
MASTER THESIS

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**Formation of an
environmentally oriented
consulting company "Sun's
generation"**

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Formation of an environmentally oriented consulting company "Sun's generation"

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Abstract:

This scientific work reveals the potential for the development of the renewable energy market, due to many reasons. The reasons are the unstable political situation in the world, rising energy prices, environmental degradation and the growing demand of German residents for government measures to reduce the negative impact on the environment. This work is related to business planning and development using strategies based on the above reasons.

The purpose of the study is to develop methods for successfully regulating the market for renewable resources to solve the problem of environmental pollution through the promotion of environmentally friendly products.

The work explores the driving forces and problems hindering the development of the market for renewable resources. The problems raised concerned all interested parties, from consumers and producers to the state body for regulating and stimulating the industry.

An analysis was also made of the methods of environmentally oriented companies and the tools they use to strengthen their positions in the market. Based on the data obtained from the conducted research, a concept and business strategy for a new environmentally oriented consulting company "Sun's generation" was created.

The business idea of the new company is to involve all parties using marketing tools, creating a healthy competitive environment among commercial companies and benefiting not only the companies themselves but also the end user of the products and the German government.

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List of abbreviations

AbLaV	Ordinance on Intermittent Loads
AEE	Renewable Energy Agency or Agentur für erneuerbare Energien
ALFI	Association of the Luxembourg Funds Industry
B2B	Business-to-Business
BMBF	Federal Ministry of Education and Research
BMDV	Federal Minister for Digital and Transport
BMEL	Federal Ministry of Food and Agriculture
BMUV	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
BMWi	Federal Ministry of Economics and Climate Action
BMWSB	Federal Ministry for Housing, Urban Development and Building
Bn billion	
CDP	Carbon Disclosure Project
CEN	European Committee for Standardisation
CENELEC	European Committee for Electrotechnical Standardisation
CSR	Corporate social responsibility
DEHSt	German Emissions Trading Authority
ECG	Environmental, Social, and (Corporate) Governance
EEG	Law on Renewable Energy Sources or Erneuerbare-Energien-Gesetz
EIU	Economist Intelligence Unit
EnWG	Energy Industry Act
ESOs	European Standardization Organizations
ETSI	European Telecommunications Standards Institute
EU	European Union
EU ETC	EU Emissions Trading System
GHGP	Greenhouse Gas Protocol

GICS	Global Industry Classification Standard
ICSU	International Council of Scientific Unions
ISO	International Organization for Standardization
KPIs	key performance indicators
kWh	Kilowatt-hour
MW	Megawatt
nEHS	National Emissions Trading System
SCR	Sustainability Risk Management
SMEs	small and medium enterprises
TRL	Technology Readiness Level
TWh	terawatt hours
UNEP	United Nations Environment Programme
VAT	VALUE-Added Tax
WBCSD	World Business Council for Sustainable Development
WCP	World Climate Programme
WMO	World Meteorological Organization
WRI	World Resources Institute

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0. Introduction

The main idea of the review chapter is to show the motivation for this master's thesis and discuss the main ideas of the research. A brief overview of individual chapters of the work is also presented.

0.1 Motivation

The negative impact on the environment is the main topic of the current time. The state of health of people living in close proximity to industrial enterprises is much worse than those who live in more remote places. This not only reduces their life expectancy and quality of life, but also increases the cost of healthcare by the state. It has also recently been proven that production in China has a negative impact on the population of other countries, as dust with chemical admixtures is sprayed by the atmosphere and even reaches the ice of Antarctica. China, as a manufacturing giant of our time, is not alone to blame for climate change. The fault lies at all countries and levels.

Starting with the Industrial Revolution, people began to produce consumer goods on a large scale, which led to an increase in the concentration of carbon dioxide in the atmosphere. An increase in the concentration of carbon dioxide in the atmosphere leads to melting of glaciers, forest fires, which in turn leads to cataclysms. Scientists have proved that a further increase in greenhouse gas emissions will lead to irreversible changes in nature, which will negatively affect not only human life, but also nature and fauna. Many wild animals lose their habitual living conditions and die, leaving their niche in the food chain free, which leads to the death and extinction of other species. Therefore, the problem of the environment is a global problem.

Back in the middle of the 20th century, the Club of Rome, an international non-governmental organization, founded the study of "global problems". The Club of Rome was founded in April 1968 by Italian industrialist Aurelio Peccia and Scottish scientist Alexander King. The main achievement of the club is to attract public attention to the problem of the negative impact of human activities on the environment.

At the moment, the problem of negative impact on the environment by human activity has been recognized by both the community and the state and the business of the enterprise. The state is increasingly imposing restrictions on the business sector in order to change the operational activities of enterprises to a more environmentally oriented one. This explains the relevance of this topic of the final qualifying work.

Publications of the United Nations structures, the European Commission, and ministries of the Federal Republic of Germany were used and analyzed as a theoretical basis along

with publications by such authors as John W. Zillman, Cora Dankers, Pascal Liu, Lena Klaassen, Dr. Christian Stoll, Debora Lacs Sichel, Ahmadya, Gholam Ali, Maryam Mehrpour, Aghdas Nikooravesh, Benjamin Wehrmann, Michel J. Backer, Christoph Steitz, Markus Wacket, Kwamena Nyarku, Gloria Agyapong.

0.2 Objectives

The purpose of the research is to develop an idea and a business plan for an environmentally oriented consulting company based on programs and state legislation on environmental protection.

To achieve the goal, it is necessary to solve the following tasks:

1. Analysis of the system of state measures in the field of solving environmental pollution problems in the countries of the European Union and in particular in Germany.
2. Analysis of the reaction of companies and households to the introduction of eco-oriented innovative projects and their financing.
3. Analysis of primary sources of financing of eco-oriented projects.
4. Search and selection of activities that solve the duality of financing eco-oriented projects and changing the attitude of both households and companies to the costs of implementing and maintaining activities.
5. Development of a business strategy of a consulting company working in the field of environmental certification of business processes of companies.

The object of the study is business entities of various sectoral nature.

The subject of the study is the model of relationships between business entities of different hierarchical levels in the field of tasks of forming an environmentally oriented enterprise.

In the final qualifying work, the works of foreign authors, marketing companies, and state pressure instruments are used to analyze the problem.

In order to substantiate the statements made, various techniques and methods were used, including analysis, synthesis, inductive approach, modeling, deduction, comparison, questioning, and system analysis.

Scientific novelty of the dissertation research:

1. A method has been developed to reduce carbon dioxide emissions by introducing a system of incentives for companies to use renewable energy sources.

2. A new unique model for estimating the share of renewable energy in the total energy consumption of companies has been developed.

0.3 Chapter overview

The final qualifying work consists of an introduction, 3 chapters, 12 paragraphs, a conclusion and a list of sources used. The main text is presented on 70 typewritten pages and contains 15 figures and 12 tables.

The introduction substantiates the relevance of the topic and the study and defines the purpose and objectives of the study, methodology, and research methods.

The first chapter analyzed the reasons for the development of renewable energy in the countries of the European Union and Germany, the driving forces of the renewable energy market, the methods of the government to stimulate this market, and the impact of this government initiative on the environment and households.

In the second chapter, an assessment was made of the impact of environmental initiatives on the well-being of companies, methods, and tools for managing the environmental orientation of companies, and their advantages and disadvantages.

In the third chapter, the business strategy and plan of the environmentally oriented consulting company Sun, its services, marketing tools, as well as the environmental and social impact and relationships of the company with multiple stakeholders were formed.

1. Analysis of the reasons for the emergence of a strategy for the development of "renewable energy sources" in the example of Germany

1.1 The reasons for the development of renewable energy in the EU and the energy transition from non-renewable to renewable energy sources in Germany

1.1.1 The main reasons for the development of renewable energy in the countries of the European Union

The climate has changed significantly since the beginning of the industrial revolution, which led to an increase in the concentration of CO₂ in the atmosphere by more than 40%, with more than half of the increase occurring since 1970. Most of the carbon dioxide emissions were formed from the burning of fossil fuels, which generate energy for human needs. This led to an increase in the average temperature of the earth's surface, which in turn led to sea level rise, abnormal heat in many regions and drought, and other negative consequences not only for humans, but also for all living organisms. Since CO₂ emissions are still continuing and the average surface temperature continues to rise, the world community is faced with the issue of reducing carbon dioxide emissions and preventing climate deterioration [1].

The first significant step towards recognizing and solving the problem of climate change was the First World Climate Conference in 1979 [2]. This scientific gathering explored how climate change might affect human activities. It issued a declaration calling on the world's governments "to foresee and prevent potential man-made changes in climate that might be adverse to the well-being of humanity". It also endorsed plans to establish a World Climate Programme (WCP) under the joint responsibility of the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP), and the International Council of Scientific Unions (ICSU) [3]. This conference was followed by many other conferences and events, which led to the most significant event in the prevention of climate deterioration - the Kyoto Protocol. Under this agreement, many countries, including the countries of the European Union, have committed themselves to reducing greenhouse gas emissions [4].

All these activities have led to the fact that the governments of many countries, especially Europe with its program "European Green Deal" [5], began to take measures to reduce the negative impact on the environment. All 27 EU member states have committed to making

the EU the first climate-neutral continent by 2050 (Net to zero race). To do this, they have pledged to reduce emissions by at least 55% by 2030 compared to 1990 levels. One of the measures to achieve their goal is the use of renewable energy sources.

Renewable sources of energy (wind power, solar power, hydroelectric power, ocean energy, geothermal energy, biomass, and biofuels) are alternatives to fossil fuels that contribute to reducing greenhouse gas emissions, diversifying energy supply and reducing dependence on unreliable and volatile fossil fuel markets, in particular oil and gas. EU legislation on the promotion of renewables has evolved significantly in the past 15 years. In 2009, EU leaders set a target of a 20% share of EU energy consumption coming from renewable energy sources by 2020. In 2018, the target of a 32% share of EU energy consumption coming from renewable energy sources by 2030 was agreed. In July 2021, in view of the new EU climate ambitions, the revision of the target to 40% by 2030 was proposed to the co-legislators. The future policy framework for the post-2030 period is under discussion [6].

Another reason for the transition to "green" energy is the dependence of the EU on energy imports. According to Eurostat, the EU has been more than 50% energy dependent since 1990, and in 2020 this figure reached 57% (Table 1). The position of the EU in the energy market has also been exacerbated by the conflict between the EU and Russia against the backdrop of events taking place in Ukraine. Russia, in response to the sanctions adopted by the European Union, announced that it would accept payment for its gas supplied in rubles or would not supply gas, which greatly concerned the government of the European Union countries, as the heads of EU countries urged not to pay for gas in rubles to their energy companies. The EU is very concerned about the current situation, as it is very dependent on Russian gas. Russian gas accounts for 45% of all EU imports and about 40 percent of its consumption [7]. In this regard, the IEA published its study showing that the European Union could reduce its imports of Russian natural gas by more than one-third within a year through a combination of measures that would be in line with the European Green Deal and support energy security and affordability, providing a 10-point Plan, which proposes not only to switch to gas supply to other countries, but also to accelerate the launch of new projects of solar and wind energy [8].

TIME	European Union - 27 countries (from 2020)
1990	50,022
1991	50,437
1992	51,727

1993	50,264
1994	51,314
1995	52,148
1996	52,678
1997	53,549
1998	55,364
1999	55,020
2000	56,280
2001	55,764
2002	56,251
2003	56,873
2004	56,843
2005	57,815
2006	58,253
2007	57,214
2008	58,364
2009	57,163
2010	55,763
2011	56,364
2012	54,921
2013	53,940
2014	54,422
2015	56,068
2016	56,164

2017	57,557
2018	58,132
2019	60,464
2020	57,497

Table 1. Energy dependence on external supplies of EU, Eurostat [9]

(The indicator shows the extent to which an economy relies upon imports in order to meet its energy needs. It is calculated as net imports divided by the gross available energy. Energy dependence = Net imports / Gross available energy. Net imports are calculated as total imports minus total exports. Gross available energy is a calculated value, defined as: Primary production + Recovered & recycled products + Imports – Exports + Stock changes. Energy dependency may be negative in the case of net exporter countries while positive values over 100 % indicate the accumulation of stocks during the reference year).

1.1.2 Reasons for the energy transition from non-renewable to renewable energy sources in Germany

Germany, the largest economy in the EU, was the largest energy consumer in Europe and the seventh largest energy consumer in the world in 2019, according to the BP Statistical Review of World Energy. According to Eurostat, the country is very dependent on energy imports. This dependence has only increased since 1990 and for 2020 was more than the average for all EU countries and reached more than 63% (Table 2).

TIME	Germany (until 1990 former territory of the FRG), %
1	2
1990	46,527
1991	51,568
1992	54,514
1993	55,429
1994	56,686
1995	56,749

1996	58,669
1997	59,336
1998	60,969
1999	59,243
2000	59,441
2001	60,891
2002	60,126
2003	60,540
2004	61,158
2005	60,740
2006	60,981
2007	58,516
2008	60,769

Table 2. Energy dependence on external suppliers of Germany, Eurostat [9]

According to data from the European Union Agency for the Cooperation of Energy Regulators, Germany also heavily depends on Russian gas as half of all gas supply comes from Russia. In addition, according to an analysis by the US Energy Information Administration, Germany consumes Russian oil in large volumes. The share of oil imported from Russia accounts for 31.5% of the total volume of crude oil imports to Germany. The situation is also aggravated by the fact that Germany has planned to close all nuclear plants by 2022 and abandon coal-fired electricity production by 2038. In 2019, brown coal production accounted for 19% of total electricity production and 114 billion kilowatt-hours (kWh) of electricity. The nuclear plants generate 75.1 terawatt hours (TWh) or 12% of total electricity generation [10]. All this puts Germany at a disadvantage and could lead to an energy crisis. Therefore, the only resources capable of ensuring Germany's energy independence now and in the future are renewable energy sources.

1.2 Driving forces of the energy transition from non-renewable to renewable energy sources in Germany

The history of Germany's transition to renewable energy sources goes back even earlier - in 1980, the Öko-Institute (Institute of Applied Ecology — an independent private institute for environmental research with headquarters in Freiburg im Breisgau) introduced the term *Energiewende* (energy transition) in the program book "Energiewende - growth and prosperity without oil and uranium." Scientists have shown that growth and prosperity are possible until 2050 without nuclear energy and fossil fuels [11]. Expanding the use of renewable energy sources is a central element of the energy transition.

Thus, in 1990, the Electricity Feed-In Law of 1991 ("Stromeinspeisungsgesetz") was introduced, which provided access to the grid for electricity produced from renewable energy sources. In addition, he obliged utility companies operating the public network to pay surcharges (preferential tariffs) for electricity supplied from these power plants powered by renewable energy sources. The funds of the state budget were not attracted, since the burden imposed by the law fell solely on electricity suppliers and their consumers. The surcharges in the Law on Electricity Supplies were calculated annually as a percentage of the average unit income for all electricity sold through the public grid in the previous year, i.e. the average electricity price for all consumers. Thus, the remuneration changed every year. Wind farms and solar power plants received the highest remuneration with 90% of the average unit income, followed by small hydroelectric power plants, biomass and biogas power plants with a capacity of less than 500 kW with 75% (remuneration increased to 80% a few years later). Hydroelectric power plants, biomass and biogas power plants with a capacity of more than 500 kW, but less than 5 MW received 65% of the average unit income. The law does not apply to installations with a capacity of more than 5 MEV. Premium prices or tariffs decreased after 1996. This happened because electricity prices decreased due to the gradual abolition of the coal levy ("Kohlepfennig"), and then due to the liberalization of electricity markets. Thus, most of the generating facilities based on renewable energy sources that existed at the time of the introduction of the Law on the Supply of Electricity were excluded. Then it was ensured that mostly new facilities would benefit from the law. The duration of remuneration for an individual plant was not fixed; however, the constitutional protection of legitimate expectations provided some confidence to renewable energy producers. In 1998, the law was amended because the Law on the Supply of Electricity imposed a significant, albeit uneven, financial burden on some utilities (especially those located near the coast, where most wind turbines are located). A "double limit" was introduced into the Law on the Supply of Electricity, limiting the amount of electricity from renewable energy sources that had to be paid in accordance with the law. Regional electricity suppliers were required to purchase no more than 5% of electricity from renewable energy sources from their total electricity supply. The same limit applies to pre-suppliers, resulting in a total limit of 10%. Thus, the overall burden of the law was limited for individual utilities and their customers. The 10% threshold was almost reached in some areas of northern Germany in 2000, which created a barrier to further implementation of wind energy technologies. The law

was considered the driving force behind the rapid spread of wind power in Germany [12]. The Law on Renewable Energy Sources (Erneuerbare-Energien-Gesetz EEG), based on the same general principles (but without restrictions), replaced the Law on the Supply of Electricity (Erneuerbare-Energien-Gesetz (EEG)), which first came into force in 2000 and has been continuously improved since then (EEG). 2004, EEG 2009, EEG 2012, FV correction, EEG 2014, EEG 2017).

