Welcome to your CDP Climate Change Questionnaire 2020

C0. Introduction

C0.1

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

Arçelik A.Ş., founded in 1955,has operations in the consumer durables and electronics sector with production,marketing, and after sales services.With over 30,000 employees, Arçelik has 23 production plants in 9 countries(Turkey,Romania,Russia,China,South Africa,Thailand,India,Pakistan,Bangladesh) and offers products and services to almost 150 countries with its 12 brands. The company has 15 R&D and Design Centers in Turkey, 5 overseas R&D Offices. Arçelik's management provides its commitment to present future environmental and social issues with its announced vision "Respecting the World, Respected Worldwide".With its sustainability approach parallel to its vision and UN Sustainable Development Goals,Arçelik aims to develop and market products that are resource and energy efficient, innovative in design and easy to use, while fulfilling its commitment to work on solutions against future threats such as drought,global warming or natural resource depletion.Arçelik conducts its business in accordance with ISO14001 Environmental Management System(EMS), which is integrated with ISO9001 and adopted to Total Quality Approach since 1994.In 2010, Arçelik established GHG Management and Reporting System based on continuous improvement principles.Arçelik calculated the GHG emissions sourced by its facilities in accordance with ISO 14064-1 GHG Standard.Arçelik's GHG emissions (Scope 1&2) have been audited and verified by an independent body in "100% verification" and "reasonable assurance" level since 2010.Since 2013 Arçelik's domestic logistics' GHG emissions (Scope 3) have been calculated and verified by an independent body at "limited assurance"level. In 2019 Arçelik has succeed transition to ISO 14064-1:2018 version in Turkey operations, and calculated its Scope 3 emissions boundaries have been widened to include domestic,export and import product logistic activities.In 2012,Arçelik established Energy Management System,which is integrated with EMS and GHG management system, according to ISO 50001 Energy Management Standard (EnMS).Arçelik's EnMS has been audited and certified by an independent body.Arçelik's environmentally responsive sustainable development approach which is applied in the whole life cycle of the product has been achieved as a result of the mentioned management systems and its vision.Arçelik participates in national and international initiatives to combat climate change and achieves practices that set an example for all of its value chain. Pioneering its sector on a global scale in combating climate change,Arçelik participates in climate conferences and shares its experiences since COP17. Arçelik also participated in the last Climate Change Conference (COP25) at several panels.Arçelik, a signatory of the Science-Based Targets initiative commits to determine targets for GHG emission reduction based on scientific evidence and to reduce emissions.Arçelik's CEO is a commissionaire of the High-Level Commission on Carbon Pricing and Competitiveness and attends to meetings. Arçelik is the only Turkish company in this commission. Arçelik's CEO also attended to "Dialogue for Climate Action" event in Vienna,

which was launched by the World Bank.Parallel to its vision,one of Arçelik's other goals is to prevent resource deplation.Arçelik focuses to achieve continuous improvement of the products,starting from the design stage.In Arçelik, R&D, Industrial Design and Product Development Departments are responsible to conduct technological and product development studies. With these studies Arçelik always achieved to be the “world's mosts and firsts”. E.g AquaDrop-Washing Machine with 5.5-Liter Water Consumption;Highly-Efficient 24 Dryer (Energy Star efficiency); Highly-Efficient Gas Stove Burners (use 17% less gas than standard burners). One of the other examples is Arçelik Solar Refrigerator developed for rural regions of South Africa.10 of Arçelik’s production plants achieved a "Platinum" certificate for energy efficiency, Arçelik was awarded as “Industry Leader” in Dow Jones Sustainability Indices in 2019 in the category of “Emerging Markets”. Arçelik received 'AAA’,the highest rate in the MSCI Global Sustainability Index Series, and is among the companies listed in the BIST SI. In 2017, Arçelik received the “A performance score” in both CDP Climate and CDP Water and entered in the Global A List in both programs, and become one of the 25 companies in the world that achieved this success. As a continuation, Arçelik has awarded as CDP Turkey Climate Leader in 2018 and 2019. At the European Business Awards for the Environment organized by the European Commission, Arçelik was awarded the 1st prize in the Management category, becoming the 1st Turkish company to win this award in its sector. Arçelik shares its sustainability approach with its Sustainability Reports.

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, 2018	December 31, 2018	No

C0.3

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

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.

Financial control

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
Director on board	Arçelik's board-level oversight for sustainability&climate change issues belongs to a member of the Board of Directors. Arçelik Sustainability Council (SC) is responsible for the management of sustainability&climate change issues. SC is comprised of the full executive board, including COO, CFO, Assistant General Manager-Turkey Trade, Finance Director, Strategic Planning Director, Human Resources Director, Customer Services Director, Innovation Director, Corporate Communications Coordinator, Quality, Sustainability and Corporate Affairs Director. The head of SC is CFO. Due to CFO reports critical issues regarding studies of SC including climate change to an assigned member of the Board of Directors, the Director on Board has been selected as board oversight for climate change issues. Climate change is one of the priority agenda items of the Board of Directors' investment and company strategy meetings. The assigned member of the Board of Directors informs the Board of Directors about studies of SC on climate change.

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 business plans Setting performance objectives	Climate change issues are one of the priority agenda item of Board of Directors' investment and company strategy meetings.

	Monitoring implementation and performance of objectives Monitoring and overseeing progress against goals and targets for addressing climate-related issues	
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 Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	Climate change issues are one of the priority agenda item of Sustainability Council meetings cheered by CFO.

