

# THE IMPORTANCE OF RENEWABLES FOR ENERGY TRANSITION AND SUSTAINABLE DEVELOPMENT - LESSONS FROM THE GERMAN EXPERIENCE AND BEST PRACTICES IN INTERNATIONAL BUSINESS<sup>1</sup>

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## Abstract

In this article the experience and best practices of German developers of renewable energy projects are reviewed. The paper also examines the history and legal framework of energy transition in Germany, thus highlighting political aspects of this process. Furthermore, renewables are viewed in the context of energy transition in Europe and as a supporting tool to the policies for sustainable development in private companies. The aim is achieved by analyzing the content of various publications on economic, environmental and climate change related topics. Additionally, a survey and case studies were conducted to obtain and synthesize empirical information.

**Keywords:** international business, renewable energy sources, sustainable development

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## 1. Introduction

Nowadays energy, produced by renewable energy sources (renewables), is called “green energy”, because of its minimal impact on the environment and its very low levels of pollution. Furthermore, renewable energy is not only clean, but also widely available depending on natural conditions and the weather. The goal of its usage is to reduce the harmful emissions of carbon dioxide (CO<sub>2</sub>) into the atmosphere, while minimizing the impact of the Global Warming and the Greenhouse Effect. This is also the reason why so many governments around the world have implemented numerous measures and strategies to increase the share of renewable energy sources in the total energy consumption of their countries.

The topic of renewable energy has become increasingly relevant in recent times. Through the means of its production - renewable energy sources (or renewables), it is connected to the measures of addressing climate change and related to current issues concerning energy shortage and the high prices of electricity generated for customers. The matter also concerns sustainable development and its dimensions, taking into account that the seventh of the United Nations’ Sustainable Development Goals is precisely related to energy from renewables.

Germany is among world leaders in the successful implementation of green energy and its practical application. Therefore, the study could serve as an example of successful integration of renewable energy sources in international business and, at the same time, conclusions from the best German practices are able support transition to a low-carbon economy in Eastern European countries.

### *1.1 International business, renewable energy sources and sustainability<sup>2</sup>*

The concept of sustainability (sustainable development is going to be used as its synonym in this paper) is a modern phenomenon influencing many areas including the international business. Through the development of sustainability policies, modern companies are gradually adapting to the changing business environment and meeting new demands of customers and partners. The renewable energy business in global aspect is no exception, and it is also implementing sustainability norms according to its three dimensions - environmental, economic, and social. Furthermore, it is important to clarify that the renewable energy is an integral part of the concept of sustainability

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## 2. Acknowledgements

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and is even included as a separate goal in the United Nations (UN) strategy for sustainable development, as goal number seven - "Ensure access to affordable, reliable, sustainable and modern energy for all" (United Nations, 2015).

The interconnection between international business, renewable energy sources and sustainability is, therefore, manifested through the policies of governments and transnational organizations in order to comply with the UN principles. This is mainly represented by the following two directions:

- Measures against climate change;
- Coordination and integration of policies about environmental protection, economic growth, and social interests.

### *1.2 The German experience in the development of renewable energy sources*

At the moment, the most developed countries are investing enormous resources in order to achieve the green energy targets set for 2050. And the most developing economies are also investing in order to reduce their carbon footprint. Germany is among the leaders in terms of energy conversion and carbon reduction. The country has a long history of developing and gradually increasing the use of renewables. Moreover, there are examples of introducing technological innovations and creative measures, such as agrivoltaics and others. That is why Germany is a good example for the experience of local companies, which are working on renewable energy projects. Consequently, their experience can serve Bulgarian entrepreneurs in future work on similar projects. Therefore, the work of local project developers in Germany can serve as an example of the best practices in Europe.

Why project developers? – As their name suggests, they actually develop renewable energy projects and are the drivers for the process of creating a new power plant, which operates with green energy. Project developers are key players in energy conversion alongside governments, investors and consumers. More precisely, these companies can give us the practical insight of what are the changes in the energy sector in terms of renewables. Most German project developers from Saarland are operating on international level and, therefore, involved in international business.

## **2. Data and Methods**

This article is the result of years of research from two separate university projects and two different universities - one in Bulgaria and the other in Germany. The former mainly relates to the sustainability policies of companies with Bulgarian and international presence, and the latter relates to the impact factors of renewable energies in international business based on the example of German project developer companies.

In this case, some of the findings on these two topics are briefly presented, but the completed results will be published in greater detail in the near future.