The need for EEG 2000 arose, among other things, due to an increase in the number of wind turbines, the commitment under the Kyoto Protocol to reduce greenhouse gas emissions by 21 percent by 2010, and a combination of renewable energy remuneration rates applicable under the Electricity Supply Act (EE) to the development of electricity prices that no longer guarantee economical operation of power plants for the production of electricity from EE [13].

The EEG defines its goals as:

- “Particularly in the interests of the climate and environmental protection to enable a sustainable development of the energy supply,
- to reduce the economic costs of energy supply by including long-term external effects,
- to conserve fossil energy resources and
- to promote the further development of technologies for generating electricity from renewable energies.” [14]

The main instrument of the EEG is the Feed-in tariff (Einspeisevergütung). As mentioned above, the purpose of the EEG law is to expand the domestic generation of renewable energy sources. Since the cost of installing solar panels and other sources of green energy is quite high, in order to increase the attractiveness of such installations, the government has developed a policy of reimbursing the costs of installing and commissioning solar panels – the Feed-in tariff. This meant that owners of renewable energy installations—from home photovoltaics to large-scale solar and wind farms—were guaranteed an above-market price per kWh of the energy they fed into the grid for 20 years [15]. All this has helped ordinary residents also take part in investing in green energy to power their homes and surrounding areas.

According to the Trens:Research Institute, ordinary citizens owned 50% of the green energy that was generated using wind turbines, solar panels and biomass (Figure 1). At the moment, the share of energy generated by private individuals has begun to decline steadily. According to the Renewable Energy Agency (Agentur für erneuerbare Energien - AEE), in 2016 the share of municipal energy was only 42 percent, and in 2019 it fell a little more and reached 40.4 percent, and in 2021 it was already only one third.

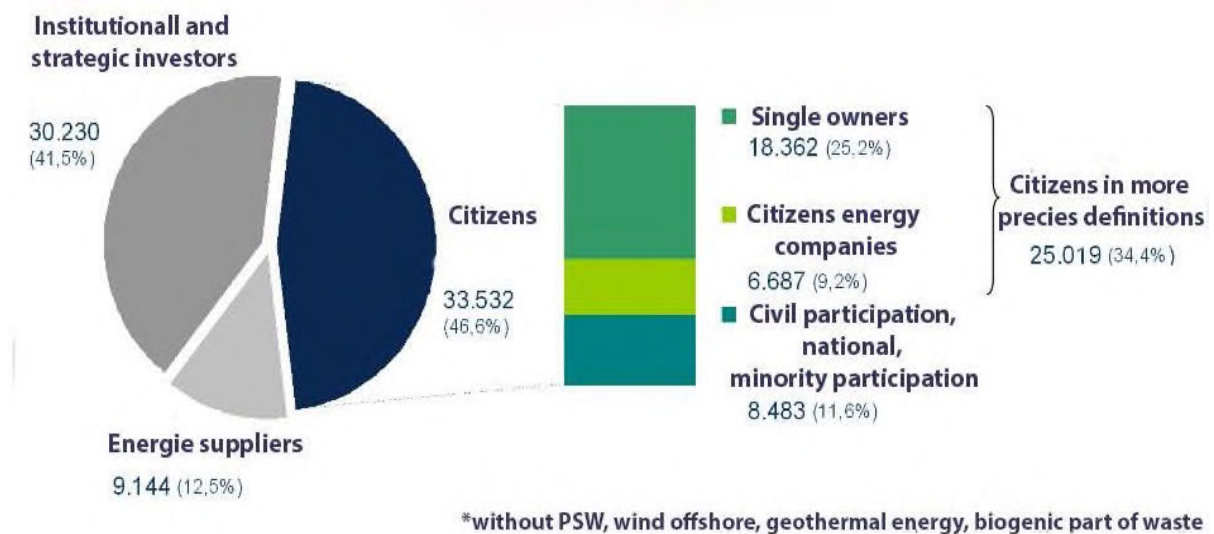


Figure 1. Installed renewable capacity according to owner groups in Germany in 2012 in MWh (Total 72907 MWh), Trend:Research Institute

The German government is not only using guaranteed pay incentives to achieve its goal of neutrality. It has also introduced additional taxes and regulation of greenhouse gas emissions, following the path of the EU with the EU Emissions Trading System (EU ETS).

The EU Emissions Trading System (EU ETS) is a system for trading emissions of carbon dioxide (CO₂) and other greenhouse gases generated from energy and industrial facilities, as well as from intra-European aviation. Governments set a cap on greenhouse gas emissions and then distribute or sell emission permissions to companies. Companies either receive free credits or buy them and are then required to use one permit per ton of CO₂ equivalent emitted. The main advantage of this system is that every year the emission permissions decreases for some percentage creating a deficit and increasing the price of an emission permit. This encourages companies to take care of reducing emissions and using renewable energy. Another tool that allows you to regulate this market is that companies that have not spent their permissions can sell them to those companies that have used up their own and thereby cover the costs of green energy or invest in it. According to figures cited by the German Emissions Trading Authority, the EU ETS covers about 40 percent of total greenhouse gas emissions in the European Union (EU) [16].

Germany has so far lacked a financial incentive to reduce emissions outside the sectors covered by the EU ETS. Therefore, the National Emissions Trading System (nEHS) started as a supplement in 2021, covering the areas of heat generation and transport where many climate-damaging emissions are caused by the combustion of fossil fuels. The German Emissions Trading Authority (DEHSt) at the German Environment Agency is responsible for implementing national emissions trading [17]. Both systems are similar in their task but differ in the areas of quotas imposed.

EU ETS is limited to emissions from industry, power plants and aviation. Plant operators or airlines must obtain certificates for the emissions they cause ("downstream" emissions trading).

On the other hand, the nEHS obliges fuel distributors to acquire pollution rights in the form of certificates ("upstream" emissions trading). Thus, they pay for the emissions resulting from the subsequent combustion of fuel (upstream and downstream emissions trading). After all, companies that produce energy by burning fuel, companies that buy fuel for transportation, and the end user are involved in this system in the form of additional fuel costs that they pay.

The National Emissions Trading System makes fossil fuels very expensive to consume. Thanks to this, end-users who pay the surcharge at the very end will seek to either reduce the use of fossil fuels or switch to renewable energy sources. It has already set itself a goal of reducing the percentage of greenhouse emissions by 7% in 2022 and increasing it to 25% in 2030 (Chart 1). Such a system is very innovative and bringing Germany closer to its goal of neutrality by 2050.

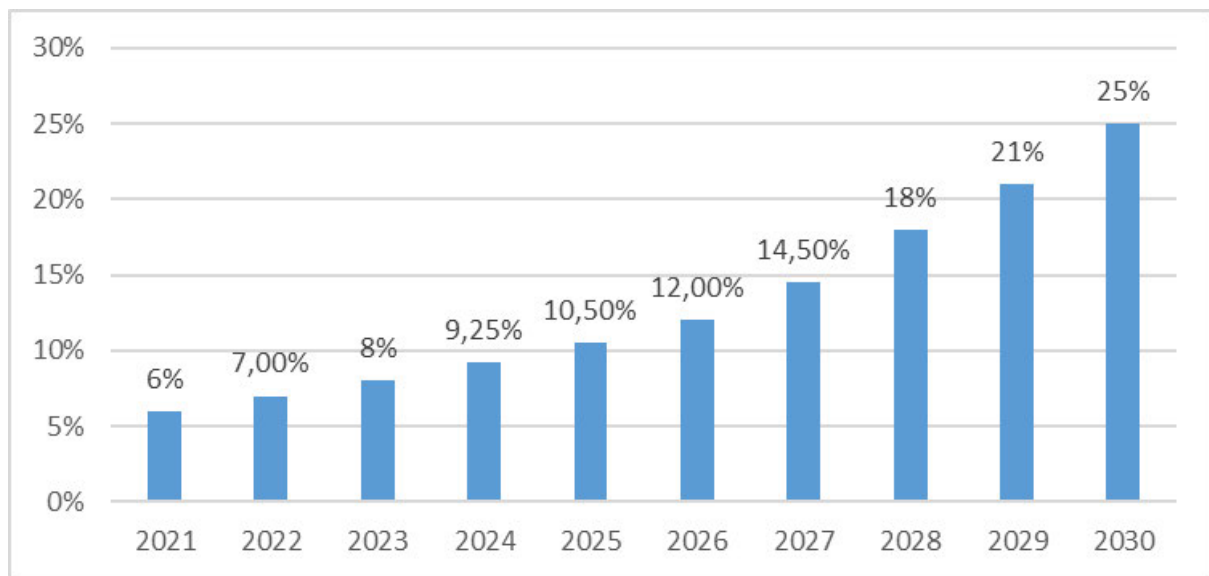


Chart 1. The ratio of decreasing green gas emissions by The National Emissions Trading System of Germany in percent of total green gas emissions from fuel distributors companies, VDB - Association of the German Biofuels Industry, 2021

Another and the newest driving force of the renewable energy market will be the so-called Easter Package, a 600-page comprehensive package of legislation presented on April 6 by the Federal Ministry for Economic Affairs and Climate Action. The Russian-Ukrainian conflict has changed the government's plans and now instead of the goal of at least 65% of the total energy consumption should be replaced by renewables, the renewable goal

has been raised to 80%, and full replacement should occur in 2035 [18]. This legislation will remove many of the obstacles that have hindered the development of renewable energy sources. According to the project, new areas for solar panels and wind turbines will be introduced, the process of planning and approval of these areas will be simplified, and the plan for improving the power transmission networks will also be improved.

1.3 Funding in green energy innovations

The main goal of Germany's entire energy transition is neutrality by 2050. In this regard, the government not only creates new taxes and obligations to fund FIT participants, but also sponsors new innovative projects. New innovative solutions, technical or non-technical, are sponsored to 'bring innovations faster from laboratories, test rooms and the minds of scientists into the practice of the energy sector and society' [19].

At the moment, the government is implementing the 7th Energy Research Programme. The program is the outcome of an extensive consultative procedure involving actors from associations and enterprises, research and scientific organizations, members of research networks and Länder representatives [20]. The program also acts as a guideline for energy research funding.

As stated in a statement by the Federal Ministry of Economics and Climate Action (BMWi), which manages the program, it is being implemented jointly with the Federal Ministry of Education and Research (BMBF) and the Federal Ministry of Food and Agriculture (BMEL). Each of the ministries will be responsible for specific projects that will qualify on a Technology Readiness Level (TRL) scale of 1-9. The Federal Ministry of Education is now responsible for and will sponsor projects qualifying on the TRL scale from 1 to 3 - applied basic research. The Federal Ministry of Economics and Climate Action and the Federal Ministry of Food and Agriculture fund more applied research work - projects from TRL 3 and above, but the Federal Ministry of Food and Agriculture is responsible for projects with a focus on biomass energy use. The program has also created a new concept of "the Living Labs for the Energy Transition", which are testbeds for innovation and regulation, designed to accelerate technology transfer and innovation, in which a holistic approach is taken to test new technologies and business models in real conditions. The living lab tool, which serves to promote near-market developments, is based on TRL 7-9. Detailed criteria for determining the TRL scale are given in Figure 2.

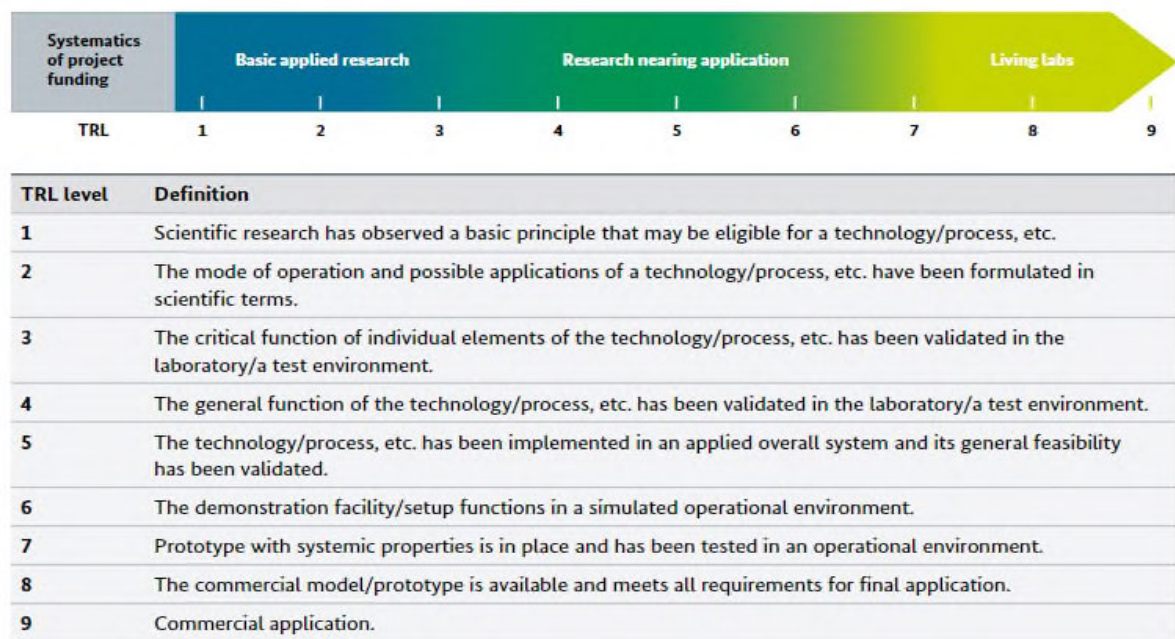


Figure 2. Technology Readiness Level (TRL) in project funding under the 7th Energy Research Programme, the Federal Ministry of Economics and Climate Action (BMWi)

Investment in the development of renewable energy sources has increased greatly since the energy transition policy was chosen. In 2012 alone, investments amounted to more than 30 million euros, and in 2020 the government invested twice as much compared to 2012 (Figure 3). According to the 2021 Federal Government Energy Research Report prepared by the Federal Ministry for Economic Affairs and Climate Action, the Federation approved 1,590 new projects in 2020 (against 1,662 in the previous year) and financed a total of 1,216 billion euros under the 7th Energy Research Program, of which 526.5 million euros of total funding for research projects in the field of non-nuclear energy in 2020 (1.148 billion euros in the previous year).

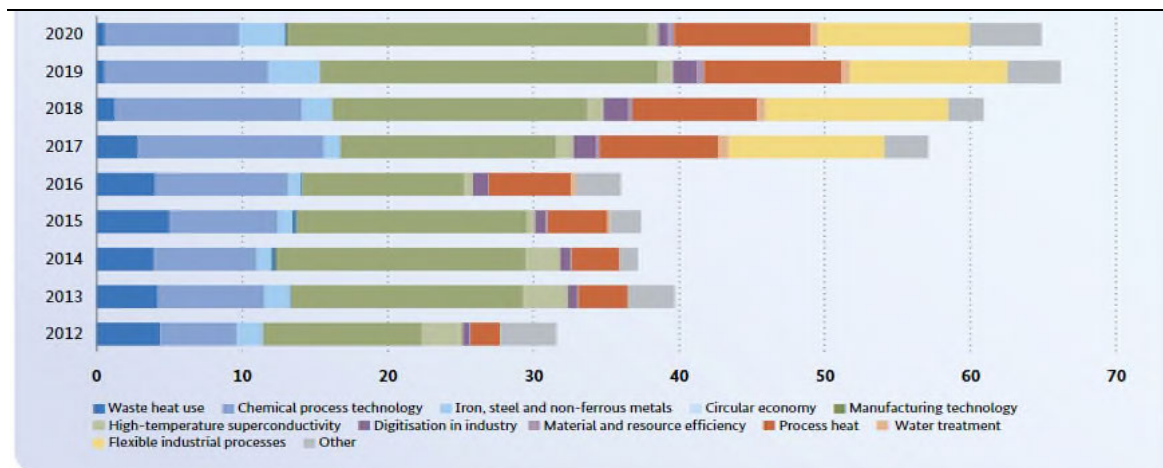


Figure 3. Funding for energy efficiency in industry, commerce, trade and services in Euro million from 2012-2020, the Federal Ministry of Economics and Climate Action (BMWi), 2021

A good green energy financial policy in Germany is not only an effective way to achieve the goal of the energy transition, but also a guarantee for the development of companies towards emission neutrality and a stronger position in the global market. To assist potential innovators of new clean energy products, services, processes, or business models, the Federal government has launched the Federal Research and Innovation Funding Advisory Service to provide new applicants with top-notch advice on existing funding programs, assist in selecting the right program, and about appropriate contact persons. [21]

Profit from the Federal Government 's free Funding Advisory Service on Research and Innovation:

- Identifying suitable funding programs
- Advising on the Federal, Länder and EU research and funding landscape
- Assisting the classification of project ideas
- Recommending specialist partners
- Advising on offers referring patents and research utilization as well as research-based start-ups
- Advising on promoting the next generation of scientists
- Supporting the preparation of international projects

The Advisory Service is supported by the following ministries:

- Federal Ministry of Education and Research (BMBF)

-
- Federal Ministry for Economic Affairs and Climate Action (BMWi)
 - Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV)
 - Federal Minister for Digital and Transport (BMDV)
 - Federal Ministry of Food and Agriculture (BMEL)
 - Federal Ministry for Housing, Urban Development and Building (BMWSB). [22]

1.4 The consequences of the adopted policy of reducing greenhouse gas emissions on the well-being of citizens and on the development of renewable energy sources.

