Welcome to your CDP Climate Change Questionnaire 2021

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Reporting Scope

Zorlu Energy (ZE) CDP Report covers the services below;
Electricity Generation:

- Geothermal Power Plants(GPP)
- Hydro PP
- Wind PP
- Natural Gas PP
- Thermal PP

Electricity trade and sales
Smart solutions for energy use
The climate change strategy of the company is based on **net zero emissions from power generation** and also being **an enabler for low carbon economy transition through smart solutions** with electrical charging stations.
More than 88% of the emissions occurred from GPP and %91 from all renewable electricity generation in this report.
Zorlu Energy Group will report two more companies in CDP separately. One of them is the natural gas distribution and sales company (GAZDAS), and the other is an electricity distribution company (OEDAŞ). In this report, strategy, emissions and targets do not cover OEDAS and GAZDAS.

Company Profile

ZE carries out its activities with the vision of becoming the **energy company of the future**, in line with Zorlu Holding's Smart Life 2030 strategy, and with a focus on sustainability. ZE focuses on the environmental, economic and social aspects of its efforts for sustainability, and takes into account matters such as combating the climate crisis, reducing carbon emissions, sustainably using resources, achieving energy efficiency and energy supply security, investing in clean technologies, use and conservation of water, human and employee rights, equal

opportunity and corporate governance. In 2020 Zorlu Energy announced its sustainability and climate change strategy which strength with **Zero Emission Target.**
Despite the pandemic, ZE continued its operations uninterruptedly in 2020 and increased its revenues by 5% to 8.6 billion Turkish lira. In terms of green finance, the agreement with Garanti Bank which is signed in 2017 as the **fifth Green Loan Agreement (Loan Green) in the world and** the **first of its kind in Turkey continues, and our rating increases each year.**

Electricity Generation:

As of the end of 2020, the total installed capacity of ZE stands at 991 MW. ZE's generation portfolio comprises 7 hydroelectric, 1 wind, 4 geothermal (GPP), and 2 natural gas power plants in Turkey; 1 wind farm in Pakistan; 1 solar power plant in Palestine; and 3 natural gas power plants in Israel. The **share of renewable energy** in ZE's total installed capacity in Turkey was 34% in 2012, it has increased to **87%** as of the end of 2020 in Turkey.
%66 of our electricity production in renewable energy comes from geothermal power plants. ZE produces more than 20% of geothermal energy in Turkey with 305 Mwh. Alasehir GPP also **produces IREC certificates and 100,000 MWh certificate is issued in 2020.**

Smart Solutions:

ZES (Zorlu Energy Solutions) was established under ZE and **fast-charging stations** in the city and on intercity roads in 2019 were installed. Since now more than 149 charging stations in total are in place, we are the leading company with a 35% market share in Turkey in residential and business areas with **collaborations with municipalities**. The automotive industry is one of the pioneers in the low carbon transition through electrical cars and **ZES stands as an enabler** for this transition. Also in 2020 I-REC certification has been used for all electricity use and become carbon neutral for scope 2 emissions. ZES emissions are less than 0,1% of total ZE emissions.

Electricity trade and sales :

The scope of electricity trade only covers office services, electricity transmission and distribution are not in the scope of service. The emissions of electricity trade and sales are less than 1% of total ZE emissions.

Sustainability Strategy:

ZE defines sustainable energy as "generating and using energy in compliance with inter-generational justice approach without causing irreversible damages to the environment and destroying the ecological balance" and progressing rapidly to become **"the energy company of the future"**. The sustainability frame of the company focus on 3 pillars which are;
· Restorative Operations and Value Chain
· Impact Driven Growth
· Human & Culture
Restorative operations and Value Chain covers ZE's climate action in terms of mitigation and adaptation. The targets of ZE related to climate change are;

- **2030 Net Zero** with all operation and energy generation
- 100% Renewable energy generation by 2030
- 10 million TL investment in biodiversity loss and restoration

- 20% of total revenue from innovative business models
- Sustainable Financial sourcing for new projects in Turkey

In 2020 ZE emissions calculated as 1,203,056 tCO2 (Scope 1+ Scope 2) with 23 % decrease. To manage, keep sustainability structure strong, and increase the interaction between different disciplines ZE has a Sustainability Committee(SC)(led by the CEO) that reports to the corporate management committee for strategical coordination and then the board of directors as a decision-maker. The committee has working groups based on 3 pillars as defined above for tracking the actions and provide internal input.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years
Reporting year	January 1, 2020	December 31, 2020	No

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

Pakistan

Turkey

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

TRY

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C-EU0.7

(C-EU0.7) Which part of the electric utilities value chain does your organization operate in? Select all that apply.

Row 1

Electric utilities value chain

Electricity generation

Other divisions

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board Chair	The utmost responsibility for the overall management of ZE is on the Board Chair. The Board Chairman guide ZE in terms of strategies and policies by coinciding with climate change and renewable energy-related issues. The board chair of ZE is also the board chair of ZH and in 2020, ZH's "Smart Life 2030" transformation for a low carbon economy has been adopted as to ZE with the vision of the Board Chair.
Other, please specify Independent Board Member (Sustainability)	ZE independent board members selected from the professional names of business life to provide an independent and impartial point of view in decisions. Zorlu Energy board member for sustainability is a business strategist and responsible to guide the company about future expectations through qualitative researches. In 2020, the results of "Perception of Climate Change and Environmental Problems in Turkey 2020" research has been shared and one of the outputs of the report is "half of the society in Turkey sees the climate crisis as a bigger threat than the virus". With the vision of ZH and the qualitative research results, ZE set long term sustainability targets in 2020 which includes Net Zero Target by 2030.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain

Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets	ZE board of directors has utmost responsibility for management. The board chair is responsible for the strategy and policies. Board member (Independent Member (Sustainability)) has the responsibility to guide the company about future expectations through qualitative researches. With the leadership of the board of directors, Zorlu Energy announced its sustainability strategy and long term targets. While they are in line with UN-SDG's, support Zorlu Holding Smart Life 2030 targets. for transition to a low carbon economy. This strategy and budget of transition have been approved by the executive board.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Quarterly
Other, please specify Corporate Governance Committee	Both assessing and managing climate-related risks and opportunities	Quarterly
Sustainability committee	Assessing climate-related risks and opportunities	Quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

The utmost responsibility for the overall management of ZE is on **The Chairman of The Board**. He is responsible for the strategy and policies of ZH companies including ZE. In 2020, **Independent Board Member -Sustainability** has been appointed to the ZE board to provide an independent and impartial point of view in decisions including future expectations of business and the communities which cover sustainability and transition to low carbon economy. **The Corporate Governance Committee reports to the Board of Directors and is responsible for strategical coordination.**

Corporate Risk Management Department **consolidates all risks and reports sustainability-related ones shared with Sustainability Committee (SC) and CEO**. CEO is responsible;

- Directing the long-term corporate strategy,
- Performance review about climate change-related targets
- Engaging with national and international institutions regarding climate change negotiations
- Planning of new investments including R&D.

CEO is the leader of the **SC** consisting of high-level executives and managers of various departments as listed below, in the company. This wide range and high level of **SC** reports to Corporate Governance Committee and;

- Provide a holistic and comprehensive perspective,
- Bring expansion of sustainability knowledge
- Behaviour change in the company.

With the vision of **Smart Life -2030**, sustainability and climate-related issues are reevaluated in terms of risks and opportunities (R&O). In 2020 long terms sustainability targets including 2030 Net Zero Emissions have been studied by the **SC** and approved by the board of directors. **SC** consists of working groups in line with sustainability strategy and is responsible for both assessment and management of the climate-related R&O

Climate-related priorities of the workings groups are as follows,

- 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

Under these committees and priorities, the responsibilities are as follows,

Q-HSE Manager (Mng.);

Reporting of sustainability R&O & climate change target performance
Emission reduction target setting and performance review
Following international developments about climate change, env. and sustainability.
Identification of;
- Sustainability policies and strategies by assessing corporate GHG mitigation performance
-Climate policies by conducting climate change mitigation activities
-Assessment and management of defined risks by the business units

Risk Manager

Guidance on risk management methodologies

Internal Control Mng.

Performance revision and recommendations on climate change strategies in line with ZH Smart Life-2030.

As a part of risk management, guidance on supply chain management with the reference of Supply Chain Principles.
Monitor & identify current and emerging regulations in terms of climate change

HR Director

Improve communication channels and tools which allow employees to contribute to the sustainability & climate change mitigation activities
Manage the environmental and social contributions

Corporate Com. Group Mng.

Identify and manage green energy-related sustainability plans, programs, projects, and actions.
Review and manage corporate environmental policy, including the planning of climate-related initiatives
Evaluate ZE Plants' climate change and environmental performances
Monitor& report climate change mitigation activities

Env. and Corporate Affaires Mng.

Evaluate corporate R&O in the scope of sustainability & climate change principles and policies
Coordinate GHG management with site applications regarding environmental issues
Monitoring of environmental targets including emission reduction

Accounting Mng.

Prepare financial statements for GHG related decision making

Procurement Director

Manage Green Supply issues.
Application of Supply Chain Principles of ZH which contains management of supplier emissions

Investments Mng.

Recommend alternative solutions for the road map based on climate change R&O

Project Finance and Development Mng.

Monitor & Review energy generation projects with local and renewable energy sources.

QHSE Asst. Manager

Improve & manage data collection and measurement system for calculating the direct and indirect emissions and their annual revision.
Prepare ZE Materiality Matrix, which includes reduction of emissions and protection of the environment, energy efficiency, energy generation with local and renewable energy resources, Env. Management System targets (including Climate Change targets and ISO14064-1 system requirements), internal audit results, regulatory compliance matters, and CDP performance and action plans

Investor Relations Director, HEPP Rprs., WPP Rprs., GPP Rprs.

Evaluate plant wise GHG indicators and technical assistance

Electricity Trade Rprs.

Register CDM projects within the UNFCCC framework, Green Marketing issues

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	Zorlu Energy provides incentives to achieve the targets including climate-related performance indicators to accelerate the transition to low carbon economy and strength responsible production practices.

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity inventivized	Comment
Board Chair	Non-monetary reward	Behavior change related indicator Other (please specify) Value Chain Engagement.	The Board Chairman guide ZE in terms of strategies and policies by coinciding with climate change and renewable energy-related issues with a focus on adaptation & mitigation activities. In 2020 Net Zero Target has been set to low-carbon economy transition. The company committed to zero-emission for power generation, to increase the adaptation of electrical vehicles, charging station investments continued. This transformation needs behavior change not only in the company but also in all value chain. To support this 5,8 Mio TL has been invested for transformation collaborations as listed below; *1,6 Mio TL Social entrepreneurship ecosystem for finding solutions to environmental problems including climate change, *Procedures for incidental findings of historical, cultural and natural heritage assets; *Undertaking various studies such as access to clean water in villages. *Scholarships for students per year for training to equip them with the skills and competencies required by the 21st century. *To observe and experience the effects of digitalization in lives, ZH has established the Digilogue platform that combines different channels, disciplines, people, technology, artists and ideas.

Chief Executive Officer (CEO)	Monetary reward	Energy reduction target Efficiency project Behavior change related indicator Company performance against a climate-related sustainability index	Profit is shared as a bonus (monetary reward) by the achievement of the relevant indicators listed below; -Performance indicators include efficiency in electricity production from renewable sources. -Adaptation and mitigation activities in line with the sustainability policy of the company. -Reduction in energy consumption and fossil fuel resources consumption -Leadership on ZE sustainability targets set in line with Smart Life 2030, UN-SDG's and Zorlu Energy Sustainability Strategy.
Other, please specify Q-HSE Manager	Monetary reward	Emissions reduction target Behavior change related indicator Environmental criteria included in purchases	Q-HSE Manager has a target to; Achieve emission reduction targets, Support to Smart Life-2030 in terms of data development of data collection systems, leading science-based target development for 2030 Net Zero Emission target. A certain amount of profit is shared as a bonus (monetary reward) by the achievement of the relevant indicators like emission reduction target. ITs followed through scorecard systems. Some good project ideas are rewarded with rewards like monetary support in training, plane tickets to the city chosen etc.
All employees	Non-monetary reward	Behavior change related indicator	To raise employee awareness on climate change and low-carbon economy, environmentally positive action ideas to protect nature messages sent and the contest is carried out messages sent in line with the calendar prepared for special days with the theme of sustainability. In-house knowledge contests aim to deepen the knowledge of employees, especially in the field of sustainability.
Other, please specify Procurement Director	Monetary reward	Emissions reduction target Environmental criteria included in purchases	Zorlu Energy is committed to being net-zero by 2040 including scope 3 emissions. Most of the emissions occur from purchased products and the procurement director has a target to collect information from suppliers in terms of climate change. The requested data's are the amount of fuel consumption and the distance of purchased products. The procurement director has emission reduction regarding scope 3 emissions.

			If the KPI is achieved, a certain amount of profit is shared as a bonus.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	1	3	Scenarios create short-term risks and opportunities expected not to have wide variation. Short-term horizon outputs about climate change are mostly related to expected extreme weather conditions like storms, droughts, and floods. Also, foreseeable regulations about climate change are defined in short term.
Medium-term	3	10	Medium-term horizons are mostly based on the trends that may occur between 3 to 10 years and it's in line with the SDG target year(2030). The risks and opportunities defined for the medium-term are mostly board strategy level and contain strategical decisions to be in line with the low carbon economy transition. ZE expects to create an opportunity with electrical car charging stations in the medium time horizon.
Long-term	10	20	Long term horizon projection is mostly strategic planning to give guidance to our company about customer behavior or production model changes. It is also linked with our asset management, new investment plans in terms of geography and product development. Most of the climate change effects are expected to occur in this time horizon. Most of the risks and opportunities in this time horizon are related to technological developments and R&D.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

At Zorlu Enerji, we identify the sustainability-related areas that will be managed as climate crisis, green and reliable energy supply, biodiversity, talent management and employees with

high welfare, management of local socio-economic impacts, innovation and new business models, sustainable financing and responsible investing. We carry out our activities to meet expectations by continuously interacting with our stakeholders, to contribute to the improvement and development of our country's sustainable economy, to manage all risks in environmental and social areas, and to contribute to our society, focusing on human and nature through our production with renewable energy sources and clean energy investments.
In line with our sustainability strategy, we aim to become the catalyst for Turkey's sustainable and innovative growth. We follow the current trends during the reporting period and review our actions plans and future strategies from a sustainability perspective. Despite global and national economic volatility, we continued performing consistently, increasing our EBITDA to 2,420 million in 2020. In 2019-2020, we have also invested approximately TL 1,875 million.

Great bonding between business and sustainability strategy results with extensive application of risk management. All cases that may cause deviation to achieve our aims and objectives are defined as a risk in Zorlu Energy however different consequence types have different levels of risk appetite and tolerance levels.

