# Assessment of Innovative Sustainable Businesses in Europe. A Case Study in the field of Renewable Energy

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## Abstract

*Sustainability and innovation are both significant for the development of the business environment. Moreover, sustainable innovation creates a new generation of businesses worldwide that provide products and services characterized by resource efficiency. This paper aims to emphasize an assessment of innovative sustainable businesses in Europe. The identification and analysis of businesses that focus on sustainability and innovation are currently necessary since the future of all economies depend on how companies are using the existing resources. Innovative sustainable businesses provide new competitive green solutions that meet human needs. In addition to economic performances, businesses around the world should focus also on social and environmental performances. The methodological approach included a comparative analysis of the Global 100 most sustainable companies and a case study of the most sustainable European business in the world in the field of renewable energy. The index of the Global 100 most sustainable businesses in the world is reported by Corporate Knights, a Canadian research company. The results of the research highlighted that European countries have the most sustainable businesses in the world. The company included in the case study can become best practice for the other European countries that were not included in the Global 100 ranking. Innovative sustainable businesses are the future of Europe because they provide socio-economic and environmentally performances.*

**Key words:** sustainable innovation, businesses, case study, renewable energy
**J.E.L. classification:** L25, L21, O30, O50, Q01

## 1. Introduction

The rapid evolution of technology in the last years has resulted in more and more competitive companies worldwide. In the context of the present issue concerning sustainable innovations, many companies are forced to develop their activities sustainably. Likewise, sustainability requires more innovative business models.

In addition to economic performances, companies have to include in their strategies social and environmental issues. How resources are used within companies determines their future in the global market. Sustainable innovation is more than innovation, it involves more efficient and competitive businesses around the globe.

This paper aims to emphasize an assessment of innovative sustainable businesses in Europe. The performances of many companies depend on the current and future challenges concerning sustainability and innovation. Internal and external stakeholders have attempted in the last years to design new innovative solutions for developing the business environment in a manner that incorporates economic, social and environmental issues.

## 2. Literature review

Evidence shows that many companies invest in technological innovations to achieve sustainable competitive advantage. The actual global challenges demand the identification of solutions and opportunities that enable sustainable innovation in companies even though the Covid-19 pandemic has affected the strategies of many companies (Avrămescu, 2020). Therefore, the future success of businesses depends on sustainable innovation.

The concept of sustainable innovation is currently at an initial stage of research. Until now, companies have been influenced by globalization (Brătășanu, 2020). The new challenges nowadays for many companies are sustainability and innovation. Some authors state that sustainable innovation involves the development of sustainable technologies and processes (Cillo *et al.*, 2019). On the other side, other authors have argued that sustainable innovation concerns more than new technologies and products, incorporates the organizational culture of the company and the social values of society (Pellegrini *et al.*, 2019).

For supporting the process of sustainable innovation, governments should establish an open innovation environment through the regulatory framework and intensive research and development. (Costa and Matias, 2020) Furthermore, the development of strategies for sustainable innovation could create advantages for companies such as cost reduction and more efficient production (Aldieri and Vinci, 2019). Future generations of entrepreneurs will benefit from the results of these policies and strategies by identifying new market opportunities.

To increase sustainable innovations, entrepreneurs could develop particular business models that generate economic, social and environmental performances (Cillo *et al.*, 2019; Ardito *et al.*, 2019). Therefore, nowadays managers and entrepreneurs must include in their business strategies social and environmental aspects besides economic issues.

Costa and Matias (2020) suggested that the creation of an innovative ecosystem can produce multiple advantages such as digitalization, technological developments and continuous innovation. To succeed in the creation of an innovative ecosystem, it is necessary to involve multiple stakeholders such as governments, businesses, educational institutions, research institutions, and the community.

Sustainable innovation for companies involves energy and waste management, environmental pollution prevention, and new recycling techniques (Adomako, 2020). All the results of the implementation of sustainable innovation have an impact on the employees, suppliers, and customers (Ardito *et al.*, 2019). On the other side, change towards sustainable innovation could come also from internal stakeholders who are interested in long-term development, not only from the exterior. For instance, the employees could propose innovative ideas for sustainably developing the business.

Some authors associate the concept of sustainable innovation with human resources (Grabar *et al.*, 2020). In their study, they investigated in which way sustainable human resources from university contribute to sustainable university development. The results of their study underlined that the sustainable innovation activities that human resources have initiated have generated positive effects on the sustainable development of the university.

