

Welcome to your CDP Climate Change Questionnaire 2020

C0. Introduction

C0.1

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

Reporting Scope

Zorlu Energy's CDP Reporting scope has been changed. In previous years only electricity generation companies were reporting as Zorlu Enerji and Zorlu Doğal based on the energy source of the production. In 2020 reporting all **power plants with electricity trade and sales, electrical charging stations and smart solutions for energy use** are in this Zorlu Energy CDP Report scope.

The main income of Zorlu Energy comes from electricity sales and trade however the climate change impact of power generation is much more important. As a result the sustainability and climate change strategy of the company is based on power generation not to the electricity sales and trade which is only a service company. In this report the more than 95% of the emissions reported comes from geothermal power plants, its a renewable source with high emissions.

Zorlu Energy Group will report two more companies in CDP separately. One of them is natural gas distribution and sales company (GAZDAS) and the other one is electricity distribution company(OEDAŞ). In this report, strategy, emissions and targets does not cover OEDAS and GAZDAS.

Company Profile

Zorlu Energy (ZE) was founded in 1993 as one of the Zorlu Holding companies to decrease the energy needs of Turkey in different fields of the energy sector. ZE makes difference among its rivals with its integrated structure which combines engineering, supply and construction services with maintenance, repair and operation services.

Despite the economic fluctuations throughout the world and in our country, while achieving all our sustainability-oriented targets, we achieved a growth of 82% in 2018 compared to the previous year, reaching the highest value of 1.854 million TL in ZE history. By maintaining our performance steadily in 2019, we increased this value to TL 2,034 million. At the same time, we invested approximately 1.888 million TL in 2018-2019.

We managed to achieve many sustainability-oriented principles and signed an agreement with Garanti Bank in 2018 within the scope of green loans that started to become widespread as of 2017 and emerged with the aim of supporting sustainable projects and companies. We **signed the fifth**

Green Loan Agreement (Loan Green) in the world, it is the first of its kind in Turkey. With the green loan agreement, its targeted to reduce our financing costs while improving our performance in environmental, social and governance areas.

ZE defines sustainable energy as “generating and using energy in compliance with inter-generational justice approach without causing irreversible damages to environment and destroying the ecological balance” and progressing rapidly with the **goal of becoming “the energy company of the future”**. With this perspective, ZE invests in new generation technologies and expand our installed capacity.

Electricity Generation:

ZE is a major player in the domestic market with 779,4 MW of installed capacity in Turkey and Pakistan. Its portfolio comprises 7 hydroelectric, 4 wind(3 in Turkey & 1 in Pakistan), 4 geothermal and 2 natural gas power plants. **By the end of 2019, 89% of our installed power in Turkey comes from renewable energy sources.**

The %66 of our electricity production in renewable energy comes from geothermal power plants. ZE produce more than 20% of geothermal energy in Turkey with 305 Mwh.

Charging Stations:

ZES (Zorlu Energy Solutions) established under ZE and fast-charging stations in the city and on intercity roads in 2019 installed. Since now more than 149 charging stations in total are in place and we are the leading company with 35% market share in Turkey for fast charging stations and standard charging stations in residential and business areas with collaborations with municipalities .

Sustainability Strategy:

ZE with a broad range of technologies and fuel types, including coal, solar, hydro-power, geothermal and wind. In 2019 ZE emissions calculated as 1,565,104 tCO2 with 10.6 % decrease.

ZE defines its sustainability strategy as to be among the front runners of global innovation economy of the future.

The targets based on ZE strategy are;

- Increasing the R&D investments by 50%
- Natural resource efficiency and investment on renewable energy sources to decrease 50% GHG intensity of the company’s energy source mixture
- Responsible consumption and production awareness to manage the supply chain in line with "Zorlu Supply Chain Principles"

To manage and keep sustainability structure strong ZE has a Sustainability Committee(SC) which led by the Corporate HSEQ Manager. A high level of the committee provide a holistic and comprehensive perspective, bring the expansion of sustainability knowledge and behavior change in the company. SC reports to ZE CEO who review the climate change performance and directing long term strategy. CEO reports to Zorlu Holding



executive board. Board chair and sustainability board members are responsible for climate change in terms of strategy and approval of action plans respectively.

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, 2019	December 31, 2019	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 of Zorlu Holding. The Board Chairman has an active role in defining strategies and policies by coinciding with climate change and renewable energy-related issues. "Smart Life 2030" transformation for low carbon economy has been started with the vision of Board Chair and expanded to all ZH companies including ZE.
Chief Sustainability Officer (CSO)	ZE under the umbrella of ZH, reports to the executive board of ZH. ZH chief sustainability officer is responsible to approve the action plans presented by the CEO of ZE. Based on the risk management model of the company high budget required action plans related to climate change are under the control of the Chief Sustainability Officer.

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	<p>ZH executive board has utmost responsibility on management of ZE. The board chair is responsible for the strategy and policies. Board member (Chief Sustainability Officer) has the responsibility for action plans and budgets.</p> <p>With the leadership of executive board Smart Life 2030 has been continued with its targets for the transition to low carbon economy. This strategy and budget of transition has been approved by the executive board.</p> <p>With the strategy and guidance of executive board, ZE defined its action plans and present it to the board for the approval.</p>

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
Sustainability committee	Both assessing and managing 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. The executive board of ZH has an executive member who is **Chief Sustainability Officer** is also responsible for the approvals of action plans related to sustainability and climate change.

CEO of ZE is responsible for both assessing and managing climate related risks and opportunities through;

- 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 advised and assisted by the “**Sustainability Committee**” consisting high level executives and managers of various departments as listed below, in the company. This wide range and high level of the committee;

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

The establishment of the committee is completed by the end of 2014 and it has started to work actively to integrate these aspects into its corporate business targets and strategies since 2015.