1.4.1 The consequences of the adopted policy of reducing greenhouse gas emissions on the well-being of citizens.

As mentioned above, the state levies taxes on citizens and businesses to offset the costs of compensating companies that produce clean energy or innovate to achieve German neutrality. This puts a burden on ordinary citizens as buyers of final services and is best reflected in the price of electricity. Only for EEG surcharge, end consumers paid 6.5 cents for each kilowatt-hour in 2021 (Chart 2).

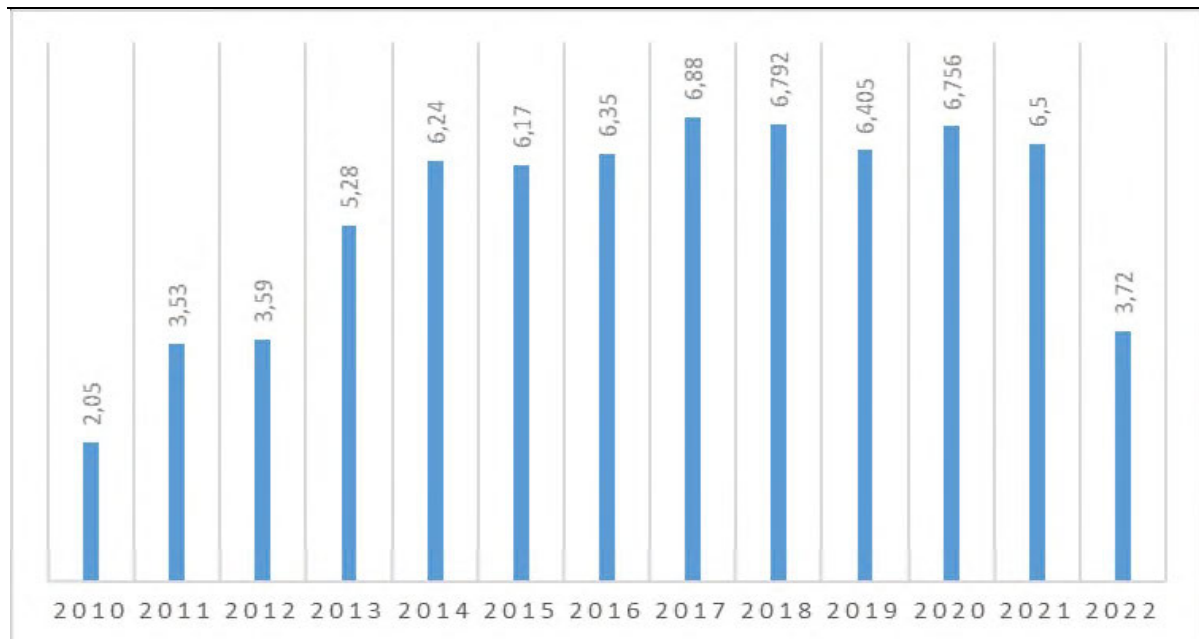


Chart 2. EEG surcharge per kilowatt-hour in Euro cents from 2010-2022, Bundesnetzagentur

Several price drivers that will play a role in the development of electricity prices in 2022:

- Electricity prices on the electricity exchange rose rapidly after Russian troops invaded Ukraine
- In the record month of March 2022, a megawatt hour cost an average of 252 euros [March '21= 47€, an increase of 436%]
- The price of CO2 certificates rose to over €90 per ton in February '22
- Demand for fossil energy is increasing, which in turn drives up electricity prices for 2022 with rising prices for CO2 certificates
- Grid fees will increase by an average of 4% in 2022
- 8 electricity suppliers are already insolvent, some suppliers stop delivering. [Everything about the delivery stop at Stromio]
- For 2022, the default suppliers will raise electricity prices by an average of 36% in more than 1,090 cases. Cost increase of almost €600 at 5,000 kWh pa consumption
- More than half of all basic suppliers [23] have introduced new tariffs exclusively for new customers. Prices are on average 65% higher than in the "normal basic service".
- Positive: End of the EEG surcharge on July 1, 2022 (relief of 3.72 cents/kWh) [24]

Due to the rise in electricity prices and the inescapable energy crisis in connection with the situation between Russia and Ukraine, 'the Federal Cabinet today accepted the project assistance submitted by the Federal Minister of Economy and Climate Protection for the draft law on the abolition of the EEG surcharge and its transfer to end users. Assistance in the development will now be sent to the coalition factions for further legislative process.' - said in a government press release published on the website of the Federal Ministry of Economy and Climate Protection. This means that the EEG fee, which is now paid by every electricity consumer in the amount of 3.72 cents per kilowatt hour, will be canceled and ordinary citizens will be able to reduce their costs. For example, in a family of four with a consumption of 4000 kW, this will save about 149 euros. Thus, the main source of income for subsidizing renewable energy policy will be the CO2 tax. This tax, as mentioned above, is more of a burden on companies. The abolition of the EEG tax in electricity bills does not mean that Germany is abandoning its EEG program, so injections into it will continue. New amendments for 2023 already was introduced in April 2021. The most important of them are 80 percent of renewable energy consumption in 2030 and expansion to 215 GW for solar energy and 115 GW for wind energy. The main question now is what the government will do with rising energy prices, since a heavy tax burden may encourage companies to move to other countries, without a policy of neutrality or with more lenient tax charges. In 2021, the income from the EEG surcharge amounted to 22,631,309,120.24 euros [25].

In addition, the government's big concern is that the abolition of the EEG surcharge does not oblige energy companies to lower the price of electricity. Therefore, if the price reduction does not happen, he will have to intervene. Nevertheless, even with the abolition of the EEG surcharge, end consumers still pay many other mandatory surcharges.

In an article published by the Federal Ministry for Economic Affairs and Climate Action of Germany, there are 8 state components of electricity prices: EEG surge, The Combined heat and power plant surge (SNR surge), Surge under Section 19 (2) of the Electricity Grid Fee Ordinance, the Offshore surge under Section 17f of the Energy Industry Act (EnWG), Section 18 of the Ordinance on Intermittent Loads (AbLaV), Concession fee, Electricity tax, and Value-Added Tax (VAT) [26]. In total, the tax burden by the state is 41% of the total cost for 1 kilowatt per hour as of April 2022 (Table 3) [24].

Price component	Price per kWh in euro cent	Percent
power generation	12.34	35.6%
network charges	8.1	23.4%

taxes and expenses*	14.2	41%
Total	34.64	100%
*taxes and expenses in detail		
EEG surcharge	3.72	10.7%
concession fee	1.66	4.8%
electricity tax	2.05	5.9%
VAT	5.53	16%
Allocations: CHP, § 19, AbLa -,	1.24	3.6%

Table 3. Electricity price composition in Germany in 2022, Strom-report

(Average electricity price for household customers in Germany)

Based on all the information provided, even without additional payment for it, end consumers would pay a high price for electricity. Private households already in 2019 paid around 31 million for energy and transport taxes (Chart 3). If the situation with the increase in energy prices persists, then in winter the government will need to look for new solutions to ease the tax burden on citizens and businesses, which, coupled with ambitious goals of increasing the production of solar and wind energy, makes the goals very difficult to achieve.

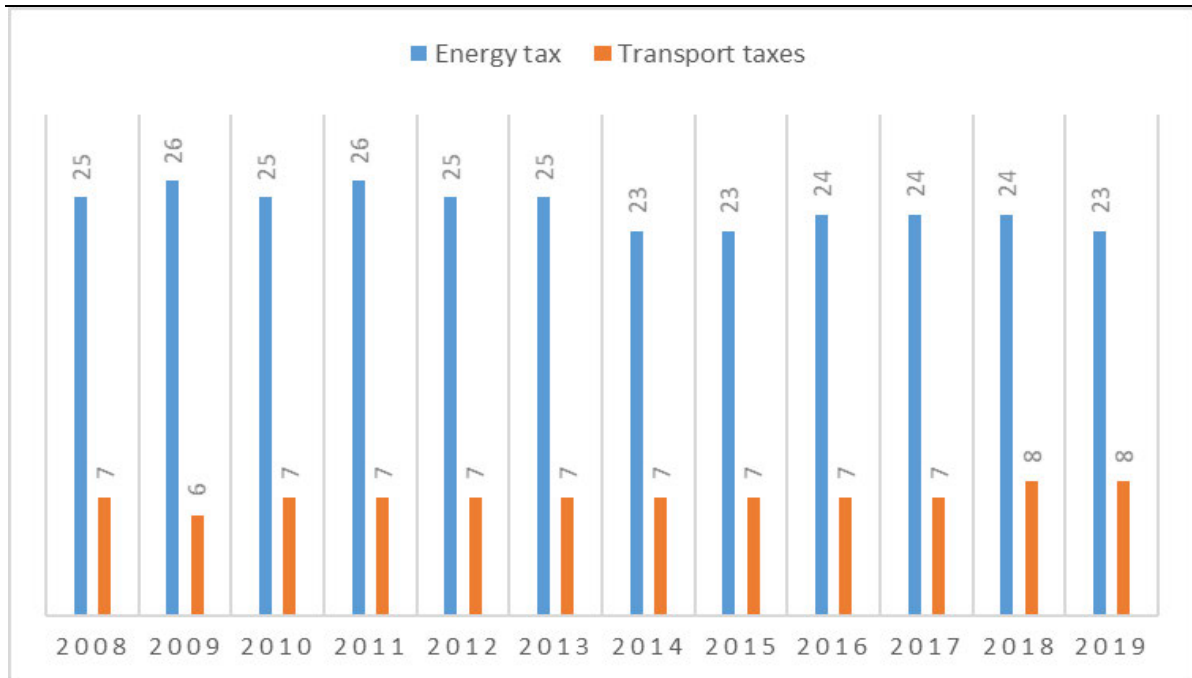


Chart 3. Environmental taxes paid by private households in billion euros from 2008-2019, Statistisches Bundesamt (Destatis) [27]

1.4.2 The consequences of the adopted policy of reducing greenhouse gas emissions on the development of renewable energy sources

Germany is setting a good example to the rest of the world in how to deal with climate change. The report published by Umwelt Bundesamt (data on greenhouse gas emissions in Germany since 1990) on greenhouse gas emissions clearly shows that compared to 1990, greenhouse gas emissions decreased by a little more than 40% in 2020. However, in 2021, the trend went up slightly and emissions increased by 4.5 percent compared to the previous year (Chart 4). This concerns the German government. Therefore, "Germany adopted major new climate legislation in June 2021 that sets higher national emissions reduction targets for 2030 (at least 65%) and 2040 (at least 88%), with the goal of achieving net greenhouse gas neutrality by 2045. In addition, a new €8bn "immediate climate action programme" for 2022 will finance further measures to achieve the new climate targets." - written in an article on the website of the Federal Ministry of Finance [28].

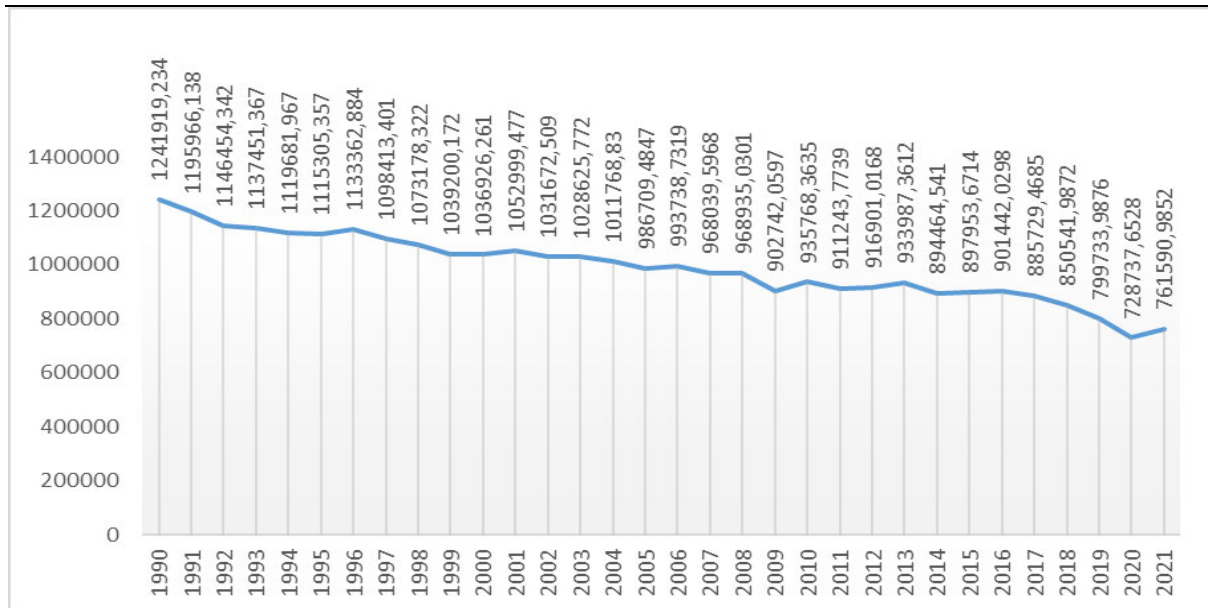


Chart 4. Summary graphic on emission trends for Germany since 1990-2020, all GHGs in kt CO2 equivalents, Umwelt Bundesamt, 2022 [29]

The goal of reducing emissions by 65% by 2030 is very ambitious. To achieve them, it is necessary to significantly reduce greenhouse gas emissions in many different sectors. The same Report published by Umwelt Bundesamt provides data on the share of greenhouse gases generated by sector. According to it, the most polluting sector is the energy sector and since 1990 this indicator has not changed significantly, remaining at the level of more than 80% of the total greenhouse gas emissions. Data on sectors are presented in Table 4, for more convenient information, data are presented after each five-year period.

Emission source and sink categories	1990	1995	2000	2005	2010	2015	2020
Total Fraction	100	100	100	100	100	100	100
1. Energy (Fuel combustion, Fugitive emissions from fuels)	83.46	82.25	83.87	84.30	85.60	85.35	83.49
2. Industry (Mineral, Chemical, Metal, Non-energy)	7.80	8.84	7.51	7.66	6.69	6.71	7.61

production from fuels, electronics, others)							
3. Agriculture	5.68	5.49	5.88	5.89	6.17	6.73	7.70
4. Waste	3.06	3.41	2.74	2.15	1.55	1.22	1.20

Table 4. Emission trends for Germany since 1990 by sectors, in percentage of total emissions, Umwelt Bundesamt, 2022 [29]

From the data provided above it clearly follows that in order to achieve the goal of neutrality by 2050, Germany must increase the share of energy from renewable sources. In a joint press release from the Federal Environment Agency and the Federal Ministry of Economy and Climate Protection, the Secretary at the Federal Ministry for Economic Affairs and Climate Action Patrick Greichen also noted that the increase in greenhouse gases has become obvious and that it is necessary to increase the share of renewable energy sources in electricity generation to 80 percent. He also noted that Russia's conflict with Ukraine has put Germany in a difficult position regarding energy security. According to him, "a faster departure from fossil energy should cover all spheres — from industrial production and the construction sector to mobility and agriculture. The key is to maintain social balance." [30]

According to the report provided by The Working Group on Renewable Energy Statistics (PAGE-Stat) on renewable energy sources in Germany in 2021, it is clear that at the very beginning, biomass energy generators were installed the most in terms of capacity, wind generators were in second place, while solar ones were inferior from them at that times. In 2015, there was a twofold increase in solar installed power generators compared to 2010 and became 39 MW. Then, in 2021, they amounted to more than 58 megawatts. In contrast, installed biomass energy generators have become half as small comparing 2010 and 2021 and became a little above 239 MW. The installation of wind power generators has also declined, from 106.82 in 2010 to almost 64 in 2021. In total, 2021 is the leader in installed capacity and is 138 MV, almost 2.5 times more than was installed in 2010 [31]. All the data provided in Table 5.

Year	Water power	Wind energy		Photovoltaic	Geothermal	Solid biomass	Liquid biomass	Gas transport biomass	Total
		on land	at sea						
2010	5.41	26.82	80	18.01	8	2.26	410	3.55	56.55
2011	5.63	28.52	188	25.92	8	2.3	345	4.52	67.42
2012	5.61	30.71	268	34.08	19	2.27	277	4.92	78.15
2013	5.59	32.97	508	36.71	30	2.55	263	5.15	83.77
2014	5.58	37.62	994	37.9	33	2.53	232	5.44	90.33
2015	5.59	41.3	3.28	39.22	34	2.55	232	5.64	97.86
2016	5.63	45.28	4.15	40.68	38	2.58	231	5.85	104.44
2017	5.63	50.17	5.41	42.29	38	2.61	230	6.15	112.52
2018	5.59	52.33	6.39	45.16	42	2.67	230	6.76	119.17
2019	5.6	53.19	7.53	49.05	47	2.69	231	7.07	125.4
2020	5.44	54.41	7.77	53.72	47	2.62	231	7.47	131.71
2021	5.38	56.09	7.77	58.73	53	2.62	229	7.58	138.46

Table 5. Installed power for electricity generation from renewable energies in Megawatt (MW) from 2010-2021, AGEE Stat [31]

In order to achieve the goal announced by the Secretary at the Federal Ministry for Economic Affairs and Climate Action [31], to increase the share of renewable energy sources in electricity production to 80 percent, if we take into account the same level of electricity consumption as in 2021, it can be concluded that it is necessary to double the capacity of renewable energy produced compared to the same year 2021 (Figure 4) [32].