## 3. Research methodology

The research methodology included (1) a comparative analysis of the Global 100 most sustainable companies and (2) a case study of the most sustainable European business in the world in the field of renewable energy. The index of the Global 100 most sustainable businesses in the world is available for the year 2019. Furthermore, the case study comprised an assessment of Orsted, a Danish business that was ranked the most sustainable business in the world in 2019.

## 4. Findings

This chapter will include a comparative analysis of the Global 100 most sustainable companies in the world and a case study of the most sustainable European companies in the world in the field of renewable energy.

### 4.1. Comparative analysis of the Global 100 most sustainable companies in the world

The index of the Global 100 most sustainable companies in the world is conducted by Corporate Knights, a research Canadian company. Every year since 2005, the company performs research concerning the most sustainable companies in the world resulting in a ranking with the first 100 most sustainable companies. The ranking is conducted by following a total of 21 indicators related to resource management, human resource management, financial management, clean revenues, and performance of suppliers (Corporate Knights, 2021). Some examples of indicators are innovation capacity, supplier sustainability score, energy productivity, waste productivity, and water productivity. (Corporate Knights, 2019) The database used for research comprises public data reported yearly by the companies.

The top ten companies included in the ranking are from Europe (Denmark, Finland, Netherlands, and Italy), North America (Canada and USA), and South America (Brazil). Therefore, the top ten ranking includes the following companies: Orsted (Denmark), Chr. Hansen Holding (Denmark), Neste Oyj (Finland), Cisco Systems (USA), Autodesk (USA), Novozymes (Denmark), ING Groep NV (Netherlands), Enel SpA (Italy), Banco do Brasil (Brazil), and Algonquin Power & Utilities Corp (Canada).

As it can be noted, the European companies own a large percentage of the top ten most sustainable companies. Moreover, out of six European companies, four companies are located in northern Europe. Consequently, the northern countries of Europe are the most competitive in the field of sustainability and innovation. The fields of activity of the companies are wholesale power, chemical engineering, oil industry, and banking.

*Table no. 1. Classification of Global 100 most sustainable companies by continents and countries of provenance*

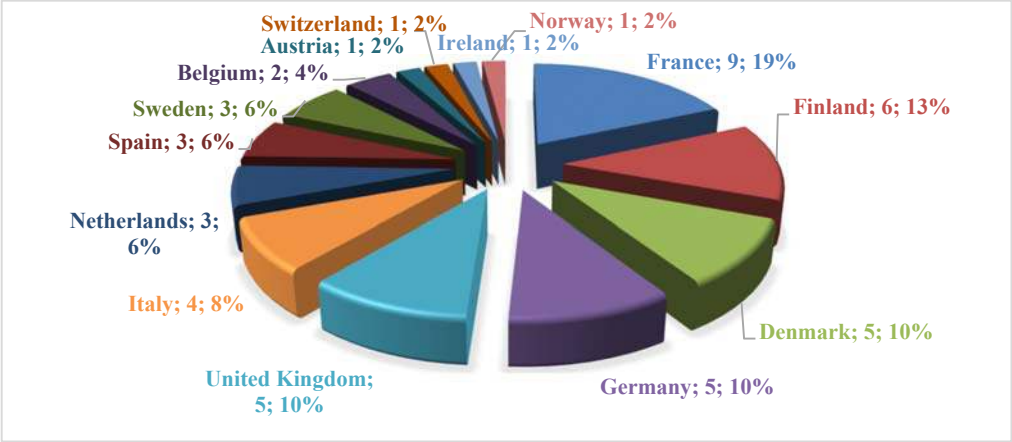
| Continents and countries | No. of companies | Continents and countries | No. of companies |
|---|---|---|---|
| *Africa* | *1* | *Europe* | *49* |
| South Africa | 1 | France | 9 |
| *North America* | *29* | Finland | 6 |
| USA | 17 | Denmark | 5 |
| Canada | 12 | Germany | 5 |
| *South America* | *3* | United Kingdom | 5 |
| Brazil | 3 | Italy | 4 |
| *Asia* | *16* | Netherlands | 3 |
| Japan | 6 | Spain | 3 |
| Singapore | 3 | Sweden | 3 |
| China | 2 | Belgium | 2 |
| South Korea | 2 | Austria | 1 |
| Taiwan | 2 | Switzerland | 1 |
| Hong Kong | 1 | Ireland | 1 |
| *Australia* | *2* | Norway | 1 |
| Australia | 2 | | |

*Source:* own elaboration after Corporate Knights reports (Corporate Knights, 2021)

The classification by continents and countries of provenance provides the following situation: 49 companies in Europe, 29 companies in North America, 16 companies in Asia, 3 companies in South America, 2 companies in Australia, and one company in Africa. From the perspective of the most competitive continents in the world in the field of sustainability and innovation, can be distinguished Europe with 14 countries included in the ranking. Europe is followed by Asia (with 6 countries), North America (with 2 countries), South America (with 1 country), Africa (with 1 country), and Australia (with 1 country).

