ZORLUENERJİ

CLIMATE RISK REPORT

The Task Force on Climate-related Financial Disclosures (TCFD) Statement

ZORLU

CONTENTS

ABBREVIATIONS

BIST:	Borsa İstanbul
CBAM:	Carbon Border Adjustment Mechanism
CDP:	Carbon Disclosure Project
EMRA:	Energy Market Regulatory Authority
ESG:	Environmental, Social and Governance
ETS:	Emission Trading System
IPCC:	Intergovernmental Panel on Climate Change
I-REC:	International Renewable Energy Certificate
PMR:	Partnership of Market Readiness
R&D:	Research and Development
SBTi:	Science Based Target Initiative
TCFD:	Task Force on Climate-related Financial Disclosures
TSVCM:	Taskforce on Scaling Voluntary Carbon Markets
WRI:	World Resources Institute

CEO'S MESSAGE

The effects of climate change have become one of the most critical global risks.

Sinan AK
Sector President
CEO

Climate change, which is one of the most critical issues worldwide, exposes the global economy to serious risks and has a destructive impact on our lives. The fight against climate change and the negative consequences it brings with it are among the top priority agenda items, both in our country and around the world.

According to the Global Risk Report of the World Economic Forum, risks arising from climate change have stood out more prominently in recent years in terms of expected occurrence and impact level compared to other risk types, and they rank among the top priority risks.

The Paris Climate Agreement foresees countries developing action plans to reduce carbon emissions in line with their commitments and moving towards carbon-neutral targets by 2050. This agreement sets out key objectives such as reducing greenhouse gas emissions, enhancing adaptive capacity against the adverse effects of climate change, and promoting the transition to low-carbon technologies.

We prioritize the fight against climate change among our key areas of focus.

The goal of achieving net-zero carbon emissions by 2050 is gaining widespread traction at the national and international levels every day. Recent extraordinary events such as natural disasters and pandemics have further emphasized the importance of combating climate change and accelerated the transition of global markets towards a carbon-free future. In the business world, determining the right strategies and swiftly creating action plans is of great importance.

As a company operating in the energy sector, ensuring secure and sustainable energy supply and production from renewable energy sources is a top priority for both our company stakeholders and Zorlu Enerji. The company places a priority on preserving energy resources, ensuring energy efficiency in all activities, and promoting awareness of responsible energy consumption, with a strong understanding of the significance of sustainable and uninterrupted energy for all sectors.

We contribute to Turkey's transition to low-carbon technologies.

In our Climate Risks Report, we transparently highlight our efforts and goals in the fight against climate change. Among our priorities, we support the fight against climate change through our work towards transitioning to low-carbon technologies, and our goal to increase the share of renewable energy in Turkey's total production to 100% by 2030.

We are aware that increasing the use of renewable energy is one of the most important components of transitioning to a low-carbon economy. As Zorlu Enerji, we embrace the principle of maximizing the use of our country's renewable energy sources and contribute to the local economy by prioritizing domestic resource utilization. Through sustainable solutions and the principles of smart technology, we lead the industry with our R&D efforts.

Decisive steps are required to combat the climate crisis.

Within the framework of sustainability vision, we take the lead in initiatives aimed at the development and improvement of societal life in the areas where we operate. Our global-scale business relations, participation in initiatives, and innovative practices place us among the institutions that make a difference in the field of sustainability.

In line with this, throughout 2022, we continued our efforts to increase the share of renewable energy in our production portfolio and enhance resource diversity. Especially, electrification and energy efficiency-focused initiatives became one of the top agendas on our investment list.

As a company that produces energy and shapes the management and transformation of the energy it produces, we plan to achieve net-zero emissions in our operations and energy production by 2030. We aim to extend this goal to encompass the entire value chain by 2040, and achieve net-zero emissions by 2050.

We will continue to work diligently to reduce climate risks.

Risks stemming from climate change are becoming increasingly significant for our company and our stakeholders. In this context, we prioritize transparently sharing the results of our rapidly advancing efforts. As one of the leading institutions in Turkey supporting the Task Force on Climate-related Financial Disclosures (TCFD), the Climate Risks Report we prepared in line with TCFD recommendations stands out as a strategic step enriching our sustainable transformation journey.

Through this report, we have made significant progress in integrating awareness of climate change risks into our business model. In our future journey, we will continue to collaborate with our business partners and work steadfastly to reduce climate risks.

İ. Sinan AK

1. SUSTAINABILITY AT ZORLU ENERJİ

Zorlu Enerji generates nearly all of Turkey's electricity from renewable energy sources.

Established as the first company of Zorlu Enerji Group in 1993, Zorlu Enerji is now one of the leading organizations in Turkey's energy sector with its well-balanced production portfolio consisting of domestic and international power plants, diversified resource base, extensive sectoral experience, and strong market position. In addition to electricity generation and electricity and natural gas sales, trade, and distribution, Zorlu Enerji is active in various areas of the energy sector, including solar panel trade and installation, electric vehicle charging station sales, installation and operation, and electric vehicle leasing.

As of the end of 2022, Zorlu Enerji's installed capacity is 991 MW. The company's production portfolio consists of the following:

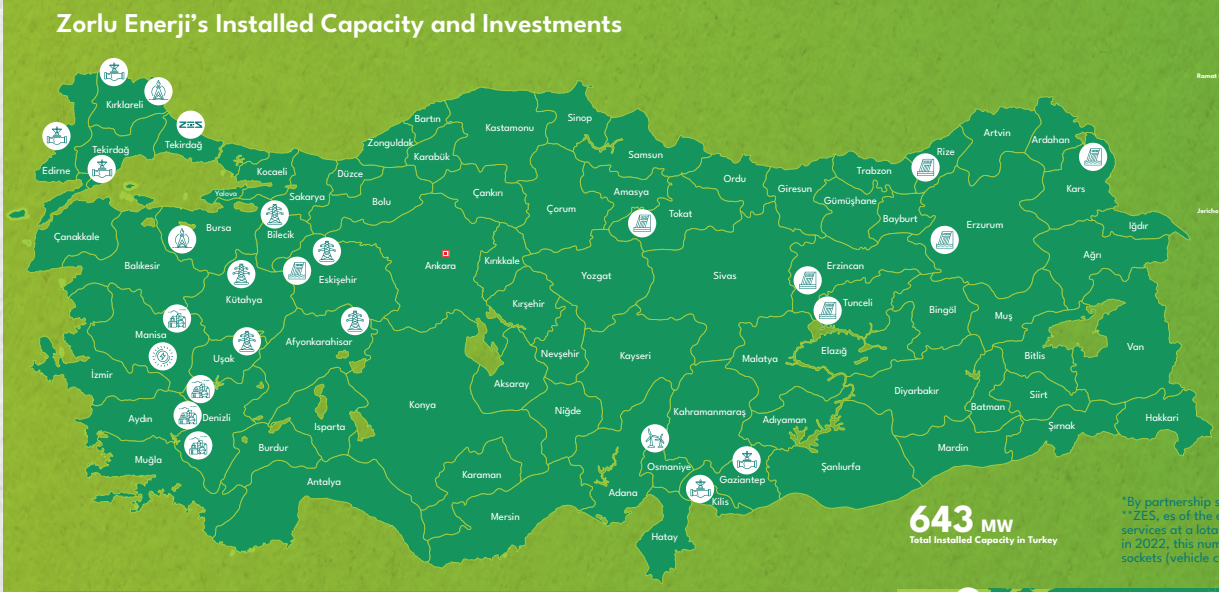
- **7 hydroelectric, 1 wind, 4 geothermal, and 2 natural gas power plants in Turkey.**
- **1 wind power plant in Pakistan, 1 solar power plant in Palestine, and 3 natural gas power plants in Israel.**

Zorlu Enerji shapes and executes all of its activities with the vision of becoming the energy company of the future, in line with Zorlu Holding's Smart Life 2030 vision and with a focus on sustainability. It places great emphasis on environmental, economic, and social dimensions in its sustainability efforts, addressing important topics such as combating the climate crisis, reducing carbon emissions, sustainable use of resources, energy efficiency, energy supply security, clean technologies, water usage and conservation, human and labor rights, equal opportunities, and corporate governance. Throughout its operations, Zorlu Enerji values creating value for itself and all stakeholders, including the environment and society.

Zorlu Enerji aims to increase the share of renewable energy in its production portfolio, especially in geothermal and solar energy, and to enhance resource diversification while supporting Turkey's clean energy supply and expanding its production capacity.

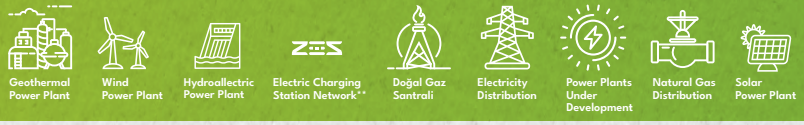
The company is focused on investing in renewable energy and next-generation technologies, particularly in geothermal energy, solar energy, smart systems, and electric vehicle charging stations, with the goal of further growth in the renewable energy sector. In alignment with this objective, Zorlu Enerji has seen an increase in the share of renewable energy, particularly in the geothermal energy sector, within its total installed capacity in Turkey in recent years.

Zorlu Enerji's Installed Capacity and Investments



*By partnership shares
**ZES, as of the end of 2021, provided electric charging services at a total of 934 points in 91 provincss. However, in 2022, this number increased to 1,570 points and 2,840 sockets (vehicle charging capocity) in all 81 province

Countries with ZES Operations	Activity Type	Company
Turkey	Electricity soles, electric vehicle sharing and other	ZES Dijital Ticaret A.Ş.
Netherlands	Electric charging station sales, installation and cperation	ZES N.V.
Israel	Electric charging station sales, installation and cperation	ZES Israel Ltd.
Montenegro	Electric charging station sales, installation and cperation	ZES D.O.O.
Italy	Electric charging station sales, installation and cperation	ZES S.R.L.
Croatia	Electric charging station sales, installation and cperation	ZES Društva s agraničenom odgovarnošću za usluge



1.1 SUSTAINABILITY MILESTONES

2010-11

Gökçedağ WPP received EBRD credit.

Gökçedağ WPP received Gold Standard Certification.

Gold Standard

ISO 14064 GHG verification done.

ISO 14064

Zorlu Doğal Completed ISO 9001, ISO 14001, OHSAS 18001 certification.

2012

Ranked among top 5 companies in the sector With is CDP score.

CDP

DRIVING SUSTAINABLE ECONOMIES

2016-17

Pakistan Jhimpir WPP received Gold Standard certification.

Gold Standard

Listend in BIST sustainability Index.

BORSA ISTANBUL

Zero Carbon Footprint Forests Project with Mehmet Zorlu Foundation is ongoing.

2018

Green Loan(Green Finance) agreement was signed with Garanti Bankası

Green Loan

Garanti BBVA

2019

Zorlu Doğal, received SA 8000 certification.

SA8000

2020

Undersigned WEPS and UNGlobal Compact.

WOMEN'S EMPOWERMENT PRINCIPLES

United Nations Global Compact

vigeo eiris

Started ESG rating process powered ESG Management System installation activity.

Published sustainability strategy and targets.

2022

First company in the sector to publish Integrated Activity Report.

CFO COALITION FOR THE SDG

Undersigned CFA Principles for UNGlobal Compact SDG.

Committed ner zero to set Science Based Tarfets (SBT).

SCIENCE BASED TARGETS

With 61 points, we achieved the advanced level at Moody's ESG rating process.

Moody's

1.2 ESG INDEXES PERFORMANCE

Zorlu Enerji, in accordance with the requirements of the Capital Markets Board (SPK) and its transparency principle, shares its sustainability performance with its investors based on evaluations conducted by independent rating agencies (Argüden Academy, Vigeo Eiris, Moody's, Sustainalytics, Refinitiv) for its shares traded on Borsa İstanbul (BIST) under the code ZOREN.IS.

Zorlu Enerji voluntarily joined the BIST Sustainability Index for the first time on November 1, 2016, and has continued to be included in the index for the 6th time based on the evaluation conducted in 2022.

Having operations both domestically and internationally, Zorlu Enerji is aware of the importance of international indices and ratings. To remain competitive in international markets and enhance its visibility in these markets, Zorlu Enerji is committed to continuous improvement. It compares its competitive and robust structure with international sector companies, integrates best practices within the company, and sets examples for other companies to follow. In this regard, Zorlu Enerji participates in CDP reporting for environmental matters and is included in Moody's and BIST Sustainability Indices for Corporate Social Responsibility. Every year, the company strives to improve its scores in evaluations conducted by these organizations. In 2022, Moody's score was raised by 4 points to reach 61, and the goal is to further increase it in the upcoming periods.

ARGÜDEN YÖNETİŞİM AKADEMİSİ İyi Yönetişim Kaliteli Yaşam

BORSA İSTANBUL

SUSTAINALYTICS

REFINITIV

CDP Scores

Zorlu Enerji joined the Carbon Disclosure Project in 2010, initiating its reporting on corporate policies, objectives, carbon emission levels, and reduction targets related to climate change. As the first energy company from Turkey to participate in the Carbon Disclosure Project, Zorlu Enerji updated its score to "B" in 2022.