With the vision of **Smart Life -2030**, sustainability and climate related issues are reevaluated in terms of risks and opportunities. Sustainability committee which is led by Corporate HSEQ Manager has responsibility for both assessment and management of the climate related risks and opportunities as listed below;

HSEQ Manager:

Leading Sustainability Committee

Reporting sustainability risks and opportunities and climate change target performance to CEO

Emission reduction target setting and performance review

Following international developments about climate change, environment and sustainability.

Identify the sustainability policies and strategies by assessing corporate GHG mitigation performance Identify the climate policies by conducting climate change mitigation activities

Assessment and management of the defined risks by the business units

Chief Risk Officer:

Guidance on risk management methodologies

Internal Control Manager:

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

Reviewing of action plans in terms of ethical principles of ZH

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 several communication channels and tools which will allow employees to contribute to the sustainability & climate change mitigation activities

Manage the environmental and social contributions

Corporate Communications Manager

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 Zorlu Enerji Plants' climate change and environmental performances periodically

Monitor& report climate change mitigation activities

Environment and Corporate Affaires Assistant Manager:

Evaluate corporate risks and opportunities 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 Manager

Prepare financial statements for GHG related decision making

Purchasing Manager

Manage Green Supply issues.



Application of Supply Chain Principles of ZH which contains management of supplier emissions

Investments Manager

Recommend alternative solutions for the road map based on climate change risks and opportunities

Project Finance and Development Manager

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

Corporate HSEQ Department, HSEQ Executive

Improve & manage data collection and measurement system for calculating the direct and indirect emissions resulting from ZE activities and its 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,

As a requirement of ISO 14001 Standard, Environmental Management Representative presents the environmental targets (including Climate Change targets and ISO14064-1 system requirements), internal audit results, regulatory compliance matters, and CDP performance and action plans to the committee.

Investor Relations Director, HEPP Representative, WPP Representative, GPP Representative

Evaluate plant wise GHG indicators and technical assistance

Electricity Trade Representative

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	

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 incentivized	Comment
Board Chair	Non-monetary reward	Behavior change related indicator Other (please specify) Value Chain Engagement.	The Board Chairman has an active role in defining strategies and policies including climate change related issues with focus on adaptation & mitigation activities. In 2019 Smart Life -2030 has been continued to its studies for the transition of low-carbon economy. The company started to invest electrical vehicles and charging stations in Turkey. This transformation needs behavior change not only in the company but also in all value chain. To support this transformation collaborations started as listed below; *2,5 millions TL provided to the social entrepreneurship ecosystem *Scholarships for 334 students per year for training to equip them with the skills and competencies required by the 21st century. *In order to observe and experience the effects of digitalization in lives, ZH have 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 sustainability policy of the company. -Reduction in energy consumption and fossil fuel resources consumption -Support Smart Life-2030 and leadership on behavior change
Other, please specify HSEQ Manager	Monetary reward	Emissions reduction target Behavior change related indicator	HSEQ Manager has target to; Achieve emission reduction targets, Support to Smart Life-2030 in terms of data development of data collection systems. A certain amount of profit is shared as a bonus (monetary reward) by the achievement of the relevant indicators like recognition. Some good project ideas are rewarded with rewards like monetary support in trainings, plane tickets to the city chosen etc.

All employees	Non-monetary reward	Behavior change related indicator	In order to raise employee awareness on climate change and low-carbon economy, environmentally positive action ideas to protect nature contest is carried out in every "World Forestry Day" and "World Environment Day". According to results, five successful employees are rewarded with participation in some outdoor activities with their families like forestation activities in our wind project areas.
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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 risk and opportunities expected not to have wide variation. Short term horizon outputs about climate change is mostly related to expected extreme weather conditions like storm, droughts, and floods. Also foreseeable regulations about climate change defined in short term.
Medium-term	3	10	Medium-term horizon are mostly based on the trends that may occur between 3 to 10 years and its in line with the SDG target year(2030). The risks and opportunities defined for medium-term are mostly board strategy level and contains strategical decisions to be in line with the low carbon economy transition. ZE expect to create an opportunity with electrical car charging stations in 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 with technological developments and R&D .
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C2.1b

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

In Zorlu Holding (ZH) companies including Zorlu Energy (ZE), all cases that may cause to deviation to achieve our aims and objectives are defined as risk.

Corporate risk management department is responsible to manage all defined risks consistently, with an overall approach and economically.

Identification and managing risks are important in terms of strategical and financial planning. With merging risk management to strategical and financial planning, the company created an awareness for the future possible cases that may cause not to achieve to its objectives and also a chance to be proactive. As a result of this, ZH started Smart Life 2030 which covers all Zorlu companies including Zorlu Energy for the transformation to low-carbon economy. We categorize risks as per risk management procedure.

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 CEO and executive board.

In CDP reporting we focus on gross risk and very high and high impacts about climate related risks are reported.

Very High Impact Definition;

- The cost of the risk is equal or more than 6 million TL or more
- Effect 50% of clients
- Effect 50% of employees
- Bad reputation of company on TV and digital platforms
- Operation shut down by official authorities

High Impact Definition;

- The cost of the risk is between 6 million TL and 3 million TL
- Loss of critical system or process damage that effects operation
- Effect between 25% and 50% of clients
- Effect between 25% and 50% of employees
- Bad reputation in conventional digital platforms and regionally
- Apply sanction 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

Identification of Risks:

Risk management is integrated to 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's make our company to review risks and opportunities daily within our operation.

In all facilities, we define stakeholders and their needs and expectations. As per our operation and stakeholder expectations, we define our risks and opportunities. 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 environment,
- *Technology updates for efficiency
- *Low carbon transition.

If any risk or opportunity identified under these categories, they are sharing with plant managers and reporting to Sustainability Committee for the assessment of risk. The committee has members from each plant, so sharing identified risk to the committee provide wider perspective for the evaluation of alternative solutions.