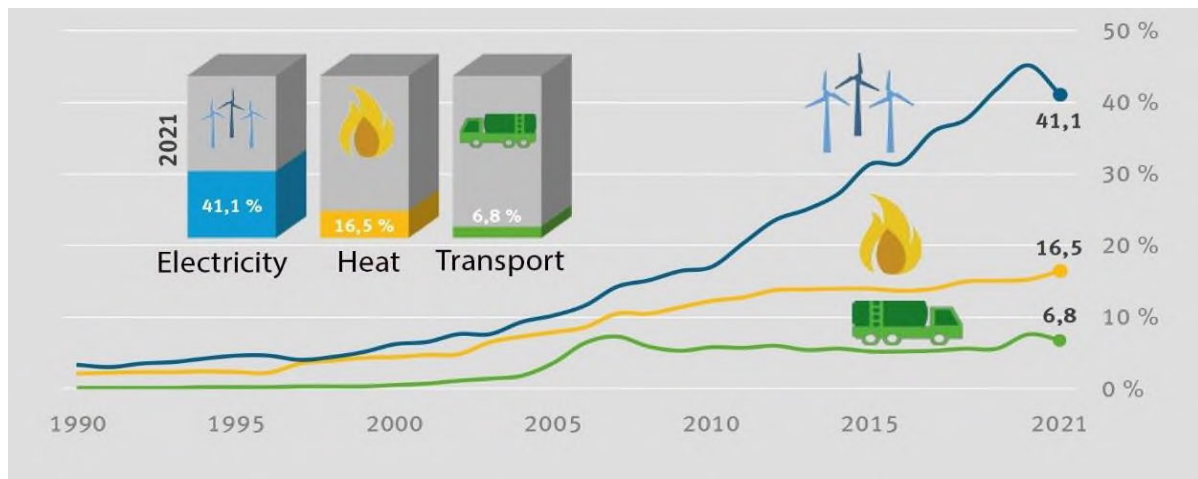


Figure 4. Renewable energies: shares in the electricity, heat, and transport sectors in percent, AGEE-Stat, 2021

The new Easter package has the same target of 80% share of gross electricity consumption covered by renewables. It has established new renewable energy deployment corridors. So, in order to reach the new 80 per cent expansion target for 2030, the deployment corridors will be raised substantially. This means that Germany will have to source a total of around 600 TWh from renewable energy in 2030. In the case of onshore wind energy, the expansion rates will be stepped up to 10 GW/year, so Germany's installed onshore wind capacity should be around 115 GW in 2030 (Chart 5). In the case of solar energy, the expansion rates will be total stepped up to 22 GW/year, so that Germany's installed solar capacity (roof-top/ ground-mounted/ special solar installations) should total around 215 GW in 2030 (Chart 6) [33].

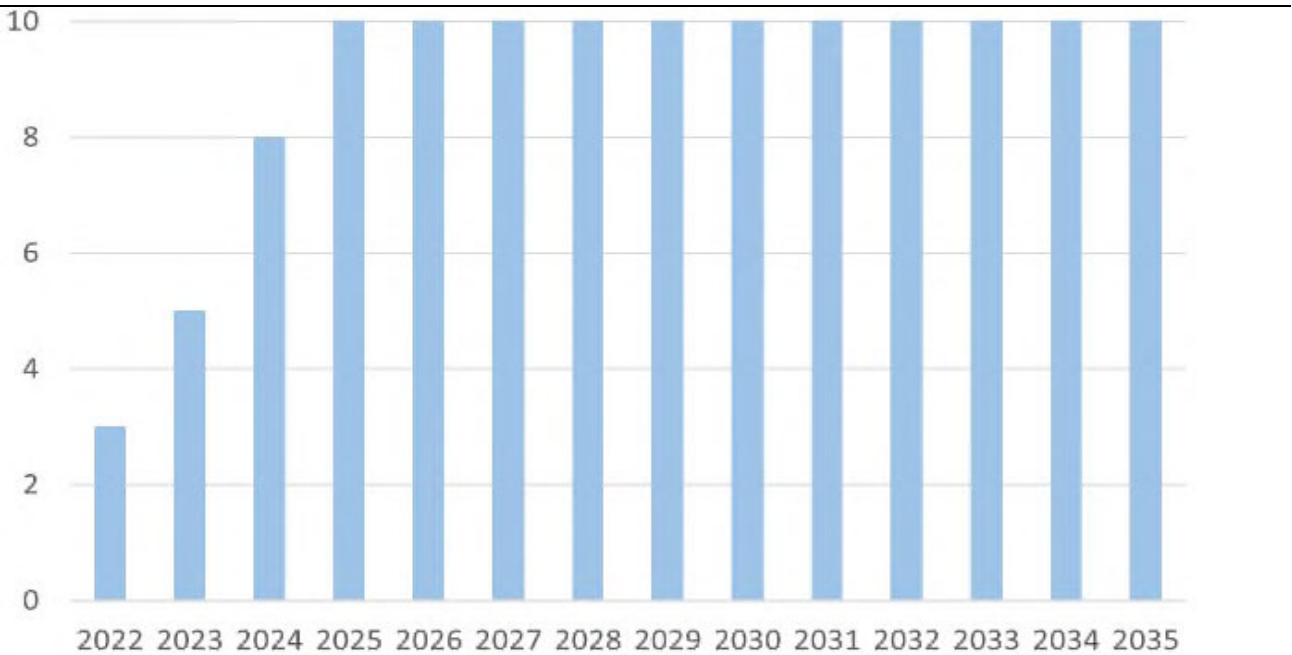


Chart 5. Wind energy expansion path up 2035 (Scenario for 600 TWh renewable electricity in 2030), Federal Ministry for Economic Affairs and Climate Actions of Germany

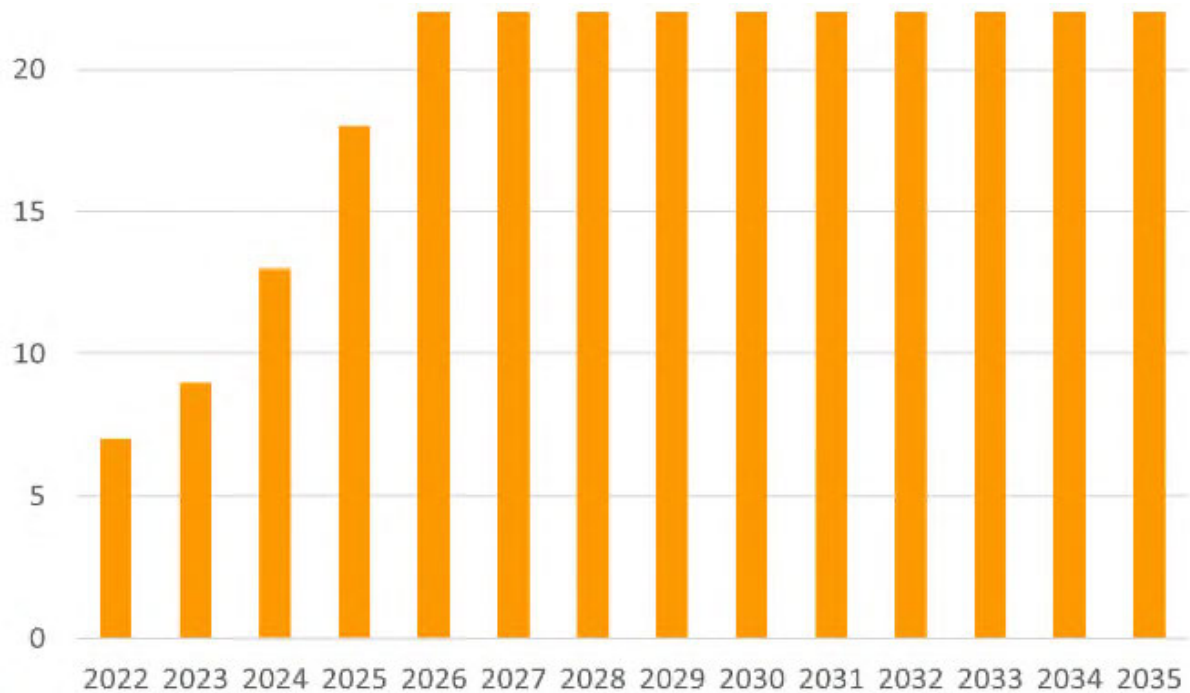


Chart 6. Photovoltaic expansion path up to 2035 (Scenario for 600 TWh renewable electricity in 2030), Federal Ministry for Economic Affairs and Climate Actions of Germany

Conclusion on Chapter 1

There are two main reasons for the development of renewable energy in Germany and Europe. The first is climate change in a negative way, the second is the energy dependence of the countries of the European Union and in particular Germany on energy imports, which has only worsened due to the conflict between Russia and Ukraine. All this has led to the government's policy of reducing greenhouse gas emissions and dependence on energy imports by renewable energy sources.

The government has developed many laws and incentives for the energy transition, in which ordinary citizens have played a big role. The initiative was taken over by commercial associations, but even so, the growth rate of installation of new renewable energy generators has slowed down significantly. The energy crisis due to the rejection of Russian gas also puts Germany in a dangerous position. The new Easter package has set even bigger goals to achieve which it is necessary to increase the growth rate of renewable energy installations. To do this, it is necessary to attract not only ordinary households, but also producers who consume electricity for their production. Only comprehensive measures can help Germany achieve its goal of neutrality by 2045.

Analyzing all the methods of pressure and assistance from the German government, it can be safely assumed that all parties are involved in the adopted policy of the state to reduce greenhouse gas emissions, from manufacturers and suppliers to buyers. The government imposes taxes on companies that make them reduce or pay for greenhouse gas emissions (CO₂ tax), buyers pay various taxes (EEG tax, etc.) thereby sponsoring government projects (EEG payments, investment in innovation, etc.), the government sets emission prices, limits, taxes and funding in green energy innovations. To make it easier to understand the interconnections, the concept of the interconnection of buyers, the business sector and the government in the renewable energy market was created (Figure 5).

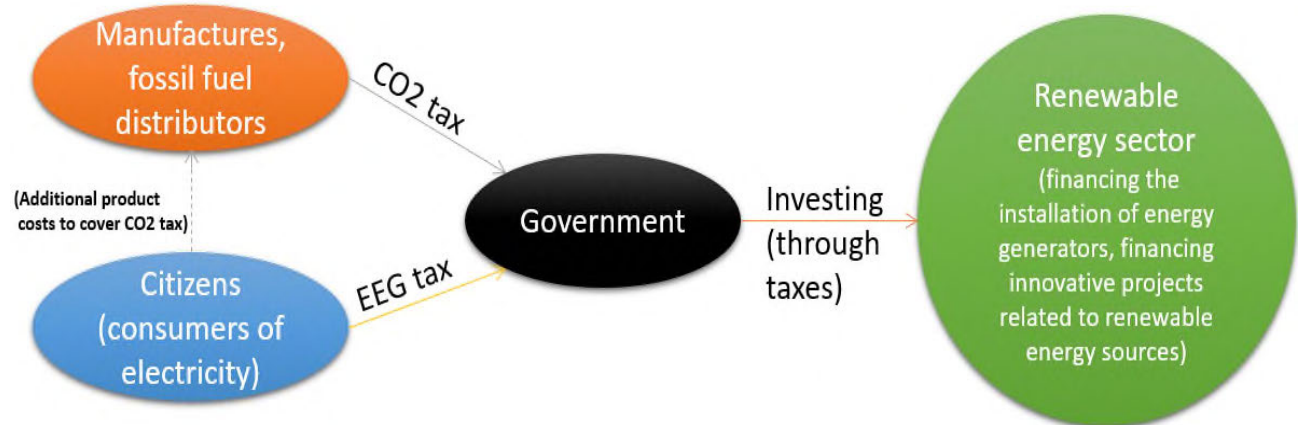


Figure 5. The concept of the development of the renewable energy sector (market)

The taxes that fund the entire energy transition are putting a heavy burden on ordinary consumers. After the rejection of Russian gas, Germany has no choice but to accelerate the transition to renewable energy sources. Even after the removal of the EEG tax, ordinary citizens will pay a high price for achieving German neutrality. Given all of the above, it is concluded that new initiatives should not be based on the method of additional taxation, but on the method of stimulating the consumer to sponsor the transition to renewable energy voluntarily.

2. Analysis of methods for increasing the sustainability of environmentally oriented companies and the tools they use to strengthen their positions in the market

2.1 Carbon footprint reduction as a competitive advantage for companies

2.1.1 Sustainability as a method of reducing company risks and creating possible profits

Large corporations and companies have recently adopted a sustainability strategy. Very often, not being sustainable cost them a lot of money. For example, the European Commission fined Daimler, BMW and Volkswagen group (Volkswagen, Audi and Porsche) for colluding on technical development in the area of nitrogen oxide cleaning in 2021. The Commission has imposed a fine of € 875 189 000. Daimler was not fined, as it revealed the existence of the cartel to the Commission. All parties acknowledged their involvement in the cartel and agreed to settle the case. The essence of their fault lies in the fact that “they possessed the technology to reduce harmful emissions beyond what was legally required under EU emission standards. But they avoided to compete on using this technology's full potential to clean better than what is required by law”, - said Executive Vice-President of the Commission Margrethe Vestager, in charge of competition policy [34]. In order not to face such lawsuits and fines, companies began to be more ethical, socially responsible and eco-friendly – sustainable.

Sustainable companies can be called those companies that have a desire to be more socially, environmentally and corporately responsible to their customers, employees and the environment. There is no exact definition, as the approach of each company may differ. For this purpose, the concept of Social Corporate Responsibility was introduced, for a better understanding of whether a particular company is sustainable or not.

Corporate social responsibility (CSR) is essentially a concept whereby companies decide voluntarily to contribute to a better society and a cleaner environment. At a time when the European Union endeavors to identify its common values by adopting a Charter of Fundamental Rights, an increasing number of European companies recognize their social responsibility more and more clearly and consider it as part of their identity. This responsibility is expressed towards employees and more generally towards all the

stakeholders affected by business and which in turn can influence its success (Commission of the European communities, 2001).

CRS is primarily the image of the company, the way it is perceived by other companies, the government and society. CSR is the company's enterprise steps towards sustainability in the past reflected at the moment, but to assess future risks and strategies, companies use Sustainability Risk Management (SRM).

Sustainability Risk Management is a business strategy that aligns profit goals and a company's environmental and social policies. It is about meeting the economic needs of business alongside environmental and social needs [35]. It allows directors and executives to embed the management of their companies' sustainability-related priorities in their business models and value chains.

Sustainable development helps companies reduce the risks associated with public and government pressure due to climate change. The importance of managing climate-related risks is also confirmed by the Global Climate Change Analysis 2018 by the Carbon Disclosure Project, a non-profit charitable organization that operates a global disclosure system for investors, companies, cities, states and regions to manage their environmental impact [36]. The study analyzed two groups of companies: 1) all those who disclose information through the CDP in 2018 (6,937 companies); and 2) a smaller subset of 500 of the world's largest companies by market cap.

The study showed that 73% of companies reporting to CDP have oversight of climate risks at the board level, while among the 500 largest companies in the world by market capitalization, this figure is 94% of the reporting sample with a total market capitalization of \$27.4 trillion. In Europe itself, these figures are incomparably higher - 87% and 99%, respectively. This shows that companies are aware of the dangers associated with climate risks. A number of 72% of all companies have already integrated climate risk into their business strategy; in Europe, this figure is almost 84% among all companies and 99% among top ones.

One of the key indicators of this study is also greenhouse gas emissions. A number of 3,610 companies reporting to CDP stated that their primary goal is to reduce greenhouse gas emissions.

In another report, CDP conducted a study of the correlation between risk-related losses and opportunities using data from the report above [37]. A number of 215 of the world's largest companies provided estimations of the potential financial impact for a proportion of their reported risks - reporting some US\$970 billion at risk. Meanwhile 225 of these 500 companies reported climate-related opportunities, representing potential financial impacts totaling over US\$2.1 trillion. In the CDP Climate Change Report 2019 'Major risk or opportunity' study, it was clearly shown that the profit opportunities far exceed the risks in dollar terms. The risks in the US were estimated at \$ 110 billion, while the opportunities

were incomparably higher and equaled a significant US\$450 billion. In Europe, risks are estimated at \$640.7 billion, while opportunities are estimated at \$1303.7 billion.

The differences in reported risks and opportunities are striking across regions. The policy differences between the US and Europe, where the latter is increasingly joining the Paris Agreement, show how clear policies can help open up opportunities for companies (Chart 7).