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 Financial Officer (CFO)	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).

Arçelik's sustainability approach is to consider social, economic, environmental, and ethical aspects into its activities, to integrate these aspects into its corporate business targets, to

manage its activities in accordance with sustainability principles, corporate policies, and strategies. Arçelik assesses sustainability and climate change-related risks and opportunities and stakeholder expectations as its main inputs.
(i)The highest level of the direct responsibility of sustainability and climate change efforts is CFO, the Head of Sustainability Council.
(ii)Arçelik Sustainability Council is comprised of the full executive board, including the COO (Chief Operations (Production & Technology) Officer), CSO (Chief Strategy & Digital Officer), CCO, CMO, Finance Director, Strategic Planning Director, Human Resources Director, Customer Services Director, Global Communications Director, Quality, Sustainability and Corporate Affairs Director, Global Customer Care Director, R&D Director, Purchasing Director. The head of the Sustainability Council is CFO and the General Secretariat of the council is Quality, Sustainability, and Corporate Affairs Director. The Sustainability Council meets quarterly.
Duties and responsibilities of the Sustainability Council are:
•Specifying the corporate policies and strategies about corporate sustainability principles and climate change
•Following the consolidation of corporate business process with specified sustainability and climate change policies and strategies, provide integration to corporate business targets
•Evaluating corporate risks and opportunities in scope of sustainability principles and policies, make strategic decisions and manage prior risks and opportunities
•Identifying KPIs and targets of sustainability and climate change-related issues
•Following the global developments on sustainability and climate change issues, to build the company strategies according to these developments
•Encouraging collaboration with NGOs, public enterprises, universities on sustainability and climate change issues
•Defining the strategic framework and decisions of the external sustainability assessment and rating tools (CDP, DJSI, MSCI, BIST SI, etc.) and follow up the results
The sustainability working groups are established to control and coordinate the sustainability and climate change implementations. The members of sustainability working groups consist of specialists and/or managers responsible for sustainability issues. These groups report to the Sustainability Council members.
Arçelik Sustainability Working Groups (WG) are; Environmental, Energy, Green Chemistry, Climate Change, Sustainable Supply Chain, and Occupational Health & Safety WG. The strategies and goals of the Council are examined and implemented by the Climate Change Working Group which consists of the Director of Quality, Sustainability and Corporate Affairs, the Managers of the Environment and Energy, Environment and Energy Specialists, and Production Managers.
Duties and responsibilities of sustainability working groups are:
•Providing conformity of all activities in sustainability working groups to corporate strategy, policy, and sustainability principles.
•Implementing decisions of the Sustainability Council.
•Implementing sustainability as the main strategy in related processes
•Developing and reporting proactive solutions for the company's sustainability and climate change-related risks and opportunities, share best practices
•Preparing and/or coordinate action plans for sustainability and climate change targets, follow the progress against targets, reporting performance monitoring, and KPI results.

Arçelik's Sustainability Council and the Climate Change WG identify policies and strategies regarding sustainability and the climate crisis, from which we establish collaborations, ensure that decisions taken are implemented, and track performances to make sure targets are met. All work carried out in sustainability is regularly reported to the member of the Board of Directors, Koç Holding Head of Durable Consumer Goods Group, who gives a report to the Board of Directors every four months. These reports are discussed and finalized by the Board of Directors.

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	Arçelik provides incentives in different categories for all employees including C-level to increase motivation, success, and productivity in the management of climate-related issues, and raise awareness.

C1.3a

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

Entitled to incentive	Type of incentive	Activity inventivized	Comment
All employees	Monetary reward	Other (please specify) Environment, energy and society projects	In order to increase motivation,success and productivity of its employees and to materialize best practices and ensure their dissemination;Arçelik evaluates,rewards and ensures promotion within the company to all success,invention and suggestions that provide benefit. In this context,since 2005 Human Resources Dept. of Arçelik has been implementing an "Pyramid Climbers Awards" annually. All employees who are successful are encouraged and rewarded. One category of this award process is "Environment and Society Contributors". Projects nominated in this category are evaluated and concluded according to the following performance indicators: 1. To produce higher efficient solutions

			and/or products that reduce greenhouse gas emissions with spending less energy and source by environmentally friendly activities 2. To develop projects that would contribute to the society lived and worked in with the perspective of social responsibility 3. To set an example in/out of company with studies and make an effort for sustainability and dissemination of studies. Environmentally friendly activities for product and production with energy efficiency projects are evaluated under this reward process.Rewardable projects and solutions are announced within the company and the project owners are rewarded in "Pyramid Climbers Award Ceremony" which is held in October annually. Arçelik develops environmental friendly,innovative and technological products which increase life standards of customers with R&D employees. R&D Department collects creative and innovative ideas of employees through a suggestion system called "Inter", an evaluation board evaluates suggestions and projects design opportunity is created for ideas that may be transformed into a product. In the name of encouraging employees for creativity,to ensure announcement of creative ideas within the company and to reward owners of such ideas "Invention Award Ceremony" is organized on World Patent Day (on April) every year. By using TPM tools,our white and blue collar employees develop projects on subjects like environment,energy and climate change and such projects are identified at individual performance target cards of employees.Employees receive individual performance points in consideration of TPM activities they perform and they are rewarded at year-