CDP Performance	2018	2019	2020	2021	2022
CDP Climate Change Scores					
Zorlu Enerji Elektri Üretim A.Ş.	A-	B-	B	B	B
GAZDAŞ Doğal Gaz Dağıtım A.Ş.	-	-	C	B-	B
OEDAŞ Sormangazi Elektrik Dağıtım A.Ş.	-	-	D	B	B
CDP Water Program Scores					
Zorlu Enerji Elektri Üretim A.Ş.	B	B-	B-	B	B

1.3 ZORLU ENERJİ'S APPROACH TO TCFD RECOMMENDATIONS

TCFD, established by the Financial Stability Board in 2015, aims to help companies better understand climate-related risks and opportunities and enhance their financial reporting in this regard.

TCFD supports the financial sector and companies in better preparing for climate-related risks and opportunities. It encourages companies to identify, manage, and report on climate-related risks and opportunities. Additionally, TCFD encourages financial institutions to assess climate change risks in their portfolios and develop strategies to address these risks.

The TCFD framework outlines how companies should assess climate-related risks and opportunities and integrate this information into their financial reporting processes. The framework consists of four main components:

TCFD aims to facilitate more transparent pricing of climate-related risks and opportunities in financial markets, support informed decision-making by investors, and encourage companies and financial institutions to develop more sustainable strategies to combat climate change.

This report aims to share Zorlu Enerji's journey of addressing climate change and adaptation in line with TCFD recommendations, disclosing the company's strategies, criteria, and objectives related to climate change. The report will be reviewed regularly and updated as needed.

1. Governance:

Companies are required to disclose their governance structure related to climate-related risks and opportunities.

2. Strategy:

Companies are expected to explain the potential impacts of climate-related risks and opportunities on their strategic planning.

3. Risk Management:

Companies should demonstrate how they identify, assess, and manage climate-related risks.

4. Metrics and Targets:

Companies should specify how they will measure their climate-related performance and report this information.

2017 TCFD Raporu[1]

[1] https://assets.bbhub.io/company/sites/60/2021/10/FINAL-2017-TCFD-Report.pdf

2. GOVERNANCE

2.1. Management of climate-related issues

Climate-related matters are managed at the highest level, overseen by the Chairman of the Board of Directors. The Chairman is responsible for Zorlu Enerji's vision, strategy, assessment of high and very high risks, and finalization of financial decisions. Additionally, the Chairman guides the development of strategies and policies related to climate change and renewable energy.

An Independent Board Member, on the other hand, is responsible for providing guidance to the company regarding future expectations through qualitative research. They evaluate the adoption of the business strategy in light of climate change, direct the company towards creating more value while achieving sustainability goals, identify priority areas based on qualitative research, act as a recommending body to facilitate potential transformations, and integrate sustainability into business operations. Zorlu Enerji has disclosed its sustainability strategy and long-term objectives under the leadership of the Board of Directors.

To ensure the proper fulfillment of the duties and responsibilities of the Board of Directors in accordance with the Capital Markets Board Corporate Governance Principles, the Corporate Governance Committee, Early Detection of Risks Committee, and Audit Committee have been established. The Audit Committee's task is to oversee the financial and operational activities to ensure their soundness. The Committee's purpose is to supervise the Company's accounting system, public disclosure of financial information, independent auditing, and the functioning and effectiveness of the Company's internal control and internal audit systems.

The internal audit function at Zorlu Group Companies has been organized under the Internal Audit Department, which has been providing services since 2000 under Zorlu Holding. The Internal Audit Department conducts audits based on the International Internal Audit Standards, within the framework of official regulations and audit programs approved by the Board of Directors. It shares its audit reports after each audit and its annual activity reports with the Board of Directors, providing an overview of the audit results throughout the year.

Under the annually prepared risk-based audit program approved by the Board of Directors, process audits are conducted to ensure effective and efficient use of resources, compliance with written rules (laws, regulations, internal policies, and rules), accuracy, reliability, and security of information. Before each audit, risk assessment is conducted in consultation with the top management, positioning risks that may hinder the company's goals, considering their impact and likelihood in the risk matrix. During the audit fieldwork, internal controls managing high-impact and high-likelihood risks are evaluated through tests. The observation results are

shared with company executives in the form of a draft report, and after their opinions are added, a final report is sent to top management.

The Internal Control Department prepares a risk-based internal control work plan annually to conduct its work in a systematic, continuous, and disciplined manner. In the creation of the annual internal control work plan, risk-based assessments by the Internal Control Department, requests from the Board of Directors and management, findings related to internal control identified during audit work by the Audit Department, and corporate risk maps play an important role. The annual internal control work plan is submitted for approval and information to the CEO and the Board of Directors. Periodic meetings between the Internal Control Department and management are held to evaluate internal control activities planned and carried out during the year, share findings, assess the action plans and follow-up results decided for the relevant findings, and review plans for the future period.

2.2 Sustainability management

Sustainability matters at Zorlu Enerji are overseen by the Sustainability Board. Led by the CEO, the Sustainability Board meets annually to evaluate current initiatives, track performance towards goals, and determine regulatory actions in areas where progress lags. Comprised of senior executives from various departments, the board aims to provide a holistic and comprehensive perspective, expand sustainability knowledge, and drive behavioral change within the company. Working Groups also provide content and support within their respective responsibilities to the Sustainability Board. The Sustainability Board brings relevant matters to the agenda of the existing Corporate Governance Committee and ensures reporting to the Board of Directors.

The "2030 Net Zero Emissions" targets have been approved by the Board of Directors in alignment with the Smart Life 2030 vision. The aim is to reduce emissions by 50% for Scope 1 and Scope 2 emissions by 2025. The Sustainability Board consists of four Working Groups established based on values adopted by Zorlu Enerji: Nature Management, Impactful Growth, People and Culture, and Strategic Foundations. These groups are responsible for both assessing and managing climate-related risks and opportunities

The climate-related priorities of the Working Groups include:

- Innovation and New Business Models
- Sustainable Finance and Responsible Investments
- Climate Action
- Green and Reliable Energy Supply
- Biodiversity
- Integrated Risk Management
- Corporate Governance and Behavior

3. STRATEGY

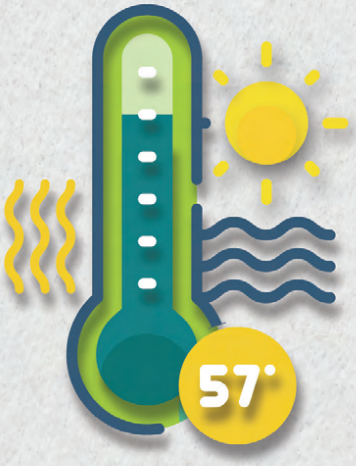
Global climate change ranks among the top-prioritized risks worldwide. As a result, climate-related physical and transitional risks not only pose short, medium, and long-term risks for companies but also present strategic opportunities. Zorlu Enerji, as a supporter of TCFD (Task Force on Climate-related Financial Disclosures), aims to fully integrate climate risks into its business processes and concretely define its objectives and performance indicators.

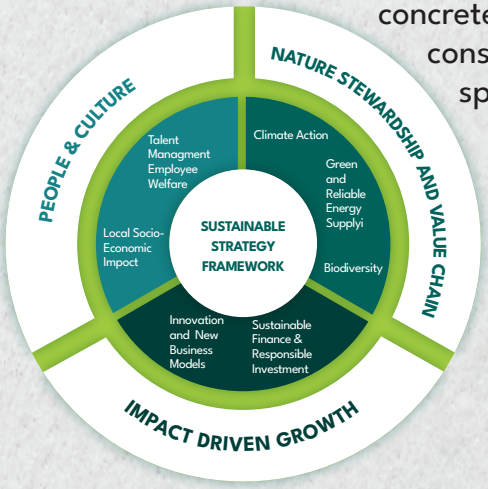
3.1 Climate change mitigation and adaptation strategy

Zorlu Enerji, within its sustainability strategy, evaluates its approach to combating climate change under three main headings: restorative operations and value chain, people & culture, and impact-focused growth. The climate crisis, along with biodiversity and the provision of green and reliable energy, falls under the restorative operations and value chain category.

Zorlu Enerji has long been contributing to the reduction of greenhouse gas emissions by investing solely in renewable sources. Its primary business is to provide clean and reliable energy supply by transitioning away from fossil fuels, thereby ensuring the transformation of its existing operations in a renewable manner. The company commits to generating all its energy from renewable sources by 2030 and aims to facilitate carbon-free growth not only in its own operations but also for its customers. To stay competitive in carbon-free markets pioneered by Europe and other major economies and contribute to our country's competitive power, Zorlu Enerji, starting from Zorlu Group companies, is working towards carbon-neutralizing the entire value chain by 2040.

In addition to addressing the climate crisis, Zorlu Enerji also takes significant measures to prevent the loss of biodiversity, another crucial issue. It invests in preserving and promoting biodiversity in the regions where its operations and facilities are located, aiming to invest 10 million Turkish liras by 2030 in biodiversity conservation and development, fully complying with international frameworks. Thus, the company not only mitigates potential negative impacts resulting from its activities but also takes concrete steps towards the conservation and enhancement of species diversity in our country.





Aligned with the company's strategy, Zorlu Enerji supports 17 of the Sustainable Development Goals in connection with its key priorities.

Impact Driven Growth

Innovation and News Business Models

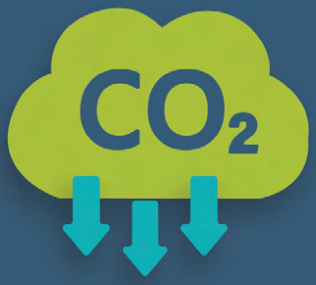
Sustainable Finance and Responsible Investments

Transition to Low Carbon Technologies

Strong Economic Performance

Nature Stewardship

Green and Reliable Energy Supply



Transition to Low Carbon Technologies

Deforestation

Biodiversity (Biodiversity Loss and Deforestation)

Health and Safety

Climate Action (Fighting Against Climate Change)

People and Culture

Helath and Safety

Brand Reputation

Local and Socio-Economic Impact

Inclusion, Equality, Diversity

Corporate Governance and Behavior

Talent Management and Employee Welfare

Human Rights

Prosses Safety

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

17 PARTNERSHIPS FOR THE GOALS

3.2 CLIMATE-RELATED RISKS

With the increasing importance of global warming and climate change, these risks have become a top priority for companies. In this regard, TCFD categorizes these risks into two types: physical risks and transition risks.

Physical risks stem from climate events such as forest fires, storms, and floods, representing both acute and chronic impacts. Economic actors are exposed to the acute physical risk of more extreme weather and climate events.

On the other hand, transition risks involve policy actions taken to transition the economy away from fossil fuels. These risks are about developing climate policies to limit greenhouse gas emissions and deploying "climate-friendly" technologies to achieve a specific warming limit. Transition risks are related to business impacts following societal and economic changes towards a low-carbon and climate-friendly future. They may include policy and regulatory risks, technological risks, market risks, reputational risks, and legal risks.

In this context, climate change-related risks expose companies to different risks in the short, medium, and long term. Zorlu Enerji defines its short, medium, and long-term risks as follows:

Time period	Year
Short term	0-3 year
Medium term	3-10 year
Long term	10-30 year

3.2.1 Physical Risks From Climate Change

Zorlu Enerji's climate change-related direct risks constitute risks directly related to its operations.

Risks	Term	Affected Facilities	Description	Zorlu Enerji Actions
Extreme temperatures	Medium term	Geothermal Power Plants	Geothermal power plants generate electricity using hot water or steam extracted from underground. However, extreme hot weather can reduce the temperature difference between the underground and the air, which can lower the efficiency of turbines and generators. A lower temperature difference can prevent geothermal energy plants from operating at maximum capacity, resulting in reduced power output. This situation can affect the potential for geothermal energy production.	The design and operation of geothermal power plants are carried out in a way that adapts to extreme temperature conditions.
Extreme temperatures	Medium term	Geothermal Power Plants	Extreme temperatures can cause expansion in the fluid communication lines of geothermal power plants, leading to loosening and sagging.	The design and operation of geothermal power plants are carried out in a way that adapts to extreme temperature conditions.
Extreme temperatures	Medium term	Wind Farms	Turbines and blades are crucial components used in wind turbines. However, during extreme weather conditions, such as high temperatures, the operating conditions of the facilities can have adverse effects on the performance and durability of the turbines and blades.	Designs are made taking into consideration the effects of extreme temperatures on turbine and blade selection and operation.
Extreme temperatures	Medium term	Hydroelectric Power Plants	An increase in temperature can lead to increased evaporation of water, resulting in a decrease in water resources and electricity production in hydroelectric power plants. The prolonged and widespread impact of temperature rise can make it difficult to ensure a regular and sustainable supply of water for hydroelectric power plants. High temperatures can alter the flow rate and discharge of water, affecting electricity generation.	The design and operation of hydroelectric power plants take into account the management of water resources and the impacts of climate change. The control and maintenance of the plants are regularly carried out.