The methodology includes analysis and synthesis of empirical information and databases from German companies, but also content analysis of various publications on economic, political, environmental, and ecological topics. Real-life business examples and case studies, relying on the best practices in the research area, are used. The experience, and knowledge of German project developers (from Saarland) are essential. Solar PV panels and onshore wind plants are the most suitable sources because they have the greatest potential for further development in Bulgaria as affordable and cost-efficient. Furthermore, the included interviews are conducted with scientists and policy makers, and the sources used are from project developers and the results of a questionnaire.

The author aims to explore success factors of renewables as well as their impacts on international business level. The timeframe of the analysis is from 2000 to 2021, but also taking into account what the goals and expectations are for the development of the energy sector up to 2030. Additionally, a custom methodology has been developed in order to analyze the sustainability practices of selected international corporations.

### **3. Results and Discussion**

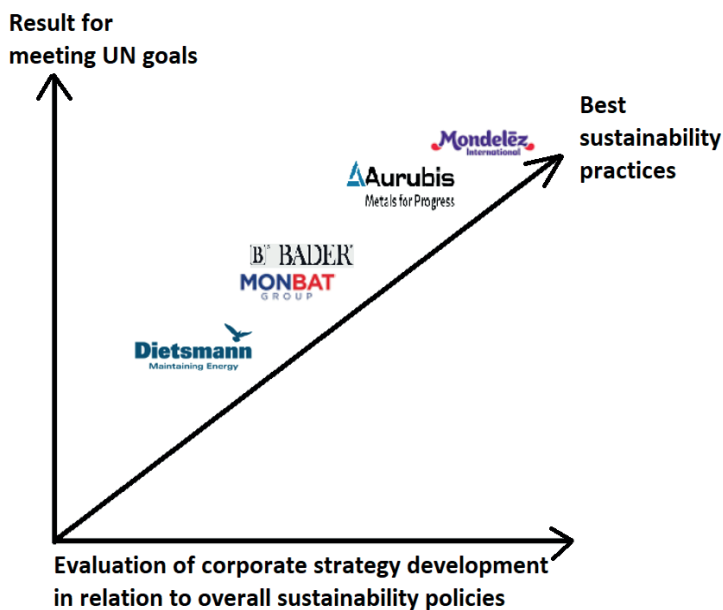
We will start with some interesting findings from the research about sustainability (Dimitrov et al., 2021). They are presented in the following figure, which uses data from a specially developed rating system, created by the author in order to evaluate the sustainability policies of the companies under review:

The main criteria by which companies are included in the rating is that they are large enterprises with a proven track record of good sustainability practices and that have operations in many countries. The selected companies are among those with a well-developed sustainability policy and should be an example to others. Furthermore, each of the five companies has an impact on the energy market and is directly or indirectly linked to renewable energy or its rivals (fossil or nuclear energy).

We can summarize the information by pointing out that Monbat JSC and Bader GmbH & Co. KG are at similar level in regard of the sustainability policy applied by their managers and have an average score of 4.58. Dietsmann is last of the top five companies because of the nature of work and low score in green energy evaluation. This is normal as the company is mainly involved in the maintenance of power plants operating with fossil or nuclear energy. There is place for changes in the future, when Dietsmann's management can focus on renewable energy projects. Aurubis AG, on the other hand, is an example of a successful company using innovative sustainable business models and production practices, despite being involved in heavy industry and the processing of metals and raw materials. Top performer in the applied ranking

is Mondelez International, which, due to its pursuit of ever higher sustainability and a plan for future development, receives a score of 4.92 out of 5. It should be noted that the analysis is focused on measurements such as environmental responsibility (such as recycling), social impact (such as labor practices and inclusion of workers), corporate governance (such as transparency and reporting) and innovation technology (such as new methods of production). This information is included in the full text of the research, on which this article is based on.

**Figure 1.** Ranking companies according to their sustainability policy implementation level



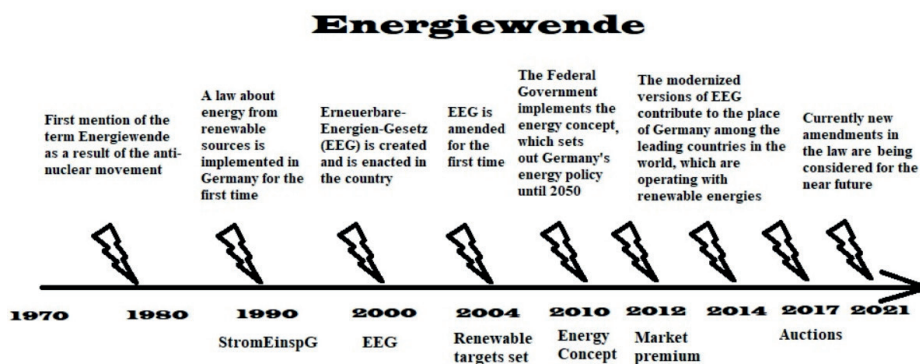
Source: Own representation based on sustainability reports of the selected companies and author's evaluation model

Other data from a project (Dimitrov, 2022) that includes a detailed analysis of the German energy transition and the best practices of German project developers (mainly working with solar and onshore wind projects in the Saarland region, but with influence in neighboring markets). The research was divided into a theoretical and a practical part.

