Environmental issues are important and urgent matters for mutual attention. Environmental damage is increasing so that global carbon emissions continue to increase; environmental damage negatively impacts industrial progress through increasing greenhouse gases on earth. To deal with this, an agreement is designed, formed, and resulted in an agreement on implementing sustainable development. During this pandemic, carbon emissions had decreased at the beginning of the pandemic in 2020 but again increased sharply and even became the highest point in history, namely in 2021. (Internasional Energy Agency (IEA), 2022)



Source: https://databoks.katadata.co.id/datapublishembed/130111/emisi-karbon-globalmeningkat-pada-2021-tertinggi-sepanjang-sejarah

Previously, several world conferences and agreements, from the Earth Summit in Rio Janeiro to the 2015 Paris Agreement, have been held to discuss the issue of climate change and global warming, which pose a threat to all countries in the world. The United Nations (UN), which oversees international climate negotiations, is also working to provide funding subsidies aimed at helping developing countries reduce emissions and adapt to climate change at the 2015 Paris Agreement Climate Conference in Paris (COP24) (David, Espagne, & Marx, 2019).

After the Paris Agreement, the United Nations continued to monitor that the Paris Agreement on Climate Change rules were implemented by countries, namely updating each country's plans every five years to reduce carbon. However, after experts at the United Nations studied more than 100 countries' climate action plans, they stated that these countries had not experienced an increase in their carbon emission reduction targets since 2015. The United Nations said, out of 191 countries that entered into the Treaty Paris, only 113 countries did a better job of developing treatment plans. Alok Sharma, President of the COP26 Conference, stated that without active action by all countries, especially the big economies, the climate plans of these countries are feared to be in vain even if the curve has been lowered. (BBC News Indonesia, 2021).

Denmark is one of the 113 countries trying to improve its environmental plans and policies. Because it is proven that Denmark is highly committed to maintaining a better environment. From 2020 to 2022, Denmark remains consistently an in-country one that takes care of the environment very well. The following is a chart according to the highest Environmental Performance Index scores in 2020.



10 Negara dengan Skor Environmental Performance Index Tertinggi (2020)

Source: https://databoks.katadata.co.id/datapublishembed/119354/denmark-negara-yahijau-di-dunia

In 2021, Denmark was also ranked 1st with a fixed score of 82.5 (Kasih, 2021). Then in 2022, Denmark still ranks number 1, with a consistent score of 82.5 (Fajri, 2022). According to Yale University as the initiator of the rating, countries have commitments and long-term policies to address issues of sustainability, preservation of human resources, and reduction of greenhouse gas emissions (Lidwina & Bayu, 2021).

## 4.1 Renewable Energy Resources

According to Lund, renewable energy is produced directly by natural resources, such as wind, sunlight, rain, geothermal heat, and natural waves, replenishing within a few years. Four renewable energies include technology that can convert natural resources into valuable energy (Lund, 2014);

- Wind, wave, tidal, and hydropower (micro-hydropower and river hydropower)

- Solar power (photovoltaic), solar heat, geothermal
- Biomass and biofuel technology
- Renewable waste group (household and industrial waste)

## 4.2 Denmark Environmental Development History

Denmark is known as a pioneer country for clean energy. In 1970, Denmark experienced a crisis of a shortage of oil reserves as a significant energy source. After the crisis, Denmark's oil production also declined, a significant decline of 57% in 1974 (Saputra, 2020). In 1987, when finding some alternative energy, Denmark also relied on coal, natural gas, and nuclear instead of just oil. Denmark's energy strategy at that time sparked several discoveries due to its dependence on fossil fuels, and it made Denmark known as the largest emitter of greenhouse gases worldwide based on the results of the 1987 Brundtland report (Rüdiger, 2019). Including the choice of nuclear as alternative energy also creates problems with the community and non-governmental organizations. So that in 1990, the issue of sustainability emerged, and the publication of Our Common Future by the Brundtland Commission as a world commission that unites countries to achieve sustainable development. This led Denmark to realize its wrong planning and design a transition of its energy policy to renewable energy resources (Yiwananda, 2021).

Aiming to maintain energy stability, Denmark began to change its policy with energy security planning so that it does not depend on other countries but can still meet the country's energy supply. One of Denmark's policies is the use of renewable energy. According to Denmark, this policy can replace fossil energy, and it can be said that Denmark is successful because it can become the fourth country using renewable energy for electricity in the European Union countries. Over time it can be seen that through the use of renewable energy, Denmark has succeeded in reducing the amount of consumption of fossil fuels such as oil and coal. From 1990 to 2018, oil consumption fell 15.8%, and coal fell 70.2%, while in 2018, natural gas consumption rose 47.4%, and renewable energy rose 61%. Denmark targets 100% renewable energy sources of electrical energy by 2050 (Saputra, 2020).