Risks	Term	Affected Facilities	Description	Zorlu Enerji Actions
Extreme temperatures	Medium term	OEDAŞ	Extreme temperatures can cause electrical transmission lines to expand, leading to slackening and sagging of the lines. The physical deformation of the lines can weaken their structure and increase the risk of faults occurring. Moreover, it can lead to insulation breakdown and reduced sealing, resulting in leakages and higher chances of faults in the lines. Additionally, high temperatures can make it more challenging for the lines to carry electrical currents, leading to increased energy losses.	During the construction of electrical transmission lines, materials capable of withstanding extreme temperatures are used. Additionally, maintenance and repair works are carried out to detect potential issues, enhance the resilience of the lines, and protect insulation materials.
Extreme cold	Medium term	OEDAŞ	Extreme cold temperatures can cause contractions in electrical distribution lines. The type of material used in the lines may exhibit a tendency to contract in low temperatures. Additionally, connection points in the electrical lines can increase the risk of contraction, especially at flexible connection points and joints where contractions are more likely to occur. Another effect of low temperatures may arise from the transportation of electrical lines over long distances. Different temperature zones along the length of the line can lead to varying degrees of contraction in the lines.	In the construction and installation of electrical distribution lines, materials and protective coatings that enhance their resistance to different temperature conditions are used. Additionally, regular inspections and maintenance are conducted on the lines, connections, and poles to ensure their durability.
Precipitation and floods	Short term	OEDAŞ	Heavy rains and floods can cause damage to electrical poles and structures. They may also disrupt the insulation materials and lead to leaks in the lines. Submerged lines may experience decreased conductivity and increased resistance, resulting in energy losses. Floodwaters can also affect the infrastructure near electrical lines. Damages to roads can make it challenging to access the lines for repairs. Precipitation and floodwaters can harm equipment like transformers and low-voltage boxes, leading to power distribution disruptions. Moreover, water can cause corrosion in equipment, shortening their lifespan and increasing maintenance costs.	The design and construction of electrical distribution lines and infrastructure are done to be resilient to rainfall. Suitable insulation and waterproof materials are used in the lines to prevent water damage.

Risks	Term	Affected Facilities	Description	Zorlu Enerji Actions
High wind speed and storms	Long term	OEDAŞ	Severe winds can knock down or damage electrical poles and structures. Especially extraordinary weather events like storms or hurricanes can cause serious damage to the power lines and result in power transmission disruptions. High-speed winds can cause the lines to sway and create sagging. This may lead the lines to come into contact with other structures or cause damage to the lines. Strong winds can also uproot trees or break branches, posing a risk of cutting off and damaging the electrical lines. Additionally, high-speed winds can cause harm to equipment such as transformers and low-voltage boxes, leading to power distribution interruptions and energy outages.	During the construction of the power lines, designs and construction materials suitable for severe winds are used. Regular maintenance and pruning are conducted to keep branches and trees away from the lines.
Changing precipitation types	Short term	Hydroelectric Power Plants	Hydroelectric power plants are directly affected by different types of precipitation. The availability of water directly impacts the production capacity of hydroelectric power plants as they may not function efficiently when the water level falls below a certain threshold. Additionally, changes in water stress pose risks for hydroelectric power plants.	The design and operation of hydroelectric power plants take into account the effects of climate change. Water regimes are regularly monitored, and the level of water stress is periodically analyzed to detect potential issues that could lead to power outages in advance.
Change in wind speed and direction	Long term	Wind Farms	Changes in wind speed can affect the energy production potential of wind turbines. Lower wind speeds can reduce energy production, while severe winds can challenge the durability of the turbines. Variations in wind intensity in regions can impact the installation locations and efficiencies of wind turbines. Changes in wind resources between regions can also lead to variations in energy production potential.	Turbine designs that can operate and withstand higher wind speeds, strong gusts, and changes in wind direction are being developed. Additionally, locations are selected taking into account the expected variations in wind speeds throughout the lifespan of the turbines.
Icing	Medium term	Wind Farms	Icing can occur on the blades, rotors, and other components of wind turbines. This situation can reduce electricity generation of wind turbines and even pose safety risks.	To prevent icing, regular maintenance and cleaning procedures are carried out on wind turbines. Icing-resistant heaters are also used.

Risks	Term	Affected Facilities	Description	Zorlu Enerji Actions
Icing	Medium term	OEDAŞ	In cold climates or at high altitudes, icing is a significant issue for electricity transmission lines. The formation of ice and frost layers on transmission lines negatively affects electricity distribution.	To prevent icing, regular maintenance is carried out on the lines. Additionally, measures such as coatings and insulation to reduce icing, as well as regular monitoring of weather conditions and meteorological data, are taken.
Icing	Medium term	Hydroelectric Power Plants	The risk of icing in hydroelectric power plants is particularly significant in cold climate conditions. Icing in these plants can lead to various issues and adversely affect the electricity generation of the power plants.	Waterways and inlets are regularly cleaned and maintained. Precautions are taken by monitoring meteorological data and predicting the possibility of icing in advance.
Increase or decrease in precipitation	Short term	Thermal Power Plants	Decreased rainfall can lead to a reduction in local water sources and lower water levels. This situation may make it challenging for water-intensive thermal power plants to meet their cooling water needs. On the other hand, increased rainfall can also impact thermal power plants. Especially due to the higher moisture content of coal, it can lead to a decrease in coal quality (and combustion efficiency).	In case of the cooling water source being affected, alternative water sources are being considered. To prevent a decrease in coal quality, the coal coming to the power plant is regularly analyzed.
Temperature rise	Medium term	Thermal Power Plants	High air temperatures can lead to a reduction in environmental water sources. This situation may cause challenges for thermal power plants in meeting their cooling water needs and result in a decrease in electricity generation capacity. Steam cycles or gas turbines used in thermal power plants may operate with reduced performance and result in decreased energy production during high temperatures. Moreover, high air temperatures can cause facilities and equipment to overheat and operate under excessive load. This can jeopardize the safety and durability of the facilities and may lead to serious malfunctions or even explosions.	In case the cooling water source is affected, alternative water sources are considered. The facilities and equipment are designed to withstand temperature changes, and regular inspections are conducted to ensure their proper functioning.

Risks	Term	Affected Facilities	Description	Zorlu Enerji Actions
Temperature rise	Medium term	Gazdaş Trakya and Gazdaş Gaziantep	With the increase in average temperatures across the country, it is expected that the average temperatures during winter months will rise in the long term. The rise in average temperatures is anticipated to lead to a decrease in natural gas consumption nationwide. The decline in gas consumption will result in revenue losses for Gazdaş Trakya and Gazdaş Gaziantep in the long term.	Price formation mechanisms and market movements are monitored.
Labor force decrease due to temperature rise	Medium term	All facilities	High temperatures can lead to health problems among workers and negatively affect their performance.	Actions are regularly taken in the fields to prevent workforce losses due to temperature increases. Some of the measures taken include proper ventilation, providing sufficient water to the workers, giving regular breaks, and adjusting working hours to be compatible with the temperature.
Erosion	Medium term	Hydroelectric Power Plants	Erosion can cause damage to the structures of dams and canals. Weakened or eroded structures can lead to cracks, collapses, or other serious safety issues over time. This puts the durability of dams and other water diversion structures at risk and can increase the risk of flooding. The sediment carried by erosion, such as sand, gravel, and other particles, can accumulate in the reservoirs of hydroelectric power plants, reducing their storage capacity. This can decrease the energy production capacity of hydroelectric power plants and adversely affect their efficiency. Moreover, sediments can block waterways and affect cooling or water supply systems of facilities. This can make maintenance more challenging and lead to malfunctions. Furthermore, erosion can cause damage to the blades of hydroelectric turbines and other equipment due to friction and abrasion caused by the particles carried in the water. This can increase maintenance costs and reduce efficiency of the facilities.	Regular maintenance is carried out in hydroelectric power plants.

Risks	Term	Affected Facilities	Description	Zorlu Enerji Actions
Siltation	Medium term	Hydroelectric Power Plants	Siltation is the process of accumulation and deposition of sand, gravel, mud, and other surface materials carried by rivers or streams, which can accumulate in storage areas or waterways. In hydroelectric power plants, siltation can lead to issues such as reduced storage capacity of reservoirs, clogging of turbines and waterways, deterioration of water quality due to reduced dissolved oxygen caused by accumulated materials, and the time-consuming and costly process of regularly cleaning accumulated sediments.	To prevent siltation, reservoirs and waterways are regularly cleaned.
Extreme temperatures	Medium term	Jericho Güneş Santrali	The increase in air temperature can have a negative impact on solar panels, which consist of photovoltaic cells that generate electricity from sunlight, affecting the performance of solar energy systems. As the air temperature rises, the electricity generation in solar panels may decrease, leading to overheating and damage to the panels, panel deformations, and an increase in resistance at wiring and connection points. These factors can result in energy losses and other adverse effects.	To enhance the performance of solar energy systems, the proper installation and regular maintenance of panels are carried out.
Rainy and cloudy weather	Short term	Jericho Solar Power Plant	Rainy weather, cloudy days, or heavy rainfall can obstruct direct sunlight from reaching the solar panels. This situation can reduce the daily production of the panels.	To enhance the performance of solar energy systems, the panels are mounted at the correct angle and regular maintenance is carried out.
High speed winds	Long term	Jericho Solar Power Plant	Strong winds can cause damage to the surface and frame of solar panels, potentially leading to panels flying or getting dislodged. Solar panels are typically mounted on fixed or inclined structures. High-speed winds can weaken or damage the mounting structures, completely halting energy production and requiring repairs for the system.	The wind conditions and wind speeds in the area where solar panels will be installed have been taken into consideration. The installation has been carried out with durability and long-lasting performance of the solar energy systems in mind, and maintenance and wind resistance measures are taken periodically.

Risks	Term	Affected Facilities	Description	Zorlu Enerji Actions
Extreme weather events	Long term	Jericho Solar Power Plant	Extreme weather events such as floods, typhoons, tornadoes, and severe storms pose various risks to solar systems. Typhoons, tornadoes, severe storms, and strong windy weather can cause solar panels to fly away, break, or sustain physical damage. This can render the panels unusable and lead to increased costs for repair or replacement. Floods, heavy rains, or torrential downpours can submerge solar panels underwater and cause water damage. Electrical connections and mounting structures of the panels can also be affected by flooding. Heavy snowfall or icing can cover the panels, preventing sunlight from reaching them and reducing their efficiency. Moreover, excessive icing can damage the panel structures. Dry and windy weather conditions can lead to the accumulation of dust, sand, and dirt on the panels. This can reduce their efficiency and necessitate regular cleaning. Additionally, extreme weather events can damage solar panel cables and systems.	To minimize the impact of extreme weather events on solar panels, the systems are installed and mounted in a planned manner. Additionally, regular maintenance and cleaning of the panels should be carried out.
Lightning	Long term	OEDAŞ	Lightning strikes can cause excessive current to flow through electrical transmission lines. This surge of current can damage the lines and electrical equipment, leading to malfunctions and disruptions in the power supply to users, resulting in extended outage durations. Lightning strikes can also ignite vegetation, structures, or other materials in the vicinity, increasing the risk of fires. The impact of a lightning strike can affect the insulation of electrical transmission lines, leading to insulation breakdown and potential contact between the lines and the ground, posing safety risks. In the case of high-voltage lines, lightning strikes can cause explosions, creating hazardous situations in the surrounding area.	To mitigate these risks, lightning protection measures are implemented in electrical transmission lines and power systems. These measures enhance the resilience of electrical transmission lines by absorbing and dispersing the effects of lightning, preventing damage to the lines and equipment, and reducing safety hazards. Adequate lightning protection measures have been taken to safeguard against the impacts of lightning, and electrical lines are regularly inspected and maintained to ensure their durability.

Risks	Term	Affected Facilities	Description	Zorlu Enerji Actions
Lightning	Long term	Wind farms	Wind turbines consist of tall structures and metal components, making them susceptible to significant damage and safety risks in the event of a lightning strike. A lightning strike can cause damage to the blades, body, or other structural elements of wind turbines. The high current and heat generated can lead to melting or burning of structural components. Lightning strikes can also damage the electrical cables, control systems, and other electrical equipment of wind turbines. This can result in decreased turbine performance and require repairs. Furthermore, lightning strikes increase the risk of fire in wind turbines. Electrical sparks or heat generated during a strike can lead to fires in the turbines.	Regular maintenance and inspections are carried out to enhance the safety and durability of the turbines.
The damage to underground cables due to soil movements resulting from floods and droughts	Medium term	All facilities	Severe floods can cause soil erosion and erode the soil layer beneath underground cables. This can result in cables being exposed and their protective coatings being damaged. Floodwaters can also lead to soil landslides and damage underground cables. Soil landslides can crush and break the cables. Floods may cause soil deposition and subsidence, exerting pressure on underground cables and causing damage. During drought periods, the formation of cracks in the soil can occur. These cracks can disturb the soil layer beneath underground cables and cause damage to the cables. Drought can lead to soil compaction and an increased risk of subsidence. This can also result in the surrounding soil being compressed and causing damage to the underground cables.	Underground cable systems have been installed considering environmental conditions and disaster risks. Regular maintenance and monitoring are carried out to detect damages to the cables.