			end in response to these points by using tools like a situational reward.
Chief Financial Officer (CFO)	Monetary reward	Energy reduction target	Energy Reduction Ratio (thus carbon emissions reduction) KPI is the part of the CFO's performance evaluation.
Chief Operating Officer (COO)	Monetary reward	Energy reduction target	Energy Reduction Ratio (thus carbon emissions reduction) KPI is the part of the COO's performance evaluation.
Other, please specify Energy and Environment Managers	Monetary reward	Energy reduction project Energy reduction target	Energy Reduction Ratio (thus carbon emissions reduction) KPI is the part of the Energy and Environment Managers' performance evaluation.
Other, please specify White and blue collar employees	Monetary reward	Energy reduction project Energy reduction target	Energy Reduction Ratio (thus carbon emissions reduction) KPI is the part of related employees' performance evaluation.
Other, please specify Quality, Sustainability&Corporate Affairs Director	Monetary reward	Energy reduction project Energy reduction target	Energy Reduction Ratio (thus carbon emissions reduction) KPI is the part of the Quality, Sustainability and Corporate Affairs Director's performance evaluation.

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	0	3	The short-term is determined as 0-3 years time horizon in the context of climate-related risks and opportunities in Arçelik.
Medium-term	3	10	The medium-term is determined as 3-10 years time horizon in the context of climate-related risks and opportunities in Arçelik.
Long-term	10	30	The long-term is determined as 10-30 years time horizon in the context of climate-related risks and opportunities in Arçelik.

C2.1b

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

A substantive impact in the context of climate risk for Arçelik is based on how financially/strategically resilient Arçelik will react to such an impact in terms of business. To manage all risks (including climate-related risks), material issues have been determined. In order to identify the most important issues that impact our business and our stakeholders, once every two years we conduct a comprehensive materiality analysis to review the issues we focus on. To determine the most material issues we utilize from the comprehensive literature review**,** global and sectoral trends, material issues of peers in the sector, and criteria of sustainability indices.

In Arçelik, Risk Management System is an integrated multi-disciplinary process. Strategic, operational, physical, financial, reputational, and environmental risks and opportunities are covered in Arçelik Risk Management System to the fulfillment of the short, medium, and long term goals. Each year climate crisis risks and opportunities are assessed and audited by the internal and external integrated systems' (ISO 14001 & ISO 50001 & ISO 14064-1) audit experts in site audits. Arçelik's GHG emissions (Scope 1&2) are being verified voluntarily by an independent body since 2010. Since 2013 Arçelik's product logistics' GHG emissions (Scope 3) have been calculated and verified by an independent body. According to Arçelik's risk and opportunity scoring methodology; the risks and opportunities are scored (1-5 points) considering financial, reputation, production, operational, human, and legal impacts and the maximum score is defined as impact point. All risks are evaluated according to impact and frequency criteria. The frequency of the risks and opportunities are also scored (1-5 points). The risk (R) and opportunity (O) points are scored by multiplying frequency (F) and impact point (I) for prioritization (R, O=F*I).

For scoring financial impact, Arçelik risk tolerance level should be considered. Risk tolerance can be defined as an appropriate level of financial loss that does not have a significant impact on the company. In Arçelik the substantive financial impact is related to Arçelik risk tolerance level and is defined according to financial loss before tax. Less than 750K Euro is not considered as substantive financial impact and costs more than 15 million EUR are considered as extremely substantive.

In terms of both probability and impact assessments, quantification of regulatory and reputational risks related to climate change stands out to be among substantive financial/strategic impacts.

Policy Risk and Reputation Risk: There are 8 production facilities in Turkey and Turkey production is mostly exported to Europe (in 2018, 49% of revenue comes from Europe, around 31% of sales is in Turkey. Overall, any policy and reputation risk in Turkey production will affect business as big as Arçelik's 80% of revenue). Any policy change and increase of carbon/introduction of potential carbon taxes, increase in ETS tariffs affect production costs and profitability. The proportion of units affected will be substantive.

Revenue generation of the organization is dependent on the sales generated from Turkey and Europe and any measures Arçelik will need to take with respect to climate change risks increase the risk of either increasing price of inputs in production/decreasing profitability and decreasing revenues.

Based on Arçelik's strategy to combat the climate change, the cost of being carbon neutral in 2025 in Turkey production as well as setting a 15MW renewable energy plant in production facilities will cost Arçelik almost a minimum investment of USD 50 million, with the risk of rising capex amounts due to increase in green electricity costs, the arrival of new technologies and the need to invest in those technologies to transform production processes.
As a manufacturer of home appliances, the challenge comes from producing the most energy-efficient ones on the market to decrease GHG emissions at the use phase, which makes up 99% of Arçelik's Science-Based Target reduction calculations. Based on EU rules and regulations, Arçelik will introduce new energy-efficient products in the market in both EU and Turkey which will cost around USD 127 million for the investment.
Business Interruption due to Extreme Weather Events: Enterprise Management Team calculates financial and non-financial risks related to the catastrophic consequences of the climate events such as floods, storm, tsunami, earthquake based on the location of Arçelik production facilities. In order to manage business interruption risks resulting from extreme weather events due to climate change, Arçelik has several lines of insurance policies globally including Third Party & Pollution Policies, all risk Property Damagre& Business Interruption policies. Financial loss estimation is carried out with the Possible Maximum Loss (PML) and Estimated Maximum Loss (EML) analysis.