The risk impact categories are defined as;

- Financial,
- Operational,
- Client
- Employee,
- Reputational
- Legal

Any risk results with interruption of electricity generation defined as substantive and **more than 6 million TL financial impact and opportunity creates financial income more than 3 million TL was rated as very high in the reporting year**. The impact rates are updating annually.
With the extensive application of ISO management systems, all departments are responsible to identify and report their risks to the Corporate Risk Management Department (CRM). CRM applies integrated risk management procedures and is responsible to merge the risks in terms of strategic and financial impacts to all businesses. Approval of strategic and financial plans are supported with the quantitative analysis of the risks and opportunities. Risks are categorized as per risk management procedure on a heat map. The criteria's to calculate the risks are impact, frequency, legal requirement and recorded previous cases of the risk. To financialize risk & opportunities, cost/benefit ratios are identified with the TCFD approach and defined action plans for high financial and strategical impacts are sharing with the CEO and boards of directors.
The outcome of the risk and opportunity assessment done in 2020, Zorlu Energy set its quantitative targets and committed to being Net Zero in Scope 1 and 2 since 2030 and Scope 3 in 2040. The investments in digital solutions and electrical vehicle charging stations continued to strengthen its vision to be the energy company of the future despite the financial recession because of Covid-19.
Strategical high impacts to the business are defined as;

- Effect 50% of clients
- Effect 50% of employees
- The bad reputation of the company on TV and digital platforms
- The operation shut down by official authorities

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations
Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

Zorlu Holding Corporate Risk Management enables early detection of internal and external risks that may endanger the business continuity and development of companies by taking necessary precautions with a centralized risk management structure that includes all Zorlu Energy businesses. Thanks to the Enterprise Risk Management we have implemented, we can identify, evaluate, and manage all risks of Zorlu Enerji as more consistent, efficient, and economical. We have implemented our Corporate Risk Management by the COSO (Committee of Sponsoring Organizations) and ISO 31000 Risk Management Standards. We assist them in achieving our Company's goals and objectives by managing the risks we have identified, not individually, but through a portfolio approach at a certain risk tolerance (risk appetite).

Risk management is integrated into all departments of Zorlu Energy from Executive Board to the divisions. All our power generation facilities are applying ISO 9001 &14001 Management Systems standards which are based on ISO 31000 Risk Management Standard. That creates a chance to review risks and opportunities daily within our operation.
Permanent change in the energy industry creates the need for close communication and consultation with internal and external stakeholders. In all facilities, we define stakeholders and their needs and expectations. This supports us while updating the

content of risk management.
Identification of the risk by the power generation facilities covers, defining the alternative solutions and the cost.
While defining the climate change and sustainability risks and opportunities, power generation facilities use our "Sustainability Risk Categories" which are;
*Energy efficiency
*Use of natural sources
*Emission reduction projects,
*Legal requirements,
*Protection of the environment,
*Technology updates for efficiency
*Low carbon transition.

All identified risks and opportunities are reporting to the “Corporate Risk Management Department” for consolidation. The autonomous and dynamic structure of Corporate Risk Management is crucial for identifying and measuring risks that may cause deviations of company targets. Sustainability related risks and opportunities are sharing with the “Sustainability Committee” by the “Corporate Risk Management”.

Besides facilities, the Early Risk Detection Committee, which we established for early detection of risks that could jeopardize our company’s existence, development, and continuity, implementing risk mitigation measures, and managing the risks, met six times in 2020 under the Corporate Risk Management Department within the scope of its duties.

We measure risks by evaluating them within the context of the probability of occurrence and effects when conducting a risk assessment.
A risk inventory was created during the risk management process, and the economic, environmental, and social impacts of our Company’s operations were assessed, primarily using the corporate risk management approach. After that, a SWOT analysis was performed to ensure that the inventory study was consistent, to identify topics that can be seen as opportunities, and to make it more versatile. New strengths and opportunities emerge as a result of the SWOT analysis, while the identified weaknesses and threats allow our company to branch out into new territory. Strong corporate management, operating with the Holding’s synergy, the Company’s inclusive sustainability approach, the Renewable Energy Resources Support Mechanism (YEKDEM) portfolio, the completion of the vertical integration of the customer portfolio, the high EBITDA margin, and international operations are among the company’s strengths according to the SWOT analysis. Considering the World Economic Forum’s global risks report; it is observed that geopolitical risks, climate action failure, biodiversity losses, natural resource crises, and regulatory uncertainty will pose threats to long-term strategic planning, changing customer demands in the increasingly digitalized energy market, economic fluctuations, and problems in production are the factors that our Company should prepare itself for. We believe that the increased potential for renewable energy investments in Turkey, as well as the opportunities that smart vehicles will bring, will play a significant role in our strategic and financial

positioning, along with studies on battery and energy storage, which will create many opportunities for our Company in the future and shape the sector.

Sustainability Committee Coordination meetings, held at quarterly intervals, bring an opportunity to review and discuss data submitted from all plants covering environmental compliance and GHG emissions reduction activities. Besides risk and opportunities from all plants, the Sustainability committee's other inputs are;

*GHG and Energy data's submitted from plants,
*Environmental compliance
*Swot Analysis
*Stakeholder Meeting Results
*Performance reports

Categorization on a heat map done as per impact and the frequency of the risk. All benefit/cost ratios are identified for the risks and defined action plans for high risks are sharing with the CEO and executive board. The major action plan approvals are under the responsibility of the executive board. CEO is responsible to monitor the progress in climate-related risks to control the long-term strategy of the company.

As a reflection of Smart Life 2030 vision of the executive board, ZE defined its target to invest in;
*Renewable energy to decrease the GHG emissions of the company with energy source mixture,
*Smart Grid
*Electrical Vehicle
*Charging Stations

As an example, the low carbon transition category was focused based on Smart-Life 2030 strategy. Transition to low carbon economy risks has been reviewed in all power generation plants. To manage the transition risks like behaviour change and low carbon transition Smart Life 2030 transition plan has been applied. For regulatory adaptation, we are directly working with policymakers or NGO's like TUSIAD.
In 2020, Zorlu Energy committed;
Net Zero for Scope 1 and 2 by 2030 and scope 3 by 2040 reduction
50% increase in R&D investments for solar power energy, electric vehicle charging stations.

The reports drafted by the Committee were submitted to the Board of Directors. Infectious disease risks were one of the factors we considered as part of our risk management during the Covid-19 pandemic in 2020.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Current regulation is considered in our risk/opportunity assessment because the Turkish government declared its incentives to local coal through Strategic Plan item A.2 PG1.1. The objective of this relevant item is to increase the electricity generation from local coal to 60 billion kWh by 2019 with respect to the base year of 32,9 billion kWh in 2013. Existing local coal-fuelled thermal power plants benefit from this incentive but ZE's business strategy is strictly clear about not installing any new fossil fuel power plants. ZE is also aware of the risk that incentives for fossil fuel might gradually lower. In this regard, there are also phase out and capacity decreasing processes going on with natural gas-fuelled power plants in ZE's portfolio. ZE's business strategy has a track record of being sustainability and climate change-oriented which was already accelerated with the 2030 Smart Life initiative started by Zorlu Holding. This orientation is now strengthened with Zorlu Holding's Net Zero pledge and ZE develops business plans according to these ambitious targets. ZE has 84 % of its global installed capacity in renewable energy power plants and also a growing network of e-vehicle charging points enabling ZE on the track to reach targets and benefit from the incentives for renewable energy sourced electricity. YEK-DEM is the incentive mechanism for promoting renewable energy investments in Turkey with a feed-in tariff for 10 years after the date renewable energy power plants start operation till June 2021.YEK-DEM is extended as a successive incentive scheme with updated feed-in tariff rates. Approaching the recent incentive scheme as an opportunity, ZE plans to continue its investment in renewable energy. Furthermore, IREC as an international standard for energy attribute certificates also enables ZE to issue renewable energy certificates. ZE uses certified green electricity in its operations particularly in e-vehicle charging networks and seizes this opportunity for guaranteeing %100 renewable electricity supply to its customers. ZE gives particular importance to the monitoring of carbon footprint and advocates sharing the carbon footprint with the public transparently through accessible media. In this regard, ZE complies with the only regulation directly related to climate change; MRV regulation which is in force since 2015 and publicly shares MRV results on verified data and submits official MRV results into the system of the MoEU.
Emerging regulation	Relevant, always included	Emerging regulations are considered in our risk assessment because of the ongoing PMR (Partnership of Market Readiness) project - funded by the World Bank- which will propose market-based emission

		reduction policy instruments such as emission trading system and carbon tax. The ongoing second phase of the project focuses on the draft climate law and emission trading scheme (ETS). The official announcement about ETS regulation is not done however by 2021 it may come into force. Since our business has coal and natural gas power plants for the electricity need of Zorlu Textile manufacturing plants any type of cap and trade system can bring us higher operating costs. Geothermal energy which is one of the commonly exploited renewable energy sources is not emission-free and incentivized in many countries as a reliable renewable energy source. In many recent researches, it is pointed out that many geothermal sites have high-emission characteristics. This may alter the regulatory framework supporting geothermal energy and lead to shrinkage of financial support by banks and governments. Also, carbon taxes might bring financial burdens on geothermal plants operated by Zorlu Enerji. Considering these circumstances, Zorlu Enerji takes such future changes as an emerging regulation risk and incorporates this into its risk assessment processes meanwhile taking part in R&D projects in CCUS (Carbon Capture, Utilization, and Storage) technologies. Due to the low-carbon economy transition plan of Zorlu Holding companies including Zorlu Energy to balance the GHG emissions of company investment for renewable energy projects are underway with other smart grid, electrical vehicle, and charging stations. Zorlu Enerji's business strategy is strictly clear about not installing any new fossil fuel power plants. Zorlu Enerji is also aware of the risk that incentives might gradually lower and integrates this risk into its risk assessment procedures. Hence, phase out and capacity decreasing processes going on with natural gas-fueled power plants. Emerging regulation that allows energy attribute certificate - known as YEK-G certificate - issuance for renewable energy sourced electricity. Zorlu Enerji approaches such regulations as an opportunity that will promote renewable energy use and attract a certain client profile interested in renewable energy consumption. Zorlu Enerji issued both YEK-G and IREC certificates and expects growing demand from existing and new clients.
Technology	Relevant, always included	Technology is considered as the main driver for the energy sector in general due to the use of high-tech and recently developed technologies. The use of more efficient technologies in energy generation, development of alternative fuels and carbon capture technologies play a key role in decreasing GHG emissions. Considering the 2030 Net Zero target, Zorlu Energy approaches

		technological developments as an opportunity for adaptation of current power plants to the future energy ecosystem. Zorlu Enerji sets its business strategy on the exploitation of future technologies and distinguished itself by being a pioneer in developing the infrastructure and network for e-vehicles in the Turkish market. In all fields of operation, Zorlu Enerji follows technological developments closely and invests in required information technologies and R&D activities accordingly. Under the umbrella of Zorlu Holding, Zorlu Enerji launched the Smart Life 2030 transformation plan for a low carbon economy. Smart Life 2030 prioritizes investments in: - Renewable energy to balance the company's GHG emissions, - Smart Grid - Electrical Vehicle (EV) - Charging stations of electrical vehicles. Zorlu Enerji focuses on these technologies taking into account the changing customer behaviour and demand for these products and services. Carbon capture and storage technologies are prioritized in R&D activities and investment plans and approached as an important enabler to achieve Net Zero targets.
Legal	Not relevant, explanation provided	Climate change is not defined in any law in Turkey and Kyoto Protocol and Paris Agreement are not ratified by theTurkish parliament. The only direct regulation impacting our industry is GHG Monitoring, Reporting and Verification which has no enforcement. In this context, climate change-related legal risks are not at a high level that may affect our company activities of Zorlu Enerji. Even though there is no legally binding potential financial burden and expected legal risk, any climate-related litigation is closely monitored and evaluated by Zorlu Enerji to be aware of potential risks. An example of such a case can be a lawsuit sued against a carbon emitter by a certain group of people adversely affected by climate change due to the carbon emitter's activities.
Market	Relevant, always included	Zorlu Enerji is aware that risks that arise from the market are of great importance to its business continuity and economic growth. Hence, market risk is always integrated into Zorlu Enerji's risk assessment procedures, particularly by considering the demand levels determined by customer behaviour, technological and social trends. Climate Change related changes in customer behaviour and product preference which can have impacts like decline in sales or change in product portfolio are evaluated and monitored by Zorlu Enerji. Zorlu Enerji approaches these risks rather as an opportunity since Zorlu Enerji's business strategy is in line with these change dynamics. Having 87% of its installed capacity in renewable energy, Zorlu Enerji plans to invest further in renewable energy power plants as an enabler to achieve decarbonization targets and meet the demand for emission-free services.

		In reference to the market trends and international reports, it is observed that electricity demand will grow with increasing life standards, electrification of existing technologies as well as energy-intensive new technologies. Under these circumstances, we expect a growing market inspite adverse dynamics like proliferating off-grid technologies.
Reputation	Relevant, always included	Reputation risk is considered in our risk assessment and evaluated rather as an opportunity because of Zorlu Enerji‘s corporate response and performance related to the environmental and climate change-related issues. Zorlu Energy's corporate sensitivity on environmental impact increases the good reputation of the company in the eyes of all stakeholders, especially investors and customers. Zorlu Holding's low carbon transition plan which is initiated as Smart Life 2030 and a continuation of Smart Life, Zorlu Energy has extended its efforts to Net Zero emission targets in 2030 meanwhile increasing R&D investments 50% in 2020. However, since the energy sector is one of the largest carbon emitters, Zorlu Enerji can face sectoral reputation risks due to the fact that action taken against climate change can be found insufficient by stakeholders. Zorlu Holding is one of the conglomerates that set ambitious goals for achieving Net Zero in 2030. Zorlu Enerji's business strategy which was already based on sustainability and climate change mitigatory activities is now in a further phase in the company scale. As a listed company, Zorlu Enerji takes reputation risk into account and stakeholder consultations are carried out during the planning and implementation phases of investments. In case of receiving negative feedbacks from external stakeholders, it is evaluated by the responsible departments and tried to be neutralized with respective measures. Zorlu Enerji also wants to create a positive social impact with its investments and prioritizes social acceptance of projects. Particularly in the regions of hydropower plants, Zorlu Enerji is aware of the use of water by neighbours particularly in irrigation periods in summer. Water management as well as having a minimum environmental impact and supporting biodiversity goes hand in hand with managing our power plants.
Acute physical	Relevant, always included	Acute weather events are considered highly relevant for Zorlu Enerji's operations. Even though many facilities like natural gas-fuelled thermal power plants and geothermal power plants are able to maintain required conditions, acute physical risks pose serious risks. For instance, natural gas is supplied through long pipelines like BTC (Baku-Tiflisi-Ceyhan Pipeline) which are directly exposed to extreme weather conditions. Other acute risks like terrorist attacks and wildfires are also always integrated into our risk assessment procedures. Considering the necessity of secure and reliable energy supply, delays at receiving gas and its distribution directly affect our

		production. Another issue is about the effectiveness of our equipment; both fossil fuel-powered and renewable energy power plants under our company may be affected by extreme weather events. The increasing frequency of extreme weather events like rainstorms, hurricanes, hails etc. are posing physical risks to dams, electricity grid networks, wind and solar power plants as well as other operational facilities. In this regard, Zorlu Energy takes into account such risk jeopardizing business continuity and integrates it into the risk assessment procedures.
Chronic physical	Not relevant, explanation provided	According to the IPCC 5. Assessment Report and IPCC 1,5 degree report, extreme precipitation patterns and droughts are expected to realize with medium confidence in our geography. It is also stated that in IPCC 1,5 degree Special Report on Climate Change in 2020, water scarcity is a high risk. Considering the fact that, stable conditions can be managed in natural gas and coal-fuelled electricity generation facilities, the availability of water is critical for the operations in hydropower and geothermal power plants. Particularly, the performance of hydropower plants are relying on water availability and rain regime which also has repercussions on society, environmental issues, and food security In this regard, climate change-related risks are integrated to risk assessment procedures and the required measures are evaluated.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical

Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact

Increased capital expenditures

Company-specific description

Zorlu Energy produces %100 of its electricity from renewable sources which is directly dependent on weather conditions. Weather conditions are one of the important scenarios that have financial impacts on production. Extreme floods or cyclones may cause interruption to our operation because of damage to assets. In scenario analysis one of the critical variable used was weather conditions based on IEA 1,5 Degree special report. While the maximum financial impact comes from the damage of switchyard damage that interrupts the transmission of the produced electricity, the minimum financial impact comes from the wind turbine damage.
Damage on switchyard or transmission line has to be solved with TEIAS, it is not only under the control of Zorlu Energy. A scenario of maximum impact is studied for geothermal power plant may continue to produce electricity which has an operational cost and at the same time switchyard or transmission line might be damaged which interrupts the sales of the produced electricity.
The minimum financial impact scenario due to the extreme weather conditions studied was for the wind farm and the damage of one turbine.
We acknowledge that given the estimated climate change and weather patterns are likely to get more off-balance, our production equipment is more likely to get affected.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

551,590

Potential financial impact figure – maximum (currency)

3,005,770

Explanation of financial impact figure

For the maximum impact, the scenario studied was based on a geothermal power plant that continues to produce electricity and damage occurred in the switchyard or the transmission line. The financial impact of the scenario is calculated as a one-day interruption of production in geothermal power plants. The guaranteed price for geothermal power energy is defined as 0,1 USD /kWh and in 2020 total energy

production was 1,565,058,786 kWh from geothermal power plants and average daily production was 4,287,832 kWh
4,287,832* 0,1 * 7,01 = 3,005,770 TL
For the minimum impact, we calculated the risk as interruption of power generation from one wind turbine. To calculate the financial impact daily production of WPP which is 1,124,088 kWh is estimated and it is multiplied with the guaranteed sales price for renewable energy which is 0,07 USD Cent/ kWh.
1,124,088*0,07*7,01 =551,590 TL

(1 USD currency accepted as 7,01 TL)

Cost of response to risk

15,000

Description of response and explanation of cost calculation

Interruption of electricity sales has financial impacts to our company but it has also a social and economic cost to electricity consumers and transmission line operating company because the balance on a transmission line is important for the assets. To manage the risk we monitor the transmission line and are fully in contact with TEIAS on regular inspections and preventive maintenance who is responsible for the transmission of the electricity.
We also have business continuity plans for crisis management like extreme weather events or earthquakes.
Finally, we have insurance for the damage to our assets. The cost of management damages on our assets that interrupt our electricity sales is equivalent to %0,001 of our revenue from power generation.

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation
Carbon pricing mechanisms

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

Paris Agreement has not been signed by the Turkish Parliament. However, like many other countries, country-based solutions to fight climate change are under progress. Local MRV Regulation is in force since 2015 and it is developed with the fund from

World Bank organized by PMR. The expected next phase is Local ETS (Emission Trading Scheme) or Carbon Tax and it is planned to be in force within 5 years however it is not officially announced

Emission trading schemes generally limit the emissions release from emission-intensive industries by assigning quotas and defining penalties and set up mechanisms for trading emissions reductions achieved. As a member of the energy industry in Turkey and the owner of natural gas power plants, Zorlu Energy is produced 321,538 Mwh (both steam and electricity) from Luleburgaz and Bursa Natural Gas Power Plants in 2020 and most likely to be subjected to this compliance and trading scheme this may lead to increased costs related to;
*Purchase of carbon credits to meet the emissions targets or,
*Carbon taxes applied to facility-based emissions or production volumes or,
*Adoption of new equipment standards and carbon dioxide equivalent (CO2e) emissions abatement technologies or,
*Required corporate resources and systems to manage risks or,
*Achieve compliance and retrofitting of existing equipment/processes.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

24,638,880

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Zorlu energy fossil fuel-based facilities subjected to MRV regulation has 102,662 tCO2 (Scope 1 emissions) and it is verified by a third party. This amount possibly will be subjected to a carbon tax. The financial impact calculated based on EU ETS price which is around 30 Euro /tonne. (1 Euro accepted as 8 TRY). The risk is calculated as 102,662*30*8 =24,638,880 TL.

Cost of response to risk

77,000

Description of response and explanation of cost calculation

At Zorlu Energy with our fossil fuel-based power plants, we mainly produce steam for textile. The natural gas PP creates financial risk due to emerging regulation.
Zorlu Energy set a 2030 Net Zero target and R&D studies continue under the Green and Reliable Energy Supply working group. The main emission source is steam production for Zorlu Textile Group and an engagement for R&D to decrease the emission studies has been carried out. The total budget for 2020 is defined as the cost of the response

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Upstream

Risk type & Primary climate-related risk driver

Chronic physical
Changes in precipitation patterns and extreme variability in weather patterns

Primary potential financial impact

Decreased revenues due to reduced production capacity

Company-specific description

Zorlu Energy has hydropower plants and as per IPCC 5th assessment report, rains will decrease all over Turkey except northeast of Turkey with medium confidence. It may cause low production due to decreased water levels in our hydropower plants. In 2020 the total production from hydropower plants was 273,737,962 kWh. A decrease in electricity production from hydropower plants is defined as a risk scenario.

Time horizon

Short-term

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,343,232

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Zorlu Energy has 7 hydropower plants in Turkey. In IPCC reports and local reports, the expected decreased levels are not defined and it is difficult to estimate. In our risk scenario 1% decrease calculated for all total hydropower plants to be conservative. The decreased amount multiplied with average sales price which is 0,07 USD for hydro. (1 USD accepted as 7,01 TL)

Cost of response to risk

17,030,000

Description of response and explanation of cost calculation

Due to the expected physical impacts of climate change such as reduction or change in precipitation patterns, we may have less water in our HEPP's.Renovation on existing HEPPs with inefficient production systems and enable increased electricity production from the same reservoir using the same amount of water. The most representative example of this management method can be given as our renovation investment initialized during the reporting year for our İkizdere HEPP. Before renovation, İkizdere HEPP had a production capacity of 111 million kWh/year. Following the initialized renovation, this capacity will be increased to 133.5 million kWh/year.

Comment

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation
Mandates on and regulation of existing products and services

Primary potential financial impact

Increased direct costs

Company-specific description

Sustainability and low carbon transition are strictly followed in Zorlu Energy from top to bottom. In Turkey operations, 87% of energy production comes from renewable sources however %88 of the emissions come from geothermal power plants. By source, it is a renewable source with a high emission however based on the European Geothermal Congress 2019 Report the emission intensity of a geothermal in Turkey might be higher than a coal power plant which is between 750 and 1.050 g/kWh (World Bank -2015). Due to the Smart Life 2030 vision of ZH, EU Sustainable Product Policy drafts, financial

institutions willing to finance low GHG emitted projects and consumer expectations emissions from geothermal power plants considered in the risk analysis.
Based on the Turkey NDC studies through PMR project and green deal regulation that will be in force and effect high emission industries. The risk on emission tax for geothermal based emissions has been considered in the risk analysis.

Time horizon

Medium-term

Likelihood

Unlikely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

204,522,508

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Total geothermal related scope 1 emissions under Zorlu Energy is calculated and verified as 1,080,927 tCO2 and intensity per kWh is 438 g CO2/kWh in 2020. Based on European Geothermal Congress 2019 Report the emission intensity for geothermal power plants was calculated as 122 g CO2/kWh and also stated that in Turkey it might be higher than a coal power plant which is between 750 and 1.050 g/kWh (World Bank-2015).
To calculate the financial impact of the risk with the TCFD approach the scenario defined from the IEA Sustainable Development scenario and we calculated the risk of high emission intensity. Unless we reduce our emission intensity from 438 g CO2 / kWh to 122 g CO2/kWh we might face a carbon tax for 861,042 t CO2. The average carbon price is accepted as 30 Euro per tonne. For medium-term time horizon financial impact of the risk calculated as 204,522,508 TL (1,080,927 - 228,750 = 852,177 t CO2 subjected to carbon tax) (852,177 * 30 = 25,565,313 Euro) (1 Euro for 2020 average currency accepted as 8 TL).
This target emission (228,750 tCO2) is also used in the geothermal intensity emission reduction target in section C4 of this report.

Cost of response to risk

2,400,000

Description of response and explanation of cost calculation

The Horizon 2020 Program is the largest research and innovation program in the European Union, which aims to take major discoveries, creative ideas and inventions from the laboratory to the world markets to create a more sustainable world. With €80 billion funding available over seven years, the Program will provide grant support to Zorlu Enerji for its participation in the GECO (Geothermal Gas Emission Control) Project, given the Company's successful performance in this field.

Various institutions and organizations from countries such as France, the UK, Italy, Iceland and Germany are taking part in the GECO Project. The project aims to conduct international field applications, test new equipment and technologies, and enable the exchange of know-how and experience to reduce emissions in line with the goals set forth in the "Mitigating Carbon Dioxide (CO2) Emissions from Geothermal Energy" under the section titled "Reducing the Costs of Electricity Generation from Renewable Energy Sources" in the Horizon 2020 Program. As part of the project, the injection of carbon dioxide gas into the reservoir to eliminate carbon dioxide emissions arising from the generation of electricity from geothermal energy sources will be tested in a total of four fields in Turkey, Iceland, Germany, and Italy. The budget of the programme is 1,000,000 Euro and 30% of the project cost is paid by Zorlu Energy. (1,000,000 * 0,3= 300,000 Euro) (Average rate for 2020 accepted as 8 TL/Euro) (300.000*8=2,400,000 TL)
The project officially began on October 1, 2018. The first general assembly for the project was hosted by Zorlu Enerji at the Kızıldere geothermal field on March 13-14, 2019. In the meeting, developments and work related to the consortium were presented. The third General Assembly, which was planned to be held in Germany on March 17-18, 2020, was held online via video conferencing due to the COVID-19 restrictions. Consistent with the studies conducted until June 2020, the consortium resolved to change the current technique for pumping carbon dioxide, and as a result of the decision taken by the consortium, the necessary budget increase was provided for this change. Accordingly, the grant support to be received by Zorlu Enerji has been increased by approximately 50%. Tender and procurement processes for the sourcing of materials and equipment required for carbon dioxide pumping are still underway.

Comment

Zorlu Energy is the only company in Turkey that works in the decarbonization of geothermal power plants.

Identifier

Risk 5

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Reputation

Shifts in consumer preferences

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Company-specific description

The emission intensity of geothermal power plants may create a negative impact on customers. Our renewable energy projects produce IREC certificates but customers may prefer low emission projects from IREC.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

500,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

In 2020 Alasehir Geothermal Power Plant is registered in I-REC and around 100.000 MWh is issued for the clients. In Turkey average rate of the I-REC certificates are around 5 to 10 TL. A yearly minimum of 500.000 TL (100.000 * 5 TL) is calculated as the risk value due to high emissions of geothermal power plants.

Cost of response to risk

2,400,000

Description of response and explanation of cost calculation

The Horizon 2020 Program is the largest research and innovation program in the European Union, which aims to make major discoveries, creative ideas and inventions from the laboratory to the world markets to create a more sustainable world. With €80 billion funding available over seven years, the Program will provide grant support to Zorlu Enerji for its participation in the GECO (Geothermal Gas Emission Control) Project, given the Company's successful performance in this field.

Various institutions and organizations from countries such as France, the UK, Italy, Iceland and Germany are taking part in the GECO Project. The project aims to conduct international field applications, test new equipment and technologies, and enable the exchange of know-how and experience to reduce emissions in line with the goals set

forth in the “Mitigating Carbon Dioxide (CO2) Emissions from Geothermal Energy” under the section titled “Reducing the Costs of Electricity Generation from Renewable Energy Sources” in the Horizon 2020 Program. As part of the project, the injection of carbon dioxide gas into the reservoir to eliminate carbon dioxide emissions arising from the generation of electricity from geothermal energy sources will be tested in a total of four fields in Turkey, Iceland, Germany and Italy. The budget of the programme is 1,000,000 Euro and 30% of the project cost is paid by Zorlu Energy. (1,000,000 * 0,3= 300,000 Euro) (Average rate for 2020 accepted as 8 TL/Euro) (300.000*8=2,400,000 TL)
The project officially began on October 1, 2018. The first general assembly for the project was hosted by Zorlu Enerji at the Kızıldere geothermal field on March 13-14, 2019. In the meeting, developments and work related to the consortium were presented. The third General Assembly, which was planned to be held in Germany on March 17-18, 2020, was held online via video conferencing due to the COVID-19 restrictions. Consistent with the studies conducted until June 2020, the consortium resolved to change the current technique for pumping carbon dioxide, and as a result of the decision taken by the consortium, the necessary budget increase was provided for this change. Accordingly, the grant support to be received by Zorlu Enerji has been increased by approximately 50%. Tender and procurement processes for the sourcing of materials and equipment required for carbon dioxide pumping are still underway.

Comment

The IEA sustainable scenario has been used to define the risk with the TCFD approach.

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Shift in consumer preferences

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Zorlu Energy's 100% of electricity production comes from renewable sources like geothermal, hydro and wind power plants. Public consciousness is growing about climate change and consumer demand on using renewable energy sources increase especially in B2C companies. The wholesale price of electricity is lower than the price sold to consumers with a bilateral agreement. Corporate response and performance related to environmental and climate change-related issues increase the good reputation of the Company in the eyes of all stakeholders, especially investors and customers.

Another issue that may result in increased demand for IREC Certification. Ministry of Energy is announced that the Renewable Energy Certification regulation is under development. In Turkey, there is no renewable energy certification so if there is no direct connection from the production site to the electricity consumer it is not possible to claim of using renewable energy because Turkey has a national grid and there is no end to end tracking system.