As an example 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.

Assessment of Risks:

At the management level; Climate related risks and opportunity assessment is under responsibility of sustainability committee. Sustainability committee which is appointed by CEO is overview and evaluate Zorlu Enerji's risks & opportunities related to climate change .

Chief Risk Officer is also the member of the sustainability committee and with the guidance of him risk taxonomy from COSO standards are used for categorization as high, medium or low. It contains;

- identification of risks (from facility data, swot analysis, stakeholder consultation)
- assessing severity of risks (as per heat map defined in risk procedure)
- prioritization of risks (For the management of the risks action plans are prioritize)
- identification of the action plans.

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

- *GHG and Energy data's submitted from plants,
- *Environmental compliance

- *Swot Analysis
- *Stakeholder Meeting Results
- *Performance reports

It is sustainability committee responsibility to consolidate the climate related risk and opportunities with their action plans. As per data consolidated in the committee, climate related risks and opportunities and Sustainability policy are defining and reporting to the CEO who is responsible of climate change performance and then Executive Board. The Executive board is authorized to approve the major actions defined in risk analysis and designing the long term sustainability strategy.

In 2019, regulatory risks as well as physical, reputation and market risks are some of the risks assessed at the company level by the sustainability committee.

Responding to Risk;

As per data consolidated in the committee, climate related risks and opportunities and sustainability policy are defining and reporting to the CEO and then Executive Board.

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 CEO and executive board. The major action plan approvals are under responsibility of 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 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

The risks we have identified over short term are;

-Extreme weather conditions,

Mid Term;

-Increased operational costs due to international agreements

-Regulatory risks

- Growing solar power plants
Long Term;
- Customer behavior change and Low Carbon Economy Transition

To manage the transition risks like behavior change and low carbon transition Smart Life 2030 transition plan has been applied.. The company committed 50% GHG reduction and 50% increase in R&D investments for solar power energy, electrical vehicle charging stations. For regulatory adaptation we are directly working with policy makers or NGO's like TUSIAD.
To manage the physical risks of the climate change like damage on wind power plants, we are investing different type of renewable energy like solar panels with the vision of Smart Life - 2030.

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 assessment because the Turkish government declared its incentives to local coal through Strategic Plan item A.2 PG1.1. The objective is defined as increasing the electricity production from local coal to 60 billion kWh by 2019 which base year defined as 32,9 billion in 2013. Since our business strategy is based on sustainability and climate change, the company invests in low carbon technology and undertake more investment to produce the same amount of electricity from renewable sources. In 2019 electrical vehicle and their charging stations investments have been done in line with Smart Life 2030.
Emerging regulation	Relevant, always included	Emerging regulation is considered in our risk assessment because the foundation of the World Bank MRV Regulation is in force since 2015. The expected next phase of the project is the emission trading scheme. The official announcement about the regulation is not done however by 2020 it may come into force. Since our business has 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. However 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.

Technology	Relevant, always included	<p>Technology is considered as a risk since energy sector is one of the most important sector that R&D projects are developing. Zorlu Energy under the umbrella of Zorlu Holding launched Smart Life 2030 transformation plan for low carbon economy. Smart Life 2030 cover investments on;</p> <ul style="list-style-type: none"> - Renewable energy to balance company's GHG emissions, -Smart Grid -Electrical Vehicle (EV) -Charging stations of electrical vehicles. <p>Those investments are the action plans of climate related risks, technological developments and customer behaviour changes.</p>
Legal	Not relevant, explanation provided	<p>Climate change is not defined in any law of Turkey. There is only one regulation which is MRV (Measuring Reporting and Verifying of GHG Emissions) and it is funded by World Bank. There is no penalty about fail to comply with that regulation because there is no climate policy. So legal is not considered in our risk assessment.</p>
Market	Relevant, always included	<p>Market risk considered in our assessment as relevant because of two reasons. One of them is about expected increased cost of natural gas due to international agreements to fight with climate change. The second one is customer behaviour change. In 2019 ZE invested to electrical vehicle charging stations and also solar panels.</p>
Reputation	Relevant, always included	<p>Reputation is considered in our risk assessment and concluded as our opportunity because Zorlu Enerji's corporate response and performance related to the environmental and climate change related issues increases the good reputation of the Company in the eyes of all stakeholders, especially investors and customers. However since our sector is one of the most energy producer we can face sectoral reputation risks with regards to insufficient action taken against climate change but it is also under control through Zorlu Holding's low carbon transition plan lauched as Smart Life 2030. As part of a Smart Life Zorlu Energy has stretch targets like to reduce GHG emissions 50%, increase R&D investments 50% .</p>
Acute physical	Relevant, always included	<p>Acute weather events are considered as relevant. We get natural gas through long pipelines like BTC (Baku-Tiflisi-Ceyhan Pipeline) and extreme weather conditions may cause damage on the pipeline and we can have delays to receive our gas and it directly effects our production. The second issue is about the effectiveness of our equipment. Both natural gas power plant and renewable energy power plants under our company may be effected with extreme weather events.</p>

Chronic physical	Not relevant, explanation provided	Chronic temprature change is assessed however it is not considered as risk because stable conditions can be managed in our production.
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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 bu siness.

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 produce %67 of its electricity from renewable sources which is directly depend to the weather conditions. Weather conditions is one of the important scenario that has financial impacts on production. Extreme flood or cyclones may cause interruption to our operation because of damage of assets. In scenario analysis one of the critical variable used was weather conditions. While the maximum financial impact comes from the damage of switch yard damage that interrupts the transmission of the produced electricity, the minimum financial impact comes from the wind turbine damage.

Damage on switch yard or transmission line has to be solved with TEIAS, it is not only under 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 switch yard or transmission line might be damaged which interrupts the sales of the produced electricity.

