

# Economic Aspect of the Transition to Sustainable Energy Development

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**Abstract:** Energy production is one of the most important sectors of the economy that needs to be transformed into new forms of sustainable energy development. Modern research should be focused on finding the economics of transforming current energy production into the development of new renewable energy sources, which will provide a comprehensive environmental impact and ecological balance. The development of new renewable energy sources and the restoration of the ecological balance are the primary tasks of Russia and other European countries. The study will show how the transition to sustainable energy development affects economic growth and development in Europe. However, this study will look at the benefits of moving towards sustainable energy development in the economy. The main question for the study is what economic benefits can be gained by the EU from the transition to sustainable energy development through the provision of renewable energy production.


## 1 INTRODUCTION

The global economy relies on the use of fossil fuels to produce energy. As the global population continues to increase, so does the standard of living along with the demand for energy consumption. As a result, energy consumption demand is expected to grow by 21% by 2030 to meet growing consumer demand, according to IEA forecasts (IEA, 2020). At the same time, climate change has caused the world to pay great attention to greenhouse gas emissions. This growing concern has many impacts on the environment, prompting the government to make decisions to reduce serious environmental impacts such as gas emissions. The government's decision on the energy sector is strongly connected to its sustainability for having long-term economic benefits. At the same time, decisions on sustainable investments in the energy sector focus on climate change in order to reduce growing concerns about climate.

The fact is that the transition to sustainable energy development has become a focus in many countries to reduce environmental pressures and increase economic efficiency. Transformative energy development is an emerging issue that can ensure

sustainable development and growth without damaging the environment. Ensuring sustainable development is bound to boost economic development, also known as an eco-friendly or green economy. The transition to sustainable energy development will have knock-on effects on the economy. Making energy supplies more sustainable, cost-effective, safe, reliable and environmentally sustainable can ensure long-term economic growth. The recent shift towards sustainable energy development has increased significantly due to the reduction of adverse climate impacts and sustainable energy supply facilities. This shift towards energy development has been strengthening its socioeconomic benefits over a long period of time.

The transition to sustainable energy development depends on reducing fossil energy consumption by increasing the development of renewable energy sources such as solar, wind, and biomass. This renewable energy has no impact on the environment and makes a significant contribution to the economy. While traditional energy production accelerates the use of natural resources, it also affects our environment and takes a huge toll on human-caused natural disasters. Conversely, ensuring sustainable energy development accelerates sustainable

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production, ensures stable growth, creates long-term economic benefits, creates new jobs, and improves living standards (Mentsiev et al., 2020).

There is no doubt that the transition to sustainable energy development is the most important issue in ensuring sustainable economic growth in both advanced and emerging countries. The energy sector is one of the most important sectors of the economy and needs to be transformed into new forms of sustainable energy production. In this regard, the research will focus on finding the economic features of transforming current energy production into new renewable energy development, which will ensure a comprehensive environmental impact and ecological balance. The research will recognize how the transition to sustainable energy development affects economic growth and development in Europe. However, this study will investigate the benefits of shifting sustainable energy development in the economy. Therefore, the main question for the study is therefore to what extent the EU can benefit economically from the transition to sustainable energy development by ensuring the production of renewable energy.

## 2 MATERIALS AND METHODS

The methodology of the research is the process of designing the research which includes the collection of data, measuring the data, and analysis of the data on the basis of the research questions. The study will investigate the economic advantages of transitioning to sustainable energy development in the EU economy by securing renewable energy production. Data will be collected from various published sources such as articles, research papers, sustainable energy development reports, government reports, and so on. The data will then be systematically analyzed to determine the economic impact of formulating such energy development policies. The research will follow the descriptive qualitative approach to find the research answer.

Therefore, the research project will follow an experimental study on the European Union. The study will determine the economic impact of shifting energy development towards renewable energy production. The study will use non-probability sampling techniques to collect data from numerous sources, including local development reports, academic research, professional journal articles, government reports, and existing published academic research papers.

In this research, the study will follow the “Preferred Reporting Items for Systematic reviews and Meta-Analyses” PRISMA analysis to identify the sources and evidence. Then, in order to collect the data, the SLR (Systematic Literature Review) approach to the literature review was to look for the economic advantages of the transition to sustainable energy development in the EU economy. The data will then be critically analyzed in economic terms to discover the economic benefits of this transition.

Economic growth depends on the mobilization of resources through the industrial revolution, maximum capital mobilization, technological advancement, and strategic change which will ensure economic development. Energy consumption is one of the main economic factors of an economy, and economic growth depends to a large extent on how much energy a country can produce to ensure proper development. The energy consumption will change the pattern of the level of development. The U.S. Energy Information Administration projects that energy consumption will increase by more than 50 percent by 2050. Most developing countries are expected to develop their energy consumption that does not belong to the OECD. Economic growth has a huge impact on rising costs due to environmental impacts. The use of the conventional energy production process affects the environment which will increase the carbon footprint. Most countries use only fossil fuels to produce energy and meet huge demands that are not sustainable for the environment. This unsustainable production process will reduce a significant portion of GDP due to environmental impacts (EIA, 2021).