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
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

In Arçelik, Risk Management System is an integrated multi-disciplinary process. Strategic, operational, physical, financial, reputational, and environmental risks and opportunities are covered in Arçelik Risk Management System to the fulfillment of the short, medium, and long term goals. Company-level risks are mainly strategic and reputational risks that affect the whole company and stakeholders. Asset level risks are mainly operational, financial, physical, and environmental risks which effect especially production plants, sales, purchasing, distribution, and production engineering

departments.
Chaired by the CFO, the Sustainability Council is responsible for identifying, determining, and evaluating climate crisis policies and strategies according to risks and opportunities. Corporate climate change risks and opportunities are presented by the Sustainability Council to Risk Management Committee for providing the integrity of corporate main risks. Risk Management Committee is formed to carry out its activities by making recommendations to the Board of Directors concerning determination and evaluation of risks and opportunities, estimation of their impacts to the company level, management of these risks, their consideration in decision-making mechanism, and establishment of effective internal control systems. Risk Management Committee integrates the climate change-related risks and opportunities into the main risks and opportunities of the company. In this context, the Risk Management Committee meets 6 times a year to monitor and assess the risks.
Climate change-related risks and opportunities are being scored and prioritized by the Sustainability Council. Defined and prioritized asset and company level climate change-related risks&opportunities are notified to the prioritized risk, and opportunity results are monitored and assessed by the Board of Directors. Arçelik Sustainability Council members are the top-level responsible for business processes. Related department managers develop proactive solutions to handle risks and opportunities and integrate into the business procedures. Plant directors are responsible to monitor and ensure that the risks are under control and opportunities are being assessed.
The management process of climate change risks and opportunities is defined in Sustainability Management Procedure. Risk and opportunity identification, determination, and prioritization methods have been defined and published in the "Arçelik Enterprise Risk Management Governance Manual."
In each year climate change-related risks and opportunities are being assessed and audited by the internal and external integrated systems' (ISO 14001&50001&14064-1) audit experts in site audits. According to Arçelik's risk and opportunity scoring methodology; the risks and opportunities are scored (1-5 points) considering financial, reputation, production, operational, human, and legal impacts and the maximum score is defined as the impact point. All risks are evaluated according to impact and frequency criteria. For scoring financial impact, Arçelik risk tolerance level should be considered. Risk tolerance can be defined as an appropriate level of financial loss that does not have a significant impact on the company. In Arçelik the substantive financial impact is related to Arçelik risk tolerance level and is defined according to financial loss before tax. Less than 750K Euro is not considered as a substantive financial impact.
The frequency of the risks and opportunities are also scored (1-5 points). The risk (R) and opportunity (O) points are scored by multiplying frequency (F) and impact point (I) for prioritization (R, O=F*I).
In consideration of Arçelik's product life cycle approach, GHG emissions emitted during to use-phase of the products have the highest contribution to carbon footprint in the product life cycle. Therefore, product use is an important step in our downstream activities for risk assessment. Arçelik's R&D Department carries out studies on the development of innovative and energy-efficient products that contribute to a low-carbon economy. The most energy-using household products that are of the most energy efficiency class(es) on the energy label are considered low carbon and climate-friendly solutions. Another risky point in downstream activities is Waste Electrical and Electronic

Equipment. According to the Turkish Regulation on the Control of Waste Electrical and Electronic Equipment, producers are responsible for financing the costs of the collection, treatment, recovery, and environmentally sound disposal of WEEE from private households after collection points and distributors. To manage this risk Arçelik established two WEEE recycling facilities to treat the products at their end of life stages. Refrigerators and other cooling appliances contain Chlorofluorocarbons (CFCs) are environmentally recycled. Take-back campaigns are organized to collect old and inefficient appliances from consumers, to recycle and reuse products as resources, or return them to nature. The goal of the campaigns is to replace the old products with new environmentally friendly products (with more energy and water efficient, that have low GWP gas ones, etc.). Between the years of 2014-2018, the energy-saving as a result of the recycling processes within the two plants is 202.1 GWh. This amount is equivalent to the annual energy production of 32 wind turbines with a capacity of 2.5 MW. Between the years of 2014-2018, approximately 100,000 tons of CO2e emission was prevented by replacing the old technology with new environmentally friendly products.
Additionally, in the context of downstream activities, greenhouse gas emissions generated by domestic, import, and export logistics operations of Arçelik products are calculated in accordance with ISO 14064-1 standard and verified by an independently accredited institution. The greenhouse gas emissions generated in 2018 by domestic, export, and import logistics operations amounted to 132,828 tCO2e.
E.g. some of the high potential risks can be found below:
Risk1: International agreements, legal legislations, air emission, and climate change limitations
Risk factor1: Additional investment need; needs for using Best Available Technology (BAT); energy cost increases; national GHG mitigation target; the necessity for buying carbon credits
Risk2: Responsibilities of Emission Reporting
Risk factor2: Failure to obtain GHG emission factors from energy suppliers
Risk3: Product labeling regulations and standards
Risk factor3: Inability to capture the competition of using voluntary labels (water label, carbon label, eco-label, etc.) except energy
E.g. one of the high potential opportunities can be found below:
Opportunity1: International agreements, legal legislations, air emission, and climate change limitations
Opportunity Factor1: Voluntary reporting of GHG emissions

Value chain stage(s) covered

Upstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

Annually

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

Considering that our supply chain extends worldwide, we have a significant impact area. To ensure the continuity in the supply of products and improve our suppliers' environmental (including energy and climate change performance) and social performances, we work together to create value for all our stakeholders in our value chain. We make our purchasing operations sustainable using risk management processes, sustainable supplier indexes, supplier audits, communication events, and supplier training. We have been organizing Supplier Days since 2011 to strengthen communication with our suppliers and to share our strategy, purchasing policies, and expectations.