The opportunity scenario is defined as increasing demand for electricity from renewable sources with higher public consciousness and REC Certification Regulation.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

500,000

Potential financial impact figure – maximum (currency)

1,000,000

Explanation of financial impact figure

In 2020 Alasehir Geothermal Power Plant is registered in I-REC and around 100.000 MWh is issued for the clients. In Turkey average rate of the I-REC certificates are around 5 to 10 TL. A yearly minimum of 500.000 TL (100.000 * 5 TL) and yearly 1,000,000 (10*100,000)is calculated as a range of opportunities based on renewable energy production.

Cost to realize opportunity

40,000

Strategy to realize opportunity and explanation of cost calculation

The budget for creating awareness about sustainability and climate change has been defined for the cost to realize the opportunity.

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Participation in carbon market

Primary potential financial impact

Increased diversification of financial assets

Company-specific description

Since Turkey is not ratified Kyoto Protocol and Paris Agreement is not approved by the Parliament there is no mandatory carbon market in Turkey. However public consciousness on climate change and sustainability increasing each year. Most of the renewable energy projects in Turkey developed with emission reduction assets. The emission reduction projects developed in voluntary carbon market(VCS or Gold Standard) rules refers to UNFCCC - CDM Methodologies. Zorlu Energy also gets validation and verification services from accredited third parties and developed emission reduction assets. It makes an additional income each year based on electricity production from renewable sources.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,699,040

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The price of the emission reduction units in voluntary markets is around 1 Euro tCO2. This price is multiplied by the amount of latest verified emission reductions is 212,380 tCO2 reduction from Gökçedağ RES WPP's. The average currency for Euro is accepted as 8 TRY in 2020.

Cost to realize opportunity

82,400

Strategy to realize opportunity and explanation of cost calculation

Preparation of the projects as per UNFCCC CDM Methodologies, validation and verification services are paid in 2020 used to demonstrate the cost of opportunity. To get the benefits from the carbon market, we follow the time frames defined by UNFCCC Methodologies we are developing projects for the voluntary carbon market. While planning for our next renewable power plant investments, we will consider the opportunity to create additional income from generating and selling carbon credits.

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Markets

Primary climate-related opportunity driver

Other, please specify

Increased demand to products

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Turkey is a developing country and energy demand per person is increasing. The main reasons for the increase in energy consumption come from digitalization and increased industrial production. As per the IEA report, energy demand will increase at least 6.7 % (low case scenario) annually in Turkey. We used IEA report data for our opportunity scenario to calculate our potential financial impact.
Zorlu Energy has electricity production plants and besides this, the company invest in electric charging stations. This investment support transmission to a low carbon economy and also creates a demand for electricity.
Also, Zorlu Energy invests in solar panel production in Turkey and this support distributed electricity generation.
Zorlu Energy invests in different areas of electricity production and sales and this holistic view provide maximum benefit from increased demand on our product and services.

Time horizon

Long-term

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

102,297,182

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

As per IEA report, energy demand will increase at least 6.7 % (low case scenario) annually. We used IEA report data for our opportunity scenario to calculate our potential financial impact. Based on our 2020 revenue from electricity production, we calculated the potential additional income due to energy demand increase(0,067).

Cost to realize opportunity

400,000,000

Strategy to realize opportunity and explanation of cost calculation

As per international reports like IEA and local official reports like we collaborated with technical and financial experts in order to estimate short, medium and long-term market prices as well as estimating the impacts of seasonal extremes on the supply deficit is the BNEF Report we published in the reporting year in collaboration with Bloomberg New Energy Finance (BNEF) in which we provide insight on today and the future of wind

power in Turkey clearly show the increase demand for electricity for next years. Zorlu Energy with the vision of Smart Life 2030 investing in electrical vehicles charging stations. Zorlu Energy also invest in solar panel production.
To realize the opportunity of customer behavior change, budget of investment plans for Smart Life 2030 has been defined.

Comment

Identifier

Opp4

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

Zorlu Energy is in a leader position in Turkey in terms of electrical car charging stations. The transition in the automotive industry already started however it has to be supported with enabler investments to expand the electrical car use ratios. 41% increase in electrical car use by 2030. In 2020, we delivered 305 MWh of energy to end-users via the ZES network, an increase of 27% over 2019. All of the energy we provide to end users to charge their vehicles comes from I-REC-certified renewable sources. Thanks to electric vehicles, we can both prevent users from consuming fossil fuels that directly cause greenhouse gas emissions and enable them to charge their vehicles with 100% renewable energy via the ZES network during the transition to a low-carbon economy.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,500,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The yearly additional income from the increase of demand on electrical charging stations is defined as the potential impact of the opportunity created by ZES.

Cost to realize opportunity

10,000,000

Strategy to realize opportunity and explanation of cost calculation

To develop next-generation technologies, Zorlu Enerji established Zorlu Energy Solutions (ZES), which is a network of electric vehicle (EV) charging stations, and electrip, which is an hourly electric vehicle rental platform. With these two brands, Zorlu Enerji joined the eCharge4Drivers Project, which was launched in Europe to promote the use of eco-friendly electric vehicles. While sales of electric vehicles are increasing rapidly across Europe, drivers are still looking for affordable
charging options, which impedes drivers from enjoying their electric vehicles. The eCharge4Drivers Project aims to significantly improve the electric vehicle charging experience in cities and intercity journeys.
In this spirit, Zorlu Enerji plans to carry out pilot projects at 10 locations in Europe, including the Trans-Europe Network for Transport, to meet drivers' needs for charging options, mobility and parking. 32 partners across 11 European countries signed the grant agreement on June 1, 2020, which officially put the project in effect, and the kick-off meeting was held online on June 16–17, 2020, with the attendance of all partners. The technical studies for the project are ongoing

The cost of the opportunity for investment of charging stations is calculated around 10,000,000 TL based on the average cost of installation and installed charging station numbers. In 2020 100 charging stations installed.

Comment

Identifier

Opp5

Where in the value chain does the opportunity occur?

Upstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Shift in consumer preferences

Primary potential financial impact

Increased access to capital

Company-specific description

The access to capital requirements is under development in terms of ESG criteria's. Zorlu Energy sustainable business model and targets provide alternative finance options. In 2018, Zorlu Enerji signed Turkey's first green loan agreement with Garanti BBVA to receive a US$ 10 million loan with an interest rate indexed to the Company's sustainability performance. In this context, the Company's ESG (environmental, social, governance) performance is evaluated and scored annually by an independent ESG rating company and between 2018 and 2020 the ratings are regularly increasing.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

10,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

In 2018, Zorlu Enerji signed Turkey's first green loan agreement with Garanti BBVA to receive a US$ 10 million loan with an interest rate indexed to the Company's sustainability performance. In this context, the Company's ESG (environmental, social, governance) performance is evaluated and scored annually by an independent ESG rating company.

Cost to realize opportunity

100,000

Strategy to realize opportunity and explanation of cost calculation

All HSE and communication department budgets, to increase the sustainability knowledge and Smart Life 2030 initiative awareness in the company defined as the cost of opportunity.

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

(C3.1a) Is your organization's low-carbon transition plan a scheduled resolution item at Annual General Meetings (AGMs)?

	Is your low-carbon transition plan a scheduled resolution item at AGMs?	Comment
Row 1	No, and we do not intend it to become a scheduled resolution item within the next two years	In 2020 with the vision of Smart Life 2030, Zorlu Energy announced its sustainability targets. Next year in the annual report presentation low carbon transition plan will be presented.

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
RCP 4.5 IEA Sustainable development scenario Nationally determined contributions (NDCs)	With the vision of "Energy Company of the Future" scenario analysis is essential for Zorlu Energy. We support the transition to a low carbon economy and limiting the GHG concentrations to 450 PPM for 2 C or if possible 1,5 C. To have a better risk analysis in terms of climate change we use scenario analysis based on publicly available reports with the TCFD approach. We focus on our electricity generation facilities and our enabler services like solar panels and electrical car charging stations. IEA Sustainable Development Scenario which focuses on renewable sources

	like to accelerate the growth of wind and solar PV directly overlap with Zorlu Energy sustainability strategy and it is one of the models we use. For the physical changes, RCP 4.5 (an intermediate scenario) which is one of the four scenarios in the IPCC report has been used to have the updated data 1,5 Degree Special report also discussed in 2020 and increased drought expectations from previous reports for the Mediterranean region has been reflected the risk analysis. For low carbon economy transitional scenarios, Turkey's National contribution (INDC) plan was the base of the scenario. NDC studies in Turkey have not been completed however the plan is a 21% emission reduction by 2030 from the business as usual scenario. 87% renewable energy production ratio is defined as one of the opportunities for Zorlu Energy. For customer behavior changes we defined the alternative scenarios based on IEA Report data. We used company-specific data's where available however for risk and opportunity analysis we used some assumptions in terms of the carbon price, carbon limitation levels, technology, timewise choices, and scope of application. The highest negative impact scenario is defined as weather events. Since %87 of Zorlu Energy production comes from renewable energy, off-balanced conditions may have negative impacts. As per IPCC 5th assessment report, while the chronicle effects of weather events are expected in a long term and the acute effects in a short term, we defined up to 15 years for scenario analysis. The highest possible impact comes from the increased demand for electricity and renewable energy sources. As per IEA Energy outlook 2017, the energy price will increase 75% until 2030 and the price will be 8,6 USD m3 and we used this data for our scenario analysis. As per the financial potential impact, Zorlu Energy defined investments on renewable energy sources like solar energy(decentralized energy). We calculated the potential financial impacts of risks and opportunities for alternative scenarios. Sustainability-related risks and opportunities are sharing with the “Sustainability Committee” by the “Corporate Risk Management”. The risk manager of Zorlu Holding is also on the committee and high risks and investment needed action plans are reported to the corporate governance committee and then to the board of directors for approval. In 2020, Net Zero Emission Target 2030 has been approved.

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and	Description of influence

	opportunities influenced your strategy in this area?	
Products and services	Yes	Zorlu Enerji credits the new dynamics formed under Green Deal, the expected Climate Law in Turkey and the change in customer behaviour and financial conditions accordingly. As the regulatory context and market conditions are maturating, Zorlu Enerji's business strategy is to increase the share of renewables in its portfolio and meet the demand for renewable energy. Many clients look for 100% renewable electricity consumption in their processes and this requires energy attribute certificates. Lately, the renewable energy supply is guaranteed with the certificates of I-REC by Zorlu Enerji as per the regulations enabling the renewable energy producers to issue these certificates. Zorlu Enerji also issued the first SUKUK bond through the Industrial Development Bank of Turkey (TSKB), as the first sustainable SUKUK Bond in Turkey. As increasing its investments in renewable energy power plants, solar panel distribution, and e-vehicle charging network, issuance of certificates and bonds are other products coming fronth as climate change driven opportunities. Zorlu Enerji also expanded its e-vehicle charging network to 81 provinces of Turkey in 2020, covering the whole country now with 455 locations. Zorlu Enerji expects a growing demand for green products and sets its strategy on meeting this growing demand in the market.
Supply chain and/or value chain	Yes	Zorlu Enerji takes into account the impact of its operations taking place in its value chain. Zorlu Enerji continually evaluates its suppliers with respect to IFC's Performance Standards and ISO 26000 Social Responsibility Standards. Zorlu Enerji works with the higher-performing suppliers in long term after the evaluation process. The suppliers who cannot meet the standards are also supported and action plans are set for these suppliers to accelerate capacity building. Thus, Zorlu Enerji ensures compliance of the stakeholders to the environmental and social standards along its value chain. Furthermore, considering the Scope 3 emissions, Zorlu Enerji prioritizes localization of products and service procurement considering the fact that transportation from closer distances play a key role in decreasing environmental footprint. Zorlu Enerji accelerated sustainable supply chain activities with a 100% sustainable supply chain target under Smart Life 2030. Also, in line with

		2030 Net Zero targets, Zorlu Enerji takes supply chain-related factors into risk procedure and considers them as a key element at managing its social and environmental impact and as an enabler for fostering human capital development on a local scale.
Investment in R&D	Yes	Zorlu Enerji gives utmost importance to R&D as an enabler for achieving 2030 Net Zero targets, particularly in its fields of operation where decarbonization will be the outcome of technological advancement and innovation. Knowing the role of international collaboration of industry players, universities and stakeholders, Zorlu Enerji takes part in international and national R&D projects under the umbrella of Horizon 2020 and TUBITAK. GECO, GeoSmart, GEROPRO and SUCCEED are the Horizon 2020 projects primarily focusing on carbon capture and storage technologies where researches on carbon sequestration, injection of CO2 and GHGs, better geothermal site characterization and cooperation alternatives with other renewable energy technologies are carried out collectively. Another field of operation of Zorlu Enerji is electricity distribution where decarbonization is going hand in hand with more deployment of renewable energy and smart grid applications. In FlexiGrid, Plame's projects under Horizon 2020 and in several other TÜBİTAK projects, Zorlu Energy takes part in developing future electricity grid networks where smart grid applications are deployed, consumption and generation points are modelled for flexible and efficient use of grids integrating IoT, batteries, e-vehicles and demand-side management. Zorlu Enerji also actively takes part in wind energy projects for better utilization of wind power plants by decreasing maintenance times and efficiency increasing practices for achieving lower LCOE. Zorlu Enerji also invests in the proliferation of e-vehicles and charging point network by conducting several types of research on customer behaviour and occurred during the proliferation process. Having the ambitious Net Zero targets, Zorlu Enerji brought R&D to the forefront and set its business strategy accordingly.
Operations	Yes	Zorlu Energy can maintain stable conditions in fossil fuel power plants but because 87% of Zorlu Enerji's portfolio is based on renewables, climate change driven factors are influential on these plants' performance. Particularly, geothermal and hydropower plants are directly affected by changing precipitation patterns considering the availability of water as a risk for the sustainability of the water reservoir.

		Furthermore, the increasing frequency of extreme weather events like storms, hails are posing physical risks to the electricity grid network, wind power plants and other operational facilities. In this regard, Zorlu Energy takes into account such risk jeopardizing business continuity and integrates it into the risk assessment procedures. For decreasing the carbon footprint of its operations, Zorlu Enerji also prioritizes taking energy efficiency measures and deploying recent technologies in the offices and facilities as in Levent 199 and Zorlu Tower buildings with Golden LEED Certificate. Furthermore, all operations are evaluated with a life-cycle approach and along with the value chain enhancements for carbon footprint reduction and circular economy, practices are under consideration.