The minimum financial impact scenario due the extreme weather conditions studied was for wind farm and a 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-low

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)

3,000,000

Potential financial impact figure – maximum (currency)

750,000

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 a damage occurred in the switch yard or in the transmission line. The financial impact of the scenario calculated as around 3% of the revenue from geothermal power plants.

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 one turbine estimated and it is multiplied with the guarantee sales price for renewable energy which is 7,3 USD Cent/ kWh.

Cost of response to risk

1,500,000

Description of response and explanation of cost calculation

Interruption of electricity sales has financial impacts to our company but it has also social and economical cost to electricity consumers and transmission line operating company because balance on transmission line is important for the assets. To manage the risk we monitor transmission line and fully in contact with TEIAS on regular inspections and preventive maintenance who is responsible from the transmission of the electricity.

We also have a business continuity plans for crisis management like extreme weather events or earthquake.

Finally we have insurances for the damage of 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 Enerji is produced 16,981,663 kWh. electricity from natural gas in 2019 and most likely to be subjected to this compliance and trading scheme this may lead to increased costs related to;

- *Purchase of carbon credits in order 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

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)

19,773,265

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Our GHG emissions in 2019 from natural gas power plants calculated as 124,556 tCO₂. The financial impact calculated based on EU ETS price which is around 25 Euro /tonne. (1 Euro accepted as 6,35 TRY)

Cost of response to risk

82,400

Description of response and explanation of cost calculation

As Zorlu Energy we produce 67% of our electricity from renewable sources but natural gas power plants still creates financial risk due to emerging regulation.

To manage the risk due to possible emission trading scheme we also develop emission reduction units from our wind power plants. In 2019 221,930 tCO₂ reduction has been developed from Saritepe and Demirciler wind power plants. Preperation of the projects as per UNFCCC CDM Methodology and validation and verification services are paid defined for cost the risk. The UNFCCC CDM Projects are not financially attractive for now however to manage the define risk we follow the time frames defined by UNFCCC Methodologies we are developing projects for voluntary carbon market.

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 hydro power plants and as per IPCC 5th assessment report rains will decrease all over Turkey except north east of Turkey with medium confidence. It may cause low production due to decreased water level in our hydro power plants. In 2019 the total production from hydro power plants were 362,152,137 kWh. Decrease in electricity production from hydro power plants defined as 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)

1,022,008

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Zorlu Energy has 7 hydro power plants in Turkey. In IPCC reports and in 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 hydro power plants to be conservative

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 İközdere HEPP. Before renovation, İközdere 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

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 67% of electricity production comes from renewable sources like geothermal, hydro and wind power plants. Public conscious is growing about climate change and consumer demand on using renewable energy sources increase especially B2C companies. The wholesale price of electricity is lower than the price sold to consumers with bilateral agreement. Corporate response and performance related to the environmental and climate change related issues increases the good reputation of the Company in the eyes of all stakeholders, especially investors and customers.

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

The opportunity scenario defined as increase demand to electricity from renewable sources with higher public conscious 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, a single figure estimate

Potential financial impact figure (currency)

1,272,353

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

0,1% increase in renewable electricity sales income has been accepted to define the potential financial impact. The ratio is defined based on the REC Certification's additional value that create to the renewable sources and difference of bilateral agreements done with electricity consumer directly instead of whole sale.

Cost to realize opportunity

600,000

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 conscious 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 which refers to UNFCCC - CDM Methodologies. Zorlu Energy also get validation and verification services from accredited third parties and developed emission reduction assets. It makes an additional income each year based on the 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)

1,409,255

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 are around 1 Euro tCO₂. This price is multiplied with the amount of latest verified emission reductions is 221,930 tCO₂ reduction from Sartepe and Demirciler WPP's. The average currency for Euro is accepted as 6,35 TRY in 2019

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 2019 used to demonstrate the cost of opportunity.. To get the benefits from carbon market, we follow the time frames defined by UNFCCC Methodologies we are developing projects for 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 of increase on energy consumption comes from digitalization and increased industrial production. As per 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 beside this, the company invest in electrical charging stations. This investment support to transmission to low carbon economy and also creates demand on electricity.

Also Zorlu Energy invest in solar panel production in Turkey and this support distributed electricity generation.

Zorlu Energy invest 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)

85,247,652

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 2019 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

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) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.1b

(C3.1b) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
2DS IEA 450	<p>To forecast the situation that may occur due to climate change we use scenario analysis in Zorlu Energy. We focus on our electricity generation facilities because they are the production sites has higher environmental impacts.</p> <p>Two critical variables defined for scenario analysis. One of them is physical changes due to climate change and the other one is customer behavior changes.</p> <p>For the physical changes we used IPCC reports and for customer behavior changes we defined the alternative scenarios based on IEA Report data's.</p> <p>We used company specific data's where available however for risk and opportunity analysis we used some assumptions. All assumptions used are from publicly available references.</p> <p>The highest negative impact scenario defined as weather events. Since %67 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</p>

	<p>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 to electricity and to renewable energy sources.</p> <p>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).</p> <p>We calculated the potential financial impacts of risks and opportunities for alternative scenarios. All risks defined about climate change are reported to sustainability committee. Risk manager of Zorlu Holding is also in the committee and high risks and investment needed action plans are reported to executive board for the approval.</p>
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C3.1d

(C3.1d) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	<p>Zorlu Energy products and services are influenced by climate related risk and opportunities. In the company the transition to low carbon economy is managed under Smart Life 2030 project. With in line to the transition to low carbon economy, Zorlu Energy invest in electrical vehicle charging stations and solar panel production and renewable energy production. Those are the main products manage the risks and opportunities occur from climate change. Renewable energy production promoted with guarantee price by Ministry of Energy and R&D based investments like electrical charging stations and solar panel production are promoted by the and Ministry of Industry and Technology.</p> <p>Zorlu Energy is developed emission reduction units from its wind power plants. Emission reductions are developed based on UNFCCC methodologies for renewable sources.</p> <p>The magnitude of impact on our business due to our products and services is calculated and defined as high because our products and services are in line with steps to fight with climate change. The impacts are defined in short, medium and long term horizons.</p>