At Arçelik, we use certain methods to identify the social, economic, and environmental risks including climate change in our value chain. First, we identify the critical suppliers that make up 80% of our purchasing turnover using the Kraljic Analysis Method. Then, we evaluate these critical suppliers in terms of risks within the scope of the Sustainable Supplier Index followed by Code of Conduct Audits. As per our Global Responsible Purchasing Policy, we audit our suppliers in terms of compliance with the Code of Conduct. Audits check whether our suppliers comply with Arçelik's expectations in areas including compliance with laws, working conditions, human rights, occupational health and safety, and the environment.

We see supplier training as one of the most important areas in the development of our suppliers. Therefore, we established the Supplier Training Platform to inform our suppliers about sustainability practices, and to provide details on national and international regulations. We provide
training in sustainability, energy management, environmental management and environmental legislation, chemical management, zero waste management, business ethics, and working conditions, as well as occupational safety.

We have a target to develop the Supplier Sustainability Index to ensure that the rate of suppliers who are assessed as medium and high risk, remains below 8% by 2020.

We set our responsible supply chain targets, related to climate change, 2024, 2025, and 2030 as follow:

- Apply for the suppliers in Tukey constitute 100% of our purchase turnover to obtain ISO 14001 certificate by 2023
- Apply for the suppliers in Tukey exceeding 1000 TEP to obtain ISO 50001 by 2024
- Apply for all global suppliers exceeding 1000 TEP to obtain ISO 50001 by 2025
- Increase Supplier Sustainability Index Response Rate to 70% by 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	According to "The Regulation on Monitoring of GHG Emissions" entered into force by publication in Official Journal on 25 April 2012 with no. 28274, approved GHG emission reports should be prepared and sent to the Ministry of Environment and Urbanization every year. Under this regulation, the first reporting obligation period for the industry has been started in 2017 for GHG emissions of 2015 and 2016. 3 of Arçelik's production plants (Washing Machine, Refrigerator, Electronics) are in the scope of this regulation. GHG Monitoring Plans of these 3 production plants were prepared and sent to the Ministry. The plans were approved by the Ministry. Continuously, in 2018, Arçelik's 2017 GHG reports were audited and verified by the licensed auditor company. To manage the risk, Arçelik has calculated greenhouse gas emissions released during its activities since 2006. In 2010, Arçelik established Greenhouse Gas (GHG) Management and Reporting System, before the regulation publishing date. Arçelik calculated the GHG emissions sourced by its facilities (Scope 1and Scope 2) by using IPCC-2006 and in accordance with ISO 14064 GHG Standard. Since 2010, Arçelik's GHG values have been audited and verified by an independent body in "100% verification" and "reasonable assurance" level. So, Arçelik's related plants (which are in the scope of the Turkish GHG regulation) were prepared for the regulation. These plants prepared the monitoring plans and renewed their systems in accordance with the Turkish GHG Regulation.
Emerging regulation	Relevant, always included	Turkey became a party to Kyoto Protocol on 26 August 2009. However, Turkey was not included in the Protocol Annex-B list which contains Annex-I signatory countries. Accordingly, Turkey has no numerical limit or reduction target in the first obligation phase which covers 2008 to 2012 of the Protocol. However, in Paris COP21, Turkey signed the Paris Agreement and submit its NDC plan to the UN Secretariat. According to the NDC, Turkey's target is to reduce 21% of its emissions according to business as usual scenario by 2030. However, this target has not been allocated to the sectors yet. For this reason, the financial implications that would become from the mitigation costs cannot be estimated and calculated. This is a grey area for Turkey and our sector. To manage the risk, as Arçelik, we have annual energy consumption reduction targets, renewable energy power plant establishment target, and Net Zero Emission targets for Turkey operations by 2025. Arçelik's Sustainability Council contributes these targets every year for increasing energy efficiency in production and using electricity produced by renewable energy sources (RES) to reduce Scope 2 GHG emissions. With energy efficiency projects in Arçelik Production Plants in the last 9 years (2010-2018), we have saved nearly 798,000 GJ energy with 1,178 projects. Totally; 75,874 tCO2e emissions have been reduced since 2010. Arçelik, starting from 2012, has been using electricity produced from