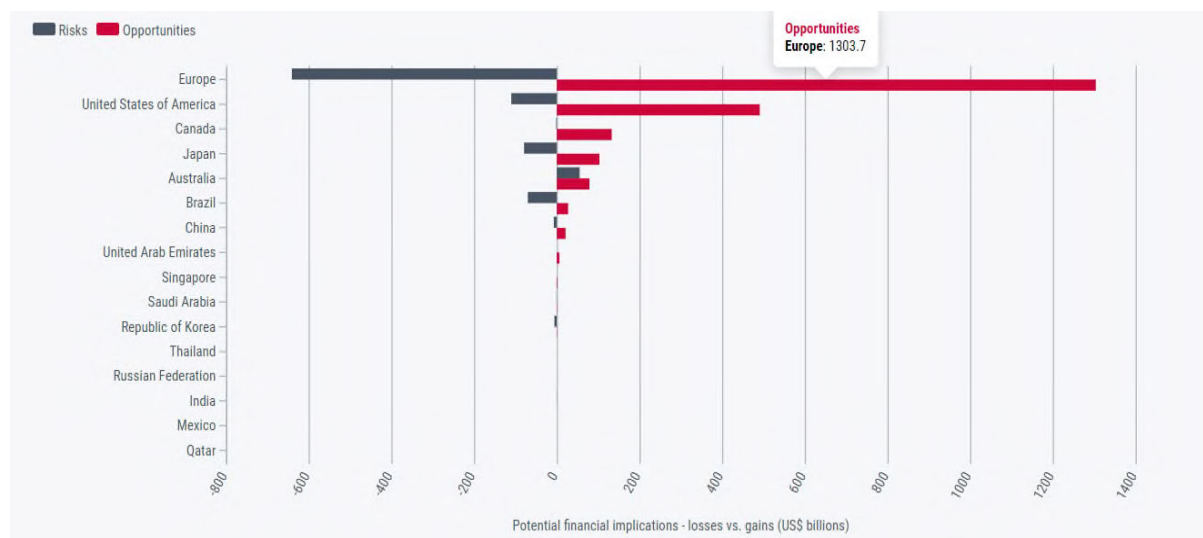


Chart 7. Potential financial impacts of climate-related risks and opportunities, CDP 2019

Another important discovery was that climate risk management would cost companies much less than dealing with the consequences of these risks when they arise. In the data provided by 192 companies from the top 500, it was cheaper to manage these risks than to deal with them in almost all industries except energy and services (Chart 8).

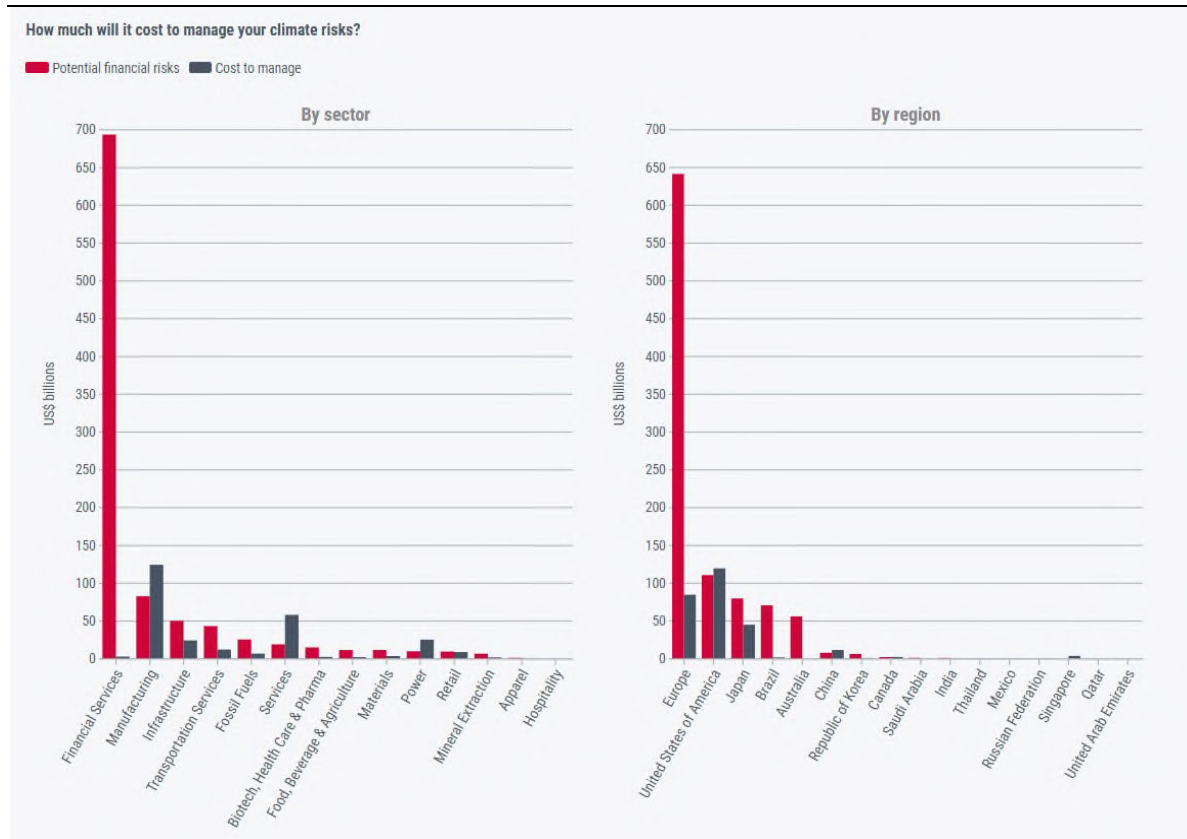


Chart 8. The cost difference between managing the impacts of potential climate risks and climate risks management, CDP 2019

In these two studies, four conclusions can be drawn:

1. Companies have begun to realize the full danger of climate risks and implement their agendas at the highest management level
2. Profit opportunities and climate risk management are much more attractive than dealing with the consequences of these risks
3. Companies with large capital are much more likely to implement risk management in their business strategies and can make a big profit from the opportunities to manage these risks
4. The European policy aimed at reducing greenhouse emissions and negative impact on the environment creates more opportunities for its companies compared to other countries.

2.1.2 Customers and investors as a drive for the market for low carbon environmental goods

The main point of CSR is the environmentally friendly strategy of the company, which also includes the reduction of the company's carbon footprint. The global market for low carbon

environmental goods and services was estimated at €4.2 trillion in 2012 [38]. EU companies' market share was 21% (UK Department for Business, Innovations and Skills, 2012). Such trends are not accidental. Buyers in the current realities dictate to companies what sustainability characteristics products should have. According to global research conducted by the Economist Intelligence Unit (EIU), commissioned by WWF organic searches on Google grew by 71% between 2016 and 2020 [39].

Another piece of evidence that awareness of the issue of climate change and the necessary measures to prevent further negative impacts on the environment affects the market for green products and services is the Environmental Awareness Study 2020, commissioned by the German Ministry of Climate [40]. The study shows that the majority of Germans believe that climate protection measures are an urgent task. However, in the eyes of the population, the importance attached to protecting the environment and combating climate change is not reflected in relevant activities. Residents are also concerned about the state of the environment on a global scale. Four-fifths see it as Germany's duty to lead the fight against climate change, calling for more ambitious climate targets and suggesting that this will also create a competitive advantage. There is somewhat less agreement on the measures to be taken. In particular, those that are associated with directly higher costs for citizens are somewhat less approved than, for example, the promotion of environmental technologies, which may be due to the greater burden of additional taxes on citizens.

There is a similar trend in awareness around the world. Half of the IBM study participants surveyed said that environmental sustainability is more important to them today than it was 12 months ago. In addition, 49% of respondents said they paid more last year — an average of 59% more — for products labeled as green or socially responsible. Investors are not left out either. A number of 62% of personal investors considering sustainability in their portfolios—up from 48% in 2021 [41]. All this leads to an increase in the market for green goods and services.

In addition, business leaders should consider the age groups that are most concerned about climate change and are more likely to buy greener products. According to the Global Sustainability Study conducted by the consulting company Simon-Kucher & Partners in 2021, which was attended by more than 10,000 consumers in 17 countries (Australia, Austria, Brazil, China, Denmark, France, Germany, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, UAE, UK, and the USA) millennials demonstrate more stable behavior, while generation X and generation boomers are slightly lower, generation Z is on the same level as boomers and X, but this may also be due to their purchasing power. The study also says that Generation Z and millennials are more willing to pay more for sustainable development.

European inspectors also understand the importance of the green program of the state and the need for people for it. Sustainable funds are currently one of the fastest-growing segment of investment solutions in Europe, according to the first annual survey of

European sustainable investment funds conducted by Morningstar and ZEB, supported by the Association of the Luxembourg Funds Industry (ALFI). The study found that:

- Sustainable fund products attracted 52% of all net new flows in 2020 and reflected 11% of total net assets domiciled in Europe at the end of 2020.
- Luxembourg was highlighted as the leading domicile, with sustainable funds accounting for EUR 371 billion by the end of 2020 and capturing 44% of total net flows made across all European domiciles in 2020.
- Equity remains the top asset class of sustainable funds across all European domiciles amounting to more than 60% of sustainable assets managed by funds. Inflows into impact funds are also rising at the expense of less ambitious sustainable strategies.
- Passive investments also rose in the period, constituting 21% of the net assets in the European sustainable fund universe by the end of 2020.
- Share of sustainable assets in UCITS and regulated open-end AIFs has risen significantly since 2018, accounting for 11% and 9% of total assets in each sub-segment respectively.
- Sustainable funds market continued to be dominated by a few large asset managers, with more than 50% of net assets in sustainable funds in Europe launched by the top 20 providers [42].

Based on these data, it is undeniable that in addition to consumer demand, another driving force behind the green market is the more attractive position of sustainable companies for investors. Investor's interest in the sustainable market and race to zero is also evidenced by the launch of the \$5 trillion Net Zero Owners Alliance and the \$9 trillion initiative of Zero Net Asset Managers, whose members have pledged to decarbonize their portfolios in line with global efforts to limit warming to 1.5°C. Nowadays, the number of assets from each association has increased and reached 10.4 trillion US dollars [43] and 57.5 trillion US dollars relevantly [44].

In 2021, European Commission conducted a study on the state of the market for the production of green products. Below is a short review of this study [39]:

- 32% of small and medium enterprises (SMEs) in Europe offered green products or services, other 11% planning to do so in the next two years. Large companies are ahead and their market share estimates are at 46%. German SMEs lag behind the European market in terms of market share and only 30% offer green products and services
- The majority of SMEs selling green products or services have been doing so for more than three years - 64%, while 26% have been selling them for one to three years, remaining 8% have been selling green products or services for less than one year. The percentage of large companies selling green products or services for more than three

years takes a little more and is 67%. In Germany, the figure for SMEs is higher, with 76% of companies offering green products or services for more than three years, 16 % have been offering between 1-3 years, and 1 % for less than one year.

– Almost nine in ten (86%) SMEs offering green products or services say their own country is their main market for these products (in terms of annual turnover).

All the results obtained serve as proof that not only government measures to reduce carbon emissions play an important role in the decarbonization of the commercial market, but also society and investors. Analyzing all the studies, it can be concluded that the market for environmentally friendly goods and services is growing and strengthening its position in the European and, in particular, the German market by raising people's awareness and their desire to make their own contribution to climate change prevention in conjunction with the growing demand of investors invest in sustainable companies. In order to minimize risks in the future, companies need to take sustainability measures today to fulfill the desire of current and future buyers. It is important not to forget the pressure from the government that together with the growing generation, who want more environmentally friendly products, makes this strategy essential to survive.

2.2 Methods for managing the sustainability and risk reduction of the company

More and more companies are interested in a good image. Using environmentally friendly strategies helps companies strengthen their market position and attract more customers. It also helps them to be more competitive. This fact is well illustrated in the statement of the European Commission (2001): «An increasing number of European companies are promoting their corporate social responsibility strategies as a response to a variety of social, environmental and economic pressures. They aim to send a signal to the various stakeholders with whom they interact: employees, shareholders, investors, consumers, public authorities and NGOs. In doing so, companies are investing in their future, and they expect that the voluntary commitment they adopt will help to increase their profitability».

One of the most popular methods of sustainable development applied by corporate leaders is John Elkington's "Triple Bottom Line".

The TBL is an accounting framework that incorporates three dimensions of performance: social, environmental, and financial. This differs from traditional reporting frameworks as it includes ecological (or environmental) and social measures that can be difficult to assign appropriate means of measurement. The TBL dimensions are also commonly called the three Ps: people, planet, and profits (Figure 6) [45]. The idea behind the triple bottom line is that if a company ignores how it interacts with society and the environment, it cannot get

an accurate picture of the true cost of doing business because it does not see the full scope of its activities [46].

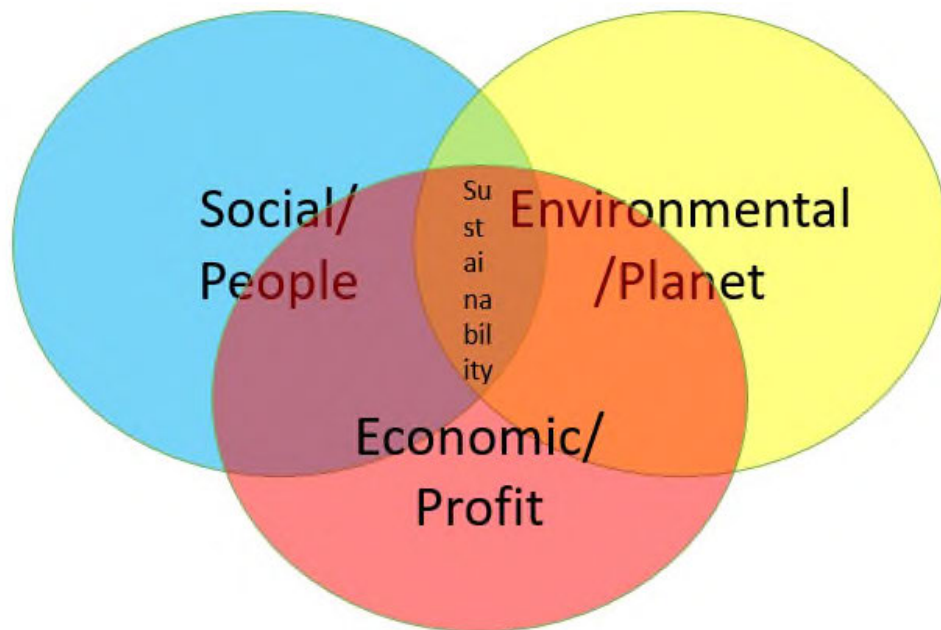


Figure 6. Triple Bottom Line concept, John Elkington, 1997

The concept is based on the interconnection of all parties, in which each of them benefits, while excluding one of them, the concept of sustainability itself is lost and risks increase. Thus, the sustainability of a company must include benefits not only for the company itself, but also for the environment and people.

The advantage of the concept is that it can be applied in all areas: from business to the city municipality. A company can use TBL for its new product or service in the following example: to assess how the product will affect the environment, society as a whole and its employees, and how it will all bring profit to the company.

In November 2010, Unilever put the TBL method at the heart of its Sustainable Development Plan, which sets out commitments and goals for sustainable development for the next ten years. This plan is not just a central element of the company's business strategy, but, according to CEO Paul Polman, "a new business model." It aims to separate the growth of the business from the environmental impact so that, although the company is increasing in size, it reduces its overall environmental footprint throughout the value chain [47].

The company has made great strides in its sustainable development goals and is still working on them [48] (Table 6).

Economic/Profit	Environmental/Planet	Social/People
€52,4 bn - Turnover in 2021 vs €50.7bn in 2020	-64% - Reduction in UL operational GHG emissions since 2015	41% - Percentage of UL portfolio that delivers positive nutrition
4,5% - Underlying sales growth in 2021 vs 1,9% in 2020	79% - Proportion of key agricultural crops sustainably sourced	63% - Percentage of UL portfolio meeting WHO-aligned nutritional standards
18,4% - Underlying operating margin vs 18,5% in 2020	-16% - Reduction in UL use of virgin plastic since 2018	89% - Percentage of UL package ice creams containing <22g of sugar per serving
€6.4bn - Free cash flow vs € 7.7 bn in 2020	53% - Percentage of UL plastic packaging that is reusable, recyclable or compostable	686mln - People reached through UL brands to improve health & wellbeing, and equity & inclusion
		€445 m - Spend with diverse businesses owned by underrepresented groups
		7% - Percentage of UL employees skilled or upskilled

Table 6. Unilever's (UL) achievements from the use of the TBL method

Another method of assessing the sustainability of a company is the ECG method. ESG is the acronym for Environmental, Social, and (Corporate) Governance, the three broad categories, or areas, using by companies to attract "socially responsible investors." They are investors who consider it important to incorporate their values and concerns (such as environmental concerns) into their selection of investments instead of simply considering the potential profitability and/or risk presented by an investment opportunity [49]. Risk management can help an organization to determine its material ESG metrics, to design

and deploy appropriate responses, and to measure and control progress, thereby increasing its ESG performance over time (Deloitte, 2019) [49].