Supply chain and/or value chain	Yes	Life cycle approach is integrated to Zorlu Energy's management model and Zorlu Supply Chain principles are applying under Smart Life 2030 transformation to low carbon economy. It also contains the management of emissions and this support transformation to low-carbon economy. With expected customer behavior change, supply chain and value chain impacts are evaluated in our risk management . Zorlu Energy defined actions for a long term risk management. The opportunity for our business defined as positive reputation from our customers and increase demand due to weather conditions. The increased demand will positively effect our business in a long term with the decreased public conscious and effects of climate change.
Investment in R&D	Yes	Low carbon economy transition committed by Zorlu Holding and managing with Smart Life 2030 Project which is launched in 2018. 50% more investment to low carbon products target has been set. Under this target the company invest in electrical vehicles charging stations and solar power. R&D based investments like electrical charging stations and solar panel production are promoted by the and Ministry of Industry and Technology.
Operations	Yes	With the transition to low carbon economy, our operations work for energy efficiency. 50% emission reduction target defined and it effect our way of doing business in operations. Second issue is increased operational costs that may occur because of the possible GHG limitation on power plants with emission trading scheme and increased natural gas prices due to international agreements. Those impacts may realize in mid-term however their effect will be high on our operations.

C3.1e

(C3.1e) 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	Transition to low carbon economy is managed with Smart life 2030 project. The main effect of Smart Life 2030 project is the areas we invest as Zorlu Energy. As an energy producer, the renewable energy production reached to 67% of total production. We invest to increase the production capacity with the same level of source and 50% decrease of energy

<p>Capital allocation Access to capital Assets</p>	<p>consumption in our operations. Those directly effect our revenues, direct costs ans capital expenditures. Zorlu Energy als has target to increase the renewable energy production per revenue. The capital allocation will be done to renewable sources. Also solar panel investment and electrical charging station investments continued in 2019 which clearly show the capital allocation to low carbon economy transition. Investment on renewable energy production is very expensive investments but since they are green technologies it creates positive impact to access to capital. ZE is the first company applied green fund in Turkey for its investments. Zorlu energy also develop financial assets from renewable sources in voluntary carbon market through it wind power plants. Weather events defined as risk on our physical assets. If any damage occurs it will effect our financials to manage this risk we have our insurance about business interruption from natural disasters. Based on the international reports, increase in electricity demand and distributed energy are expected and this is inline with our development strategy. The negative impact on our revenue may occur due to increased operational cost. It may occur because of the possible GHG limitation on power plants with emission trading scheme and increased natural gas prices due to international agreements. Those impacts may realize in mid-term and their effects studied on our financials .</p>
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C3.1f

(C3.1f) 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 possible risks and opportunities. As an energy sector company to manage the risks occurs due to climate change, Zorlu Energy strategically decide to invest in renewable sources. Beside 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

2018

Target coverage

Business division

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Base year

2015

Covered emissions in base year (metric tons CO₂e)

736,379.5

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

75

Target year

2025

Targeted reduction from base year (%)

17

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

611,194.985

Covered emissions in reporting year (metric tons CO₂e)

1,438,676.22

% of target achieved [auto-calculated]

-561.0092590126

Target status in reporting year

Underway

Is this a science-based target?

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

Please explain (including target coverage)

This target covers geothermal and hydroelectric power plants. As our hydroelectric power plant power densities are below the required criteria, we only account for geothermal power plants related project emissions.

In geothermal power plants, there are two main factors that affect CO₂ emissions: Natural discharge and injection. In our geothermal power plants which are the flash steam system, the amount of dissolved CO₂ in the injected fluid is very small. The amount of saturated CO₂ in the reservoir will be reduced over time thanks to dilution with keeping a steady injection rate as per the production rate. So CO₂ emission will decrease in time.

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

2016

Target coverage

Business division

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Intensity metric

Metric tons CO₂e per megawatt hour (MWh)

Base year

2015

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

0.347

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

75

Target year

2022

Targeted reduction from base year (%)

50

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

0.1735

% change anticipated in absolute Scope 1+2 emissions

48.33

% change anticipated in absolute Scope 3 emissions

0

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

0.182

% of target achieved [auto-calculated]

95.1008645533

Target status in reporting year

Underway

Is this a science-based target?

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

Please explain (including target coverage)

This target covers natural gas and wind power plants. In 2015, which is our target base year, our intensity is 0.347 ton CO2 emission per generated MWh energy. We aim to reduce our intensity by 50% until 2022. In the reporting year, we achieved to decrease the intensity to 0.182 tCO2/MWh, thus we achieved 95% of our target due to energy efficiency activities.

Target reference number

Int 2

Year target was set

2017

Target coverage

Business division

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Intensity metric

Metric tons CO₂e per megawatt hour (MWh)

Base year

2017

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

0.553

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

75

Target year

2025

Targeted reduction from base year (%)

15.5

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

0.467285

% change anticipated in absolute Scope 1+2 emissions

11.5

% change anticipated in absolute Scope 3 emissions

0

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

0.607

% of target achieved [auto-calculated]

-62.9994750044

Target status in reporting year

Underway

Is this a science-based target?

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

Please explain (including target coverage)

This target covers geothermal and hydroelectric power plants. As our hydroelectric power plant power densities are below the required criteria, we only account for geothermal power plants related project emissions.

In geothermal power plants, there are two main factors that affect CO2 emissions: Natural discharge and injection. In our geothermal power plants which are the flash steam system, the amount of dissolved CO2 in the injected fluid is very small. The amount of saturated CO2 in the reservoir will be reduced over time thanks to dilution with keeping a steady injection rate as per the production rate. So CO2 emission will decrease in time.