		RES. The supply rate of electricity generated from RES, which was realized approximately as 1% in 2012, 28% in 2013, 78% in 2014, 82% in 2015, 88% in 2016, 77% in 2017 and occurred 75% in 2018.
Technology	Relevant, always included	For the post-2012 period, Turkey has been signed the Paris Agreement in COP21 and submitted its NDC plan which includes the reduction target to the UN Secretariat. However, it is still not clarified how this target is distributed to sectors. In the case of the designation of GHG reduction target, companies would be required to adapt in a short period of time and fully comply with targets. In order to be ready for this, requirements to implement additional operational activities and/or BAT (Best Available Technologies) will arise; additional cost and investments shall be required. If sector/company targets may not be achieved, the requirement for carbon purchase will arise; this would affect costs significantly in turn. This may cause an impact on company share certificates before investors. When it is needed to reflect operational and investment cost increase to product price, we may have a disadvantage in competition. To manage this risk, most of the production processes of Arçelik production plants comply with IPPC and BAT documents. As an example; nanotechnology processes are implemented in production. The integration process for introducing "Environmentally Friendly Nanotechnology Product" has been using for the entire plants to reduce the use of pre-treatment chemicals and energy during the surface finishing before the implementation of metal sheets powder coating. Thanks to this product, the related process is completed at 25°C instead of 50-55°C hence a significant level of energy is saved while the process. Also, phosphate sludge generation from the coating process has been canceled. As an example of this implementation; in our dishwasher plant, the nanotechnology surface treatment process is being used in the production process since 2012. This technology provides less natural gas consumption (35053 m3/year reductions) and less GHG emission emitting (70 tCO2e/year reduction). Thanks to this transition, our dishwasher plant has been selected as "Best Available Technology (BAT) using plant" by T.R. Ministry of Environment and Urbanization. In addition, the powder dye coating transition has been implemented in Arçelik plants. And this transition reduced VOC (volatile organic compound). Arçelik attaches to environmental management is supported with investments on the relevant subjects in the term of employment. In this regard, TRY 22.75 million in Turkey operations were allocated to environmental protection and investment expenditures in 2018.
Legal	Relevant, always included	Besides uncertainties regarding the reduction of greenhouse gas emissions, another subject that may cause a problem at the international competition is legal requirements related to energy. Operational costs are directly impacted by the variable prices in the world. The energy prices are being dependent on the global changes since Turkey is foreign-dependent in energy, intensification of general

		tax approach on energy sources, electricity generation from renewable energy sources is not an adequate level. With new legal requirements, it is highly probable that electricity and natural gas costs increase to extend that may cause problems in competition. To manage the risk, energy consumption per product is followed in "kWh/product", “m3/product” and reported in Arçelik's production plants. In the light of data, obtained projections are made and short, medium, and long term targets are determined. We determine the energy consumption levels at all the stages of our production processes, query energy efficiency through periodical analyses, identify areas open to improvement, and design and realize projects that will increase energy efficiency in production. In addition to that, developments regarding renewable energy are closely followed; operations are carried out to include this subject into perspective business plans.
Market	Relevant, always included	We have 2 cogeneration systems with 6.3 MW capacities of each in Eskişehir and Çayırova plants. Çayırova plant has been working for 24 years with a total efficiency of 78.2%, however, due to the need of additional investment in order to continue its operation and decrease in heat demand in Eskişehir factory, Eskişehir plant has been shut down in 2015. Both plant’s electricity efficiency is nearly 40.3% and heat efficiency is nearly 37.9%. We use natural gas and fuel oil as well for primary fuels. We use the produced electricity and heat in our factories. Since the capacities are lower than the requirements we supply electricity from the grid as well. It is possible to invest in new more efficient cogeneration systems or modernization of current systems. However, natural gas prices and supply are the most important risks for both of the cases. The price of natural gas has been increased dramatically in previous years especially due to fluctuation in USD/TL. Since Turkey is an energy-dependent country on natural gas, political situations may affect to supply of natural gas. Therefore, it seems there is a risk of investing in natural gas-based power plants.
Reputation	Relevant, always included	As Arçelik, we are aware that our environmental-friendly products and production activities turn the reputational risks to the opportunities to increase our brand value. We perform our activities in accordance with these opportunities with a link to contribute to UN 2030 SDGs. Every year, we share our sustainability activities through our sustainability reports with our stakeholders. According to a study conducted by Harvard Business School by reviewing 180 companies, long term market share, and share certificate value of companies having high sustainability performances and reporting them to increase in comparison with those with low sustainability performance and such companies draw the attention of investors. In this scope, all activities concerning the environment including also activities performed in connection with climate change are deemed as an opportunity financially. Environmental production and environment-friendly products are the

		main elements of Arçelik's sustainability management. E.g. for environmentally friendly products: AquaDrop - Washing Machine with 5.5-Liter Water Consumption; Highly-Efficient 24 " Dryer (Energy Star efficiency); Highly-Efficient Gas Stove Burners (use 17% less gas than standard burners). The other example of the environmentally friendly product is Arçelik Solar Refrigerator developed for rural regions of South Africa. Additionally, as Arçelik, we participate in national and international collaborations to be a part of who combat climate change. As an example, Arçelik's CEO is a commissionaire of the High-Level Commission on Carbon Pricing and Competitiveness and attends meetings. Arçelik is the only Turkish company in this commission. Arçelik follows the decisions about carbon pricing management for both the company itself and Turkey.
Acute physical	Relevant, always included	Important effects of climate change include more arid climate, fall in precipitation quantities, increase in forest fires, decrease in agricultural yield, exhaustion of surface waters, floods, loss of plant species, and dissemination of invasive species. Globally, much more extreme and variable weather conditions are anticipated. It is also anticipated that more floods will occur due to increasing storms and rise at sea levels and this constitutes a risk for our plants in particular which have stream beds nearby. By handling such circumstances as an emergency, emergency drills are conducted; emergency action plans are prepared and implemented. This is a factor that may increase our operational costs too. Another action to manage this risk; since the production of all of the products only in one location is very precarious due to impossibility of continuing to production in case of a natural disaster or any emerging situation, our products are manufactured more than one location; in South Africa, Russia, Romania, China, Thailand, Pakistan, Bangladesh, and India.
Chronic physical	Relevant, always included	Gradual increase of concentration of gases causing greenhouse effect in atmosphere causes the world to warm more than normal and climate changes. Sea levels increase because of melting glaciers due to temperature rise; on the other hand some parts of Antarctica get colder. Important effects of climate change include more arid climate, fall in precipitation quantities, increase in forest fires, decrease in agricultural yield, exhaustion of surface waters, floods, loss of plant species and dissemination of invasive species. It is anticipated that while precipitation quantities will increase in coastal regions, aridity will arise at internal regions because of hot weather, more floods will occur due to increasing storms and rises at sea levels. A 2˚C temperature increase globally will have many significant impacts on Mediterranean Basin which also includes Turkey. If global temperature increase reaches 2˚C, Mediterranean climate will get warmer, aridity will be felt at extensive lands and there will be changes in climate. While general