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Capital expenditures Capital allocation Access to capital Assets	Transition to a low carbon economy is started with Zorlu Holding's Smart life 2030 initiative and Zorlu Energy supported this initiative by setting its quantitative targets in 2020. Strategically, Zorlu Energy's vision is to become the energy company of the future and investing in distributed and renewable energy, electrical car charging stations. As an energy producer, renewable energy production reached 87% of total production. We invest to; Renewable energy to decrease the GHG emissions of the company with energy source mixture, Smart Grid Electrical Vehicle Charging Stations Those directly affect our revenues, direct costs and capital expenditures. In 2020, Zorlu Energy also committed to being a Net Zero Company by 2030 for scope 1 and 2 and by 2040 in scope 3 emissions. The board chair also committed not to invest in fossil fuel power generation and the capital allocation will be done to renewable sources. Also, solar panel investment and electrical charging station investments continued in 2020 which clearly show the capital allocation to the low carbon economy transition. Investment in renewable energy production is still expensive than fossil fuel-based energy investments but due to changes in customer expectations, regulatory risks and green finance opportunities Zorlu

		Energy defined its strategy as being the energy company of the future. ZE was the first company applied a green fund in Turkey for its investments and also develop financial assets from the voluntary carbon market through its wind power plants and IREC certificates from geothermal power plants. Weather events are defined as risks to our physical assets. If any damage occurs it will affect our financials to manage this risk we have our insurance about business interruption from natural disasters. An increase in electricity demand and distributed energy are expected which will create an opportunity for Zorlu Energy. The strategy of the company is based on the risk and opportunity assessment performed in the company. The negative impact on our revenue may occur due to increased operational cost, GHG limitation on power plants with emission trading schemes and increased natural gas prices. Those impacts may realize in the mid-term and their effects studied on our financials.

C3.4a

(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

Based on scenario analysis we defined variables to perform risks and opportunity assessment As an energy sector company to manage the risks that occur due to climate change, Zorlu Energy strategically decide to invest in renewable sources. Besides production from renewable sources Zorlu Energy invest in smart solutions like electricity charging stations and solar panels.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Both absolute and intensity targets

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Year target was set

2020

Target coverage

Business division

Scope(s) (or Scope 3 category)

Scope 1

Base year

2015

Covered emissions in base year (metric tons CO2e)

105,101

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

9

Target year

2030

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

102,662

% of target achieved [auto-calculated]

2.3206249227

Target status in reporting year

New

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

Please explain (including target coverage)

This target covers natural gas power plants. As our fossil fuel based facilities are subjected to MRV regulation, we only account for the natural gas power plants for this target. The Scope 1 emissions related to the project emission is 102,662 tCO2 that is verified by a third party.

This amount possibly will be subjected to the carbon tax. ZE set long term sustainability targets in 2020 which includes Net Zero Target by 2030. It is aimed to be Net Zero in Scope 1 and Scope 2 emissions by 2030 and across the entire value chain (Scope 1, 2, and 3) by 2040.

Target reference number

Abs 2

Year target was set

2020

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Base year

2018

Covered emissions in base year (metric tons CO2e)

1,749,850

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2025

Targeted reduction from base year (%)

50

Covered emissions in target year (metric tons CO2e) [auto-calculated]

874,925

Covered emissions in reporting year (metric tons CO2e)

1,203,056

% of target achieved [auto-calculated]

62.4960996657

Target status in reporting year

New

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

Please explain (including target coverage)

ZE set long term sustainability targets in 2020 which includes Net Zero Target by 2030. It is aimed to be Net Zero in Scope 1 and Scope 2 emissions by 2030 and across the entire value chain (Scope 1, 2, and 3) by 2040.
This target covers all of our Scope 1 and Scope 2 emissions. It is aimed to reduce Scope 1 and 2 emissions by 50% by 2025. The baseline emissions are 1,749,850 tCO2 which is decreased to 874.925 tCO2 by 2025.

Target reference number

Abs 3

Year target was set

2020

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Base year

2018

Covered emissions in base year (metric tons CO2e)

1,749,850

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2030

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

1,203,056

% of target achieved [auto-calculated]

31.2480498328

Target status in reporting year

New

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

Please explain (including target coverage)

ZE set long term sustainability targets in 2020 which includes Net Zero Target by 2030. It is aimed to be Net Zero in Scope 1 and Scope 2 emissions by 2030 and across the entire value chain (Scope 1, 2, and 3) by 2040.

This target covers all of our Scope 1 and Scope 2 emissions. It is aimed to be Net Zero in Scope 1 and 2 emissions by 2030. The baseline emissions are 1,749,850 tCO2.

Target reference number

Abs 4

Year target was set

2020

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based) +3 (downstream)

Base year

2020

Covered emissions in base year (metric tons CO2e)

1,208,174

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2040

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

1,208,174

% of target achieved [auto-calculated]

0

Target status in reporting year

New

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

Please explain (including target coverage)

ZE set long term sustainability targets in 2020 which includes Net Zero Target by 2030. It is aimed to be Net Zero in Scope 1 and Scope 2 emissions by 2030 and across the entire value chain (Scope 1, 2, and 3) by 2040. This target covers all of our Scope 1, 2, and 3 emissions.

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Year target was set

2020

Target coverage

Business division

Scope(s) (or Scope 3 category)

Scope 1

Intensity metric

Metric tons CO2e per megawatt hour (MWh)

Base year

2016

Intensity figure in base year (metric tons CO2e per unit of activity)

0.733

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

100

Target year

2025

Targeted reduction from base year (%)

83.3

Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]

0.122411

% change anticipated in absolute Scope 1+2 emissions

82.8

% change anticipated in absolute Scope 3 emissions

0

Intensity figure in reporting year (metric tons CO2e per unit of activity)

0.438

% of target achieved [auto-calculated]

48.3140050017

Target status in reporting year

New

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

Please explain (including target coverage)

Sustainability and low carbon transition are strictly followed in Zorlu Energy from top to bottom. In Turkey operations, %88 of the emissions come from geothermal power plants. By source, it is a renewable source with a high emission however based on the European Geothermal Congress 2019 Report the emission intensity of a geothermal in Turkey might be higher than a coal power plant which is between 750 and 1.050 g/kWh (World Bank -2015).

Total scope 1 emissions of geothermal power plants under Zorlu Energy is calculated and verified as 1,080,927 tCO2 and intensity per kWh is 438 g CO2/kWh in 2020. Based on European Geothermal Congress 2019 Report the emission intensity for geothermal power plants is 122 g CO2/kWh. It is aimed to reduce the intensity figure from 0.733 in 2016 to 0.122 by 2025.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

No other climate-related targets

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	1	10,942
To be implemented*	1	113
Implementation commenced*	6	21,885
Implemented*	1	1,730
Not to be implemented	5	7,845

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Non-energy industrial process emissions reductions

Carbon capture and storage/utilization (CCS/U)

Estimated annual CO2e savings (metric tonnes CO2e)

1,730

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

2,292,496

Investment required (unit currency – as specified in C0.4)

5,055,000

Payback period

4-10 years

Estimated lifetime of the initiative

6-10 years

Comment

The project aims to lower emissions from geothermal power generation by capturing them for either reuse or storage.
The GECO project is industry driven. It is coordinated by Reykjavík Energy (OR), one of the most experienced, largest, and oldest geothermal energy providers in the world. OR has been at the frontier of the geothermal development in Iceland for heat and power since OR leads a diverse and expert international consortium from throughout Europe. From industry, GECO's consortium partners are Zorlu Energy Group, Graziella Green Power S.p.A (GGP), STORENGY (Storengy), Green Minerals (GM). These industrial partners are joined by 13 Research and Technology Development (RTD) partners located in France, Italy, Spain, Norway, Turkey, Germany, UK, and Iceland. These academic partners provide state-of-the-art analytical techniques and expertise and provide a link for GECO to help train the next generation of scientists to move EGS technology into the future.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Dedicated budget for low-carbon product R&D	We invest in national, renewable, and clean energy to reduce Turkey's dependency on energy imports. We ensure sustainability and security in energy supply through our balanced portfolio. On the back of our innovation and R&D activities that shape the sector, we invest in the development and operation of smart systems. Charging Stations: This project aims to analyze the impact of the increasing number of electric vehicles and charging stations on the electricity transmission network and minimize the impact of charging devices on the electrical grid as well as develop innovative and value-added applications that will help increase customer satisfaction. Electricity Storage: The project aims to integrate storage systems for different purposes and with different configurations and capacities to the distribution grid, ensure that these systems are operated in accordance with their objectives, and to compare the applications. Within the scope of this project, a proposal document will also be prepared to help draft new legislation. GECO Project:

	GECO (Geothermal Gas Emission Control) Project,aims to conduct international field applications, test new equipment and technologies, and enable the transfer of know-how and experience in order to reduce carbon dioxide (CO2) emissions from geothermal energy in line with the goals set forth in “Reducing the Costs of Electricity Generation from Renewable Energy Sources” in the Horizon 2020 program. The Horizon 2020 Program is the largest Research and Innovation Program in the European Union with €80 billion of funding available over seven years. The Program aims to make major discoveries, creative ideas and inventions from the laboratory to the world markets to create a more sustainable world. The GECO Project includes various institutions and organizations from countries including France, the United Kingdom, Italy, Iceland, and Germany. Zorlu Energy and Middle East Technical University are the only participants from Turkey. Under the project, initiated with the “Grant Agreement,” a grant of approximately €15 million will be provided to Zorlu Energy in long term for use in R&D work in the area of sustainable generation of geothermal energy. Zorlu Energy will contribute to the GECO Project with its vast experience and R&D resources in the field of geothermal energy.
Compliance with regulatory requirements/standards	The importance we give to the environment goes beyond legal requirements. As we continue our operations, we act on the basis of our Sustainability Strategy and Environmental Policy when it comes to efficient use of energy, management of greenhouse gas emissions, prevention of waste generation, protection of biodiversity and natural heritage. In 2019, the Company had all the required legal inspections conducted at its existing power plants and projects regarding their environmental impacts, and these audits identified no serious and material violation regarding the environment. All activities are carried out in accordance with the national regulations on the environment, obligations arising from international conventions, and environmental awareness. Geothermal Village Project The project aims to utilize the excess heat produced by the geothermal power plant to power the greenhouse, heating, electricity generation, thermal tourism, food drying, and aquaculture activities to be undertaken by the village which will be built next to the GPP, and the project development is underway. Horizon 2020 Program - GECO Project The Horizon 2020 Program is the largest Research and Innovation

	Program in the European Union with €80 billion of funding available over seven years. The Program aims to take major discoveries, creative ideas, and inventions from the laboratory to the world markets to create a more sustainable world. Horizon 2020 Program - GeoSmart Project The project aims to implement crosscountry field applications for the "Application of High-Performance Renewable Energy Technologies to Combined Heat and Power Plants" under the "Safe, Clean and Efficient Energy" heading of the Horizon 2020 Program, test new equipment and technologies, and transfer know-how and experience. The activities planned within the scope of the project include the storage of geothermal fluids in liquid and vapor phases at the Kızıldere Geothermal Power Plants of Zorlu Enerji and in the Balmatt field in Belgium and to study the impacts of CSP (Concentrated Solar Power) and biomass technologies that can be integrated into the geothermal power plants on plant performance. The project is planned to be included in the main project list and implemented in the event that the Commission allocates funds for the project.
Dedicated budget for other emissions reduction activities	Zorlu Energy has a budget to develop emission reduction units as an asset. It is the approval for the project that shows the magnitude of the emission reduction provided. We have received the "Gold Standard" certificate for our Gökçedağ, Sarıtepe and Demirciler Wind Energy Power Plants. The amount of "Voluntary Emission Reduction" (VER) we have achieved during the reporting period through electricity generation from renewable energy resources equals 221,930 tons of CO2 VER.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Product

Description of product/Group of products

Zorlu Energy has wind power plants in its portfolio and emission reduction units have been developed as per UNFCCC CDM Methodologies. Producing electricity from

renewable sources causes avoided emissions as per the baseline scenario which is conventional production in the Turkish national grid.
Renewable energy sources basically low carbon products and avoided emissions have been verified by an accredited third party. The amount of “Voluntary Emission Reduction” (VER) we have achieved during the reporting period through electricity generation from renewable energy resources equals 212,380 tons of CO2 VER.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product and avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

UNFCCC CDM Methodology ACM0002

% revenue from low carbon product(s) in the reporting year

1

Comment

Zorlu Enerji received the Gold Standard Certificate for the Gokcedag WPP. It is expected to reduce CO2 emissions by nearly 292,820 tons per year, ensuring high-quality carbon credits by guaranteeing transparency and credibility in the voluntary carbon market.

Level of aggregation

Product

Description of product/Group of products

I-REC Standard is empowering energy purchasers by facilitating reliable energy claims with Renewable Energy Certificate (REC) schemes. The REC is an Energy Attribute Certificate (EAC). Through the use of EACs, end-users around the world can make reliable claims about their energy usage. EAC schemes can accelerate a country’s energy transition by putting an additional, marketable value on the production of renewable energy.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

I-REC Standard

% revenue from low carbon product(s) in the reporting year

1

Comment

In 2020 Alasehir Geothermal Power Plant is registered in I-REC and around 100.000 MWh is issued for the clients.

C-EU4.6

(C-EU4.6) Describe your organization's efforts to reduce methane emissions from your activities.

CO2, CH4, and N2O emissions are all produced during natural gas combustion. Nearly all of the fuel carbon (99.9 %) in natural gas is converted to CO2 during the combustion process. This conversion is relatively independent of combustion type. Fuel carbon not converted to CO2 results in CH4 emissions and is due to incomplete combustion. Even in boilers operating with poor combustion efficiency, the amount of CH4 produced is insignificant compared to CO2 levels.

Methane emissions are highest during low-temperature combustion or incomplete combustion, such as the start-up or shut-down. The optimum temperature and pressure are continuously monitored and under control via automation system at our natural gas power plants.

Our wind power plants do not have CH4 emission affect.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1, 2015

Base year end

December 31, 2015

Base year emissions (metric tons CO2e)

1,145,498

Comment

Zorlu Enerji is an energy company that aims to operate in different fields of the energy sector providing a global scale integrated service. Zorlu Enerji Group has lots of subsidiary companies that operate in various fields of the sector with an integrated corporate combination including electricity and steam generation and their retail, electricity sales, solar panel sales and installation, natural gas sales and distribution, construction, management, and maintenance of power plants and EV charging stations network.

Therefore, the base year emissions including all related emissions in line with the GHG Protocol Corporate Standard.

Scope 2 (location-based)

Base year start

January 1, 2015

Base year end

December 31, 2015

Base year emissions (metric tons CO2e)

15,602

Comment

Zorlu Enerji is an energy company that aims to operate in different fields of the energy sector providing a global scale integrated service. Zorlu Enerji Group has lots of subsidiary companies that operate in various fields of the sector with an integrated corporate combination including electricity and steam generation and their retail, electricity sales, solar panel sales and installation, natural gas sales and distribution, construction, management, and maintenance of power plants and EV charging stations network.
Therefore, the base year emissions including all related emissions in line with the GHG Protocol Corporate Standard.

Scope 2 (market-based)

Base year start

January 1, 2015

Base year end

December 31, 2015

Base year emissions (metric tons CO2e)

0

Comment

Zorlu Enerji consumes electricity from the interconnected grid.