Risks	Term	Affected Facilities	Description	Zorlu Enerji Actions
The damage to administrative buildings due to extreme weather events	Long term	All facilities	Severe rains and flooding events can cause company administrative buildings to be submerged and result in damage to the interior, including computers, furniture, electrical installations, and other equipment. Severe winds and typhoons can lift the roofs of company administrative buildings, shatter windows, and cause damage to the exterior facade. Tornadoes, which are rotating columns of air formed by severe winds, can cause serious damage to company administrative buildings or even completely destroy them. Severe storms can damage the structure of company administrative buildings and lead to water leakage inside. High temperatures can cause roofs to crack and exterior surfaces to get damaged. Additionally, excessive heat can lead to overheating of electrical equipment and increase the risk of fire. Extreme cold and heavy snowfall can cause roofs of company administrative buildings to collapse and result in other structural issues. Lightning strikes can lead to fires and cause extensive damage or destruction to company administrative buildings.	The design and construction of administrative buildings are done in a way to be resilient against disasters, and structural strengthening measures are taken. Additionally, businesses prepare for damage assessment and repair processes after disasters.
Storm	Long term	Wind farms	Storms can cause damage to wind turbines, including breaking or damaging the turbine blades. Severe winds can overload the rotating blades, leading to mechanical failures. Moreover, storms can exceed the structural integrity of wind turbines and cause them to collapse. Additionally, storms can harm the electrical equipment of wind farms, including generators and other electrical components. The foundations and structural elements of wind turbines can also be damaged by strong winds, compromising the stability of the turbine. Furthermore, storms can reduce the performance of wind turbines. Particularly, very strong winds can lead to turbine shutdowns or rotation at low speeds.	Wind turbines undergo regular maintenance. Additionally, structural reinforcement measures are taken for wind farms.

3.2.2 Transition Risks From Climate Change

Risks	Term	Description	Zorlu Enerji Actions
Carbon pricing mechanisms with evolving regulations	Medium term	The Paris Agreement entered into force in 2021, after being ratified by the Turkish Parliament. The climate law is still in the development phase, but like many other countries, we are trying to manage the crisis by prioritizing country-specific solutions to combat climate change. In this context, the Local MRV (Measurement, Reporting, and Verification) Regulation developed by PMR with funds from the World Bank has been in effect since 2015. The expected next steps include the implementation of the local ETS (Emissions Trading System) and Carbon Tax. Although these stages are planned to be put into effect within the next 5 years, an official date has not been announced yet. Emissions trading schemes generally aim to reduce emissions by setting quotas and defining penalties. They also create emission trading mechanisms by limiting emissions from emission-intensive industries. As Zorlu Enerji is a leading member of Turkey's energy sector and the owner of natural gas power plants, the likelihood of being subject to the ETS and CO_2 tax is high. This could lead to the following cost increases: • Being affected by carbon tax due to power plant-based emissions or production volume, • Adoption of new equipment standards and carbon dioxide equivalent (CO_2e) emission reduction technologies, • Establishing necessary corporate resources and systems to manage risks, • Ensuring compliance and renewal of existing equipment/processes.	Zorlu Enerji focuses on renewable energy production and aims to increase the share of renewable energy in total production to 100% by 2030. Energy consumption is targeted to be reduced through energy efficiency improvements to decrease carbon emissions. Projects such as GECO and SUCCEED, which involve Carbon Capture and Storage (CCS), are aimed at reducing the carbon footprint and increasing the share of green energy.
Developing regulations	Medium term	Zorlu Enerji closely monitors sustainability and low-carbon transition topics. As a reflection of this approach, it obtains 87% of its energy production from renewable sources in its operations in Turkey. However, a significant portion of its emissions comes from geothermal power plants, which are considered high-emission renewable sources. According to the European Geothermal Congress 2019 Report, the emission intensity of a geothermal power plant in Turkey is reported to be between 750 to 1,050 g/kWh when compared to a coal power plant (World Bank; 2015). Aligning with Zorlu Holding's Smart Life 2030 vision and the draft of the EU Sustainable Products Policy, institutions aiming to finance low greenhouse gas emission projects closely monitor emissions originating from geothermal power plants and observe consumer expectations. In this context, they carefully examine these emissions in their own risk analyses. The PMR (Partnership for Market Readiness) project, planned to impact high-emission industries, positions the Green Deal and NDC (Nationally Determined Contribution) studies as reference points.	The risk of carbon tax related to emissions from geothermal facilities is prioritized and taken into account in risk analyses.

[2] The World Bank launched a technical support program called the "Partnership for Market Readiness" (PMR) in 2011 to contribute to the efforts of developing countries in the global fight against climate change by facilitating greenhouse gas emissions reduction and effective use of market-based instruments in carbon markets.

Risks	Term	Description	Zorlu Enerji Actions
Decrease in demand for products and services	Medium term	The high emissions from geothermal power plants can have a negative impact on consumers. High emissions may damage the corporate reputation and affect the company's image and trustworthiness. As a result, market and brand value, market share, demand for services, access to new markets, and potential investors' perception of the company may be negatively affected. Furthermore, all these adverse effects can have a destructive impact on the financial situation and lead to negative financial outcomes. Customers may prefer low-emission projects promoted by I-REC. This may lead environmentally-conscious consumers to adopt low-carbon production models and start producing their own electricity. This, in turn, could lead to a decrease in demand for our products and services.	Zorlu Enerji places a strong emphasis on renewable energy production and aims to achieve a 100% share of renewable energy in total production by 2030.
Increased electricity consumption due to extreme heat	Medium term	The increase in electricity consumption due to extreme temperatures can bring along some risks in the electricity production sector. This situation can put pressure on the energy production and distribution system due to the rising electricity demand and pose various challenges. Extreme temperatures often lead to increased usage of air conditioners and cooling needs, resulting in sudden and high spikes in electricity demand that can strain the electricity production capacity. In case the capacity of energy production facilities is insufficient, it may lead to electricity outages or the need to implement energy consumption restrictions. The rising electricity demand can cause excessive loads on distribution lines and complicate energy distribution. Increased energy losses and overloading of distribution infrastructure can make it difficult to maintain a balanced energy supply.	Zorlu Enerji continues the process of adding additional capacity to its Kızıldere 3 and Gökçedağ RES power plants. The additional capacity is being prepared to meet the increasing electricity demands.

3.3 Impacts Of Climate Change On Our Activities

	Δ Air temperature	Δ Water temperature	Δ Water availability	Δ Wind speed	Flood and precipitation	Extreme weather events	Soil movements
Coal	1	2	1	-	3	-	1
Natural gas	1	2	1	-	1	1	1
Hydroelectric power plants	1	1	3	-	3	1	2
Wind power plants	1	-	-	3	1	3	1
Solar	1	-	-	1	1	1	1
Geothermal power plants	1	1	2	-	1	-	2
Electricity distribution and transmission	3	-	-	1	2	2-3	1

Δ= It represents change.

3= High impact; activities are likely to be significantly affected. Serious investments are required for precautions.

2= Medium impact; activities are moderately likely to be affected. Serious investments are not required for precautions.

1= Low impact; activities are unlikely to be affected. Existing control and monitoring measures are sufficient for precautions.

3.4 Financialization Of Climate-Related Risks

3.4.1 Financialization of Climate-Related Physical Risks

• Kızıldere II Geothermal Power Plant

It caused the loss due to the fact that the air temperatures in the region were lower than planned. As we can see in the pie chart below, while the total losses are 4,719 MWh, the losses due to physical risks are calculated as 175 MWh. The average annual Yekdem sales price for 2022 was determined as $105, and a total production loss of $18,375 was calculated.

• Kızıldere III Geothermal Power Plant

While the net production amount in the region was 80,987 MWh due to the higher than planned air temperature, 167 MWh production loss occurred due to the temperature change. In this case, the production loss was determined as $17,535.

• Alaşehir I Geothermal Power Plant

A total of 21,499 MWh production was made from Alaşehir Geothermal Power Plant. In addition, 421 MWh more production was realized due to the lower than planned air temperature. Another loss was 383 MWh due to equipment downtime and vaporizer pollution. In this case, the production loss due to the physical risk was determined as $44,205.

• Tercan Hydroelectric Power Plant

Due to the fact that the amount of water in Tercan Power Plant is below seasonal normals, the planned production in the feyezan season was not realized. Production was suspended in July, August and September in order to maintain the lake level due to the low incoming water and the priority of irrigation. In this context, the total loss was determined as 10,402 MWh, while the loss due to physical risks was determined as 9,764 MWh. The average market electricity sales price in 2022 was determined as 2,526 TL/MWh, and the production loss due to physical risks was determined as 24,663,864 TL.

• Kuzgun Hydroelectric Power Plant

Production was suspended at the Kuzgun Power Plant due to the low level of the lake. All loss in this context is equal to the loss arising from physical risks and is 370 MWh. In this case, production loss was calculated as 934,620 TL.

• **Atakoy Hydroelectric Power Plant**

Ataköy Power Plant did not produce due to the closing of the irrigation season. The total amount of loss occurred was determined as 4.002 MWh. Production loss of 10,109,052 TL was calculated in line with the average annual electricity sales price of 2.526 TL/MWh.

• **Mercan Hydroelectric Power Plant**

Due to the low amount of snow and rain falling at the Mercan Power Plant, the amount of incoming water was less than expected. In this case, all losses are due to physical risks. The loss was calculated as 322 MWh and 813,372 TL.

• **Çıldır Hydroelectric Power Plant**

The arid seasonal conditions in Lake Çıldır have caused the incoming water to be low. The loss was calculated as 386 MWh and 975,036 TL.

• **İkizdere Hydroelectric Power Plant**

Ikizdere Power Plant, in the period between January and December, had better snowfall in the winter period, prolonging the feyezan time and ensuring higher production. The coldness of March caused the water inflow to be delayed until April, and this situation continued to increase the water inflow in July as well. Although August and September were noticeably dry, the precipitation increased slightly in October. In this context, there was no loss due to physical risks and the net generation was calculated as 3.225MWh.

• **Beyköy Hydroelectric Power Plant**

During the period between January and December at Beyköy Power Plant, the precipitation amounts in the spring and summer months were below seasonal normals, causing the power plants in the upper basin to not produce. Although there was a slight increase in production in September, there was a serious decrease in production as of October due to the rains. In this context, the total loss was equal to the loss due to physical risk and was calculated as 4,590 MWh and 11,594,340 TL.

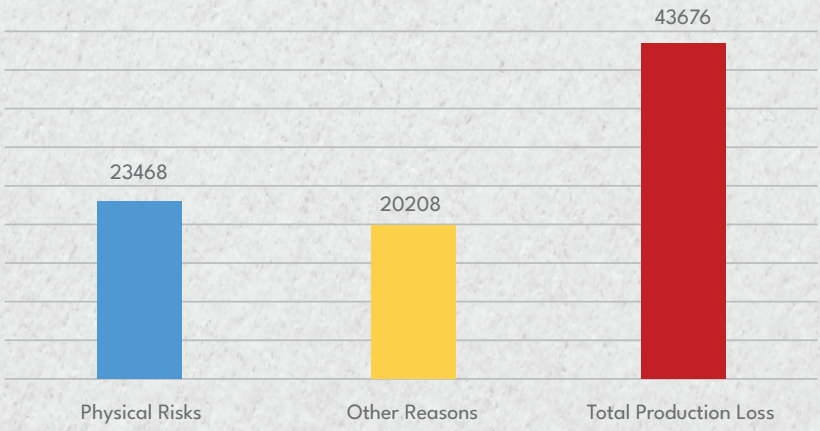
• **Gökçedağ Wind Farm**

At Gökçedağ Power Plant, the wind speed was 4.92 m/s in December, remaining below the December average of the last three years, 5.67 m/s. In the period covering January – December, the productions are planned by taking the average of the wind speed of the last 3 years. While the planned average wind speed in March, May, June, July, October, November and December was 7.43 m/s, it remained at 6.34 m/s. In this context, net production was determined as 25,345 MWh. Production loss due to physical risk due to wind speed has been calculated as 6.839 MWh equivalent to 17.275.314 TL.

- **Jhimpir Wind Farm (Pakistan)**

In December, production was 434 MWh below the budgeted one due to the wind. The total loss amount is calculated as 5,225 MWh. In this context, the average electricity sales price is calculated as 27.38 kWh/Rs production loss of Rs 11,883,000.

Production Losses Due to Physical Risks (MWh)



Gas Distribution

With the increase in average temperatures throughout the country, it is expected that the average temperatures in the winter months will increase in the long term. With the increase in average temperatures, gas consumption is expected to decrease across the country. Reductions in gas consumption will cause loss of turnover for Gazdaş Trakya and Gaziantep in the long run.

3.4.2 Financialization of Climate-Related Transition Risks

As of January 1, 2026, which marks the beginning of the main implementation period under the Carbon Border Adjustment Mechanism (CBAM), the import of products covered by the regulation can only be carried out by "authorized CBAM declarants." During this period, import and customs procedures can still be conducted through direct importers or customs agents (indirect customs representatives).

The implementation of CBAM is expected to have significant effects on the Turkish economy due to the country's intensive trade with the European Union. Ongoing studies are being conducted to measure the potential economic impacts of the sectors covered by CBAM on the Turkish economy. In-depth analyses are also being carried out to assess the possible costs triggered by CBAM under various carbon pricing scenarios, as well as the broader economic implications for GDP growth and the evolution of Turkey's greenhouse gas trajectory. Based on these studies, possible climate policy intervention options that Turkey should consider to mitigate the impact of CBAM and how these policies can be used to support green growth in the context of the Paris Agreement goals are being reviewed.

As of May 2023, the average carbon price under the EU Emissions Trading System (ETS) was set at 86 EUR. With the expected expansion of CBAM implementation in Turkey in 2024, a pricing range of 95 to 200 EUR is anticipated. The establishment of a possible market in Turkey is foreseen to align with the existing EU ETS at a price range of 20 to 50 EUR.