The elements of investing in ESG – environmental, social, and corporate management contain a number of criteria that can be taken into account not only by socially responsible investors, but also by companies themselves seeking to take a more favorable operating position for ESG.

Environmental criteria show how a company takes actions to prevent a negative impact on the environment by its activities and may include criteria such as the company's use of renewable energy sources, a waste management program, potential air or water pollution problems arising from its activities, deforestation problems (if applicable), etc.

Social criteria most often relate to the attitude of companies to their employees: remuneration, child labor, paid leave, diversity, human rights, etc.

Governance, in the context of ESG, is responsible for the management's policy regarding the interests of their employees, suppliers, shareholders, and customers. Financial and accounting transparency and full and honest financial reporting are often considered key elements of good corporate governance.

One of the best examples of ESG is used to identify the list of the top 100 most sustainable corporations - Global 100 Index, by Corporate Knights Magazine [50]. It has been evaluating nearly 7000 public companies with revenues of more than 1 billion US dollars since 2005. Companies are compared by prioritized key performance indicators (KPIs) using The Global Industry Classification Standard (GICS). Priority indicators are selected based on the percentage of firms in the sector that disclose the indicator. KPI should be more than 10% or the indicator will not be considered as a priority KPI for this sector. The KPI assessment method is presented in the table 7:

	KPI	Methodology
Resource management (E)	Energy Productivity	Revenue / energy use
	Carbon Productivity	Revenue / GHG emissions
	Water Productivity	Revenue / water withdrawal
	Waste Productivity	Revenue / non-recycled/reused waste generated
	Innovation Capacity	R&D expenses / revenue

Financial management (S)	Percentage Tax Paid	Cash tax / EBITDA
	CEO-Average Employee Pay	CEO compensation / average employee compensation
	Pension Fund Status	Unfunded liabilities / total assets
Employee management (G)	Safety Performance	Fatalities and lost time incidents
	Employee Turnover	Number of departures / average total employees
	Leadership Diversity	Female representation on board of directors and executive management team
	Clean Capitalism Pay Link	Mechanisms that link senior executive pay to clean capitalism targets

Table 7. Method for assessing companies for sustainability by KPI by Corporate Knights Magazine

The KPI system of Corporate knights based on ESG criteria. The proof of the successful application of the method is the 2022 Global 100 press release. It shows a constant correlation between higher investor returns and high performance on key environmental, social and governance (ESG) indicators [50].

According to analysis by S&P Capital IQ, the Corporate Knights Global 100 Index is the best performing global sustainability equity index since its inception in 2005 and is also ahead of its blue-chip benchmark. A dollar invested in an index composed of Global 100 companies on February 1, 2005, would have generated a return nearly one-fifth larger than the same investment in the MSCI All Country World Index, or ACWI (total return of 331% compared to 279%) (Chart 9), with the performance gap widening in favor of the Global 100 markedly after the onset of COVID as large green recovery programs were adopted.

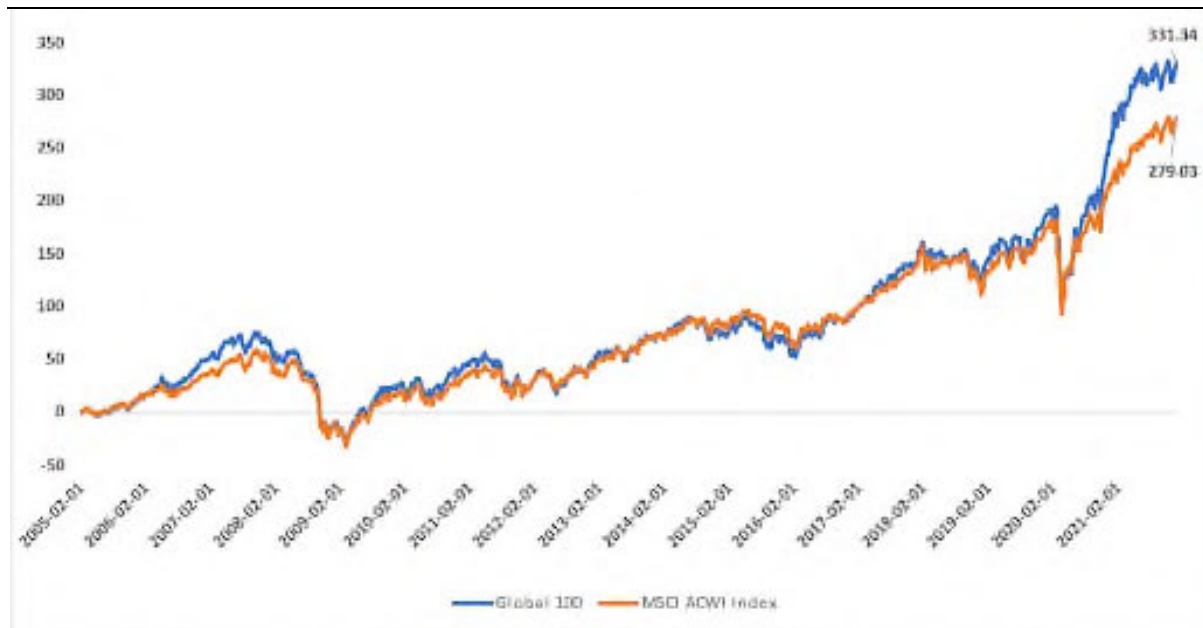


Chart 9. Global 100 compared to MSCI Index, total returns (USD, net) from 01.02.2005 – 31.12.2021, Corporate knights magazine, 2022

2.3 Certification as a tool to determine companies' sustainability

To make it easier for companies to understand how to act to be more sustainable, ISO - International Organization for Standardization developed the ISO 26000:2010 Social Responsibility standard in 2010. It contains recommendations, not requirements, so it cannot be certified unlike some other well-known ISO standards. Representatives of government, non-governmental organizations, industry, consumer groups and trade unions from all over the world participated in its development, which means that it represents an international consensus. It helps clarify what social responsibility is, helps businesses and organizations translate principles into effective actions, and shares best practices related to social responsibility around the world. It is designed for all types of organizations, regardless of their activities, size, or location [51].

The core subjects addressed by ISO 26000 are as follows:

- Organizational governance
- Human rights
- Labor practices
- Environment
- Fair operating practices

-
- Consumer Issues
 - Community Involvement and development [52].

Although certification companies cannot certify you according to this standard, they can help you assess your risks and offer a plan by which you can achieve compliance with the recommendations of this standard. ISO is also developing new standards for accounting for greenhouse gas emissions by organizations where a separate standard has been allocated for LNG energy producers. It is aimed at the fact that companies will disclose about the greenhouse gases emitted [53]. The World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) have also created their Greenhouse Gas Protocol (GHGP) Greenhouse gas emissions accounting system.

A tool that helps end customers to determine the certified product and by what criteria is the certificate label. A certification label is a label or symbol indicating that compliance with standards has been verified. Use of the label is usually controlled by the standard-setting body. Where certification bodies certify against their own specific standards, the label can be owned by the certification body. While the certificate is a form of communication between seller and buyer, the label is a form of communication with the end consumer. For this communication to be effective, the label must be meaningful [54].

Different countries or unions can also use their own standards, and therefore their own labeling. For example, the European Union has its own standardization organizations - ESOs (The European Standardization Organizations).

European standardization is a consensus-building process that involves many players. As the development of standards is mainly initiated by market needs, industry plays an important role. European standards are then developed through one of the three European Standards Organisations: the European Committee for Standardisation (CEN), the European Committee for Electrotechnical Standardisation (CENELEC), and the European Telecommunications Standards Institute (ETSI) [55]. All this ensures a free market for goods and services produced within the EU market, thereby creating a competitive advantage over products produced in other countries.

Products that have passed the EU standard are marked for compliance with EU standards - CE marking (Figure 7).

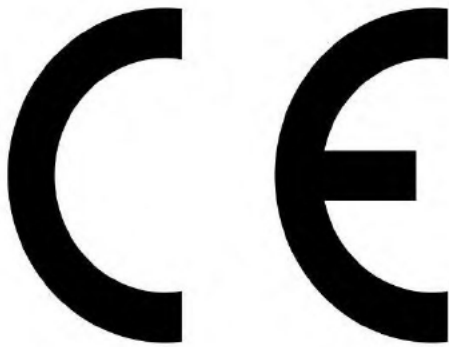


Figure 7. CE mark (left) [56] and CE marking example on a mobile phone charger (right)

CE marking is not a certification mark, but administrative marking, which means that products sold in the EEC have been evaluated for compliance with high safety, health and environmental requirements [57]. For manufacturers or distributors of goods, receiving and applying this mark on their goods means unhindered distribution of goods throughout the European Economic Area and Turkey. For the consumer, this sign means that the product will be safe. This, of course, does not give a 100% guarantee, does not oblige the manufacturer or distributor to assume responsibility for the safety of the products they sell [58].

CE marking is obligatory for products for which EU specifications exist and require the affixing of CE marking. It does not show how committed the company is to sustainability. A marking that helps consumers determine which of the products is more eco-friendly is Ecolabel.

Ecolabelling is a voluntary method of environmental performance certification and labelling that is practiced around the world. An ecolabel identifies products or services proven to be environmentally preferable within a specific category [59].

Ecolabeling may be owned or operated by government agencies, non-profit environmental organizations, or private sector organizations. Ecolabeling can be single attribute, which means that it focuses on one stage of the life cycle (i.e., at the stage of use) of a product/service or on one environmental problem (i.e., VOC emissions). They can also be multifactorial, which means that they focus on the entire life cycle (production, use, maintenance, disposal) of a product/service and solve many different environmental problems (for example, energy use, chemical use, recycling, and more) [60].

Currently, the number of eco-labels is very large, and in order to figure out which standards need to be applied in their creation, the International Organization for

Standardization (ISO) has created standards for the practice of labeling a new series of ISO 14020-14025 standards. ISO has proposed three categories of environmental labels according to the aspects covered, the criteria and the rigor needed to award a seal:

- type I in ISO 14024 - a voluntary, multiple-criteria based, third party program that awards a license which authorizes the use of environmental labels on products indicating overall environmental preferability of a product within a product category based on life cycle considerations.
- type II in ISO 14021 - informative environmental self-declaration claims.
- type III in ISO 14025 - voluntary programs that provide quantified environmental data of a product, under pre-set categories of parameters set by a qualified third party and based on life cycle assessment and verified by that or another qualified third party [61].

European Union created its own ecolabeling scheme – EU Ecolabel. EU Ecolabel or EU Flower is a voluntary ecolabel scheme established in 1992 by the European Union. The European Commission manages the EU Ecolabel at the EU level to ensure that the EU Ecolabel Regulation is implemented correctly [62]. As of March 2022, most licenses are awarded in Germany (18%), Italy (16%) and France (15%). Similarly, the majority of products are awarded in Spain (20%), Italy (16%), Germany (12%) and France (10%) [63].

Germany has its own eco-labelling scheme called the Blue Angel (Figure 8). The scheme was created in 1978 and was awarded to particularly environmentally friendly products. The owner of the mark is the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety. The technical criteria that a product or service must meet in order to receive Blue Angel certification are developed by experts from the German Environmental Protection Agency (UBA), while the decision to award the label is made by the Environmental Label Jury, which is made up of 15 independent environmental and consumer representatives associations, trade unions, industry, retail, crafts, local authorities, academia, the media, churches, youth and federal states.

When developing criteria, the following aspects are analyzed:

- resource-saving production (water, energy, (recycled) materials)
- sustainable production of resources
- avoidance of harmful substances in the product
- reduced emissions of harmful substances in the ground, air, water and indoors
- reduced noise and electromagnetic radiation
- efficient use, e.g., products which save energy or water

-
- longevity, ability to repair and recycle the product
 - good fitness for use
 - compliance with international occupational safety standards
 - take-back systems and shared-use services, e.g., car sharing.

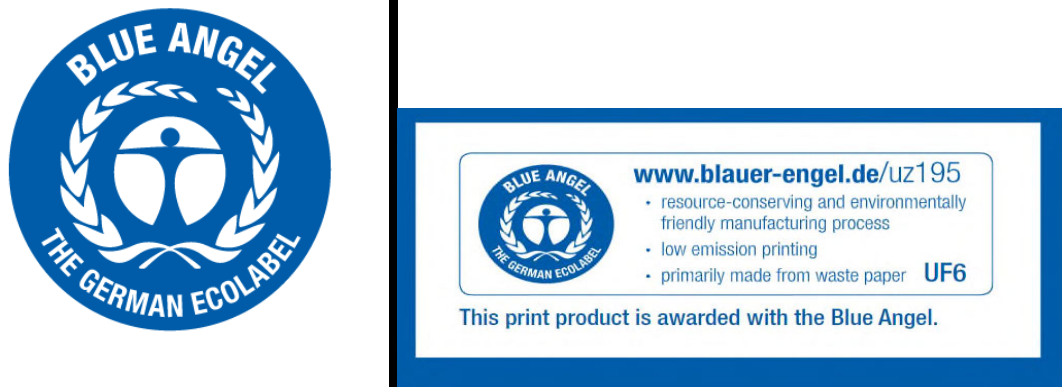


Figure 8. Blue Angel ecolabel

To obtain the Blue Angel ecolabel, companies must find suitable for their product Basic Award Criteria, submit an application according to chosen criteria, and pay a fee. A one-off handling fee is charged for making the application. This fee is €400 for a base contract and €200 for an extension contract (plus VAT in each case). After concluding the Contract on the Use of the Environmental Label, a yearly fee is also charged. This fee is charged according to a graduated scale based on the annual sales of the product certified with the Blue Angel (Table 8). Alongside application form, company also need to submit e.g., test reports, manufacturer declarations, safety data sheets and certificates/documents depending on the Basic Award Criteria. In addition, some of the Basic Award Criteria require company to carry out repeat testing and resubmit the necessary verifications during the term of the contract. They also should comply with the requirements for the test methods and suitable laboratories that are defined for the compliance verifications. The term of validity for each Basic Award Criteria is generally 3 - 5 years.

Annual sales (in millions of euros)	Annual fee (in euro plus vat)	Fee category
up to 0.25	320	1

from 0.25 up to 1.0	600	2
from 1.0 up to 2.5	1.300	3
from 2.5 up to 5.0	2.400	4
from 5.0 up to 10.0	3.500	5
from 10.0 up to 15.0	4.800	6
from 15.0 up to 20.0	6.100	7
from 20.0 up to 25.0	7.500	8
from 25.0 up to 40.0	9.000	9
from 40.0	10.500	10

Table 8. Annual fee for the use of the Blue Angel ecolabel

At the moment, there are 20,000 products from 1600 companies awarded with Blue Angel label. Companies use Blue Angel like many others as it helps to improve the image and attract customers. According to a survey the Environmental awareness study 2016 [64] conducted by BMUV, 92% of people in Germany know Blue Angel. For 37% of those who know him, he also plays a role in purchasing decisions (Chart 10).

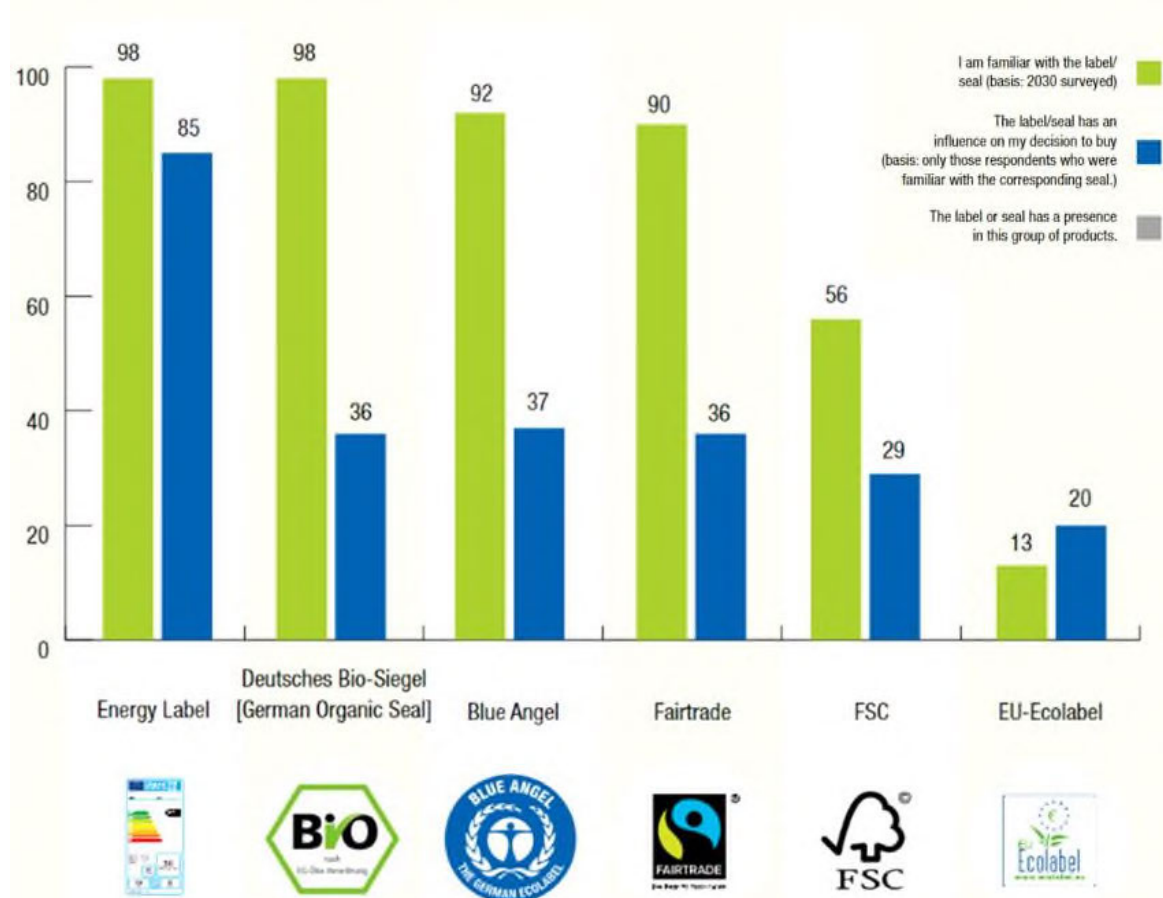


Chart 10. Comparison of the ecolabels in Germany. BMUV, 2016

2.4 Criticism of the company's sustainability management methods and tools

The cornerstone of the European Green Deal is the reduction of greenhouse gas emissions. In all methods of sustainable development of companies, everything is based on this. Regardless of what services and goods companies offer, they produce GHG emissions. When one of the companies reaches the emission limit, in order to continue its activities, it can buy the right to emissions from another company that has not used them. International carbon trading allows two or more companies to achieve their emissions targets more cheaply than if they acted alone. By buying the right to reduce emissions in a country where emissions reduction is relatively cheap, companies reduce their costs and do not pay fines for excess.