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

Defra Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance, 2019
IPCC Guidelines for National Greenhouse Gas Inventories, 2006
ISO 14064-1
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

1,197,601

Comment

The given gross global Scope 1 emissions represent our electricity and steam generation and their retail, electricity sales, solar panel sales and installation, construction, management, and maintenance of power plants and EV charging stations network. Our greenhouse gas inventory report has been prepared in line with the ISO 14064-1 standard which has been verified by an accredited third party. We have been calculated our emissions based on the 2006 IPCC Guidelines for National Greenhouse Gas Inventories methodology according to the Tier 1 approach.

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We have no operations where we are able to access electricity supplier emission factors or residual emissions factors and are unable to report a Scope 2, market-based figure

Comment

We consumes electricity from the interconnected grid.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

5,455

Comment

The given gross global Scope 2 emissions represent our electricity and steam generation and their retail, electricity sales, solar panel sales and installation, construction, management, and maintenance of power plants and EV charging stations network. Our greenhouse gas inventory report has been prepared in line with the ISO 14064-1 standard which has been verified by an accredited third party. We have been calculated our emissions based on the 2006 IPCC Guidelines for National Greenhouse Gas Inventories methodology according to the Tier 1 approach.

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, not yet calculated

Please explain

Zorlu Enerji has given priority to establish a data collection system for Scope 3 emissions starting with the most relevant categories. This category is planned to be included in the data collection boundary in the near future.

Capital goods

Evaluation status

Not relevant, explanation provided

Please explain

Zorlu Enerji considers that emissions associated with capital goods are not material (less than 5% of total GHG emissions). Given the complexity of the process of gathering information, the company will formalize an accurate data gathering process to identify Scope 3 emissions sources from buildings, equipment, and machinery. The company does not predict its inclusion over a three-year period, compared to the effort that would involve in training and gathering information.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1,378

Emissions calculation methodology

The average-data method, which involves estimating emissions by using secondary (e.g., industry average) emission factors for upstream emissions per unit of consumption (e.g., kg CO2e/kWh) is applied. The "DEFRA Greenhouse Gas Reporting: Conversion Factors 2021" is used.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Fuel-and-energy-related activities include Well to tank (WTT) process emissions of consumed fuels and electricity. The data is based on energy consumption that is monitored by us and cross-checked with the supplier invoice.

Upstream transportation and distribution

Evaluation status

Relevant, not yet calculated

Please explain

Zorlu Enerji has given priority to establish a data collection system for Scope 3 emissions starting with the most relevant categories. This category is planned to be included in the data collection boundary in the near future.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

2,766

Emissions calculation methodology

The waste-type-specific method is applied which involves using emission factors for specific waste types and waste treatment methods. The emissions are calculated based on the "DEFRA Greenhouse Gas Reporting: Conversion Factors 2019" tool.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Emissions from waste depend on the type of waste being disposed of, and the waste diversion method. Therefore, waste data based on its type (e.g., cardboard, food-waste, wastewater) and the waste treatment method (e.g., incinerated, landfilled, recycled) are necessary for calculation. All kinds of waste generated in our activities are monitored by

us and the licensed waste transporter company and upload the amount of waste according to their waste code to the online system in line with the local regulation. By this declaration, we calculate emissions inventory according to DEFRA GHG Conversion Factors.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

85

Emissions calculation methodology

The distance-based method, which involves determining the distance and mode of business trips, then applying the appropriate emission factor for the mode used is applied as per the Greenhouse Gas Protocol -Corporate Value Chain (Scope 3) Accounting and Reporting Standard. The distance-based method involves multiplying activity data (i.e., vehicle-kilometers or person-kilometers traveled by vehicle type) by emission factors (typically default national emission factors by vehicle type). Vehicle types include all categories of aircraft, rail, subway, bus, automobile, etc. The GHG Protocol has a calculation tool for transportation that uses a combination of fuel-based and distance-based methods. This combination is used because CO2 is better estimated from fuel use, and CH4 and N2O are better estimated from distance traveled. The tool uses fuel-efficiency ratios to convert either type of activity data (fuel or distance) supplied by the user into either fuel or distance depending on the GHG being calculated. Therefore, “GHG emissions from transport or mobile sources” are used.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

98

Please explain

Emissions arising from air travel and short term car rentals conducted by Zorlu Enerji employees have been accounted for under business travel-related Scope 3 emissions. The car rentals information is based on our internal portal which includes detailed business travel information of all employees. We gathered travel information from our travel management company which includes both domestic and international flights. The emissions arising from air travel have been calculated.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

889

Emissions calculation methodology

The distance-based method, which involves collecting data from employees on commuting patterns (e.g., distance traveled and mode used for commuting) and applying appropriate emission factors for the modes used is applied as per the Greenhouse Gas Protocol -Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Total distance traveled by employees over the reporting period (e.g., passenger-kilometers traveled) and mode of transport used for commuting (e.g., train, subway, bus, car, bicycle) data are necessary for calculation. The GHG Protocol has a calculation tool for transportation that uses a combination of the fuel-based and distance-based methods. This combination is used because CO2 is better estimated from fuel use, and CH4 and N2O are better estimated from distance traveled. The tool uses fuel-efficiency ratios to convert either type of activity data (fuel or distance) supplied by the user into either fuel or distance depending on the GHG being calculated. Therefore, “GHG emissions from transport or mobile sources” is used.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Employee commuting is realized by scheduled buses and minibusses. Since employee number carried in each trip is assumed as equal to the full capacity of vehicles, this calculation may include a little overestimation. The distance data is obtained from the supplier service agreement.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

We have not used upstream leased assets in the reporting year.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

Our product, electricity, is directly consumed without any processing. Therefore, we do not have scope 3 emissions to account for under this category.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Our product, electricity, is directly consumed without any processing. Therefore, we do not have scope 3 emissions to account for under this category.

Use of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Emissions related to extraction and production of the product have already been accounted for as Scope 1 and 2 emissions. Only transmission and distribution related emissions can be considered for use of sold product emissions. However, we do not have access to reliable data to include this category yet.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Our product, electricity, is directly consumed without any processing. Therefore, we do not have scope 3 emissions to account for under this category.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

We have not used downstream leased assets in the reporting year.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

We do not have any franchises.

Investments

Evaluation status

Relevant, not yet calculated

Please explain

Zorlu Enerji has given priority to establish a data collection system for scope 3 emissions starting with the most relevant categories. This category is planned to be

included in the data collection boundary in the near future when reliable data can be collected from suppliers.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Please explain

There are no additional upstream emission sources.

Other (downstream)

Evaluation status

Relevant, not yet calculated

Please explain

There are no additional downstream emission sources.

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.0001402308

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

1,203,055

Metric denominator

unit total revenue

Metric denominator: Unit total

8,579,113,000

Scope 2 figure used

Location-based

% change from previous year

48.5

Direction of change

Decreased

Reason for change

The revenue has increased 49.25% and our absolute gross emissions have increased 23.13% compared to the previous year. AS a result of energy efficiency activities, then intensity is decreased 48.5% compared to the last. year.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	1,141,483	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	42,565	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	404	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	13,149	IPCC Fifth Assessment Report (AR5 – 100 year)

C-EU7.1b

(C-EU7.1b) Break down your total gross global Scope 1 emissions from electric utilities value chain activities by greenhouse gas type.

	Gross Scope 1 CO2 emissions (metric tons CO2)	Gross Scope 1 methane emissions (metric tons CH4)	Gross Scope 1 SF6 emissions (metric tons SF6)	Total gross Scope 1 emissions (metric tons CO2e)	Comment

Fugitives	1,043,072	42,536	0	1,098,757	The figure includes geothermal fugitive emissions. Total gross scope 1 emissions include also N2O fugitive emissions.
Combustion (Electric utilities)	97,410	27	0	97,816	This figure includes our natural gas power plants. Total gross scope 1 emissions include also N2O emissions.
Combustion (Gas utilities)	0	0	0	0	We don't have gas utilities.
Combustion (Other)	569	0.821	0	592	This figure includes the emission of diesel generator and off-road mobile sources such as forklifts, excavators etc. Total gross scope 1 emissions include also N2O emissions.
Emissions not elsewhere classified	0	0	0	0	There is no other emissions.

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Turkey	1,197,582
Pakistan	19

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By business division
By facility
By activity

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Natural Gas Operations	102.662
Wind Energy Operations	70
Geothermal Energy Operations	1,094,261
Hydro Energy Operations	171
Administrative Operation	436

C7.3b

(C7.3b) Break down your total gross global Scope 1 emissions by business facility.

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Bursa Natural Gas Power Plant	172	40.245104	28.955018
Lüleburgaz Natural Gas Power Plant	102,490	41.4	27.35
Gökçedağ Wind Power Plant	51	37.074627	36.246399
Pakistan Wind Power Plant	19	25.043613	67.999048
Alaşehir Geothermal Power Plant	43,219	38.233	28.261
Kızıldere I-II-III Geothermal Power Plant	1,051,042	37.956213	28.842528
Ataköy Hydro Power Plant	0	40.424004	36.884118
Beyköy Hydro Power Plant	8	40.073156	30.755448
Çıldır Hydro Power Plant	36	40.900774	43.328855
İkizdere Hydro Power Plant	17	40.795463	40.551031
Kuzgun Hydro Power Plant	3	40.183631	41.063687
Mercan Hydro Power Plant	32	39.413794	39.30221
Tercan Hydro Power Plant	75	39.755985	40.40183
İstanbul Headquarters	173	40.993661	28.699289
Zorlu Enerji Solutions (ZES)	6	40.993661	28.699289
OEPSAŞ	257	39.784944	30.501583

C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

Activity	Scope 1 emissions (metric tons CO2e)
Stationary Combustion	97,940

Mobile Combustion	720
Fugitive Emissions	17,888
Process Activities	1,080,870
Office Activities	184

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Comment
Electric utility activities	1,197,165	Geothermal project activities have emissions of CO2 and CH4 due to the release of non-condensable gases from produced steam. In geothermal power projects, non-condensable gases flow with the steam into the power plant. A small proportion of the CO2 is converted to carbonate/bicarbonate in the cooling water circuit. In addition, parts of the non-condensable gases are re-injected into the geothermal reservoir. However, as a conservative approach, the applied calculation methodology, ACM0002, assumes that all non-condensable gases entering the power plant are discharged to the atmosphere via the cooling tower. Hydropower plant has no emission since the electricity is generated from renewable sources. Natural gas power plants have combustion emissions. The wind power plant has no emissions since the electricity is generated from renewable sources. This figure includes all activities, processes, and equipment that are ancillary to the production processes. Offices, non-production related activities such as office, vehicles are deducted from total gross emissions.

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption				
Other emissions reduction activities	211,747	Decreased	13.5	Our total emissions have decreased by 23.1% compared to the previous year. We focused on energy efficiency benefits in the operation of our plants. Through these activities, we reduced our emissions by 211,747 tons CO2e, and our total emissions (Scope 1 and Scope 2) in the previous year were 1,565,104 tons CO2e. Therefore there is a 13.5% decrease in emissions. (211,747 / 1,565,104) * 100 = 13.5%
Divestment				
Acquisitions				
Mergers				
Change in output	150,301	Decreased	9.6	Our total emissions have decreased by 23.1% compared to the previous year. Our gross electricity generation is decreased 17% compared to the previous year and it resulted in a 9.6% emission reduction. We reduced our emissions by 150,301 tons CO2e, and our total emissions (Scope 1 and Scope 2) in the previous year were 1,565,104 tons CO2e. Therefore there is a 9.6% decrease in emissions due to less electricity

				generation. (150,301 / 1,565,104) * 100 = 9.6%
Change in methodology				
Change in boundary				
Change in physical operating conditions				
Unidentified				
Other				

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 80% but less than or equal to 85%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No

Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	10,564	10,564
Consumption of purchased or acquired electricity		0	13,948	13,948
Consumption of self-generated non-fuel renewable energy		265,823		265,823
Total energy consumption		265,823	24,512	290,336

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)
Natural Gas

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
6,558

MWh fuel consumed for self-generation of electricity
1,071

MWh fuel consumed for self-generation of heat
921

MWh fuel consumed for self-generation of steam
4,567

Emission factor
56.155

Unit
metric tons CO2e per GJ

Emissions factor source
2006 IPCC Guidelines for National Greenhouse Gas Inventories -Volume 2-Chapter 2 Stationary Combustion - Table 2.2 Default Emission Factors For Stationary Combustion in the Energy Industries

Comment
We consume natural gas for the generation of electricity, steam, and heat. The generated electricity is fed to the grid after the internal consumption is met. The generated steam is not consumed by Zorlu Enerji, it is delivered to the customer. The main customer is Zorlu Textile which is a sister company.
The CO2 equivalent emission factor is calculated based on CO2, CH4, and N2O emission factors, and the GWP of each greenhouse gasses.

Fuels (excluding feedstocks)
Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

3,353

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

3,353

MWh fuel consumed for self-generation of steam

0

Emission factor

74.343

Unit

metric tons CO2e per GJ

Emissions factor source

2006 IPCC Guidelines for National Greenhouse Gas Inventories -Volume 2-Chapter 2 Stationary Combustion - Table 2.2 Default Emission Factors For Stationary Combustion in the Energy Industries 2006 IPCC Guidelines for National Greenhouse Gas Inventories -Volume 2-Chapter 3 Mobile Combustion - Table 3.2.1. Road Transport Default CO2 Emissions Factors and Uncertainty Ranges

Comment

The diesel is consumed at generators, on-road transportation, and off-road transportation (forklift, grass mower, etc). %63 of the diesel is used for on-road transportation. Therefore, the on-road mobile combustion emission factor is given. In the calculation, the emission factor is applied depending on each category.
The CO2 equivalent emission factor is calculated based on CO2, CH4, and N2O emission factors, and the GWP of each greenhouse gasses.

Fuels (excluding feedstocks)

Lignite Coal

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

613

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

335

MWh fuel consumed for self-generation of steam

279

Emission factor

101.526

Unit

metric tons CO2e per GJ

Emissions factor source

2006 IPCC Guidelines for National Greenhouse Gas Inventories -Volume 2-Chapter 2 Stationary Combustion - Table 2.2 Default Emission Factors For Stationary Combustion in the Energy Industries

Comment

We consume lignite coal for the generation of steam and heat. The generated steam is not consumed by Zorlu Enerji, it is delivered to the customer. The main customer is Zorlu Textile which is a sister company.
The CO2 equivalent emission factor is calculated based on CO2, CH4, and N2O emission factors, and the GWP of each greenhouse gasses.

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

39

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

39

MWh fuel consumed for self-generation of steam

0

Emission factor

70.862

Unit

metric tons CO2e per GJ

Emissions factor source

2006 IPCC Guidelines for National Greenhouse Gas Inventories -Volume 2-Chapter 3 Mobile Combustion - Table 3.2.1. Road Transport Default CO2 Emissions Factors and Uncertainty Ranges 2006 IPCC Guidelines for National Greenhouse Gas Inventories - Volume 2-Chapter 3 Mobile Combustion - Table 3.3.1 Default Emission Factors for Off-Road Mobile Sources and Machinery

Comment

The gasoline is consumed for on-road transportation, and off-road transportation (forklift, grass mower, etc). Almost all gasoline is used for on-road transportation. Therefore, the on-road mobile combustion emission factor is given. In the calculation, the emission factor is applied depending on each category.
The CO2 equivalent emission factor is calculated based on CO2, CH4, and N2O emission factors, and the GWP of each greenhouse gasses.