		temperature rise in the region reaches to 1-2˚C, this rise may reach to 5˚C at Turkey's internal regions which are away from alleviating impact of sea. Such temperature changes will cause sudden and important changes at costs of energy spent for heating and cooling systems of plants in particular, and affect operational and investment costs. To manage this risk, changes and mean temperature and related risks/emergencies are considered in new investments including facility location choices.

C2.3

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

Yes

C2.3a

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

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation

Carbon pricing mechanisms

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

Turkey has no numerical limit or reduction target in the first obligation phase which covers 2008 to 2012 of the Kyoto Protocol. However, in Paris COP21, Turkey signed the Paris Agreement and submit its NDC plan to the UN Secretariat. According to the NDC, Turkey's target is to reduce 21% of its emissions according to business as usual scenario by 2030. The method of GHG reduction has not been identified yet. Although it is under progress, it is anticipated that there will be a carbon tax.

In this context, it is deduced that the targets or taxes will be related to energy efficiency projects and the possible use of renewable energy resources.

The NDC mainly focuses on increasing the use of solar, wind, hydroelectric, nuclear energy, and the increase of cogeneration plants in the scope of energy. In addition, it has also focused on financial incentives on energy efficiency projects. Due to this reason, renewable energy usage and energy efficiency investment requirements are expected to be increased. Companies may need to buy electricity from renewable

sources with higher prices. Energy efficiency projects and carbon credit purchasing needs will be increased, thus costs will be increased dependently. There will be a necessity for investment to decrease GHG emissions. This will cause a significant increase in costs. Nonetheless, if the sectors may not reach the given targets, carbon purchase necessity may occur and costs would be affected significantly. Because of the cost increase, there is a risk of affecting product prices. This situation can create a disadvantage in competition.
To manage this possible obligation, Arçelik has annual energy reduction targets and additionally has determined its GHG emission target as Net Zero Emission in production in Turkey by 2025.
Arçelik Sustainability Council contributes these targets every year to increase energy efficiency in production and using electricity produced by renewable energy sources (RES) to reduce GHG emissions. With energy efficiency projects in Arçelik production plants in the last 9 years (2010-2018), it has been saved nearly 798,000 GJ energy with 1,178 projects. Totally; 75,874 tCO2e emissions have been reduced since 2010. Arçelik, starting from 2012, has been using electricity produced from renewable energy sources (RES). The supply rate of electricity generated from RES occurred as 75% in 2018.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

650,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

There is a mitigation target in Turkey Pledge reported in UNFCC technical paper. However, this target has not been allocated to the sectors. For this reason, the financial implications that would become from the mitigation costs cannot be estimated and calculated. This is a grey area for Turkey and our sector. To manage the risk, we have energy efficiency targets annually. The estimated financial implication (investments and costs) of the energy efficiency target is 32,689,429 TL (for 2010-2018).
Arçelik, starting from 2012, has been using electricity produced from RES. The supply rate of electricity generated from RES, which was realized approximately as 1% in 2012, 28% in 2013, 78% in 2014, 82% in 2015, 88% in 2016, 77% in 2017, occurred 75% in

2018.
To produce our green electricity from our own renewable energy plants we have to invest 4.3 Million TL for each MW. For whole Arçelik plants in Turkey 150 MW peak and nearly 650 million TL investment needed.

Cost of response to risk

47,105,198

Description of response and explanation of cost calculation

To manage the risk, Arçelik has annual energy efficiency targets and has determined its GHG emission target as Net Zero Emission in production in Turkey operations by 2025. Arçelik Sustainability Council contributes these targets every year for increasing energy efficiency in production and using electricity produced by renewable energy sources (RES) to reduce GHG emissions. With energy efficiency projects in Arçelik's production plants in last 9 years (2010-2018), it has been saved nearly 798,000 GJ energy with 1,178 projects. Totally; 75,874 tCO2e emissions have been reduced since 2010. Arçelik, starting from 2012, has been using electricity produced from RES. The supply rate of electricity generated from RES, which was realized approximately as 1% in 2012, 28% in 2013, 78% in 2014, and 82% in 2015, 88% in 2016, 77% in 2017 occurred as 75% in 2018. Investments and costs of energy efficiency projects in 2018 6,042,556 TL. In 2018 we have also spent approx. 41.1 million TL for purchased electricity generated from renewable energy sources. Totally we spent 47,105,198 TL for energy efficiency projects &green electricity supply in 2018.