## **4.3 Denmark Environmental Policy**

The Denmark policy is adopted from the policies set by the European Union; the EU directives are changed to Denmark laws or regulations, which of course, are adapted based on the capacity and domestic circumstances of the country. (Djurhuus, Hemmer, K Villsboll, & Brandt, 2013). The Denmark Ministry of the Environment is leading in setting policies for drafting environmental laws. Three institutions under the Ministry of Environment, namely:

- 1) The Environmental Protection Agency functions to establish the fundamental objectives of environmental protection to fulfill the objectives and administrative principles used.
- 2) Denmark Geodata Agency functions to ensure that geographic information on land and sea is collected, quality checked, and accessible on the internet. Public authorities may use the information for climate change, providing mobile access to data, providing information services to citizens, and by police and emergency services.
- 3) The Denmark Nature Agency ensures the overall protection of nature and is responsible for environmental planning laws and other actions governing nature-related issues.

The primary environmental law is the Environmental Protection Law, LBK No. 879 of 26/06/2010. There are 11 Denmark adaptation policies and strategies for dealing with environmental issues and using energy resources (Nachmany & Fankhauser, 2015), that is :

- The Climate Change Act 2014 aims to form a strategic and overarching basic concept for implementing Denmark's climate policy and transition to a low-emissions society
- Energy Agreement 2012-2020, a comprehensive agreement passed by a majority vote in parliament to reduce emissions through energy efficiency and increase the share of renewable energy towards an environmentally friendly socio-economic transition
- The Forest Act 945 aims for the sustainable use of natural resources, biodiversity conservation, mitigation, and adaptation to climate change. This law also adheres to the EU Environment Act.
- The Planning Act (No. 937 of 2009; consolidated No. 587 of 2013) aims to ensure sustainable land use supports environmental protection, adaptation to climate change, wildlife habitat, and biodiversity protection.
- Law on the Promotion of Renewable Energy No. 1392/2008 aims to achieve emission reductions through increasing the share and absorption of renewable energy (40% by 2020), particularly in the electricity sector.
- Environment Protection Act, no. 1757 of 22 December 2006 (updated: No. 879 of 2010), aims to maintain sustainable management of environmental resources, including control of air, water, soil, and noise pollution in various sectors such as transportation, agriculture, waste disposal, and energy through institutional arrangements that in accordance. This action applies a lot of EU directives and regulations.
- Carbon Dioxide Tax on Certain Energy Products Act 321/2011, the application of a tax, namely an energy tax, to prevent widespread public consumption.
- Act on the Energy Tax on Mineral Oil Products Act 313/2011 undertakes the obligation to pay the annual tax for companies that produce, process, receive, or ship energy products.
- The Denmark Climate Policy Plan contains targets for reducing carbon emissions and adopting renewable energy resources from 2020 to 2035.
- Green Transport Policy Agreement, for emission reduction as a form of implementing international commitments, especially in the transportation sector and sectors not covered by ETS (Emissions Trading Systems).
- Denmark strategy for adaptation to a changing climate (2008) and the Action Plan for a climate-proof Denmark (2012), this 2008 strategy aims to provide awareness to the public (companies and individuals) to respond and take action on the consequences of climate change initiatives.

## 4.4 Denmark Environmental Policy in 2020-2022

The Denmark government has a strategy called Energy 2000 which is used as a model to describe and design future energy systems, and it is evident that several targets were achieved in 2005. By issuing and using the Energy 2000 policy, Denmark has become a pioneer country or originator committed to utilizing renewable energy. In 2020, Denmark will implement a comprehensive and ambitious environmental policy to stop the use of fossil fuels. Of course, gradually, this is producing satisfactory results. Denmark is ranked 2nd after Sweden in the Sustainable Governance Indicators (SGI) with a score of 8.1 out of 10. Policies the environment is doing well, and greenhouse gas emissions have decreased by 20% since the 1990s. Denmark also actively shapes international environmental regimes, such as the European Union, the United Nations, and others. Denmark's active role has ranked the country first in the world in the Environmental Performance Index (EPI), where Denmark is declared superior in tackling climate change with a score of 82.5 out of 100 (Yiwananda, 2021).

Denmark has a long-term focus on climate change mitigation, commitment to sustainable development, GDP per capita, industrial manifestations, and urbanization. Denmark strives to achieve its multi-class target, namely reducing greenhouse gas emissions by 70% by 2030. By 2021, Denmark will have used 23% of renewable energy sources as its country's energy source. Denmark is committed to having a target, by 2050, this country's electricity will come 100% from renewable energy sources (Brittlebank, 2016).

Denmark has a long-term project and goal, which is to be free from fossil fuel resources in the future. The Denmark government states that all of Denmark's energy supply must be renewable by 2050. The efforts made by Denmark to achieve the target.