C-EU8.2d

(C-EU8.2d) For your electric utility activities, provide a breakdown of your total power plant capacity, generation, and related emissions during the reporting year by source.

Coal – hard

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Lignite

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Oil

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Gas

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Biomass

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Waste (non-biomass)

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Nuclear

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Fossil-fuel plants fitted with CCS

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Geothermal

Nameplate capacity (MW)

305

Gross electricity generation (GWh)

1,827

Net electricity generation (GWh)

1,565

Absolute scope 1 emissions (metric tons CO2e)

1,094,261

Scope 1 emissions intensity (metric tons CO2e per GWh)

598.97

Comment

These figures cover all our geothermal power plants operating in the reporting year: Alaşehir, Kızıldere I, Kızıldere II and Kızıldere III
The CO2e intensity is calculated based on gross generation.

Hydropower

Nameplate capacity (MW)

118.9

Gross electricity generation (GWh)

277

Net electricity generation (GWh)

274

Absolute scope 1 emissions (metric tons CO2e)

171

Scope 1 emissions intensity (metric tons CO2e per GWh)

0.62

Comment

These figures cover all our hydroelectric power plants operating in the reporting year: Ataköy, Beyköy, Çıldır, İkizdere, Kuzgun, Mercan, Tercan
The CO2e intensity is calculated based on gross generation.

Wind

Nameplate capacity (MW)

191.4

Gross electricity generation (GWh)

411

Net electricity generation (GWh)

410

Absolute scope 1 emissions (metric tons CO2e)

70

Scope 1 emissions intensity (metric tons CO2e per GWh)

0.17

Comment

We have 1 wind power plant in Turkey and 1 wind power plant in Pakistan: Gökçedağ, and Pakistan
The CO2e intensity is calculated based on gross generation.

Solar

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Marine

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Other renewable

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Other non-renewable

Nameplate capacity (MW)

0

Gross electricity generation (GWh)

0

Net electricity generation (GWh)

0

Absolute scope 1 emissions (metric tons CO2e)

0

Scope 1 emissions intensity (metric tons CO2e per GWh)

0

Comment

Total

Nameplate capacity (MW)

699.1

Gross electricity generation (GWh)

2,837

Net electricity generation (GWh)

2,527

Absolute scope 1 emissions (metric tons CO2e)

1,197,165

Scope 1 emissions intensity (metric tons CO2e per GWh)

412.92

Comment

These figures cover all our natural gas, wind, hydroelectric, and geothermal power plants operating in the reporting year. The CO2e intensity is calculated based on gross generation

C-EU8.4

(C-EU8.4) Does your electric utility organization have a transmission and distribution business?

No

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C-EU9.5a

(C-EU9.5a) Break down, by source, your total planned CAPEX in your current CAPEX plan for power generation.

Primary power generation source	CAPEX planned for power generation from this source	Percentage of total CAPEX planned for power generation	End year of CAPEX plan	Comment
Wind	23,310,000	8	2020	Since the end of 2020, 87% of our installed power in Turkey and 64% of our total installed capacity is based on renewable energy sources. In the field of renewable energy, we aim to increase our profitability through geothermal energy, solar and wind energy investments in Turkey and abroad. Within Zorlu Enerji, in the first half of 2021, it is planned to establish, manage and publicly offer Zorlu Renewable Enerji company our hydroelectric, geothermal and wind power plants.
Geothermal	232,190,000	78	2020	CAPEX plans for geothermal projects including GECO project to mitigate GHG in geothermal power plants included. Horizon 2020 Program - GECO Project: Horizon 2020 Program, which is the largest research and innovation framework program of the European Union and established to support the transfer of great discoveries, creative ideas and inventions from the laboratory to the world markets for a more sustainable world, being able to fund 80 billion Euros within 7 years, gives support for Zorlu Enerji for its participation in the GECO (Geothermal Emission Control) by taking into account its successful work in this field The GECO Project includes various institutions and organizations from countries such as France, England, Italy, Iceland, and Germany. Within the scope of the “Reducing Electricity Production

				Costs from Renewable Energy Sources" title included in the Horizon 2020 Program, the project, focusing on "The Reduction of Geothermal Energy Sourced Carbon Dioxide (CO2) Emissions" aims at carrying outcross-country field practices, testing new equipment and technologies, and transferring knowledge and experience. Under the project, in order to reduce carbon dioxide emissions resulting from geothermal energy production to zero, the tests for 4 countries in total will be executed – Turkey, Iceland, Germany, and Italy – related to the injection of carbon dioxide gases into reservoir.
Solar	21,210,000	7	2020	By demonstrating our experience of over 25 years in the energy sector and our knowledge in renewable energy activities, in the field of solar energy; we continue to provide customer-oriented, quality, and reliable service. We established Zorlu Solar Energy Procurement and Trade Inc. (Zorlu Solar) in order to produce the electricity we need from endless solar energy, instead of limited resources that are not continuous for future generations. Within the scope of our activities under the name of Zorlu Solar, there are buying and selling transactions of producing electricity from solar energy at home and abroad, renting, selling, purchasing, exporting solar photovoltaic (PV) panels and providing all kinds of installation services and consultancy services related to this, and domestic electricity and / or capacity wholesale. As Zorlu Enerji, we started to apply membrane-based photovoltaic solar panels in 2018, of which we have purchased patent rights, mainly in food, cold, and livestock industries in different sectors to various projects. We firstly exported the membrane-based solar panel, that we

				started exporting in 2018, to Jamaica. We launched the Solution Partnership Ecosystem project, which will be implemented in 12 regions across Turkey in order to expand the marketing, promotion, and implementation areas of the products we sell and distribute, and which will start with a maximum of 24 Solution Partners. As part of the project, we will have completed and commissioned 16 different rooftop solar energy system installation projects in Turkey by the end of 2020. Through a special collaboration with First Solar, Inc. (“First Solar”) which developed new technologies to offer innovative solutions in the field of solar energy, we became the only authorized distributor of high-performance thin-film photovoltaic solar panels produced by First Solar for five years in 26 countries in Eastern Europe, Eurasia and Eastern Mediterranean regions. We continue to lead the sector in which we operate by reaching more than 550 MW portfolio in 2020 with First Solar products we offer domestically and abroad.
Other, please specify Smart System	20,230,000	7	2020	As part of Zorlu Holding Smart Life 2030 Targets and Sustainability Policy, we combine our country’s rich and undiscovered renewable energy resource diversity with advanced technology and innovation, and contribute to our country’s assessment of opportunities to transition to a low-carbon and self-sufficient economy. As part of our innovation efforts, we invest in the establishment and operation of smart systems that will initiate transformation in the industry. We keep up with the current era by providing innovative and smart solutions, and continue to make our name known in the sector with our qualified workforce and diversity of resources.

				We bring together the ideas we offer about smart and new generation solutions for the future with technology and bring them to life through our Smart Systems Department, which we established in line with our goal of becoming the energy company of the future. We continue our current work in many areas, such as electric vehicle rental, electric vehicle charging stations, smart home systems, and smart energy management systems, within the scope of Innovation and New Business Models, which is one of our priority topics. While the innovative content and large investment amounts of our previous projects demonstrate the significance we place on this issue, the HORIZON 2020 Program and the projects we collaborate on with TÜBİTAK play a critical role in Turkey's transition to next-generation technologies. We save 10% to 30% on heating energy and up to 30% on electricity consumption with smart home systems.

C-EU9.5b

(C-EU9.5b) Break down your total planned CAPEX in your current CAPEX plan for products and services (e.g. smart grids, digitalization, etc.).

Products and services	Description of product/service	CAPEX planned for product/service	Percentage of total CAPEX planned products and services	End of year CAPEX plan
Electric vehicles	ZES, which has been operating since August 2018 under the motto "Turkey's new, clean, and fast energy," provides charging services for electric vehicle owners throughout Turkey. Users can charge their electric vehicles in 30-60 minutes using the charging stations, the first of which we installed at Istanbul Zorlu Center. By 2020, we will have 761 sockets in 455 different locations across	4,638,841	14.1	2030

	all 81 provinces as part of our public network. In 2020, we delivered 305 MWh of energy to end users via the ZES network, an increase of 27% over 2019. All of the energy we provide to end users to charge their vehicles comes from I-REC-certified renewable sources. Thanks to electric vehicles, we can both prevent users from consuming fossil fuels that directly cause greenhouse gas emissions and enable them to charge their vehicles with 100% renewable energy via the ZES network during the transition to a low-carbon economy. As part of our sustainability approach, we strive to digitize our processes as much as possible. In this context, while our users could only charge their vehicles using ZES cards at the beginning of the project, they can now do it digitally wherever they want via the mobile application.			
Distributed generation	We established Zorlu Solar Energy Procurement and Trade Inc. (Zorlu Solar) in order to produce the electricity we need from endless solar energy, instead of limited resources that are not continuous for future generations. Within the scope of our activities under the name of Zorlu Solar, there are buying and selling transactions of producing electricity from solar energy at home and abroad, renting, selling, purchasing, exporting solar photovoltaic (PV) panels, and providing all kinds of installation services and consultancy services related to this, and domestic electricity and / or capacity wholesale. At Zorlu Enerji, we started to apply membrane-based photovoltaic solar panels in 2018, of which we have purchased patent rights, mainly in food, cold, and livestock industries in different sectors to various projects.	4,638,841	85.8	2020

Large-scale storage	Horizon 2020 Program - GECO Project: Zorlu Enerji, which continues to be Turkey's gateway to the international energy arena through not only its investments but also the global partnership projects with which it shares its experiences, has become a partner of the GECO project that targets the sustainable management of natural mineral resources. Zorlu Enerji will contribute to the GECO project with its experience and R&D resources in the area of geothermal energy. Various institutions and organizations from countries such as France, England, Italy, Iceland, and Germany will take part in the GECO project. Under the Horizon 2020 program's main heading "Reducing Electricity Generation Costs for Renewable Resources," the project aims to enable the implementation of international field applications, the testing of new equipment and technology, and the transfer of knowledge and experiences in order to "Reduce Carbon Dioxide (CO2) Emissions Resulting from Geothermal Causes."	50,289	0.2	2020

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	As part of Zorlu Holding Smart Life 2030 Targets and Sustainability Policy, we combine our country's rich and undiscovered renewable energy resource diversity with advanced technology and innovation and contribute to our country's assessment of opportunities to transition to a low-carbon and self-sufficient economy. As part of our innovation efforts, we invest in the establishment and operation of smart systems that will initiate transformation

		in the industry. We keep up with the current era by providing innovative and smart solutions and continue to make our name known in the sector with our qualified workforce and diversity of resources. We develop innovative, efficient, and environmentally friendly products and services with our target to lead the industry in the global arena, and in line with our Sustainability Strategy, we ensure that the issue is adopted and closely followed by the innovation-based target indicators that we have determined, primarily in R&D expenditure intensity. Our Smart Systems Department, which we established in 2017, continues its activities in the fields of Digitalization, R&D, and Innovation, especially electric vehicles. Understanding the needs of the current era, we continue to develop energy storage projects by offering smart services and electric charging stations supported by EMRA.

C-CO9.6a/C-EU9.6a/C-OG9.6a

(C-CO9.6a/C-EU9.6a/C-OG9.6a) Provide details of your organization's investments in low-carbon R&D for your sector activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
Other, please specify Electrical Vehicle	Full/commercial-scale demonstration	41-60%	4,500,000	electrip, Electric (Vehicle Sharing Platform): We aimed to create a fleet of electric vehicles, under the name of Zorlu Energy and having a distinction of being Turkey's first electric vehicle sharing platform – electrip. Thus, by enabling the introduction of electric vehicle lease term, we became unique low emission eco-friendly vanguard in Turkey with transportation solutions offered in this sector. Users can apply for membership using the electrip mobile application, rent an electric vehicle from the closest point to them, take their vehicles with the application without using a key, end leasing by leaving the

				vehicle back to the point where they purchased it. In this way, they can analyze traditional car rental procedures that cause extra effort such as going to the branch and signing a contract through a single application. ZES: As of August 2018, “Turkey’s new, clean, fast energy” with the motto touted as the ZES, prove charging services for electric vehicle users all over the country. The charging stations, allow users to charge their electric vehicles around 30-60 minutes. After expanding its network of electric vehicle charging stations to 81 provinces, ZES has the capacity to serve 761 vehicles at 455 locations simultaneously. In 2020, we delivered 305 MWh of energy to end users via the ZES network, an increase of 27% over 2019. All of the energy we provide to end users to charge their vehicles comes from I-REC-certified renewable sources. Thanks to electric vehicles, we can both prevent users from consuming fossil fuels that directly cause greenhouse gas emissions and enable them to charge their vehicles with 100% renewable energy via the ZES network during the transition to a low-carbon economy. As part of our sustainability approach, we work to digitize

				our processes as much as possible. In this context, our users can perform their charging processes only at the beginning of the project with ZES cards, and now they can perform completely digitally via mobile application wherever they wish. We aim to expand fast charging stations and electric vehicles throughout the country, we continue our investments in being ready for the 'Turkey's Otomobile' project of Vestel Elektronik Şirketi ve Ticaret A.Ş. which is one of the stakeholders of Zorlu Group.
Carbon capture and storage/utilisation	Pilot demonstration	21-40%	2,400,000	Zorlu Enerji, which continues to be Turkey's gateway to the international energy arena through not only its investments but also the global partnership projects with which it shares its experiences, has become a partner of the GECO project that targets the sustainable management of natural mineral resources. Zorlu Enerji will contribute to the GECO project with its experience and R&D resources in the area of geothermal energy. The Horizon 2020 program, which is the European Union's largest Research and Innovation program that was established with the aim of transferring significant discoveries and creative ideas from the laboratory to the global market in order to help

				create a sustainable world, and which will offer funding worth EUR 80 billion for a period of 7 years, will provide grant support to Zorlu Enerji for its participation in the GECO project due to its successful activities in this area. Various institutions and organizations from countries such as France, England, Italy, Iceland, and Germany will take part in the GECO project. Under the Horizon 2020 program's main heading "Reducing Electricity Generation Costs for Renewable Resources," the project aims to enable the implementation of international field applications, the testing of new equipment and technology, and the transfer of knowledge and experiences in order to "Reduce Carbon Dioxide (CO2) Emissions Resulting from Geothermal Causes." At the plants, we are currently operating and the ones will install as a result of the R&D activities we will carry out, we will generate energy with zero waste by making use of the underground heat at the field and re-injecting all waste, including carbon dioxide, back into the ground. We wish to contribute to this field worldwide by reporting our findings and sharing them with other geothermal plant operators in different countries.