In terms of the European companies included in the Global 100 ranking, the research emphasises that most sustainable companies are located in France (9 companies), followed by Finland (6 companies), Denmark (5 companies), Germany (5 companies), United Kingdom (5 companies), and Italy (4 companies), Netherlands (3 companies), Spain (3 companies), Sweden (3 companies), and Belgium (2 companies). Moreover, Austria, Switzerland, Ireland, and Norway have one company. The evidence underlines that all the European countries included in the ranking are highly developed countries with a competitive business environment worldwide.

*Figure no. 1. Number of sustainable European companies included in Global 100, by country of provenance (2019)*




*Source*: own elaboration after Corporate Knights reports (Corporate Knights, 2021)

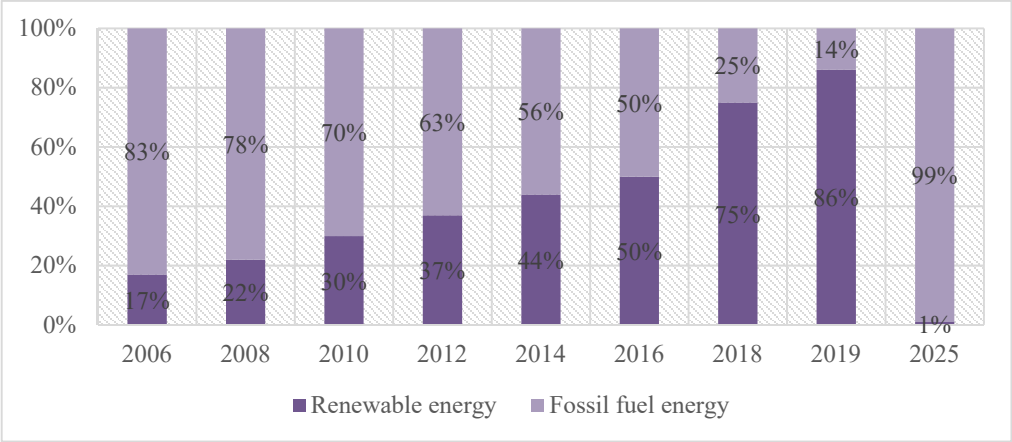
To summarize, the European countries are the most competitive in the world in the context of sustainability and innovation. A large number of European companies have implemented in their strategies innovation and sustainable development measures as an opportunity for environmental protection, move towards renewable resources and development of R&D activities.

### 4.2. Case study of the most sustainable European company in the world in the field of renewable energy

The case study includes an analysis of the most sustainable European company in the world. According to the reports released by Corporate Knights in 2019, Orsted ranked first in their research named Global 100 most sustainable corporations in the world. As it was mentioned in the previous part, Orsted is originally from Denmark. Over the last few years, the Danish company developed all the activities sustainably.

Orsted is operating in the field of renewable energy. From 2006 to the present time, renewable energy has started to overcome fossil fuel energy. The predictions reported by Orsted state that renewable energy will comprise almost 99% of the company's electricity and heat production until 2025. The company intends to develop the field of the green economy to reduce CO2 emissions.

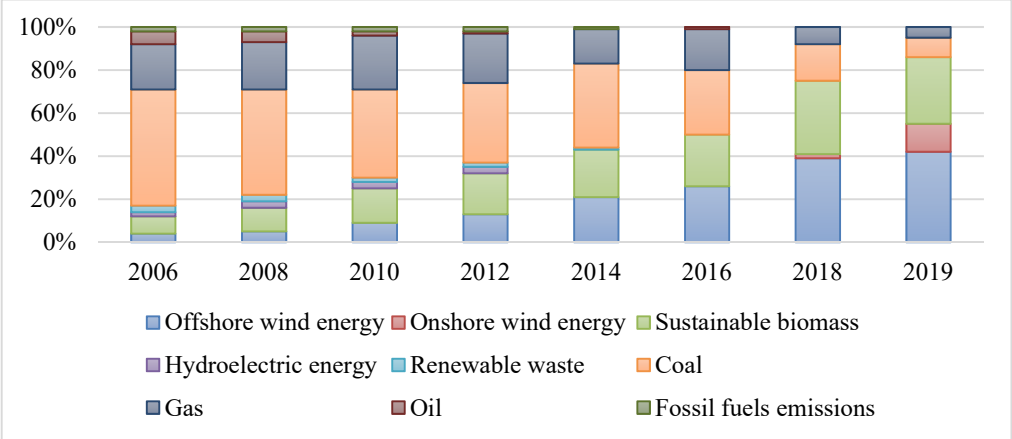
*Figure no. 2. The share of green energy in Orsted's electricity and heat production*