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	2	
To be implemented*	0	0
Implementation commenced*	0	0
Implemented*	0	0
Not to be implemented	0	0

C4.3b

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

C4.3c

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

Method	Comment
--------	---------

<p>Dedicated budget for low-carbon product R&D</p>	<p>We invest 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.</p> <p>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 to develop innovative and value-added applications that will help increase customer satisfaction.</p> <p>Electricity Storage: The project aims to integrate storage systems for different purposes and with different configuration 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.</p> <p>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.</p> <p>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.</p> <p>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 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.</p>
<p>Compliance with regulatory requirements/standards</p>	<p>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.</p> <p>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</p>

	<p>international conventions, and environmental awareness.</p> <p>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.</p> <p>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.</p> <p>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 European Commission has waitlisted the project with an above-threshold score. 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.</p>
<p>Dedicated budget for other emissions reduction activities</p>	<p>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.</p> <p>We have received the “Gold Standard” certificate for our Gökçedağ, Saritepe 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 to 221,930 tons of CO2 VER.</p>

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 cause avoided emissions as per baseline scenario which is conventional production in Turkish national grid.

Renewable energy sources basically low carbon products and avoided emissions has 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 to 221,930 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

After the Gökçedağ WPP, Zorlu Enerji received the Gold Standard Certificate for the Sarıtepe and Demirciler WPPs as well. Sarıtepe and Demirciler WPPs are expected to reduce CO2 emissions by nearly 180,000 tons per year, ensuring high-quality carbon credits by guaranteeing transparency and credibility in the voluntary carbon market.

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 on different fields of energy sector providing a global scale integrated service. Zorlu Enerji Group has lots of subsidiary companies operates 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.

In line with our target to lead the energy sector in which we operate, we continue to grow by continuing our journey on a global scale. According to Zorlu Holding Smart Life 2030 Strategy, as Energy Group, we set our goals and strategies. In 2018, we reconsidered our Sustainability Strategy with the "2022 Vision" considering our future-oriented development goals and changing needs and presented them to our stakeholders. In the previous years, only electricity generation companies are reported in two different reports as "Zorlu Doğal Elektrik Üretim A.S." and "Zorlu Enerji Elektrik Üretim A.S.". Zorlu Doğal covers the geothermal and hydropower plants, Zorlu Enerji covers the natural gas power plant and wind power plants.

In line with the Zorlu Holding Smart Life 2030 Strategy, the reporting boundary has extended including all companies to be more transparent. Starting from this year, except natural gas sales and distribution activities, all companies are reported together in this report. Zorlu Doğal Elektrik Üretim A.S. will not be reported separately anymore. Natural gas sales and distribution activities will be reported under the Gazdaş account. Therefore, the base year emissions have been recalculated including all related emissions in line with the GHG Protocol Corporate Standard since organizational boundary has been changed.

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 on different fields of energy sector providing a global scale integrated service. Zorlu Enerji Group has lots of subsidiary companies operates 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.

In line with our target to lead the energy sector in which we operate, we continue to grow by continuing our journey on a global scale. According to Zorlu Holding Smart Life 2030 Strategy, as Energy Group, we set our goals and strategies. In 2018, we reconsidered our Sustainability Strategy with the "2022 Vision" considering our future-oriented development goals and changing needs and presented them to our stakeholders. In the previous years, only electricity generation companies are reported in two different reports as "Zorlu Doğal Elektrik Üretim A.S." and "Zorlu Enerji Elektrik Üretim A.S.". Zorlu Doğal covers the geothermal and hydropower plants, Zorlu Enerji covers the natural gas power plant and wind power plants.

In line with the Zorlu Holding Smart Life 2030 Strategy, the reporting boundary has extended including all companies to be more transparent. Starting from this year, except natural gas sales and distribution activities, all companies are reported together in this report. Zorlu Doğal Elektrik Üretim A.S. will not be reported separately anymore. Natural gas sales and distribution activities will be reported under the Gazdaş account. Therefore, the base year emissions have been recalculated including all related emissions in line with the GHG Protocol Corporate Standard since organizational boundary has been changed.

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 Voluntary 2017 Reporting Guidelines

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)

1,559,891

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

5,214

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

35,516

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 2019" 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 crosschecked 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

2,047

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

0

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. We record all kinds of waste generated in our activities every year 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

328

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 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

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

1,818

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

Relevant, not yet calculated

Please explain

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

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

Relevant, not yet calculated

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 sold product, electricity, does not have an end of the life treatment process. Therefore, there are no Scope 3 emissions 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

Not relevant, explanation provided

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

0.000272

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

1,565,104

Metric denominator

unit total revenue

Metric denominator: Unit total

5,748,113,000

Scope 2 figure used

Location-based

% change from previous year

77.64

Direction of change

Decreased

Reason for change

The revenue has decreased 77.64% and our absolute gross emissions have decreased 10.56% comparing to the previous year. Since this year's reporting boundary is extended, both power generation and sales services are reported. Therefore, the emission intensity per revenue was decreased.