				We are ready to transfer all our know-how and experience to this project, which we believe will contribute to the reduction of the emissions of carbon dioxide and similar gases, the more efficient utilization of geothermal fluid, and the maintenance of the sustainability of the source. We at Zorlu Enerji are proud to be successfully representing Turkey in various fields of energy, including geothermal energy, through not only our investments but also our know-how and experience.
Renewable energy	Full/commercial-scale demonstration	≤20%	89,374	We established Zorlu Solar Enerji Tedarik ve Ticaret A.Ş. (Zorlu Solar) in order to produce the electricity we need from endless solar energy, that gives life to the world and reborn every day, instead of limited resources that are not continuous for future generations. Our operations under Zorlu Solar include using solar energy to generate electricity domestically and abroad, as well as renting, selling, purchasing, and exporting solar photovoltaic (PV) panels, installing them on rooftops, providing installation and consulting services, and/or domestically buying and selling electrical energy and capacity on a wholesale basis. In collaboration with domestic solar panel manufacturers, we offer innovative solutions for the sale and distribution of membrane solar panels. In

				2018, Zorlu Enerji began implementing the locally produced membrane-based photovoltaic solar panels, for which we purchased the patent rights, in a range of projects in Turkey, primarily in the food, cold air, and livestock sectors. We continue to work on new projects related to logistics opportunities. We firstly exported the membrane-based solar panel, that we started exporting in 2018, to Jamaica. We launched the products sent to the American continent, the world's largest membrane roof market, in 2019. With the First Solar products we offer at home and abroad, we will continue to lead the sector, with a portfolio of more than 550 MW in 2020.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Zorlu Enerji Limited Assurance Report - 31 December 2020.pdf

Page/ section reference

page 1

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Zorlu Enerji Limited Assurance Report - 31 December 2020.pdf

Page/ section reference

page 1

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3: Business travel

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Zorlu Enerji Limited Assurance Report - 31 December 2020.pdf

Page/section reference

page 1

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

2

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain

C8. Energy	Energy consumption	International Standard on Assurance Engagements (ISAE) 3000	The following parameters are verified by third party: • Electricity consumption (kWh) • Natural gas consumption (m3) • Total energy consumed (GJ) • Fuel consumption of company vehicles (lt) 1

[1]Zorlu Enerji Limited Assurance Report - 31 December 2020.pdf

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

No, but we anticipate being regulated in the next three years

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

In Turkey, reediness to emission trading schemes is studied by the World Bank, and the project started in 2014. Zorlu Energy reports its stationary combustion emissions since 2015 that occurred from its Natural Gas Power Plants. The second phase of the project will be finalized in 2020 and expected outcomes are draft climate law and ETS Regulation. Starting in the 3rd phase is depended on the parliament's decision. If it's approved then we expect to have a carbon tax or an ETS mechanism.
To forecast the impacts of a regulated system we apply carbon pricing in the company and this clearly shows the financial impacts on the business. We put carbon price to scope 1 emissions for the distribution of the cost of GHG's. This application also accelerated the performance of energy efficiency.

Another reflection of possible regulation on emissions is the Net Zero target of the company that is confirmed in 2020.. The strategy to achieve the target is based on energy efficiency, R&D and renewable energy investments.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

Yes

C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

Credit origination or credit purchase

Credit origination

Project type

Wind

Project identification

Zorlu Energy's Gokcedag Wind Power Plant is registered under Gold Standard. Since Turkey is not in the mandatory market, the project is developed under voluntary market.

Verified to which standard

Gold Standard

Number of credits (metric tonnes CO2e)

212,380

Number of credits (metric tonnes CO2e): Risk adjusted volume

212,380

Credits cancelled

No

Purpose, e.g. compliance

Voluntary Offsetting

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Navigate GHG regulations
Change internal behavior

GHG Scope

Scope 1

Application

Stationary combustion emissions are reporting to the ministry so carbon price is defined for scope 1 emissions. To be ready for the carbon tax the price is 7 TL(about 1 USD) for tonnes of carbon. Its internally followed by Environment Executive and reported to the Sustainability Committee.

Actual price(s) used (Currency /metric ton)

7

Variance of price(s) used

Uniform pricing is used since all production plants were in Turkey in 2020 and carbon pricing is applied only for scope 1 emissions. 1 USD is 3% of the price expected based on the ETS simulation projected by the World Bank in Turkey.

Type of internal carbon price

Shadow price

Impact & implication

The carbon pricing for scope 1 emissions created awareness about the low carbon industry and how it may impact the financials. Zorlu Energy has a decision to invest in renewable energy and Net Zero Target by 2030.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

30

% total procurement spend (direct and indirect)

% of supplier-related Scope 3 emissions as reported in C6.5

73

Rationale for the coverage of your engagement

In 2020 Zorlu Energy started to calculate its scope 3 emissions and set Net Zero Emission on Scope 3 by 2040. The calculation of scope 3 emissions has much more activity data than Scope 1 and 2 calculations. The supply chain team request activity data from suppliers. In the next years, the reduction in scope 3 emissions will be expected from suppliers.

Impact of engagement, including measures of success

Procurement Director has a scope 3 emission reduction target and Zorlu Energy set Net Zero Target for scope 3 emissions by 2040.

Comment

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

Zorlu Energy produce electricity and sell it to the national grid operator and it is an official institute. To create awareness on energy efficiency, Zorlu Energy invest in public communication about renewable energy, climate change, social issues based on SDG's and energy efficiency.

In line with Zorlu Holding's Smart Life 2030 Goals, we support the "İmece Platform," a social innovation initiative aimed at creating a large solution ecosystem in collaboration with the society. We want to accelerate social innovation and development by working together to create innovative solutions to social, cultural, economic, and environmental problems. After supporting İmece's support programs for "Quality Education," "Gender Equality," and "Reducing Inequalities" in 2017, we continued to support the social innovation ecosystem with İmece in 2020.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Direct engagement with policy makers

Trade associations

Funding research organizations

Other

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution

Other, please specify Turkey INDC Preperation	Support	Turkey is a rapidly developing country alongside with its sustainable development. Turkish Energy Industry will act its best to tackle climate change with important projects carried out in renewable energy, energy efficiency, and other low-carbon development scenarios. Turkey, as an Annex I country at the Convention with special circumstances recognized by the Conference of the Parties, can fully utilize the opportunities. Energy Industry can implement its internal strategies, actions and plans following National Climate Change Mitigation and Adaptation Plans by the supporting different instruments: 1- Broad dissemination of knowledge on mitigation opportunities (enabling finance solutions, technology solutions adapted to local circumstances, innovative alternatives to the conventional patterns) 2- Coherent and comprehensive implementation of high-level targets in close cooperation with the government and other related sectors 3- Strengthening national institutions for technology, finance, and capacity building.	Zorlu Energy is committed to contributing to the development of appropriate measures to address energy and climate-related challenges. We are actively involved in policy development through our participation in activities developed by public institutions. The views and proposals for the draft INDC-Turkey which is then submitted to UNFCCC were discussed and shared with the MoEU –Turkey.
Adaptation or resilience	Support	Zorlu Energy Group is a member of The Climate Platform, an initiative jointly established by Regional Environment Centre Turkey (REC Turkey) and TÜSİAD (Turkish Industry and Business Association) In July 2009 for the purpose of supporting efforts of Turkish business community tackling climate change, and transition to a low carbon economy. Zorlu Energy Group has signed “The 2°C Convention” which invites the	The Company defends a strong support to renewable generation and supported the interaction between the Energy Sector Companies and the government to achieve mitigation and adaptation to climate change events.

		governments to accept their responsibilities regarding climate change; and to collaborate with each other on “international cooperation”, “effective market mechanisms”, “financing the transition to low carbon economy”, “encouraging innovation and efficiency,” “forest preservation” and “adaptation to climate change and risk reduction”. In this scope, Zorlu Enerji has been reporting its greenhouse gas emissions since 2009 within the framework of the ISO 14064-1 standard. IPCC 2006 Guidelines are used as the methodology for the related calculations.	

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

TÜSİAD

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association’s position

Zorlu Energy Group is a member of The Climate Platform, an initiative jointly established by Regional Environment Centre Turkey (REC Turkey) and TÜSİAD (Turkish Industry and Business Association) in July 2009 to support the efforts of Turkish business community tackling climate change and to assist the transition to the low carbon economy. The Climate Platform brings together the business world to discuss major topics of transition to low carbon economies such as technology transfer, financing, and carbon management in the supply chain. The major working areas of the platform, among others such as supporting the private sector on the strengthening of corporate

governance and risk management regarding climate change and providing insight, analysis, and information to the private sector. The platform members support the development of national climate change policies, the establishment of public-private sector cooperation for combating climate change, and active participation of the business community to international negotiations.

How have you influenced, or are you attempting to influence their position?

Zorlu Enerji is a member of the Climate Change Leaders Group formed under the Climate Platform. This group has been working on the climate policies of the Turkish private sector and the expectations in the post-2012 period. We have been following international meetings such as Durban and Doha. In the reporting period, we discussed and shared our views on MRV with the MoU. In this regard, we are in favor of legal infrastructure for monitoring and reporting greenhouse gases with the expectation of a satisfactory national transition strategy to fill in the capacity gaps among the industry sector, consultants, verifiers, and the relevant governmental units. As stated above, we have also provided our views regarding the 2015 International Climate Change Agreement to TÜSİAD.

Trade association

Turkish Cogeneration & Clean Energy Technologies Association (TURKOTED)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

TURKOTED was established in 1998 to support Cogeneration & Clean Energy Technologies Association with regards to wind and solar technology and to encourage the implementation and facilitation of clean energy technologies transition. To achieve this goal, TURKOTED works to develop sustainable energy policies and remove unnecessary barriers to implementation.

How have you influenced, or are you attempting to influence their position?

Zorlu Energy Group is a member of The Turkish Cogeneration & Clean Energy Technologies Association and participates in its meetings. The association members support the development of National Cogeneration & Clean Energy Technology policies. Zorlu Enerji support the association on preparation of an annual country report for COGEN Europe. Zorlu Enerji ensures that its views are acknowledged and integrated into its publications.

Trade association

Turkish Wind Energy Association (TWEA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

TWEA is established by the Council of Ministers in 1992 as a technical non-profit association that follows scientific and technical researches related to wind energy. It aims extensive use of wind energy, collects and complies with technological information in this area, and performs widespread activities including seminars, conferences, and publications for having a common information sharing environment. Additionally, TWEA puts efforts towards extensive use of Wind Energy Potential in Turkey and adaptation of wind energy in the country's economy with General Directorate of Renewable Energy (former EIE), Turkish Electricity Transmission Company (TEİAŞ), General Directorate of Energy Affairs (EİGM), Energy Market Regulatory Authority (EMRA) and Ministry of Energy

How have you influenced, or are you attempting to influence their position?

Zorlu Enerji shares its experience and perform researches related to Wind Energy Technologies in seminars and conferences.

Trade association

World Business Council for Sustainable Development (WBCSD)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The Council works on a variety of issues related to sustainable development. It works to achieve the Sustainable Development Goals (SDGs) through the transformation of six economic systems. These are circular economy, Cities and Mobility, Climate and Energy, Food, Land and Water, People and Redefining Value. Each system transformation is set up as a WBCSD Program with several supplementary Projects.

How have you influenced, or are you attempting to influence their position?

The business model of Zorlu Energy and its products overlaps with sustainability. Mainly, renewable energy production originated IREC certificates, Emission Reduction units from Gold Standard Project, electrical charging stations as an enabler for the automotive industry and solar panels are our products. Being in WBCSD support us for the global sustainability players and creating awareness in Turkey for sustainable prıducts.

C12.3d

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

Yes

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

Our company has on-going cooperation with Regional Environmental Center-Turkey. We support REC with our membership and consult them in certain parts of our sustainability plans and actions. REC is an independent international NGO, which began operations in Turkey in April 2004. REC Turkey works closely with all major stakeholders, including public organizations, NGOs, businesses, and the financial sector. It continuously contributes to national and international initiatives in order to achieve Sustainable Development Goals (SDGs) through its various support programs. The projects supported by REC include; Climate Change Public Awareness Campaign in Turkey, Promoting Climate Change Policies in Turkey, Promotion of ZeroCarbonCity Campaign in Turkey, and Renewable Energy and Energy Efficiency Partnership (REEEP) for CEE and Turkey.
One of our core corporate social responsibility strategies is to raise awareness among children for clean energy and energy efficiency. Children represent the future consumers and will have the power to influence their social environment.
Our company supports many reputable non-governmental organizations such as TOÇEV (Tuvana Foundation for Educating Children), LÖSEV (Foundation for Children with Leukemia) and TEGV (The Educational Volunteers of Turkey) for projects targeting awareness-raising and education of young generation for climate change-related topics including energy use, energy efficiency and renewable sources. These projects include;
'Our energy is for our children' project, which is the first national "energy" themed educational project, developed in collaboration with the Ministry of National Education. It has focused on renewable energy resources and energy efficiency and reached approximately 197000 children to date. As part of this project, we have also collaborated with Bahçeşehir University and Hacettepe University and revised the content to be suitable for 3rd – 4th grade syllabus.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

The overall alignment of Zorlu Enerji's position with the corporate climate strategy has strong support to:
- Effective GHG emissions management aiming to reduce emissions and to enforce the expected requirements related to the UNFCCC;
- Clean energy generation for a more sustainable living
- Responsible business for supporting the achievement of the Sustainable Development Goals (SDGs) and global climate change action agenda.

Our company aims for a new market design that allows the integration of low-carbon technologies, including renewable energy systems via long-term contracts.
We believe that stability and regulatory stability and regulatory compliance control are essential to creating the conditions for the needed investments in the energy sector.
All managerial decisions related to our direct and indirect activities are taken with a sustainability approach through economic, social, and environmental impacts. Our sustainability strategy that is compatible with climate change is annually improved and becoming even more comprehensive each year. The strategy is developed with the support of top management and all departments. This approach has allowed our company to address Climate Change from both mitigation and adaptation perspectives. Key Executives including the CEO are actively taking

part in various environmental and climate change platforms/ organizations thus these issues have top priority on our agenda. They periodically provide research and reports for new markets.
We consider that all climate and energy proposals should be accompanied by a transparent, inclusive, and independently verified impact assessment.
Innovation is the key driver to achieve a low-carbon economy. Technological change and development will significantly enhance the portfolio and, over time, will bring down the cost of reaching global climate change goals.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In voluntary sustainability report

Status

Complete

Attach the document

Zorlu Energy sustainability-report-2020.pdf

Page/Section reference

Governance Page: 28-37
Strategy Page: 39
Risks&Opportunities: 33-34
Emission Figures Page: 103
Emission Targets Page: 40
Other Metrics Page: 97-105

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

Sustainability report of Zorlu Energy provides its vision for being an energy company of the future.

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Chief Executive Officer	Chief Executive Officer (CEO)

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission
I am submitting my response	Investors	Public

Please confirm below

I have read and accept the applicable Terms