*Source:* own elaboration after Orsted data (Orsted, 2021)

The energy sources used for energy and heat production within the Danish company were characterised by intense changes for the period 2006-2019. In 2006, the company used coal and gas as primary energy sources. However, the share of coal and gas has started to decrease over the next few years. On the contrary, in 2019, Orsted used as primary energy sources for energy and heat production offshore wind energy, sustainable biomass, and onshore wind energy. It can be noted that nowadays economies should implement renewable energy sources.

*Figure no. 3. Energy sources used by Orsted in the production of energy and heat*




*Source:* own elaboration after Orsted data (Orsted, 2021)

Among the green solutions, the company implemented include offshore wind energy, onshore wind energy, bioenergy, and solar energy. All these energy sources will be detailed hereinafter.

- **Offshore wind energy**

Evidence shows that Orsted is a global leader in constructing and developing offshore wind farms. The company has built offshore wind farms across three continents: Europe (Netherlands, Denmark, Germany, and United Kingdom), North America (USA), and Asia (Taiwan). In the four European countries (Netherlands, Denmark, Germany, and United Kingdom) the offshore wind farms have met the electricity needs of more than one million households, which is more than in the other countries. The evolution of offshore wind energy has recorded an upward trend since countries have begun to implement more and more renewable energy sources.

*Table no. 2. Offshore wind farms constructed by Orsted*

| Countries | No. of offshore wind farms |
|---|---|
| Denmark | 5 |
| United Kingdom | 16 |
| Germany | 5 |
| Netherlands | 1 |
| USA | 9 |
| Taiwan | 4 |

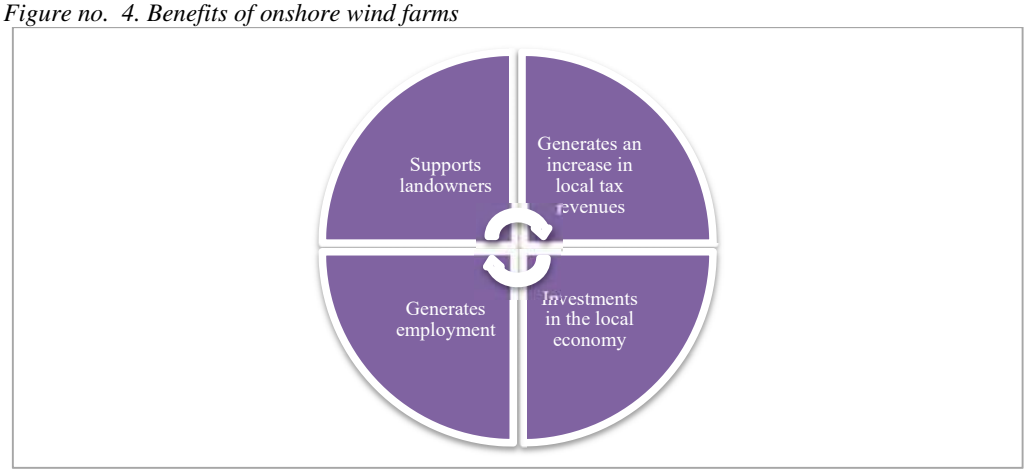
*Source:* own elaboration after Orsted data (Orsted, 2021)

Furthermore, the Danish company focuses on innovation in the development of offshore wind turbines, as a tool to develop new sources of renewable energy. Another action within Orsted is the cooperation with universities and research institutions. Orsted provides data relating to offshore wind turbines to these institutions to encourage the development of this sector through innovation.

- **Onshore wind energy**

Onshore wind energy is another renewable energy source that Orsted produces. The Danish company possesses onshore wind farms in multiple states from the United States of America (USA). Orsted has constructed onshore wind farms in the United States of America: in Texas, South Dakota, and Nebraska. The onshore wind farms provide electricity and heat energy to more than 400,000 households.

*Figure no. 4. Benefits of onshore wind farms*




*Source:* own elaboration after Orsted data (Orsted, 2021)

The establishment of new onshore wind farms provide multiple advantages for local communities: (1) supports the landowners to accommodate onshore wind farms for a long-term rent; (2) generates high tax revenues from property tax that can result in investments related to infrastructure education, health; (3) generates investments in the local economy that contribute to an increase in people's revenue; (4) generates employment for the local communities.