However, if the trade rules are not robust, then the use of carbon markets could lead to increased emissions, which would undermine the Paris agreement [65]. One of the main risks is double counting. Each of the companies can claim to reduce their emissions, which will eventually lead to the fact that each of the countries in which these companies are located will declare their reductions. The risk is especially high for large companies with a large number of emissions. Eventually, the global amount of carbon dioxide emissions will decrease, although, in fact, it will remain in the same place or even increase. Ultimately,

the company will declare its sustainability without changing anything in its activities, which of course will not correspond to reality.

Another important problem of accounting for greenhouse gas emissions by companies is their emissions report. In order for each country to be able to determine the goal of reducing emissions, it is necessary to know how much companies actually emit greenhouse gases. However, there are no mandatory requirements for comprehensive accounting and full disclosure of these emissions, as the Greenhouse Gas Protocol (GHGP) is considered a voluntary standard. There are three categories of emissions: Scope 1 - direct emissions from the company's own activities, Scope 2 - emissions from the production of purchased energy, and Scope 3 - emissions from value chain activities, in other words, all emissions from the extraction of raw materials to the use of the final product. The latter often make up a large part of a company's carbon footprint. Past studies have also shown that these outliers account for most of the reporting gaps. However, it has not yet been possible to quantify these gaps or determine their causes.

Lena Klaassen and Dr. Christian Stoll from the TUM School of Management at the Technical University of Munich (TUM) developed a method for identifying gaps in reporting on these emissions and used it in a case study to determine the carbon footprints of pre-selected digital technology companies and published a report in the journal *Nature Communications*. Klaassen and Stoll applied this method to quantify the Scope 3 emissions of 56 digital technology companies. Due to its high energy consumption, this industry is considered a major source of CO₂ emissions but often claims to be committed to a low-carbon business model. In their study, they examined software and hardware manufacturers that were included in the Forbes Global 2000 2019 list, the ranking of the world's largest public companies, and took part in a CDP survey in the same year.

Calculations show that in 2019, the analyzed technology companies did not disclose more than 50% of greenhouse gas emissions along the value chain in their own reports and/or CDP survey. It was also revealed that instead of the claimed 360 megatons of carbon dioxide equivalents, the study reaches a total of 751 megatons. Half of the companies submitted data to the CDP that did not agree with the data disclosed in their own corporate reports, ignoring the categories of GHG protocols that contribute significantly to emissions. For example, 43 percent of companies neglected emissions from the use of products sold, and 30 percent neglected purchased goods and services [66].

A newer study conducted by the Boston Consulting Group surveyed 1,290 organizations in Europe, Asia, North, and South America, and spanning industries from healthcare to finance, found that only 9% of companies have the ability to frequently and accurately calculate their emissions, 81% of companies do not report emissions from their own operations, and 66% do not report emissions from their suppliers and customers. The companies had between 1,000 and over 100,000 employees and revenues ranging from less than \$100 million to over \$10 billion. Such inaccurate data mislead the government, investors, and customers [67].

Companies don't just use their reporting to mislead customers. Another problem is the statement of its environmental friendliness using marketing, mainly ecolabels. As already mentioned, there is a type of eco-labeling, when the company itself creates criteria and labels itself in accordance with its statement about environmental friendliness. This method is called greenwashing [68]. Thus, greenwashing harms those companies that actually take steps towards sustainability, violates fair competition and undermines consumer confidence.

Ultimately, it is difficult for consumers, companies, and other market participants to understand many environmental labels and initiatives related to the environmental characteristics of products and companies. There are more than 200 environmental labels in the EU and more than 450 worldwide; there are more than 80 widely used carbon-only reporting initiatives and methods. Some of these methods and initiatives are reliable, while others are not; they vary depending on the issues covered [69].

Conclusion on Chapter 2

Companies are under unprecedented pressure from the government to deal with the climate crisis. The social community and investors also do not stand aside. All this increases the risk of the company losing profits or going bankrupt. In Germany, according to numerous surveys, the trend is even higher, as the country is one of the leaders in the field of climate change policy. The new rising generation is also more likely to choose products and services that have less impact on the environment.

Thus, company sustainability management is not just a tool to increase profits and reduce risks; it is also an indicator of how a company responds to changing market demand and its ability to survive.

Since many companies are not as resilient as they claim, there is a risk that all government action to mitigate climate change will be in vain. State control and tightening of standards should come to the rescue. The role of standards will increase, as will certification companies. Firstly, their role is important for companies. The company's standard allows shareholders, buyers, and investors to see that the company operates within certain rules and regulations. Secondly, as Paolo Frankl, the Head of the Renewable Energy Department of the International Energy Agency, noted in his interview, the main role in the transition to neutrality is played by people, and standards "can make a huge contribution to creating consumer confidence in products and services". He also mentioned that "To reach net zero by 2050, solar and wind alone would need to quadruple their 2020 record installation by the end of the decade". From this, it is clear that if Sun's generation certify companies for the use of renewable energy sources and make this data open to consumers, then it will be much easier to achieve the goal of 100% transition to renewable energy sources. Of course, the state will have to be one of the key players in this matter. This will help companies to be sure that unfair competition will be minimized, and consumer confidence will only increase.

3. FORMATION OF AN ENVIRONMENTALLY ORIENTED CONSULTING COMPANY "SUN'S GENERATION": ORGANIZATION STRUCTURE AND SERVICES

3.1. Introduction of the company

3.1.1 The main idea and trademark

Despite the great efforts of the German government to reduce the harmful impact on the environment by developing a renewable energy market, the country is still dependent on energy imports. The price of electricity is still rising and the concept of subsidizing new installations of renewable energy generators puts a burden on end customers. To solve the problem of forced sponsorship of renewable resources by ordinary citizens, the idea of an environmentally oriented consulting company Sun's generation was born.

The main idea of the company is to encourage the manufacturers for using renewable energy and people to buy their products in order to decrease the negative impact on the environment for the sake of future generations.

The main tool of the company is certification and subsequent labeling of services and products with the company's ecolabel.

Since the trademark plays an important role in the company's value [70], the Sun's generation trademark was developed based on the main ideas of the project - renewable energy (in this case solar) and the future generation for which people want to preserve nature (Figure 9).



Figure 9. Trading mark of the company

3.1.2 Sun's generation services

The main service of the company is the certification and labeling of goods produced using renewable energy. Depending on the share of energy consumed compared to total energy consumption, the company will reward manufacturers with its own label. To determine the share of renewable energy in total consumption, consumption data for one year is used. The formula is shown below (1.1):

$$T r.e. / T e.c. * 100\% = S r.e.; \quad (1.1)$$

T e.c. – Total electricity consumption in Watt 1 year,

T r.e. – Total renewable energy consumption in Watt 1 year,

S r.e. – Share of renewable energy consumption in total energy consumption for 1 year in percent (%).

For example, milk carton manufacturer consumes 587 GW of electricity per year. Let's assume that the company uses 265 kW of electricity per year from renewable energy sources. Thus, the company's share of electricity consumed from renewable sources is equal to 27.77%:

$$S r.e. = (265/587) * 100\%;$$

$$S r.e. = 45.14\%$$

After the share of renewable energy has been calculated, Sun's generation will consider which category the company falls under and which label it needs to be awarded. There are 4 types of Sun's generation markings in total:

- Type 5 – the share of renewable energy consumption in total energy consumption for 1 year is 15-30%.
- Type 4 - the share of renewable energy consumption in total energy consumption for 1 year is 31-50%.
- Type 3 - the share of renewable energy consumption in total energy consumption for 1 year is 51-70%.
- Type 2 - the share of renewable energy consumption in total energy consumption for 1 year is 71-85%.
- Type 1 - the share of renewable energy consumption in total energy consumption for 1 year is 86 – 100%.

According to the labeling rules, the company must be awarded the Type 4 label.

Since labelling is intended to increase the attractiveness of products, it has been made more understandable to consumers. The Energy Label Generator was used as the basis for the development of labels, which will allow customers to understand our labelling methods more quickly. Copyright was not violated in this case.

The label exactly repeats the company's trademark, except for more detailed information. It carries information about the Sun's generation website with information about the certified product and the Type of certification (Figure 10).

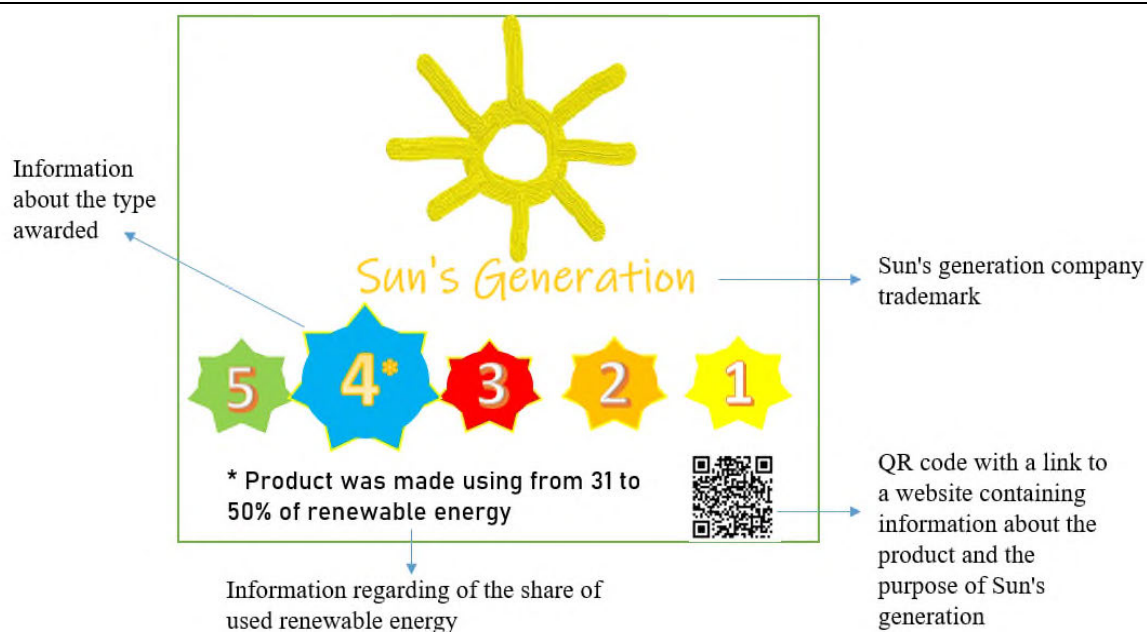


Figure 10. Example of a Type 4 label awarded for a company producing milk boxes

From Chapter 2, it was determined that the main problems of ecolabeling are greenwashing and customer distrust. In order to cope with greenwashing, our company will not use the data provided by the companies themselves. The assessment of electricity

use and the share of renewable energy will be outsourced, i.e. calculated with the help of other large certification companies, for example TÜV, BSI, GS.

3.2 Organization structure and SWOT analysis of Sun's generation

3.2.1 Organization structure

Mintzberg (1972): Organizational structure is the structure of relations between workplaces, systems, operational processes, people, and groups making efforts to achieve goals [71]. First, in order to define the organizational structure, it is necessary to define the goals of the organization. To do this, you need to understand what services and products it offers. The service of the company "Sun's generation" is certification of goods. The buyers of our services are other companies, so company's economic model can be defined as Business-to-Business (B2B). To provide a certification service, an organization body is required that will pay for it. Therefore, the Inspection and Labeling Department will be responsible for providing renewable energy assessment services

Although ordinary customers are not our direct customers, our success depends on how widely our brand is known. In order to increase the attractiveness of our services, it was decided to create a marketing department that would contribute to the recognition of our brand and its value for the end consumer. To minimize costs and the relationship between marketing and sales, the Marketing Department will be merged with the Sales Department.

Since many companies have taken a course for stability, Sun's generation will also minimize its risks and increase its attractiveness to investors due to a positive impact on the environment, investing part of its profits in the development of the renewable energy sector. The Finance and Financing Department will be responsible for this. The hierarchical organization model was chosen as the model of the organizational structure (Figure 11).

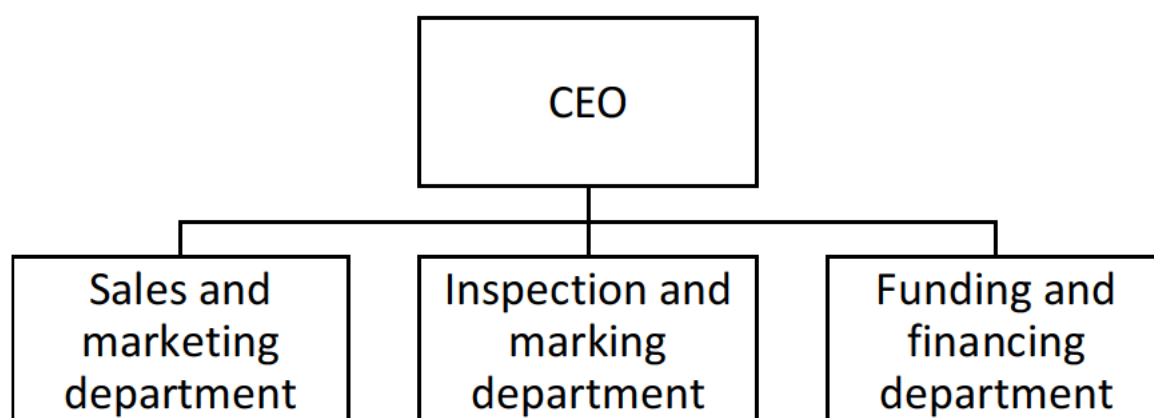


Figure 11. Organizational structure of Sun's generation

3.2.2 SWOT analysis

Two methods were used to determine the ways of the company's development: SWOT analysis and relationship marketing.

According to Meyer (2003), SWOT analysis suggests that a reasonable strategy should match the strengths (S) and weaknesses (W) of the firm to the opportunities (O) and threats (T) encountered in the firm's environment. It is intended to awaken strategic understanding and turn fragmentary facts and figures into a holistic basis for strategic planning (Mintzberg, 1994). A SWOT analysis determines not only the internal weaknesses (S, W) and strengths of the company but also external ones (W, T). The aim of the analysis is converting weaknesses to strengths and threats to opportunities (conversions strategies) and to match the strengths with opportunities (matching strategies) (Jobber 2004).

The Strength of the company can be a unique service - no certification company provides services for calculating the share of renewable energy sources. Another strength can be called, as was shown in chapter two, the advantage of the service the company provide, namely reducing risks and increasing opportunities for companies using our services.

As for the Weaknesses, as it was found out in Chapter 2, the problem of many eco-labels is "green washing". The statements of companies about their eco-orientation, when in fact this is not the case, have undermined the confidence of many buyers in eco-labels. This could be a serious obstacle for Sun's Generation. According to the website

ecolabelindex.com in total, there are 455 different eco-labels in the world, of which 200 are in the EU alone, direct competitors of the company. The biggest problem may be the problem of outsourcing, when the company only assembles parts, and not full production. Thus, the most energy-intensive production processes can be located in another country or part of the world, while using non-renewable energy, and the part of production that is located in Germany will use 100% renewable energy and declare that it is carbon neutral. Also, it may lead to the transfer of many production processes to other countries, which goes against the main idea of the company - reducing the carbon footprint by expanding the use of renewable energy.