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	1,484,910	IPCC Second Assessment Report (SAR - 100 year)
CH4	42,291	IPCC Second Assessment Report (SAR - 100 year)
N2O	534	IPCC Second Assessment Report (SAR - 100 year)
HFCs	32,156	IPCC Second Assessment Report (SAR - 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	1,363,668	42,264	0	1,438,088	The figure includes geothermal fugitive emissions. Total gross scope 1 emissions include also N2O fugitive emissions.
Combustion (Electric utilities)	116,090	25	0	116,624	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)	608	1	0	631	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	1,559,828
Pakistan	62

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	120,917

Wind Energy Operations	139
Geothermal Energy Operations	1,438,318
Hydro Energy Operations	137
Administrative Operation	380

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	226	40.245104	28.955018
Lüleburgaz Natural Gas Power Plant	120,690	41.4	27.35
Gökçedağ Wind Power Plant	56	37.074627	36.246399
Sartepe Wind Power Plant	13	37.200244	36.681666
Demirciler Wind Power Plant	7	37.246583	36.628055
Pakistan Wind Power Plant	62	25.043613	67.999048
Alaşehir Geothermal Power Plant	63,170	38.233	28.261
Kızıldere I-II-III Geothermal Power Plant	1,375,149	37.956213	28.842528
Ataköy Hydro Power Plant	0	40.424004	36.884118
Beyköy Hydro Power Plant	7	40.073156	30.755448
Çıldır Hydro Power Plant	13	40.900774	43.328855
İkizdere Hydro Power Plant	14	40.795463	40.551031
Kuzgun Hydro Power Plant	4	40.183631	41.063687
Mercan Hydro Power Plant	50	39.413794	39.30221

Tercan Hydro Power Plant	49	39.755985	40.40183
İstanbul Headquarters	103	40.993661	28.699289
Ankara Office	19	39.892882	32.816238
Zorlu Enerji Solutions (ZES)	0	40.993661	28.699289
OEPSAŞ	258	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	116,745
Mobile Combustion	666
Fugitive Emissions	32,157
Process Activities	1,410,098
Office Activities	225

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	1,559,511	<p>Geothermal project activities have emissions of CO₂ and CH₄ due to the release of non-condensable gases from produced steam. 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 emission since the electricity is generated from renewable sources.</p> <p>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.</p>
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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 CO ₂ e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption				

Other emissions reduction activities	184,747	Decreased	10.6	<p>At the previous years, only electricity generation companies are reported in two different reports as "Zorlu Doğal Elektrik Üretim A.S." and "Zorlu Enerji Elektrik Üretim A.S.". Zorlu Doğal covers the geothermal and hydro power plants, Zorlu Enerji covers the natural gas power plant and wind power plants.</p> <p>In line with the Zorlu Holding Smart Life 2030 Strategy, the reporting boundary has extended including all companies to be more transparent. Starting from this year, expect natural gas sales and distribution activities, all companies are reported together in this report. Zorlu Doğal Elektrik Üretim A.S. will not be reported seperatly anymore. Natural gas sales and distribution activities will be reported under Gazdaş account.</p> <p>In 2018, the total gross (scope 1 and scope 2 combined) emissions of Zorlu Enerji is 189.562 tCO2e, the total gross (scope 1 and scope 2 combined) emissions of Zorlu Dogal is 1.560.290 tCO2e. This reporting year, total emissions cover both Zorlu Doğal and Zorlu Enerji. So, the total emissions are decreased by 10.6% comparing to the previous year.</p> <p>We aim to use domestic and renewable resources efficiently with advanced technology and innovative solutions. Our industrial plant in the transition to 4.0, being an example for Turkey, is shaping up to our investments in line with smart applications. We aim to improve the diversity of resources by increasing the share of renewable energy in our product portfolio, especially geothermal, solar, and wind energy both domestically and abroad. As a result of energy efficiency solutions, total emissions decreased by 10.6%.</p>
Divestment				
Acquisitions				
Mergers				
Change in output				

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 30% but less than or equal to 35%

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	353,437	353,437
Consumption of purchased or acquired electricity		0	11,268	11,268
Consumption of self-generated non-fuel renewable energy		80,790		80,790
Total energy consumption		80,790	364,705	445,495

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

31,318

MWh fuel consumed for self-generation of electricity

23,657

MWh fuel consumed for self-generation of heat

1,128

MWh fuel consumed for self-generation of steam

6,534

Emission factor

56.1

Unit

kg CO2 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.

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

3,287

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

3,287

MWh fuel consumed for self-generation of steam

0

Emission factor

74.1

Unit

kg CO2 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

Diesel is consumed by vehicles and generators.

Fuels (excluding feedstocks)

Lignite Coal

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

318,749

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

248

MWh fuel consumed for self-generation of steam

318,501

Emission factor

101.1

Unit

kg CO2 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.

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

14

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

14

MWh fuel consumed for self-generation of steam

0

Emission factor

69.3

Unit

kg CO2 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

Gasoline is consumed by vehicles and generators.

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)

83.8

Gross electricity generation (GWh)

360

Net electricity generation (GWh)

322

Absolute scope 1 emissions (metric tons CO2e)

120,917

Scope 1 emissions intensity (metric tons CO2e per GWh)

375.74

Comment

Natural gas

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)

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)

2,009

Net electricity generation (GWh)

1,709

Absolute scope 1 emissions (metric tons CO2e)

1,438,319

Scope 1 emissions intensity (metric tons CO2e per GWh)

841.73

Comment

These figures cover all our geothermal power plants operating in the reporting year: Alaşehir, Kızıldere I, Kızıldere II and Kızıldere III

Hydropower

Nameplate capacity (MW)

118.9

Gross electricity generation (GWh)

362

Net electricity generation (GWh)

361

Absolute scope 1 emissions (metric tons CO2e)

137

Scope 1 emissions intensity (metric tons CO2e per GWh)

0.38

Comment

These figures cover all our hydroelectric power plants operating in the reporting year: Ataköy, Beyköy, Çıldır, İkizdere, Kuzgun, Mercan, Tercan

Wind

Nameplate capacity (MW)

271.7

Gross electricity generation (GWh)

673

Net electricity generation (GWh)

671

Absolute scope 1 emissions (metric tons CO2e)

139

Scope 1 emissions intensity (metric tons CO2e per GWh)

0.21

Comment

We have 3 wind power plants in Turkey and 1 wind power plant in Pakistan: Gökçedağ, Sarıtepe, Demirciler and Pakistan

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)

779.4

Gross electricity generation (GWh)

3,404

Net electricity generation (GWh)

3,062



Absolute scope 1 emissions (metric tons CO2e)

1,559,511

Scope 1 emissions intensity (metric tons CO2e per GWh)

509.26

Comment

These figures cover all our natural gas, wind, hydroelectric, and geothermal power plants operating in the reporting year.