The German energy transition (Energiewende) is an ongoing process and is still directed by the political will and actions. In fact, according to a study (Evans, 2016), the term Energiewende was introduced back in the 70s as part of the anti-nuclear

movement but it gained popularity around year 2000 due the effects of Global Warming. German legislation about the energy sector started to change in 1990. The Electricity Feed Act of December 7, 1990 (StromEinspG) was introduced in the country from the beginning of 1991. Almost a decade later, the Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz or EEG, 2000) was accepted as a new step in the promotion of renewable energy sources in Germany. The whole process of the German energy transition could be represented as follows:

**Figure 2.** Simplified timeline for the process of energy transition in Germany



Source: Evans (2016) and Bundesministerium für Wirtschaft und Klimaschutz (BMWK)

It was very important to understand the legal and theoretical background of the energy transition in Germany, including the history and recent changes in EEG. However, the project is mainly practice-oriented, more attention is devoted to the second part of the research with empirical analysis.

As a next step, a special questionnaire was created for gathering practical information. It was sent to several companies, which are the most significant project developers in Saarland. They specialize in carrying out projects with a focus on solar and onshore wind installations. These operate not only locally but also internationally, therefore, especially suitable for the current research purposes.

The completely anonymous questionnaire included twenty questions. The aim of the survey was to identify best practices in the work and development of renewable energy projects in Germany and to support future implementation of such practices in Eastern Europe. Another goal was to find out expert opinions on what new strategies and incentives should be promoted by policy makers to further encourage successful implementation of renewable energy projects. The third key was to increase

the awareness of the society about the actual working activities of project developer companies in order to encourage further adoption of energy from renewable sources.

Based on the answers from the questionnaire, we were able to construct a profile of the average manager in a renewable energy project development company in Germany. The typical manager in such company could be described as:

- Usually, male over 50 years of age (60% are over 50 and 80% older than 35);
- He has more than ten years of experience in the energy sector;
- He runs a company that has several local and international competitors (usually less than ten);
- Some of the numbers are not decisive, but it is noteworthy that nearly 40% of managers run large companies with more than a hundred employees. The rest of the companies (60%) have less than twenty workers.

For the project developers in Saarland, the most common problems are related to the long time needed for obtaining the permits for launching a project, as well as restrictions regarding the local environment. All respondents claimed these two issues as top problems for resolution.

At the end of the questionnaire, the German managers of renewable energy project development companies made suggestions to their Bulgarian counterparts. Those recommendations includes aiming for more transparency in administrative and operational aspects, as well as paying attention to the remuneration of their employees, which is the key to successful business. The topic of workers' skills and proportionate remuneration is increasingly discussed in Eastern Europe, especially since energy prices and inflation are rising. In Bulgaria, many workers will also need to be properly qualified to work with renewables, as currently a significant part of the population still works with conventional energy sources.

Subsequently, some of these companies also sent case studies for analysis. The case studies pointed out the exact types of problems managers in Saarland face while they are involved in an onshore solar or wind renewable energy project. Then the impact of the issues was measured based on the formulated factor groups. From this information, which was provided by the local project developers in Saarland we can draw conclusions about general problems their colleagues across Germany. Therefore, we can assume that German project developers present practical guidelines for solving problems in their operations that may be useful for their Bulgarian colleagues in the future. There were four case studies, which were sent by the companies and here is the summary:

**Table 1.** Findings from the case studies

Case study	Type of energy for the project	Type of problem	Impact factor	Type of Solution
1	Solar	Legal issues and need for extended credit line	Law and Politics	Intervention by the state authorities
2	Wind	Problem with the delivery of the wind turbine	Economy and Management	Intervention by the state authorities
3	Solar	Problem with the beginning of the construction work due to ancient remains in the area	Law and Environment	Adjustment the construction plan and decision of the Management
4	Solar	Problem for the safety of workers and locals	Others (force majeure)	Increase in spending and changes in time planning