A little more opportunities for the company are provided by external factors. The government's policy to reduce carbon dioxide emissions by imposing limits and taxes is an Opportunity for the company. Also, the rejection of Russian energy carriers has led to higher prices for fossil fuels, which makes renewable energy sources even more attractive. The government's support of the renewable energy market also serves as an opportunity for our company, as well as reducing the cost of renewable energy (Figure 12). Another possibility is the growing number of buyers choosing more sustainable products.

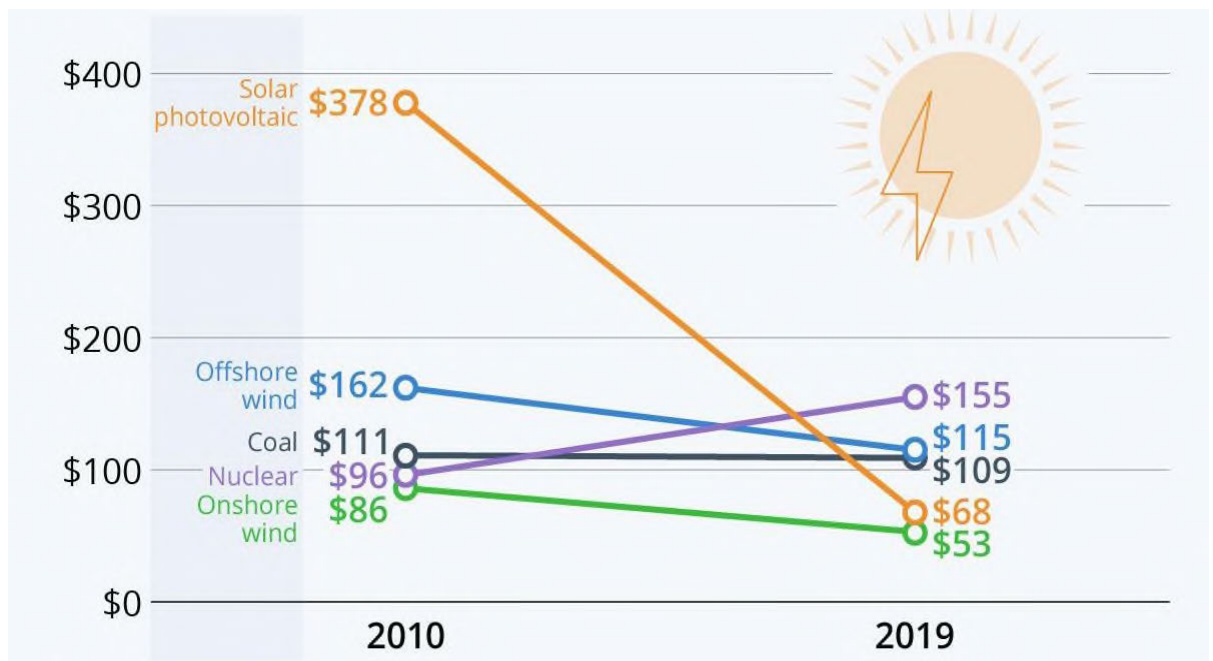


Figure 12. The falling cost of renewable energy from 2010-2019, price per MWh of electricity, by source, 2019, Statista

The Threats to the company are not very obvious, but as 2020 has shown, the pandemic poses a real threat to production. The big problem is that China produces the cheapest panels, and as a result, most of the installed panels in Germany are made there. According to the website [cleanenergywire.org](https://www.cleanenergywire.org) [72], only 2% of the total number of installed

solar panels in the coming years were produced in Germany. The imposed sanctions and additional taxes on goods from China can also serve as a threat to our company, since the renewable energy sector is very dependent on production from China.

According to the data given above, a table of SWOT analysis was created. The SWOT analysis of the company Sun's generation is presented in the Table 9.

Strengths	Weaknesses
<ul style="list-style-type: none">• The uniqueness of the service the company provide in the ecolabeling market• Reducing risks and increasing opportunities for companies using our services	<ul style="list-style-type: none">• customer distrust as a consequence of greenwashing• there are many other certification companies providing ecolabel• a more energy-intensive process is carried out by a supplier company
Opportunities	Threats
<ul style="list-style-type: none">• Germany's policy to reduce carbon dioxide emissions and sponsor the renewable energy market• the rising price of fossil fuels• reducing the price of renewable energy sources• a growing number of customers choosing eco-friendly products	<ul style="list-style-type: none">• pandemic threats• political sanctions

Table 9. SWOT analysis of Sun's generation company

In order to reduce the risks of the company and make it more attractive to customers of our services, it is necessary:

1. Build on strengths
2. Eliminate weaknesses
3. Use opportunities
4. Threat mitigation

Therefore, Sun's Generation start-up needs a strategy that uses all the opportunities for the company, as well as to reduce the risks identified in the SWOT analysis.

1. Build on strengths

- the Sun's Generation company should use the web platform as a means of promoting products that have passed our inspection;
- create top companies according to Sun's generation using more renewable energy compared to non-renewable, in order to increase competition among users of our services and push to use more renewable energy.

2. Eliminate weaknesses

- To make information about measurement methods and results publicly available;
- to include state employees as a guarantor of an honest assessment and increase customer confidence;
- to use marketing to demonstrate the identity of the company and its goals. Companies that do not produce half of the production process of their products in Germany are not accepted for certification. Also, if the company outsources most of the processes, half of the processes must also be produced by the company itself.

3. Use opportunities

- At the initial stage, it is possible to use Germany's policy of sponsoring innovations in the field of renewable energy resources as a start-up capital;
- to use marketing not only to promote our services, but also the services of companies installing photovoltaic panels and other renewable energy generators to create additional income.

4. Threat mitigation

- To label only companies using renewable energy generators produced by 100% or at least 50% in Germany.

3.3 Marketing mix and relationship marketing

3.3.1 Marketing mix

Marketing mix is the set of marketing tool – often summarized as the 'four Ps': the product, its prize, promotion, and place – that the firm uses to achieve its objectives in its target market (McCarthy, 2001) (Figure 13) [73].



Figure 13. Marketing mix. Michel J. Backer

The marketing mix has been adapted to the company Sun's generation.

Product.

1. Brand – Sun's generation
2. Design – ecolabel "Sun's generation"
3. Service - labeling of companies using renewable energy to create their product
4. consulting on the benefits of renewable energy
5. working with a third party and the state in assessing the use of renewable energy

Promotion.

With the help of the information obtained from Chapter 2 and the SWOT analysis, the best means of promotion can be considered promotion via the Internet.

The company's website will contain information:

- Companies and products that have received the Sun's generation environmental label and data on the type of their labeling.
- TOP companies using the largest amount of renewable energy compared to non-renewable according to Sun's generation.
- Information for ordinary citizens on the benefits of using renewable energy sources. Since it is most expedient for ordinary households to use solar energy, information will be provided on subsidies from the state from the use of solar panels, savings, a solar clock calculator for each of the lands, as well as information about domestic companies installing solar panels.
- Information about the benefits of using the label will be provided to the commercial sector along with the steps that need to be taken to get the label, as well as about companies producing and selling renewable energy generators.

Another tool will be an application for the phones. The application will have quick access to information about certified products, a QR code reader, and information about how much carbon dioxide emissions can be prevented by buying this particular product instead of the average from this segment. Also, to stimulate the promotion at the initial stage, an action is planned with the return of a certain percentage of the purchase to customers on a bonus card. The marketing campaign will be carried out using a mobile application – consumers marketing.

Place.

Since our service is aimed at helping companies to attract more customers, indirect users of our services are ordinary consumers. For additional attraction of end consumers, another campaign will be launched with the participation of retail stores. The Made in Kazakhstan campaign was taken as a prototype, which increased the revenue of retail stores by 30% from the very beginning of the launch of the campaign [74]. Its purpose was to familiarize customers with products made in Kazakhstan itself in order to increase their attractiveness, despite the fact that the price of these products is much higher compared to products from neighboring countries of China and Russia. The essence of the action was that the goods marked with the label Made in Kazakhstan were separated from other goods on another shelf and had a stand with information about the objectives of the action. An example of the adaptation of the action is presented in Figure 14.



Figure 14. Sun's generation labeled products campaign in stores.

Price.

The price for the services of using the ecolabel Sun's Generation was taken from the example of pricing the use of the Blue Angel label since other companies keep the prices of their services secret. Also, the volume of the ecolabeling market remains a secret. Advertising and promotion of the services of sellers of renewable energy generators will be provided free of charge. Retail stores will be provided with free advice on obtaining a label and exemption from its use for a period of 3 years.

Business plan

This business plan will show only the launch costs together with the number of staff and their salaries (Table 10) and possible sources of financing.

Department	Number of workers	Salary* Gross/month in Euro	Total
CEO	1	4000	4000
Sales and marketing department/Sales managers	3	3500	10500
Sales and marketing department/Marketing managers	2	3500	7000
Inspection and marking department	3	3500	10500
Funding and financing department	4	3500	14000

Table 10. Calculation of the number of Sun's generation company personnel and their salaries

(*The salary was calculated on the basis of the average salary in Germany of specialists in specialized fields for 2022 + 10% according to the website [averagesalariesurvey.com](https://www.averagesalariesurvey.com)).

In total, the company will spend 46,000 euros per month or 552000 euro per year on employee salaries.

Since the assessment of the share of renewable energy will be carried out by the companies themselves in certification companies with the necessary equipment and personnel, the only initial costs of the company will be salaries to employees, rent of an office with furniture, necessary technical equipment (laptops, monitors, cables, printers), stationery and marketing costs. The creation and maintenance of the website with application will also be outsourced. For all the necessary equipment, the average prices in Germany were taken, as well as the average price of an office with furniture for 13 people.

As a result, the company needs about 700,000 euros to launch.

The company will seek funding from the government, investors among business angels, and crowdfunding.

3.3.2 Relationship marketing

The key element of the Sun's generation company is its relationship with direct customers, service providers, and end-indirect customers. Gummesson (1987) pointed out that relationships should become the center of strategic planning at both corporate and marketing levels. Despite this, Morgan and Hunt (1994) and Gummesson (1994) identify a range of relationships in which a company is likely to be involved, and thus, by implication, within the domain of marketing. Morgan and Hunt's (1994) conceptualization suggests four broad categories of relationships: supplier partnerships, lateral partnerships, customer partnerships, and internal partnerships. Within each of these categories, the authors further specify the number of particular relationships. These include supplier relationships (with goods and service suppliers), internal relationships (with employees, etc.), lateral relationships (with government, competitors, etc.), and buyer relationships (with immediate and ultimate customers) [73]. This concept has been applied to the Sun's generation company and is presented in Figure 15.

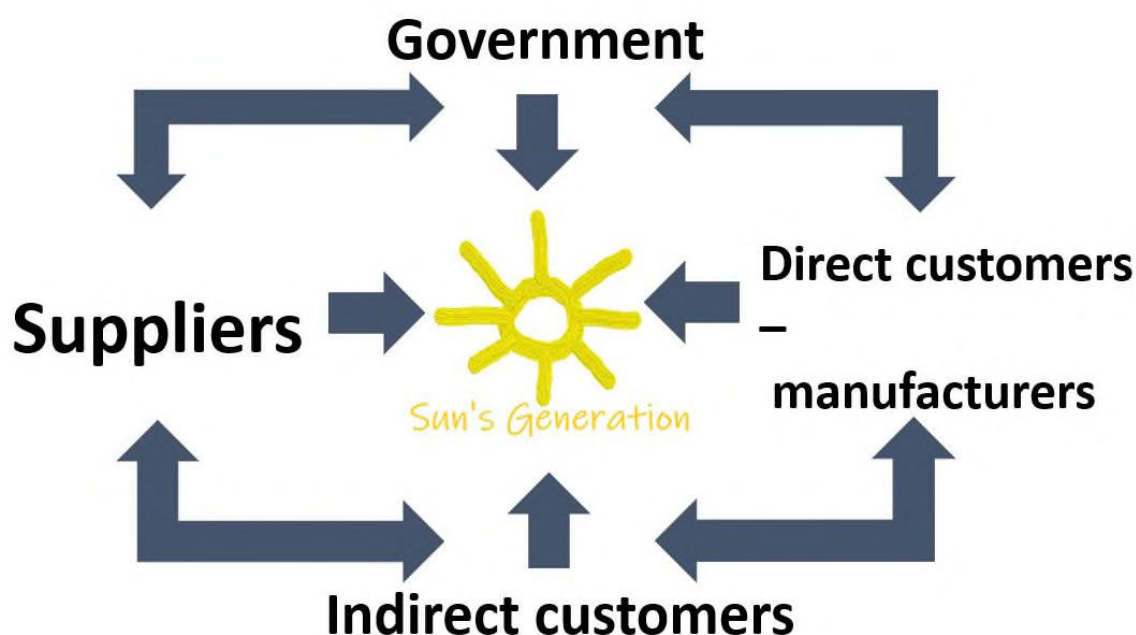


Figure 15. The Sun's generation relationship exchange in marketing relationship

Each of the parts of the relationship brings its benefits to the participant. The benefits for each of the parties are shown in the Table 11.

Government	Sun's generation	Direct Customers - producers of goods	Certification companies/ retail stores	Solar panel manufacturers	Society
decrease of emissions of co2	make profit by selling their service for companies	less spendings on advertising	increase in profits	increase of profit	better environment
higher speed of implementing eu energy policy	good market position backed up by government, partners, citizens	more competitive position	more chances to expand business	more contracts with companies	cheaper price of electricity
better environment	minimum spending on start running up the company	return part of investment from the government	more investment on innovation		
more competitive companies with environmental sustainability programs	sustainable future because of rising demand on renewable energy	better brand attitude of customers	increase of loyal customers		
less spendings on EEG program		the increase in the number of buyers due to the category of buyers who buy eco products	more competitive position		
better economic					

situation/more taxes					
the best image on the world stage					
the seizure by German companies of the European and global markets of neutral products and the renewable energy market					

Table 11. Benefits of the parties from the relationship in the marketing relationship of the Sun's generation company

3.4 Social, economic, and environmental impact

The philosophy and business strategy of Sun's generation is based on reducing the negative impact on the environment by reducing greenhouse gas emissions. The table of benefits of the parties from using the company's services well reflects the concept of a triple bottom (Table 12). Sun's generation's business strategy is built on TBL and helps not only to improve the environment but also to strengthen the position of the German renewable energy market, which saw a decline amid lower prices from manufacturers from China. The development of the renewable energy market will also lead to an increase in jobs and highly qualified specialists in demand around the world.

Economic/Profit	Environmental/Planet	Social/People
making a profit	reducing greenhouse gas emissions	improving human health as a consequence of improving the environment

strengthening the position in the market	increasing attention to the problem of the environment	increase in jobs
creates a recognizable brand	increasing the pace of environmental improvement	cheaper price of electricity
		reduction of tax burden

Table 12. Sun's generation possible achievements from the use of the TBL method

Conclusion on Chapter 3

New trends in environmental protection originated in society dictate their own rules in the market. Government pressure also exerts pressure and increases the risks of companies accustomed to conducting their business by the "old methods".

However, as practice shows, it is much more profitable to respond to new market demands not only for profit but also for further existence.

Sun's generation company has not only united the demands of society and the government, but it also defends the interests of the market of environmentally oriented companies.

The service offered by the company is unique. Using marketing tools, all parties in the chain of relationships with the company receive their benefits, which strengthens the company's position and reduces its risks. The use of SWOT analysis and the TBL method makes Sun's generation from a certification company to an eco-oriented consulting company.

Sun's generation company solves such problems related to the development of renewable energy sources by such actions as:

1. Develops the German solar panel market, creating demand for panels produced in Germany itself, new jobs, and a new highly skilled workforce.
2. promotes the idea of climate protection among the population and sponsors the government's policy on reducing carbon dioxide emissions voluntarily and not forcibly.
3. strengthens Germany's position as a leading country in the environmental protection initiative.

4. strengthens the position of manufacturers of more environmentally friendly products in the German market and in the pan-European market.

CONCLUSION

Having considered the « Formation of an environmentally oriented consulting company "Sun's Generation" », it was possible to achieve the goal of the final dissertation.

In the process, the following tasks were solved:

1. The systems of state measures in the field of solving the problems of environmental pollution in the countries of the European Union and in particular in Germany were analyzed.
2. The reactions of companies and households to the implementation of eco-oriented innovative projects and their financing were analyzed.
3. An analysis of the primary sources of financing for eco-oriented projects was carried out.
4. Appropriate measures have been chosen to address the duality of funding for eco-oriented projects and change the attitude of both households and companies towards implementation and maintenance costs.
5. A business strategy has been developed for a consulting company working in the field of environmental certification of business processes of companies.

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Statement of Authorship

I hereby certify that Master's thesis presented here has been composed by myself and is the result of my own investigations, unless otherwise acknowledged in the text. All references and all sources of information have been specifically acknowledged. This thesis has not been submitted, either in part or whole, for a degree at this or any other University. This work has not been published.

Mittweida, 08.12.2022

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