SCENARIOS	ASSUMPTIONS
• Business As Usual (BAU)	• BAU scenario that assumes no CBAM is implemented or domestic carbon price is implemented
• Scenario 1: CBAM carbon price	CBAM implementation that assumes an allowance price of: • **Low**-CBAM: EUR 75/tCO_2e • **High**-CBAM: EUR 150/tCO_2e
• Scenario 1: CBAM carbon price • + Domestic ETS in 2024	The CBAM scenarios assume the implementation of 3 domestic carbon price levels: • **Low**-CBAM: EUR 75/tCO_2e + **Low**-Domestic carbon price: EUR 20/tCO_2e • **High**-CBAM: EUR 150/tCO_2e + **High**-Domestic carbon price: EUR 50/tCO_2e

EU ETS allowance price

- CBAM certificates would mirror the EU ETS allowance price

19 January 2023

3.5 Climate-Related Opportunities

Opportunities	Opportunity Type	Term	Description	Actions
Participation in the voluntary carbon market	Transition	Short Term	In Turkey, there is currently no mandatory carbon market. However, each year, public awareness regarding climate change and sustainability is increasing, leading to a rise in renewable energy projects. Most renewable energy projects in Turkey are focused on assets that contribute to emission reduction. These emission reduction projects are developed in accordance with the rules of voluntary carbon markets (such as VCS or Gold Standard) by applying to the United Nations Framework Convention on Climate Change (UNFCCC).	Zorlu Enerji, as part of its emission reduction efforts, obtains verification services from accredited third parties and incorporates advanced technological assets that contribute to emission reduction. As a result, it generates additional revenue based on electricity production from renewable sources each year.
Participation in the mandatory carbon market	Transition	Short term	Mandatory carbon markets offer incentives to companies and industries to reduce carbon emissions and adopt environmentally friendly practices. This transition provides advantages to companies in terms of both supporting environmental sustainability and developing financial and business strategies. In mandatory carbon markets, energy companies can buy or sell carbon credits or carbon units. Companies with low carbon emissions may have excess credits, which they can sell to other companies in need, generating revenue.	Zorlu Enerji obtains verification services from accredited third parties within the scope of emission reduction efforts and incorporates advanced technological assets that contribute to emission reduction. As a result, it generates additional revenue each year based on electricity production from renewable sources.
Increasing demand for products	Transition	Long term	Turkey is a developing country, and with the increasing digitization and industrial production, per capita energy demand is rising every year. According to the International Energy Agency (IEA) report, in the low scenario, energy demand in Turkey will increase by at least 6.7% annually.	Zorlu Enerji owns electricity generation facilities and also invests in electric charging stations. This investment not only contributes to the transition to a low-carbon economy but also provides a green solution to the electricity supply. Zorlu Enerji supports renewable energy production by investing in solar panel manufacturing in Turkey. By engaging in different areas of electricity generation and sales, it aims to benefit from the increasing demand for our products and services with a holistic approach.

Opportunities	Opportunity Type	Term	Description	Actions
Changes in consumer preferences	Transition	Medium term	Zorlu Enerji provides 87% of its electricity from renewable sources such as geothermal, hydroelectric, and wind power, which aligns well with the increasing public awareness about climate change. Especially in B2C companies, the growing consumer demand for the use of renewable energy sources creates an advantage for the company when its services and products are based on green energy. The importance given to the environment, the sustainable corporate approach towards climate change, and the performance in these areas enhance the company's reputation in the eyes of stakeholders, particularly investors and customers. Another factor that can create an increase in demand due to changes in consumer preferences can be seen in the I-REC Certification. The Ministry of Energy and Natural Resources has announced that Renewable Energy Source Certificate (YEK-G) can be issued by renewable energy producers.	Zorlu Enerji registered 132,000 MWh of energy as YEK-G in 2021. The opportunity scenario is defined as an increase in demand for electricity from renewable sources, driven by the growing public awareness and the completion of IREC Certification regulations.
Development and/or expansion of low-emission goods and services	Transition	Medium term	Zorlu Enerji is a leading provider of electric vehicle charging stations in Turkey. While the transition to electric vehicles has already begun in the automotive sector, there is a need for further increase in the usage of electric vehicles. Supporting this increase with investments would be a positive contribution to facilitate the transition. All the energy provided to end-users for charging their vehicles comes from I-REC certified renewable sources. With this momentum, a 41% increase in electric vehicle usage is expected by 2030.	ZES provides charging services with clean electricity sourced from I-REC certified renewable energy sources at 1,570 points in 81 provinces across Turkey in 2022. The company aims to strengthen its leadership position in this field by increasing the number of fast-charging stations and standard charging stations in residential and commercial areas through collaborations with municipalities. Additionally, ZES offers services to end-users at approximately 15 locations in Northern Cyprus as part of its operations there. Furthermore, within the scope of the UNDP tender won in Montenegro, the company continues to install 15 dual-socket electric vehicle charging stations in 13 different cities across the country.

Opportunities	Opportunity Type	Term	Description	Actions
Transition to next-generation technologies	Transition	Medium term	Under the umbrella of Zorlu Enerji, there are 4 Horizon 2020, 1 Horizon Europe, and 4 TÜBİTAK (The Scientific and Technological Research Council of Turkey) projects. In addition, OEDAŞ, which is Zorlu Enerji's wholly-owned subsidiary, is involved in 4 Horizon 2020 projects and more than 15 EMRA (Energy Market Regulatory Authority) supported R&D projects. The reporting of European Union Horizon 2020 and Horizon Europe supported projects is carried out by the main coordinators of the projects through the European Commission Portal. TÜBİTAK projects are similarly reported through the ARBİS Portal and supported financially, technically, and administratively by Zorlu Enerji. EMRA-supported projects are reported to EMRA by OEDAŞ on a six-month basis. Driven by the motivation to provide accessible clean and reliable energy, the Company takes a leading role in developing the infrastructure of electric vehicle charging stations in Turkey, along with operating renewable energy power plants and electricity distribution services.	Zorlu Enerji prioritizes innovation and aims to reflect its vision in its targets by increasing the contribution of renewable and impact-focused businesses to the revenue by 20% by 2030. In 2022, the investment in R&D reached 25 million TL. Thanks to collaborations with the Horizon 2020, Horizon Europe Programs, EMRA, and TÜBİTAK, national and international projects have provided significant support for strengthening and developing the R&D capacity. The Zorlu Enerji R&D Projects can be accessed from the 2022 Integrated Annual Report.

3.6 Financialization Of Climate-Related Opportunities

Based on Zorlu Enerji's Integrated Activity Report data for the year 2022, the carbon offset amount is shown in the table below. Zorlu Enerji generated revenue from the sale of carbon credits in voluntary carbon markets during 2022.

Through the sale of carbon credits from the Gökçedağ RES Osmaniye plant, a revenue of 1,200,000 USD was obtained. The average selling price per ton of carbon was 6 USD.

At the Gökçedağ RES Osmaniye plant, renewable energy production resulted in an annual emission reduction of 250,000 tons of CO_2e, while at the Jhimpir RES Pakistan plant, an annual emission reduction of 100,000 tons of CO_2 was achieved.

Zorlu Enerji aims to prevent a total of 882,000 tons of annual CO_2 emissions through capacity expansion of 46.6 MW at Gökçedağ RES and the commissioning of licensed Tekirdağ Yeniçiftlik RES and Kırklareli Hamitabat RES, with a total additional capacity of 375 MW. The ton price for these plants planned to be commissioned by 2030 is expected to be 22 USD, providing a revenue opportunity of 19,404,000 USD from the sale of carbon credits.

Transfer Year	Company	Ton Co_2	Progres
2022	Caley	50.500	Completed.
2022	Climax	104.990	Completed.
2022	EcoAct	120.000	Completed.
2022	İş Leasing	907	Completed.
2022	Garanti Bankası	25.000	Completed.
2022	Carbon Clear	213.000	Completed.

I-REC Sales

In 2022, Zorlu Enerji met its electricity internal demand for the following facilities through renewable electricity generation from Alaşehir 1 Geothermal Power Plant and Kızıldere 3 Geothermal Power Plant. The electricity supplied to these facilities is documented with International Renewable Energy Certificates (I-RECs), confirming that it is sourced from clean and renewable energy. Zorlu Enerji generated revenue of 8,000,000 TL from the sale of I-REC certificates.

Voluntary Carbon Credits Potential from ZES Operations (Researching Opportunities)

Zorlu Enerji, which has made significant investments in recent years to promote the development of electric vehicles in our country, continues to expand its charging station network through its Zorlu Enerji Solutions (ZES) brand established in 2018, and certifies the electricity it provides from its stations with I-REC certificates, offering clean energy to its customers. As of the end of 2022, ZES has expanded its capacity to cover 81 provinces, 1,570 locations, and 2,840 sockets (vehicle charging capacity), and since its commissioning date, it has supplied 3,787,693 kWh of electricity to electric vehicles.

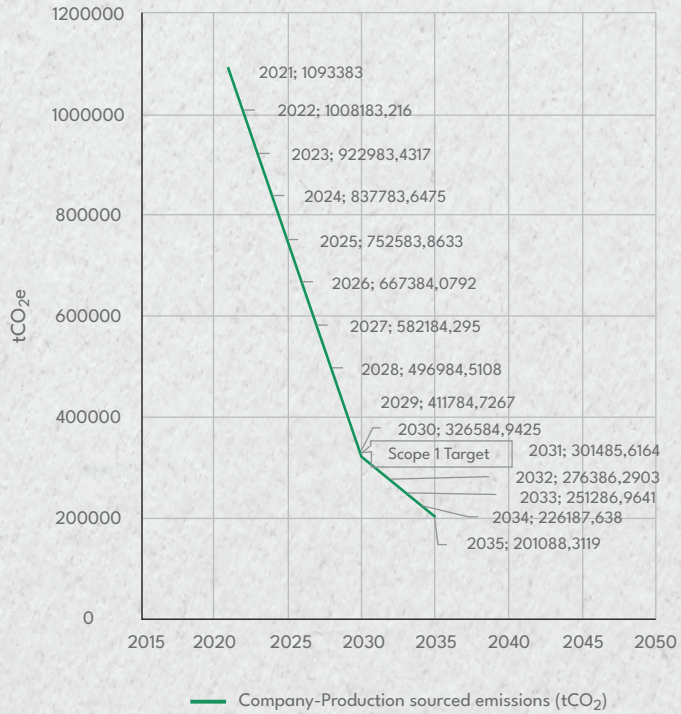
3.7 Climate-Related Scenario Analyses

3.7.1 The Scenario that Zorlu Enerji Must Follow to Achieve Science-Based Goals

Climate scenario analyses are a method used to assess the potential impacts and risks of specific climate change scenarios. These analyses help institutions and communities understand climate-related risks and develop strategies to adapt to these risks.

As part of Zorlu Enerji's Science-Based Targets (SBT) determination efforts, the scope required to achieve the zero-emission target by 2050 has been identified. The emission reductions to be followed for Scope 1, based on the accomplishments in 2021 and 2022, are provided below.

Chart 1 Sectoral Decarbonization Approach
Absolute Emission (SBTİ 1.5C)



3.7.2 Carbon Pricing Scenarios

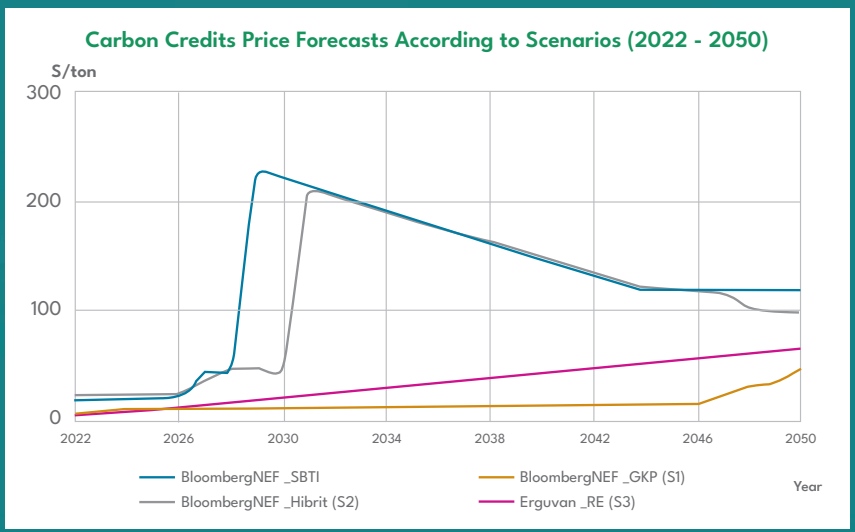
According to the scenarios for carbon price predictions between 2022 and 2050, four different scenarios are foreseen:

- **Bloomberg NEF Science Based Targets Initiative (SBTi) Scenario:**

The Science Based Targets Initiative is the largest third-party initiative that verifies emission reduction targets for companies. In October 2021, SBTi published the net-zero framework, enabling companies to take their science-based targets one step further and commit to fully reducing and/or offsetting their emissions by 2050. In this scenario, prices are expected to rise to $44/ton in 2027 and $224/ton in 2029 due to supply constraints. While prices are expected to gradually decrease by 2050, it is noteworthy that in this scenario, prices are not expected to fall below $120/ton.