Many countries have adopted sustainable energy development strategies to achieve the Sustainable Development Goals. Germany, for example, launched the Energiewende project in 2010, shutting down coal-fired power plants and starting to invest in wind power plants, a shift aimed at enabling renewable energy. In fact, in 2018, the plant has become Germany's most important source of energy. In 2020, countries generate nearly 55.8% of the energy from renewable sources, where they produce wind energy with nearly 30.6% of the total energy according to the “Fraunhofer Institute for Solar Energy Systems (ISE)” (Fraunhofer Institute for Solar Energy Systems ISE, 2021).

According to “European Union’s European Green Deal” the EU set the goal in 2019 to make the climate of Europe natural by 2050 where every country is promised to phase out the use of fossil fuel by installing green technology to promote a green environment. Under this promise, Austria closed its

last coal energy plant in 2020, and Portugal phased out its last gas energy production plant in June 2020. Consequently, the EU reduced its gas emissions by 3.7% after switching energy production to natural energy production, resulting in a 1.5% increase in GDP (European Commission, 2021). This is one of the most unusual examples of the rest of the world increasing GDP by reducing gas emissions from energy production.

While developing countries are far from these changes, Nepal has already set an example in terms of clean energy production. Nepal forecasts the potential of hydropower in energy production to be close to 43.3 GW. Bangladesh has a huge potential for generating 50.2 GW of energy from the solar system which is connected to the national grid. Correspondingly, Albania also has the potential to generate 16.5 GW of energy from renewable sources. On the other hand, developing countries such as India are investing heavily in coal energy production. If this expansion could be translated into hydro and solar production, it could reduce gas emissions and the impact on the environment. These developing countries could follow the example of the NordLink power development project, in which a wind energy production company is linked to a Norwegian hydroelectric power plant. The project produces renewable energy and is shared between the two countries so that they can benefit together. Thus, this event is another example of multilateral cooperation between the two countries to increase renewable energy production and reduce carbon emissions (Adhikari, 2021).

The transition to sustainable energy development can have sustainable effects on economic growth. In 2006, Berkeley Kammen examined the economic revenue consequences of the U.S. economy's shift to renewable energy development. Research shows that they are achieving sustainable development by promoting renewable energy production, earning income, ensuring social well-being, and maintaining the environment. Another study on the "The economics of solar energy as renewable energy and the economic effects of its investment in Egypt" was conducted by Fawaz in 2014, which concluded that the conventional system of energy production through consuming fossil fuels will not meet the growing demand of the energy. Hence, the study also shows that there is a growing demand for renewable energy sources, which will meet the demand for renewable energy sources such as solar energy (Salman and Hosny, 2021).

### 3 RESULTS AND DISCUSSION

To achieve sustainable energy production, countries need to convert their energy production to renewable energy. The commercial, household, transportation, and industrial sectors should ensure the use of clean and renewable energy. It is well known that the domestic sector is a key sector that can be improved through the consumption of renewable energy such as solar energy. A sustainable energy development policy ensures economic growth by mobilizing resources through industrial insurrection, technological advancement, and strategic changes. Energy production is one of the main economic issues of an economy, and growth depends on energy production. The level of energy consumption will definitely change the development pattern of the entire economy. Shifting the energy sector to sustainable energy consumption will ensure economic growth by minimizing environmental costs. It is well known that the domestic sector is a key sector that can be improved through the consumption of renewable energy such as solar energy (Bulatova and Amirova, 2020).

A sustainable energy development policy ensures economic growth by mobilizing resources through industrial insurrection, technological advancement, and strategic changes. Energy production is one of the main economic issues of an economy, and growth depends on energy production. The level of energy consumption will definitely change the development pattern of the entire economy. Shifting the energy sector to sustainable energy consumption will ensure economic growth by minimizing environmental costs. Many tropical countries are increasing their backup plans for natural biogas digesters caused by human activities. To that end, the economy affects this environmental cost and affects overall growth. Sustainability ensures economic benefits in a number of ways, such as saving the economy for environmental costs, contributing to low-cost energy supply, contributing long-term benefits to GDP, conserving natural resources, and building a strong sustainable economy. Correspondingly, sustainable energy development policies have many benefits, such as helping to increase employment opportunities in the long term, which has become a major concern in developing countries.

## 4 CONCLUSIONS

Though there has been much debate on the subject, it is clear that with sustainable policies, it is possible to change the current energy production by using fossil fuels for sustainable energy production. It will certainly change the environmental effect as well as increase economic contribution in numerous ways, such as GDP growth, reduce natural cost, increase job offers, and ensure sustainable development. Renewable energy production will improve overall social welfare and human well-being, more than add to GDP. If existing renewable energy production could be doubled globally, GDP would be significantly affected. It shows that a renewable energy development strategy is economically viable and able to contribute to a major part of the economy.

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