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 2019, 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	<p>CAPEX plans for geothermal projects including GECO project to mitigate GHG in geothermal power plants included.</p> <p>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 out cross-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.</p>
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

				<p>limited resources that are not continuous for future generations.</p> <p>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.</p> <p>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. At the same time, we launched the Solution Partnership Ecosystem project that is targeted by implementing in a total of 12 regions in Turkey and it is targeted to proceed with a maximum of 24 Solution Partners for the first period in order to increase the marketing, promotion and application areas of the products we sell and distribute in 2018. Within the scope of the project, since the end of 2019, we completed and commissioned 7 different projects in Turkey, all of which were installed on the rooftop solar system. 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 500 MW portfolio in 2019 with First Solar products we offer domestically and abroad.</p>
Other, please specify	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

Smart System			<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
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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
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<p>Electric vehicles</p>	<p>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.</p> <p>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. Within the scope of our public network, we serve approximately 300 vehicles in 149 different locations.</p> <p>Charging processes form the basis of our current activities. We offer the electrical energy that we purchase from our operating locations through chargers. Over the ZES network, we provided a total of 240 MWh energy to the last users, 40 MWh in 2018 and 200 MWh in 2019. As a result of our measurements and calculations, we anticipate that the losses during the charging process and our management software system working in data centers cause a consumption / loss of 10% of the amount of electricity we offer to users.</p>	<p>4,638,841</p>	<p>14.1</p>	<p>2030</p>
<p>Distributed generation</p>	<p>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.</p> <p>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</p>	<p>28,304,000</p>	<p>85.8</p>	<p>2020</p>

	purchased patent rights, mainly in food, cold, and livestock industries in different sectors to various projects.			
Large-scale storage	<p>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.</p> <p>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.”</p>	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	<p>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.</p> <p>As part of our innovation efforts, we invest in the establishment and operation of smart systems that will initiate transformation in</p>

	<p>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.</p> <p>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.</p> <p>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.</p>
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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%	4,638,841	<p>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.</p> <p>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</p>

				<p>a single application.</p> <p>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. Within the scope of our public network, we serve approximately 300 vehicles in 149 different locations.</p> <p>Charging processes form the basis of our current activities. We offer the electrical energy that we purchase from our operating locations through chargers. Over the ZES network, we provided a total of 240 MWh energy to the last users, 40 MWh in 2018 and 200 MWh in 2019. As a result of our measurements and calculations, we anticipate that the losses during the charging process and our management software system working in data centers cause a consumption / loss of 10% of the amount of electricity we offer to users.</p> <p>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.</p> <p>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.</p>
Carbon capture and storage/utilisation	Pilot demonstration	21-40%	1,854,000	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,

				<p>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.</p> <p>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.</p> <p>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.”</p> <p>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</p>
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				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.
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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	No third-party verification or assurance

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 Doğal Elektrik Üretimi A.Ş.14064_2020.pdf
-  Zorlu Jeotermal Elektrik Uretim A.S.14064_2020.pdf
-  Zorlu Enerji Elektrik Uretim A.S.14064_2020.pdf

Page/ section reference

Assurance Statement, full page.

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

99

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

Page/ section reference

Assurance Statement, full page.

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

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?

No, we do not verify any other climate-related information reported in our CDP disclosure

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, readiness 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 than 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 employees. 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 emission reduction target of the company that defined based on Smart-Life 2030 transition plan. The target of the company is 50% reduction. The strategy to achieve the target is based on energy efficiency 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

Sarıtepe and Demirciler Wind Farm Projects are registered as Gold Standard VER.

Verified to which standard

Gold Standard

Number of credits (metric tonnes CO₂e)

221,930

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

Credits cancelled

No

Purpose, e.g. compliance

Other, please specify

Creating carbon asset and awareness

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 defined for scope 1 emissions. To be ready for the carbon tax the price is 6 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)

6

Variance of price(s) used

Uniform pricing is used since all production plants were in Turkey in 2019 and carbon pricing is applied only for scope 1 emissions. 1 USD is 10% of the price expected based on ETS simulation projected by World Bank in Turkey.

Type of internal carbon price

Shadow price

Impact & implication

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

C12. Engagement

C12.1

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

Yes, our customers

Yes, other partners in the value chain

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Education/information sharing

Details of engagement

Run an engagement campaign to educate customers about the climate change impacts of (using) your products, goods, and/or services

% of customers by number

25

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

0

Please explain the rationale for selecting this group of customers and scope of engagement

We engage with our customers in terms of energy efficiency awareness and training's. The efficient use of electricity will provide regular payments of invoices and reduce the customer complaints.

Impact of engagement, including measures of success

The measure of success is the number of customers trained.

C12.1d

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

Zorlu Energy produce its electricity from renewable sources by 67% and we engage with the local communities in the regions we have power plants. Stakeholder consultations and regular meetings with the mayor of the villages give opportunity to get the needs and expectations of the villagers. For hydro power plants the minimum water volume to release to the river is defined by the regulations however based on seasonality and agricultural needs Zorlu Energy release more water for the locals of region.

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
- 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	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

		<p>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.</p>	<p>INDC-Turkey which is then submitted to UNFCCC were discussed and shared with the MoU –Turkey.</p>
<p>Adaptation or resilience</p>	<p>Support</p>	<p>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 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.</p>	<p>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.</p>

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 EİE), 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.

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
- Businesses responsibility in 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 by 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

 sustainability-report-2018-2019_boyut.pdf

Page/Section reference

GHG Management pg: 50

Sustainability Management: pg.34

Sustainability Policy: pg. 36

Sustainability Strategy: Pg.37

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Other metrics

Comment



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	HSEQ Manager	Environmental, health and safety manager

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