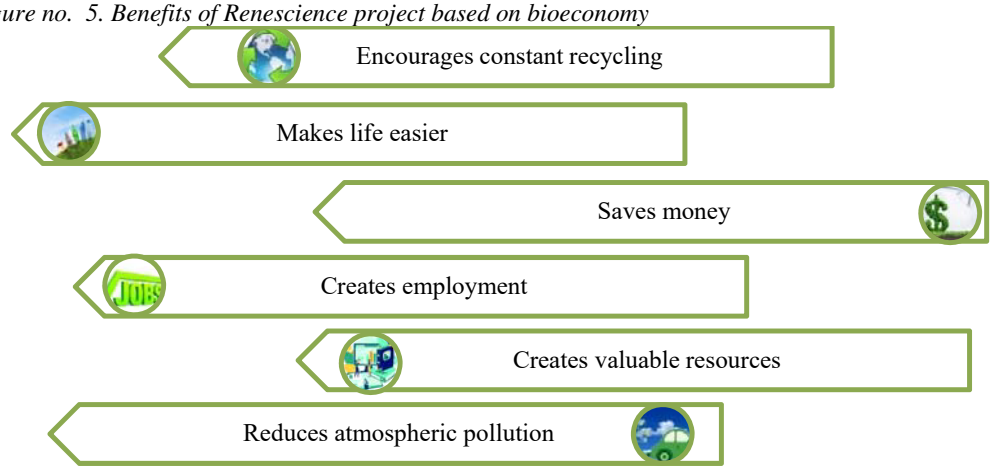
- **Bioenergy**

Bioenergy is integrated within the activities of Orsted and provides CO2 neutral electricity production. The company uses fuelwood chips and pellets produced from sustainable sources. In terms of electricity and heat services, the customers benefit from green sources which are obtained through particular methods.

*Renescience* is a bioenergy project within Orsted and envisages the identification and design of innovative technologies to transform household waste into a reusable material. The idea of the project is based on the assumption that there is a very large amount of waste worldwide and this situation requires a new solution for this problem to be solved: the construction of a landfill on the edge of the cities or the burning of waste. These two approaches are not effective from the

viewpoint of the scarcity of resources and demand other modalities such as the recycling of waste and the reuse of it for producing new products. For instance, the project data emphasises that the amount of recycled metal could annually generate the production of 3,700 cars.

*Figure no. 5. Benefits of Renescience project based on bioeconomy*




*Source:* own elaboration after Orsted data (Orsted, 2021)

The solutions implemented within the *Renescience* project have important implications for the quality of people's lives: makes life easier, saves money, creates employment, creates valuable resources, reduces atmospheric pollution, and encourages constant recycling.

- **Solar energy**

The production of solar energy is another solution for renewable energy that Orsted has developed. Globally, solar energy is in a continuous process of development since it provides energy by harnessing solar power. Therefore, solar energy is a renewable source that contributes to the reduction of other polluting energy sources. The Danish company owns three solar and storage centres in the United Kingdom and the USA.

*Table no. 3. Solar and storage centres constructed by Orsted*

| Countries | Solar and storage centres | Characteristics |
|---|---|---|
| Liverpool / United Kingdom | Carnegie Road storage project | 3 lithium battery system |
| Texas / USA | Permian Energy Center | 1.3 million panels; 100,000 homes powered |
| Alabama / USA | Muscle Shoals | 670.000 panels |

*Source:* own elaboration after Orsted data (Orsted, 2021)

To summarize, European companies have evolved considerably in the last year in terms of sustainability and innovation. The northern countries are a model of best practice for all European countries since their companies have followed an efficient process of development in the field of sustainability. These circumstances result from a large investment in innovation and research. Also, companies are supported by governments through various policies and benefits.

## 6. Conclusions

To summarize, the concept of sustainable innovation has started to become crucial for many companies since the new global challenges involve social and environmental issues. However, the implementation of sustainable innovation requires the creation of a network to support and harness this process. Sustainable innovation will create the future generation of entrepreneurs worldwide.

Furthermore, the results of the research underlined that European countries have the most sustainable businesses in the world in terms of sustainable innovation.

The case study of the European company considered to be the most sustainable in the world, according to Corporate Knights, can constitute a model of best practice for other European countries. Innovative sustainable businesses are the future of Europe because they provide socio-economic and environmentally performances.

## 7. Acknowledgement

This work is supported by project POCU 125040, entitled "Development of the tertiary university education to support the economic growth - PROGRESSIO", co-financed by the European Social Fund under the Human Capital Operational Program 2014-2020.

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