- **Bloomberg NEF Hybrid Scenario (s2):**

In this scenario, the market undergoes a gradual transition. Initially, until 2030, it is assumed that there will be limited demand for credits from companies, and all types of credits will be available in the market. In this scenario, prices gradually rise to $48/ton by 2030. In 2031, with the impact of SBTi, the market faces a supply shortage, and prices go up to $207/ton. In this scenario, the average prices are expected to gradually decrease to $99/ton by 2050.

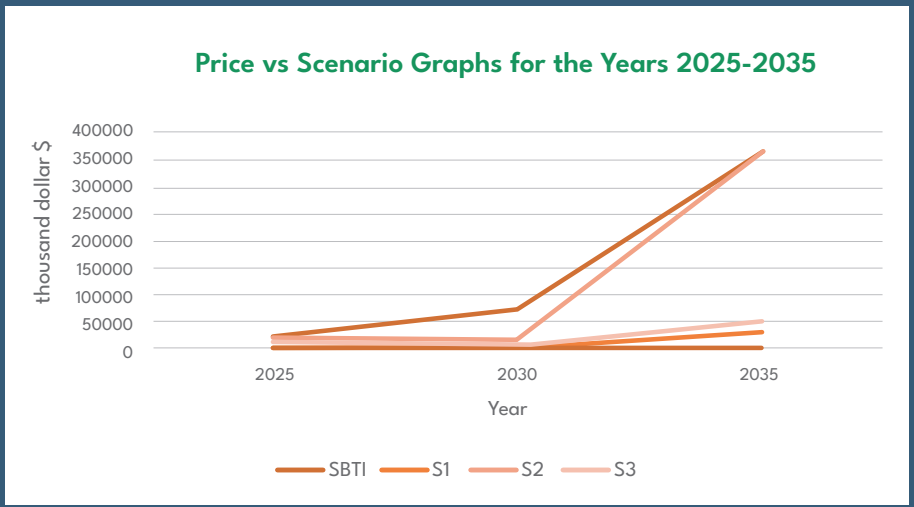


- **Bloomberg NEF Voluntary Carbon Market (VCM) Scenario (s1):**

Initiatives like SBTi and Verra establish quality standards for the types of offset credits that can be purchased and used by companies based on their quality and sectors. If these standards are successfully implemented, the potential supply offered to corporate buyers can be absorbed. Additionally, there is a possibility of countries being included in the global carbon market. Considering all these possibilities without harming the market, the predictions suggest that prices will not rise until 2040. Prices are estimated to reach an average of $14/ton in 2040 and $47/ton in 2050.

- **Market Representative Renewable Energy Scenario (s3):**

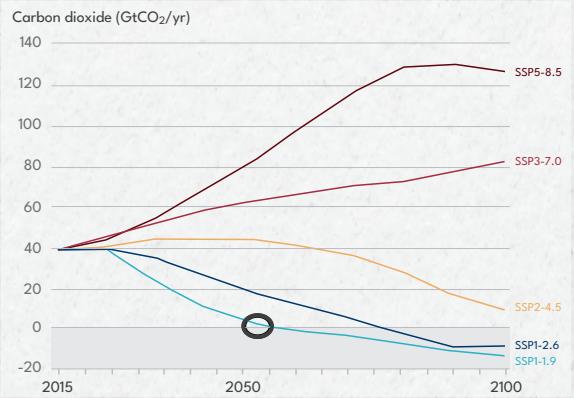
In addition to the above-given prediction scenarios, the market representative (carbon market broker) has provided their own price forecast used for developing their business plans. In this scenario, it is envisaged that by 2030, carbon credits generated by renewable energy projects will reach $22.

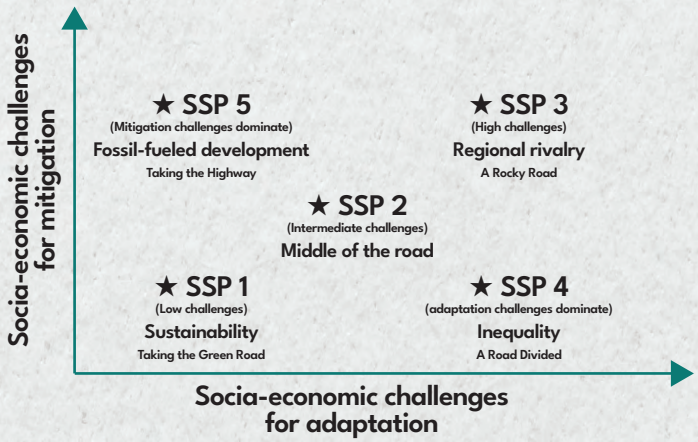


3.7.3 Zorlu Enerji's Climate Change Scenario to Achieve Net Zero

Among the climate change scenarios defined in IPCC, SSP1-1.9 has been identified as the most suitable low-carbon transition scenario for Zorlu Enerji. With its renewable energy portfolio and investments supporting clean energy, Zorlu Enerji aims to achieve net-zero emissions by 2050, and thus, SSP1-1.9 serves as the basis for their approach.

The SSP1-1.9 scenario is the most optimistic and aggressive scenario outlined by IPCC, depicting a world where global CO_2 emissions reach net-zero around 2050. Societies shift their focus from economic growth to overall well-being, transitioning to more sustainable practices. Investments in education and healthcare increase, leading to reduced inequality. Although extreme weather events become more common, the world has managed to avoid the worst impacts of climate change.





4. RISK MANAGEMENT

Zorlu Enerji determines the scope of risk management in parallel with the priorities of the organization and stakeholders and in an integrated manner with other group companies within Zorlu Group.

Zorlu Enerji takes actions to enable early identification of internal and external risks that may jeopardize the continuity and development of its operations and to manage the identified risks in a centralized structure and conducts works towards this end.

Within the scope of risk management, Zorlu Enerji includes the priority issues of the organization and stakeholders in the risk assessment process and performs risk assessment in line with global trends.

Zorlu Enerji has conducted impact assessments under each category and disclosed the actions taken or planned for these risk factors. At this point, risk assessment was handled within the framework of the TCFD approach and climate-related risks were classified in a separate category. As an important actor in the energy sector, Zorlu Enerji has included both its production and distribution activities in its risk assessment. The priority issues for each risk factor, the actions taken and the scope of the risk are summarized as follows;

Accordingly, Zorlu Enerji has categorized its risks under 4 categories;

Accordingly, the risks identified in the World Economic Forum's 2023 Global Risk Report and Zorlu Enerji's high-priority issues were in line, and the identified risks were integrated into Zorlu Enerji's risk management process.

Risk Category	Risk Scope	Actions
Strategic Risks	•Reputation Risk •Geopolitical Risks •Energy Crisis •Regulatory Compliance Risk •Epidemic Diseases •International Political Risk •Cyber Risks •Social Risks	• In relation to new investment decisions, carrying out activities such as feasibility studies, cost-benefit analyses and budget studies in coordination with the relevant departments, • Diversification of the generation portfolio by investing in different energy sources, • Evaluation of legal, political, etc. risks before and after the investment by obtaining consultancy services when necessary, • Adopting different forms of management specific to the relevant investment, • Monitoring the return performance of the investments made, • Identifying innovative strategies for marketing and sales • Monitoring the operational risks that the Zorlu Holding Corporate Risk Management Department concludes to be significant based on its studies through key risk indicators via the information technologies system and informing the relevant business units about the risk levels when necessary • Providing all Zorlu Enerji personnel with regular mandatory training on occupational health and safety in line with the relevant regulations • Monitoring the recommendations of insurance companies to companies after risk inspections in a centralized structure • Commitment to compliance with the United Nations Global Compact and principles such as human rights, environment, society, ethics and anti-corruption • Ensuring multi-directional, consistent and continuous communication with all stakeholders of the company • Maintaining brand value and credibility; ensuring that all communication processes are managed in an integrated manner in line with strategic business objectives and representing Zorlu Enerji Marketing & Corporate Communications Directorate at the Directorate level within this framework • Managing regulatory changes, legal cases, tax disputes, infringement of intellectual property rights, unfair competition and related risks by communicating in coordination with all relevant units within the Company, • Conducting certain short-term rehabilitations and integrating new technologies • Considering the risks related to terrorist incidents, determining a wide insurance coverage within the Company and transferring potential risks to insurance companies to minimize their possible material effects
Operational Risks	• Supply Chain Risk • Profitability and Production Costs Risk • Risk of Rapid Change in Consumer Behavior	• Internal Audit, Financial Audit and Tax Audit Departments within Zorlu Holding auditing all operational activities, • Reporting and monitoring customer satisfaction by measuring it • Following policies and procedures related to compliance with legally prescribed standards regarding environmental health, stakeholder safety and stakeholder health • Recording and monitoring the maintenance and repair of machinery and equipment

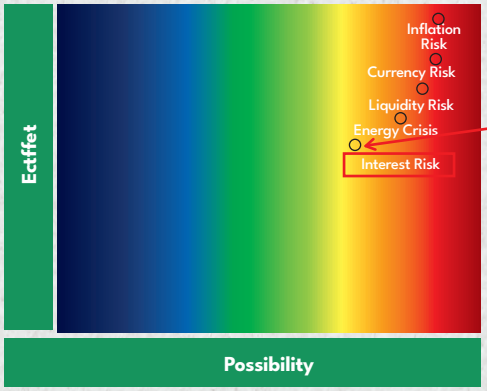
Risk Category	Risk Scope	Actions
Financial Risks	• Currency Risk • Inflation Risk • Liquidity Risk • Interest Rate Risk • Price Stability Risk	• Using alternative financing methods, • Ensuring balance sheet asset-liability balance, • Using various hedging derivatives when necessary, • Monthly monitoring of budget targets and realizations and making revisions when necessary, • Ensuring lending and collateral structure in line with credit risk policies
Climate-related Risks	• Global Warming and Climate Change Risk • Risk of Biodiversity Decline • Natural Disaster Risk	• Carrying out annual planned maintenance and repair works in distribution facilities, cutting the trees under the lines passing through forest areas in coordination with the Regional Directorates of Forestry against fire hazards, and redesigning the networks that have completed their economic life in a way that does not include such risks • In the event of a natural disaster or emergency, preparing the necessary plans to recover and restore the functionality of critical systems, technical infrastructure and facilities in alternative locations, reviewing business continuity and emergency action plans at regular intervals, organizing drills • Taking appropriate measures against unfavorable geographical and climatic conditions • Considering the risks related to natural disasters, determining a wide insurance coverage within the Company and transferring potential risks to insurance companies to minimize their possible material effects

Zorlu Enerji has included legal compliance and policy risks in its risk assessment process, and in this regard, it has evaluated the risks and opportunities that may arise after the European Green Deal. The current geopolitical context, combined with increasing energy prices and the negative impacts of climate change, is driving a transformation within the energy sector. Coal and natural gas, which are heavily used in Turkey, are being replaced by renewable energy sources. Zorlu Enerji, which produces all of its energy in Turkey from renewable sources, is demonstrating positive developments in managing this risk.

Conducting risk assessments under the headings of climate change and water stress, Zorlu Enerji has evaluated climate-related acute and chronic risks within the scope of TCFD reporting. These risks are specifically addressed in renewable energy power plants, where water resources play a significant role. Factors such as the efficient operation of these energy sources, potential disputes with local communities, and water distribution are also taken into account in the assessment.

Energy supply and security have been evaluated in an integrated manner with supply chain security. Zorlu Enerji prioritizes delivering uninterrupted and secure energy supply to end-users in the countries where it operates and has included this aspect in its risk assessment.

Considering the situations in the geographical locations and markets where its investments are located, Zorlu Enerji is in an advantageous position in terms of the evaluated risk factors. The company's activities, approach to sustainability issues, and corporate structure demonstrate its ability to seize numerous opportunities in the energy sector and in Turkey.



Risk Name	Risk Score (Possibility- Impact)
Inflation Risk	15,82
Currency Risk	15,48
Liquidity Risk	14,61
Energy Crisis	14,04
Interest Risk	12,40
Natural Disaster Risk	12,21
Global Warming and Climate Change	12,10
Geopolitics Risk	11,81
Price Stability Risk	11,64
Cyber Risks	11,57
Supply Chain Risk	11,06
International Policy Risk	10,75
Epidemic Diseases	10,52
Profitability and Production Costs Risk	10,47
Decrease in Biodiversity Risk	8,87
Reputation Risk	8,73
Society Risk	8,22
Rapid Change in Consumer Behavior Risk	7,67
Compliance with the Legistation Risk	6,49

4.1 Zorlu Enerji risk management

Zorlu Enerji implements an integrated and centralized corporate risk management system to identify potential threats to its business operations. This approach allows the company to consistently, efficiently, and economically identify, assess, and manage all risks. In this context, the risk management system aligns with the COSO Internal Control Integrated Framework and ISO 31000 Risk Management Standards. Following these guidelines, Zorlu Enerji also applies ISO 9001 and 14001 Management Systems procedures based on ISO 31000 Risk Management Standards.