Source: Information from the cases studies and project developers in Saarland

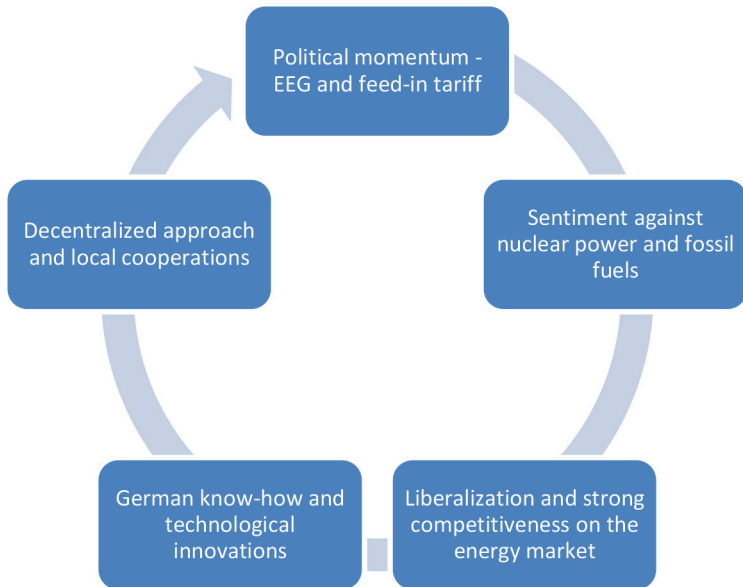
The information collected from all case studies shows the expertise of project developers in Saarland from their daily business. This confirms that companies in Germany have the know-how in dealing with problems of various kinds – from local regulations and restrictions to defusing bombs and clearing sites for new projects. We should know that all conclusions are based on the information from local companies. Across the county are noted other problems such as grid integration and connectivity, resistance of farmers to the usage of agricultural land for energy purposes, storage issues and lack of stable supply of energy depending on weather conditions. Each issue requires different approaches and solutions.

From the beginning of the century project developers in Germany had the time to adapt to market and regulatory changes. Their colleagues in Bulgaria have relatively less experience in working with renewable energy sources than their colleagues in Germany. Therefore, it is important to understand and learn from lessons of the past.

The role of government and scientific institutes in the energy transition in Germany was evaluated through four interviews with scientists and policy makers who are specialized in working, researching, and direct involvement in policies about green energy. The information is summarized as follows:



**Figure 3.** Key drivers for the German Energiewende  
(summary from interviews with the experts)



Source: Interviews with different experts and policy makers

Those conversations were very helpful in order to understand the current sentiment and upcoming trends in Germany regarding the development of renewable energy sources. Furthermore, it gave us the opportunity to highlight measures supporting smooth energy transition towards renewables and to summarize key drivers for German energy transition (Energiewende). Interviews and various opinions of experts revealed the key drivers (five factors from the figure) for the energy transformation process in Germany.

Regular updates in the legal framework, decentralization and liberalization contribute for the rise of renewables more than pure financial incentives. Technological innovations, awareness of society and political will to implement the necessary changes also contribute in achieving secure, cleaner and energy efficient future for next generations.

#### 4. Conclusion

The information provides a basis for predicting future trends in sustainability policies and renewable energy development. The following conclusions could be pointed out:

- The international business with renewable energy sources is part of a global system and is susceptible to various changes in the economic or political environment. Renewable use is increasing mostly due to government policies and incentives, also in times of crisis and rising inflation;
- Private investors are looking to profit from renewables, but governments see them as a measure to reduce the effects of the Global Warming phenomenon and to provide energy security; in other words, RES implementation is important for all;
- Investing in renewables can help companies is able to reduce the uncertainty of price changes in volatile market conditions, but also ensure a cleaner and safer future for next generations;
- Renewable energy will have a significant impact on global economy in the near future, especially after the recent events. The long-term forecast is that renewables will be the world's leading energy source by the middle of 21<sup>st</sup> century.

Currently, there are also conditions for an increase in global energy prices. Among the leading reasons are rising inflation, supply chain problems, rising tensions around the Globe, lack of reserves of different commodities and others. In parallel, energy needs of the population have also increased, which is a further prerequisite for the impending energy crisis. Therefore, the construction of a greater number of renewable energy generation facilities is a must, as green energy is cheaper and has a very low environmental footprint.

The following suggestions can facilitate energy transition and help in solving energy issues:

- Less bureaucracy will be a powerful incentive for investors and more entrepreneurs to enter the energy business;
- More renewable energy professionals are needed as the number of installations is expected to increase and create new jobs worldwide;
- More funding is needed for scientists, specialized in the study of renewable energy applications of all kinds. This could help improve the current level of technology and increase the efficiency of installations. The lack of funds occurs also in research into energy systems, capable of interconnection between renewable energies, flexibility options and convergence of associated electricity, heating and transport infrastructure;
- Implementation of independent courses in schools and universities will support awareness and general knowledge of the population concerning the benefits of renewables.

Following this analysis, we can reasonably predict that the use of renewables will continue to rise in the coming years. This will not only change economic balance but will also provide a stimulus for international companies to deal with the consequences of current market changes.

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