## 4.5 Building an 'energy island' in the North Sea

Based on the Denmark Climate Act, which confirms the country's commitment in 1990 to reduce 70% of greenhouse gas emissions by 2030 and achieve a CO2 balance by 2050. Denmark is building an artificial island in the North Sea as a wind energy center. The area of this 'energy island' is 120,000 square kilometers. The estimated cost is 210 billion kroner or IDR 477.9 trillion. Half of the island is owned by the state, and the private sector owns half. The planned 'energy island' will supply electricity to the Denmark people and neighboring countries. Prof Jacob Ostergaard from the Technical University of Denmark said that Germany, the UK, and the Netherlands could take advantage of the 'energy island.' 'Energy Island' is a project capable of supplying energy for three million homes. Although it is planned that this 'energy island' can function by 2033, this is doubted by the environmental group Dansk Energi, but they remain optimistic and say "dreams are coming true." (BBC News Indonesia, 2021).



## 4.6 Discontinuing gasoline and diesel-powered cars by 2035

Denmark is one of the member states of the European Union that is actively implementing the policies set by the European Union into national policies, which are, of course, adapted to the country's circumstances. Denmark is also actively cooperating with international environmental regimes. Environment ministers from the 27 European Union (EU) countries agreed to stop selling fossil fuel cars by 2035 to reduce carbon dioxide emissions and fight climate change on Wednesday, 29 June 2022. According to Frans Timmermans, the EU's head of climate policy, the climate crisis, and its consequences are apparent, so policies are unavoidable and must be implemented (Saja, 2022).

#### **4.7 Eco-Friendly Hotel**

Crowne Plaza Copenhagen Tower, Denmark, is one of the world's most environmentally friendly hotels. The hotel management uses solar panels, variable ventilation systems, and intelligent lighting. The hotel has a water heating and cooling system facility that pumps water to cool during the summer and stores excess heat for heating during the winter, positively impacting the hotel's financial stability. This is because the groundwater system cuts heating and cooling by 90%, thus cutting most hotel costs. Most hotel systems strive to be as resource-efficient as possible and have proven successful by producing almost no carbon. According to scientists who are supported by the Intergovernmental Panel on Climate Change (IPCC) report, this hotel system has the potential to be one sector to slow climate change because the average carbon dioxide emission produced from one hotel room per year is 5-15 tons, not including the use of single-use bottles, high water usage and food waste from visitors (Ayu Maharani, 2022).



Denmark has one main goal: to make its people adaptable to green energy and sustainable resources. Denmark public awareness is very supportive of protecting the environment.

#### 4.8 Organic Food

Denmark is known as the largest market for organic products in the world. The choice of organic food in Denmark is extensive, from meat, fish, milk, and baby food, to snack biscuits. The main reason consumers prefer organic products is public awareness to consume 'healthy' food. Organic products are free from pesticides, chemical fertilizers, growth hormones, and GMO seeds. Regarding milk, Denmark has the largest organic dairy farm in the world, which is 300 organic dairy farmers with strict certification standards. Other requirements of the certificate are animal welfare, prohibited from using hormones and antibiotics, and cannot be locked up in a cage all day. Food safety is the primary consideration of consumers choosing organic products. Many parents do not want their toddlers to have pesticide residues in their daily food, and animal welfare is also a reason. According to Laust Krejberg, a cattle farmer in Denmark, cows raised on organic farms will be more prosperous and happier, which will eventually produce more milk, and the organic products products produced are safe for the body and do not harm anyone, including the environment. (Anna, 2019).

#### 4.9 The use of transportation as the daily mobility of citizens

In Denmark, cycling is one of the primary forms of transportation. People cycle for pleasure, travel, freight and family trips, work, grocery stores, or social events. The bicycle became a symbol of equality and freedom. In large Denmark cities, it is often easier to

travel by bicycle than by car, supported by an extensive network of bicycle lanes. Dane's ride various bicycles, from racing bicycles to giant box cargo bicycles used to transport goods and children. At rush hour, Copenhagen's bike lanes can be as congested as car traffic in other parts of the world. Worrying about air pollution, climate change, as well as heavy petrol and car taxes are factors that make people cycling (Denmark.dk, n.d.).



## **V. Conclusion**

The Denmark Government has successfully carried out adequate and comprehensive policies to achieve the goal of being free from fossil fuel resources, with the target achieved by 2050. The policies and projects that the Denmark Government undertakes are long-term, so during the period 2020- 2022, The Denmark Government is continuing the policies of previous years and implementing the previous policies and projects designed, one of which is the 'energy island' which will only be realized in 2022, as well as the ecofriendly hotel project. Then, in 2022 the environment ministers from the 27 European Union (EU) countries only reached a collective agreement after lengthy talks about stopping selling fossil fuel cars by 2035 to reduce carbon dioxide emissions and tackle climate change. Ensuring the success of Denmark to become the number 1 country has the highest score as a clean, green country and has an excellent and active environmental policy, which requires a high level of public awareness. Denmark people are highly aware of protecting the environment by using bicycles as the primary means of transportation and consuming organic food, which is undoubtedly healthy and environmentally friendly. Furthermore, the Denmark Government is still carrying out the policies and plans that have been previously designed until it reaches its target, namely in all aspects of using renewable resources by 2050.

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