With this structure, the company reviews risks and opportunities daily in its operations. The risk management approach enables the assessment, prioritization, and monitoring of risks. Additionally, the Corporate Risk Management and Finance Departments calculate the financial impacts of risks based on scenario analysis. The results of the conducted scenarios are shared with the Sustainability Board by the Corporate Risk Management Department, and risks are consolidated. The board maps all sustainability-related risks, and the most significant risks are communicated to the top-level management board to decide how to manage these risks.

At this stage, the Management Board reassesses the level of risk and determines the necessary measures. The Management Board shares its views with the Board of Directors and the CEO. The required actions are then taken based on the Management Board's recommendations and the approval of the Board of Directors and the CEO.

To effectively assess and manage these categories, an Early Risk Detection Committee is established within the Corporate Risk Management department. The committee is responsible for implementing risk reduction measures and managing risks. In 2022, the Early Risk Detection Committee convened 6 times to timely and accurately identify risks that could negatively impact operations.

During the risk assessment process, various criteria such as legal sanctions, probability, frequency, relevance, the number of affected businesses, timeframe, and impact level are taken into account. Risk mapping is done with the help of a previously established risk inventory. Economic, environmental, and social impacts are evaluated, and a SWOT analysis is conducted in accordance with the inventory, highlighting potential opportunities. The outcomes of all these efforts are then communicated to the Sustainability Board.

In line with the corporate risk management approach, "Sustainability Risk Categories" are defined as follows:

- Energy efficiency
- Natural resource utilization
- Emission reduction projects
- Legal requirements
- Environmental conservation
- Technology upgrades for efficiency
- Low carbon transition

The Sustainability Board acts as a unit that brings together data from various channels, including greenhouse gas and energy data submitted by facilities, environmental compliance indicators, SWOT analysis, stakeholder meeting results, and performance reports. Based on this information, Sustainability Board Coordination Meetings are held every three months to review and monitor environmental compliance and greenhouse gas reduction activities at the facilities.

[3] COSO, the most well-known model of internal control, is a framework that illustrates the relationship between the components of internal control and the objectives and activities of an organization. It enables a company's units and operations to achieve their goals with the help of the elements of internal control. The primary purpose is to continuously improve processes and create organizations that are cost-effective, more effective, and efficient.

[4] SWOT Analysis is a strategic technique used to identify the strengths and weaknesses of an organization, technology, process, situation, or individual, as well as to determine the opportunities and threats arising from the internal and external environment in a project or a business venture.

4.2 Managing climate-related risk process

Zorlu Enerji Group continues its activities through the Zorlu Holding Corporate Risk Management Department to proactively identify risks that could jeopardize the existence, development, and continuity of the company. The department also ensures the implementation of necessary measures concerning identified risks and centralizes the management of risks.

In this context, the Zorlu Holding Risk Policy and Procedures and the Corporate Risk Management Framework have been prepared, valid for all related companies operating under Zorlu Holding. Climate-related risks are considered an integral part of the general risk management framework, encompassing both physical and transition risks.

The Zorlu Holding Corporate Risk Management Policy is summarized below:

GOAL SETTING

- Incorporating risk management principles into strategic planning and goal setting processes
- Aligning the strategy and goals set with the Company's risk appetite

RISK IDENTIFICATION

- Identifying the risks and opportunities that may affect the Company's goals with the engagement of the entire organization in a coordinated manner and within the framework of a common perception

RISK ASSESSMENT AND INHERENT RISK

- Assessing the probability of risks and their impact on the Company in case of their occurrence
- Determining the value of risk before the actions taken and control activities, i.e. inherent risk

DETERMINING ACTIONS

- Addressing the risks in the most appropriate way (Risk Acceptance, Risk Transfer, Risk Mitigation, Risk Avoidance) by taking into consideration the risk appetite and cost/benefit factors
- Determining actions in line with the responses identified and managing the risks proactively

RESIDUAL RISK AND ACTION PLAN FOLLOW-UP

- Determining the value of risk after the actions taken, i.e. residual risk

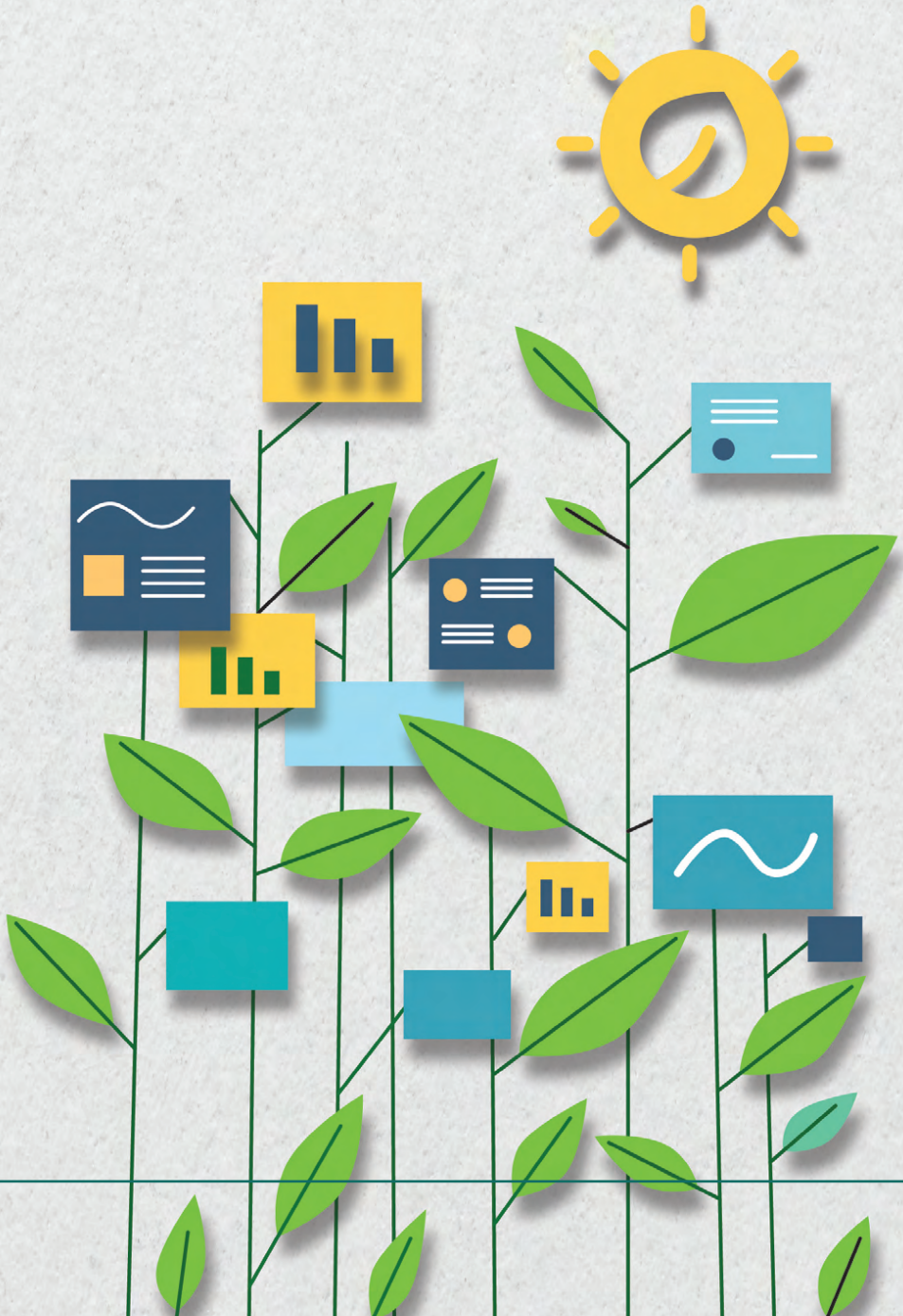
REPORTING AND COMMUNICATION OF RISKS

- Prioritizing the risks identified and monitoring them through Key Risk Indicators
- Measuring and reporting all other risks taking into consideration the control points via key risk indicators which give warnings
- Sharing all activities transparently and ensuring that risk management process is integrated into the decision- making mechanisms with the establishment of a culture of risk awareness across the entire organization

Continuous Monitoring

The Early Detection of Risks Committee has been established in accordance with the Turkish Commercial Code, the Company's Articles of Association, and the Capital Markets Board's Corporate Governance Communiqué, with the aim of identifying risks that could endanger the existence, development, and continuity of the Company at an early stage, implementing necessary measures regarding identified risks, and managing risks effectively. The committee continues its efforts to proactively identify threats that may have adverse effects on the Company's continuity and development, and to develop action plans to mitigate these threats and manage risks effectively.

To ensure adequate oversight of the corporate risk management processes, the Early Detection of Risks Committee convened six times in 2022. The decisions taken by the committee as a result of its reviews have been presented to the Board of Directors.



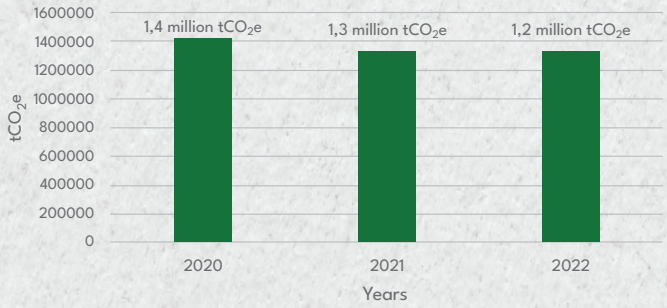
5. METRICS AND GOALS

Zorlu Enerji believes that in order to achieve a world powered entirely by green energy, it must start with its own operations. In this regard, the company is committed to decarbonizing its energy production and operations every day. By 2030, Zorlu Enerji aims to achieve net-zero emissions in its operations and energy production, and by 2040, it seeks to attain net-zero emissions across its entire value chain.

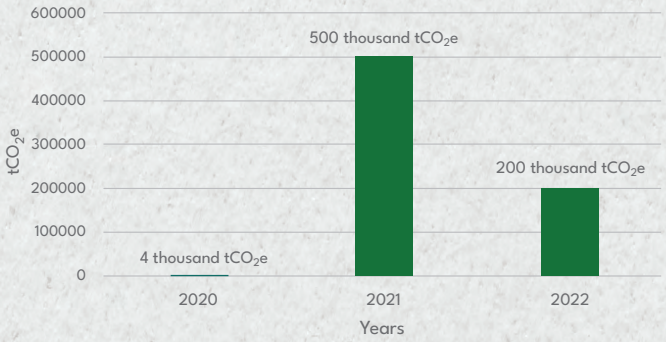
5.1 Combating the climate crisis

Title	Goals	Performance Indicator	Base Year	Progress		
				2020	2021	2022
Climate Action	Achieving net zero in operations and energy production by 2030	Scope 1-2 emissions (tCO_2e)	2020	1,4 million (tCO_2e)	1,3 million (tCO_2e)	1,2 million (tCO_2e)
	Achieving net zero across the entire value chain by 2040	Scope 3 emissions (tCO_2e)	2020	4 thousand (tCO_2e)	500 thousand (tCO_2e)	200 thousand (tCO_2e)
Green and Reliable Energy Supply	Increase the share of renewable energy in total generation to 100% by 2030[5]	Percentage of energy production	2020	%99,9	%99,9	%99,9

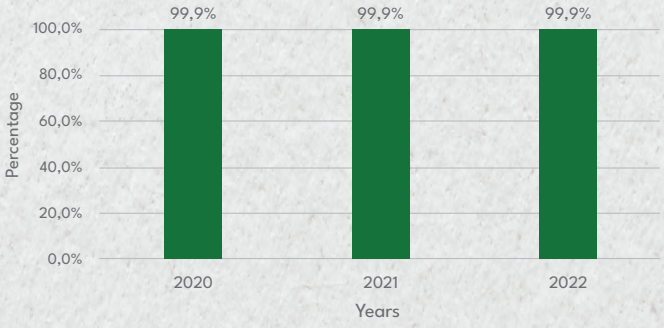
Achieving net zero in operations and energy production by 2030



Achieving net zero across the entire value chain by 2040



Increase the share of renewable energy in total generation to 100% by 2030



[5] Production in Turkey has been taken into account, production from thermal power plants that are operated due to the instructions of the Ministry of Energy and Natural Resources and maintenance processes have been excluded from the scope.

Zorlu Enerji is aware of the importance of reliable and sustainable energy supply for all sectors. The company emphasizes the conservation of energy resources, optimizing energy usage in all its activities, and promoting responsible energy consumption. In line with these objectives, Zorlu Enerji regularly measures energy consumption levels, evaluates findings, and strives to make improvements wherever possible.

Zorlu Enerji is committed to promoting efficient energy use and responsible energy consumption. The company consumes non-renewable energy sources such as natural gas, diesel, gasoline, LPG, and coal. With a strong sense of environmental responsibility, Zorlu Enerji complies with all environmental regulations and conducts regular environmental risk assessments. The company prioritizes minimizing environmental impacts in all its activities, including construction, maintenance, and repair processes, and takes measures to prevent or reduce direct and indirect effects on the environment and human health. These measures include proper waste disposal procedures, efficient use of natural resources, and preparedness against potential accidents and disasters that could harm the environment.

As part of its Sustainability Policy and strategy, Zorlu Enerji invests in high technology to prioritize energy efficiency while also investing in domestic, renewable, and clean energy sources in the fight against the climate crisis. Thanks to recent investments in renewable energy, as of the end of 2022, renewable energy accounts for 87% of Turkey's production portfolio. The company continues its efforts to be the most effective, visionary, and technology-developing player in wind, hydroelectric, solar, and geothermal energy, as well as solar energy in Turkey.

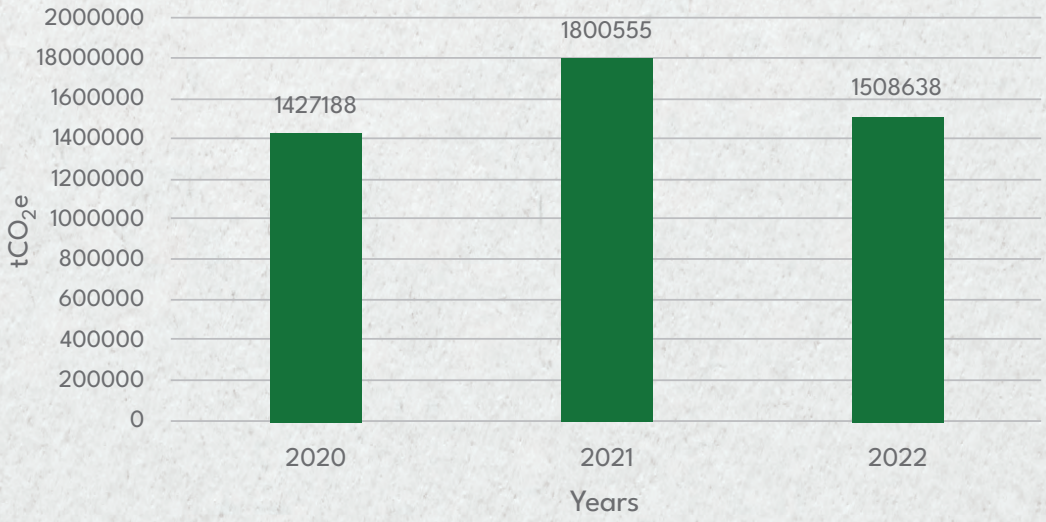
GHG Emissions

Zorlu Enerji always operates with an environmental responsibility approach, focusing on energy efficiency, sustainable energy production, distribution, and consumption, efficient use of water resources, and reducing greenhouse gas emissions in all its activities. Given the high level of greenhouse gas emissions from the energy sector in which it operates and aiming to mitigate its adverse effects on the climate crisis, Zorlu Enerji is committed to meeting set targets, including the Paris Climate Agreement, and working intensively to achieve net zero carbon emissions by 2050. The company is actively working on Science-Based Targets (SBTi), aligned with the global 1.5˚C adaptation goal, as part of supporting its sustainability objectives, and plans to disclose its targets by 2024.

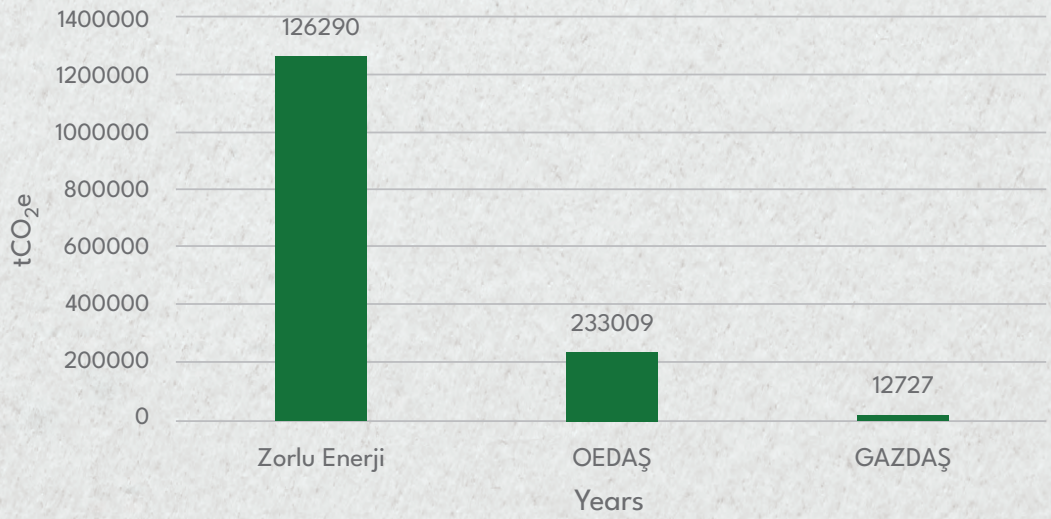
Without excluding any aspect mentioned in the ISO 14001 Standard, Zorlu Enerji has calculated and verified direct and energy indirect greenhouse gas emissions arising from its operational activities, covering all group companies. The company has measured its carbon footprint in the sector, verified it, and shared the results with investors and other stakeholders through platforms like CDP (Carbon Disclosure Project) and its Sustainability and Integrated Activity Reports. Zorlu Enerji became the first company in the Electricity Distribution Sector to calculate and verify its carbon footprint upon joining OEDAŞ (Distribution System Operator).

In 2022, Zorlu Enerji's total Scope 1 and Scope 2 greenhouse gas emissions amounted to 1,063,477.93 tCO_2e and 232,456.77 tCO_2e, respectively. Scope 3 emissions, which include fuel-related activities not covered in Scope 1 and Scope 2, production-related waste, procurement, business travels, and personnel services, amounted to 212,703.06 tCO_2e in 2022. OEDAŞ reported Scope 1 and Scope 2 emissions of 202,718 tCO_2e, while Scope 3 emissions of 30,291 tCO_2e were attributed to distribution activities and reported under Scope 2.

Total GHG Emissions (tCO_2e)



Sector Breakdown Emissions in 2022 (tCO_2e)

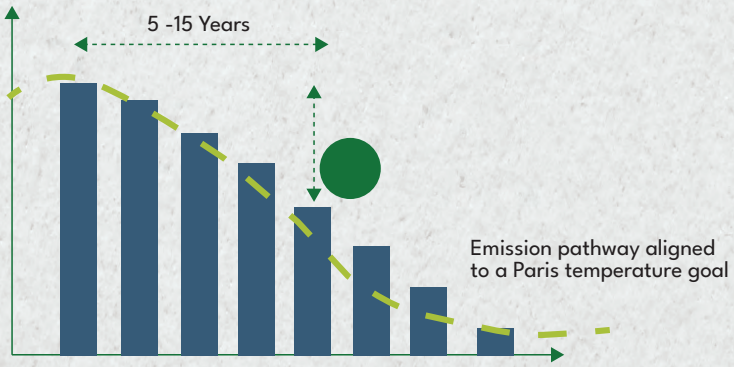


5.2 Our goals and performance indicators for combating the climate crisis

Science Based Target Project (SBTi)

"We continue to develop our goals towards achieving 'Net Zero'!

Zorlu Enerji, with its vision of becoming the "energy company of the future," has committed to developing its Sustainability Strategy, embracing the climate action dimension, and setting "net-zero emissions targets" for 2030 and 2040 in line with the "Science-Based Targets " approach. As a groundbreaking move in the Turkish energy sector, Zorlu Enerji has publicly shared its commitment through the Science-Based Targets Initiative (SBTi) and declared its responsibility to limit global greenhouse gas emissions in line with the Paris Climate Agreement goals to 1.5˚C, creating a science-based and traceable roadmap by 2024.



Zorlu Enerji, with its vision of becoming the "energy company of the future," has committed to developing its Sustainability Strategy, embracing the climate action dimension, and setting "net-zero emissions targets" for 2030 and 2040 in line with the "Science-Based Targets[6]" approach. As a groundbreaking move in the Turkish energy sector, Zorlu Enerji has publicly shared its commitment through the Science-Based Targets Initiative (SBTi) and declared its responsibility to limit global greenhouse gas emissions in line with the Paris Climate Agreement goals to 1.5˚C, creating a science-based and traceable roadmap by 2024.

CDP-Carbon Disclosure Project

Zorlu Enerji became the first energy company from Turkey to participate in the Carbon Disclosure Project (CDP) in 2010, joining the initiative for Carbon Transparency. By doing so, the company started reporting on its corporate policies, targets, carbon emission levels, and reduction goals related to climate change. Since 2011, Zorlu Enerji has been sharing its carbon footprint with the public in a transparent manner annually as part of the project.

ISO 14064 Greenhouse Gas Verification

As the first energy company in Turkey to comply with the ISO 14064 Greenhouse Gas Verification Standard, we conduct emission verification and obtain certification. We continuously work on tracking, monitoring, and reducing greenhouse gas emissions resulting from our operations. The quantity and measurement methodologies of our greenhouse gas emissions are regularly verified. Zorlu Enerji conducts Greenhouse Gas Calculation and Verification in line with the ISO 14064 Standard for emission-intensive electricity generation plants and electricity distribution areas, and certifies these efforts.

United Nations Global Compact

Zorlu Enerji institutionalized the principles we have embraced since our establishment through our commitment to the United Nations Global Compact (UNGC), which we became a signatory to in 2019. These principles have been enshrined within an international framework of commitment.

Signatory of the 2˚C Declaration and Climate Platform

Zorlu Enerji is a signatory to the COP 17 Durban initiative, the 2˚C Declaration, and a founding member of the Climate Platform-Turkey Climate Change Leaders Group.

Gold Standard Practices

Zorlu Enerji achieved Turkey's first carbon emission project by obtaining the Gold Standard Certificate and integrating into the Voluntary Carbon Market with the Gökçedağ Wind Power Plant Project, which was launched in Osmaniye in 2010. The Gökçedağ Wind Power Plant has a installed capacity of 135 MW and achieves an annual emission reduction of approximately 300,000 tons of CO2 equivalent.

In Pakistan, Zorlu Enerji took on the project design, installation, and operation of the country's first wind power plant with a capacity of 56.4 MW. By obtaining the Gold Standard certificate in Pakistan, Zorlu Enerji became the first company to receive such recognition. The wind power plant contributes to an annual emission reduction of 100,000 tons of CO2 equivalent in Pakistan, creating capacity for renewable energy investments and promoting technology transfer, which is considered a significant step for countries like Pakistan.

The Gold Standard Certificate is globally recognized as the most reputable program, assessing renewable energy projects based on various criteria such as carbon emission reductions, environmental sustainability, and contributions to social development. Supported by over 80 civil society organizations worldwide and involved in the development of over 1100 projects, the program is administered by the Gold Standard Foundation.

Zero Carbon Footprint Forests Project

Zorlu Enerji implements the Zero Carbon Footprint Forests Project at the micro-level as part of its efforts to combat climate change and ensure a sustainable future. With the aim of raising awareness about climate change, the company calculates the carbon footprint of visitors and stands at all fairs and summits it participates in and initiates reforestation efforts in the regions where these activities are conducted. This project, which was initially launched as a social/environmental responsibility initiative, was expanded in collaboration with the General Directorate of Forestry, a subsidiary of the Ministry of Agriculture and Forestry, in 2017.

As of the end of 2022, Zorlu Enerji has carried out reforestation efforts with 520,000 saplings in the regions where it operates, following the guidelines of the General Directorate of Forestry's Memorial Forests regulation. With a target of 1,150,000 saplings, the project aims to plant 90,000 saplings each year.

2017: 35,000 saplings in Yeğenli/Tire-İzmir
2018: 70,000 saplings in Yenicekent/Buldan-Denizli
2019: 90,000 saplings in Salihli/Manisa
2020: 90,000 saplings in Nurdağı/Gaziantep
2021: 90,000 saplings in Nurdağı/Gaziantep
2022: 90,000 saplings in Erzincan

CONCLUSION

There is strong scientific consensus that climate change is occurring, predominantly due to human activities. The energy sector is particularly vulnerable to the anticipated changes in climate variables. The increased frequency and intensity of extreme weather events, higher temperatures, and projected sea level rise are expected to lead to various consequences. As a result, the energy sector in Turkey will also be affected by these risks.

Energy investment decisions require a long time, and power plants and grids typically last for 40 years or longer. This necessitates evaluating the potential impacts of climate change on such infrastructure, identifying the nature and effects of potential adaptation options, and assessing the technical and economic viability of some or all of these options.

This report aims to highlight and raise awareness of Zorlu Enerji's exposure to and vulnerability to climate change. It also discusses the existing adaptation options for each energy source and energy distribution. By following the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), Zorlu Enerji intends to transparently present its climate change risks, opportunities, and their financial implications to its stakeholders. The company will continue its efforts to combat climate change while maintaining its operations.

TCFD Recommendations

Section	TCFD Recommendations	Title
Governance	Describe the board's oversight of climate-related risks and opportunities.	Management of Climate-Related İssued
	Describe management's role in assessing and managing climate-related risks and opportunities.	Sustainability Management
Strategy	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	Climate Change Mitigation and Adaptation Strategy
	Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	Climate-related Risks, Financialization of Climate-related Risks, Climate-related Opportunities, Financialization of Climate-Related Opportunities
	Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2˚C or lower scenario.	Cimate-Related Scenario Analyses
Risk Management	Describe the organization's processes for identifying and assessing climate-related risks.	Risk Management
	Describe the organization's processes for managing climate-related risks.	Managing Climate-Related Risk Process
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	Managing Climate-Related Risk Process
Metrics and Goals	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Metrics and Goals
	Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks.	Metrics and Goals
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	Our Goals and Performance Indicators for Combating the Climate Crisis

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