Comment

Investments and costs of energy efficiency projects in 2018 6,042,556 TL. In 2018 we have also spent approx. 41.1 million TL for purchased electricity generated from renewable energy sources. Totally we spent 47,105,198 TL on energy efficiency projects &green electricity supply in 2018.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Current regulation
Enhanced emissions-reporting obligations

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

Approved GHG emission reports to be prepared and sent to the Ministry every year under "The Regulation on Monitoring of GHG Emissions" which was prepared by T.R. Ministry of Environment and Urban Planning and entered into force with publication in Official Journal on 25 April 2012 and with no. 28274, contains calculating and verifying

of GHG emissions and GHG monitoring plans. Under the regulation, the first reporting obligation period for the industry was started in 2017 for GHG emissions of 2015 and 2016. 3 of Arçelik Production Plants (Washing machine, Refrigerator, Electronics) are in the scope of this regulation. They sent their GHG Monitoring Plan to the Ministry. These plans are approved by the Ministry. In 2017, Arçelik's 2015 and 2016 GHG reports; in 2018, Arçelik's 2017 GHG reports have been audited and verified by the licensed auditor company. Miscalculations, missing the deadlines for submission or unapproved GHG reports can cause policy, financial and reputational risk for Arçelik.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

35,500

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

ISO 14064 GHG Emission Inventory Verification is a continuous process for Arçelik on yearly basis. The verification for the Ministry has been started in 2017. Total financial implications for both ISO 14064 and GHG Regulation by the Ministry verification processes and training are around 35,500 TL for the verification period in 2018.

Cost of response to risk

35,500

Description of response and explanation of cost calculation

To manage the risk, Arçelik has calculated GHG emissions released during its activities since 2006. In 2010, Arçelik established Greenhouse Gas (GHG) Management and Reporting System, before the regulation publishing date. Arçelik calculated the GHG emissions sourced by its facilities by using IPCC-2006 and in accordance with ISO 14064-1 GHG Standard. Since 2010, Arçelik's GHG values have been audited and verified by an independent body in "100% verification" and "reasonable assurance" level. The scope of this verification is Arçelik's all production plants in Turkey and the Head Office. Arçelik shares the GHG emissions with all stakeholders through Sustainability Reports. The scope of this verification is Arçelik's all production plants in Turkey and the Head Quarter. In addition, Arçelik's related plants (which are in the

scope of the Turkish GHG regulation) prepared the monitoring plan for GHG. The monitoring plans have been approved by the T.R. Ministry of Environment and Urban Planning (the Ministry). After the approval process, GHG emission reports of Arçelik's related plants were submitted to the Ministry. GHG emission reports should be submitted to the Ministry yearly.
The total cost of the verification audits for ISO 14064 and Turkish GHG Regulation is approx. 35,500 TL in 2018.

Comment

The total cost of the verification audits for ISO 14064 and Turkish GHG Regulation is approx. 35,500 TL in 2018.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Market
Uncertainty in market signals

Primary potential financial impact

Increased direct costs

Company-specific description

Besides uncertainties regarding the calculation and reduction of greenhouse gas emissions, another subject that may cause a problem at the international competition is legal requirements related to energy. Operational costs are directly impacted by the variable prices in the world. The energy prices are being dependent on the global changes since Turkey is foreign-dependent in energy. The intensification of the general tax approach on energy sources and electricity generation from renewable energy sources is not an adequate level. With new legal regulations, it is highly probable that electricity and natural gas costs increase to extend that may cause problems in competition.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

6,580,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

For the last 8 years, the electricity unit price has increased by an average of 8.3% per year.
Between 2017-2018 electricity unit price increased 27%.
Since our electricity consumption has been decreased 9.5% compared to 2017, our total electricity cost was increased by approximately 14,5% due to an increase in unit prices.
We applied approximately 120 energy efficiency projects in 2018 and have spent approximately 6.05 M TL.
The total extra cost sourced by price increases in electricity is approx. 6.58 million TL.

Cost of response to risk

6,050,000

Description of response and explanation of cost calculation

To manage risk, energy consumption quantity per product is followed in "kWh/product", “m3/product” and reported. In the light of data, obtained projections are made and long term targets are determined. We determine the energy consumption levels at all the stages of our production processes, we query energy efficiency through periodical analyses, we identify areas open to improvement, and we design and realize projects that will increase energy efficiency in production. We applied approximately 120 energy efficiency projects in 2018 and have spent approximately 6.05 M TL. On the other hand, as Arçelik, we made a decision about electricity price hedging by pre-purchasing the electricity which will be consumed in Arçelik production facilities according to our production plan. With hedging operation, we have provided a financial advantage as 6.8 million TL by hedging the prices. In addition to that, developments regarding renewable energy are closely followed; operations are carried out to include this subject into perspective business plans. On the other hand, we constructed a new factory in Romania. This new plant, which is built with the building management system, smart building concept, has LEED Platinum certificate, and the most energy-efficient machines and equipment, has 930 kWp solar PV and 700 kW CSP systems.

Comment

We invested approximately 6.05 million TL to energy efficiency projects during the reporting year. Besides, if the hedging project have not been applied, energy cost in terms of electricity consumption, would be 6.8 million TL more.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Technology

Substitution of existing products and services with lower emissions options

Primary potential financial impact

Increased direct costs

Company-specific description

New EU energy labeling framework regulation has entered into force and product-specific regulations will enter into force for refrigerators, washing machines, TVs, and dishwashers March 2021. Such an analysis led by the EU Commission showed the current energy label does not fully meet the technological advancement of today. Technological development has exceeded the limits of current energy label and top energy-efficient class on the label has already become common in the market. Thus the EU Commission has completed its work on new energy label layouts along with calculation methods of energy efficiency index. Besides, the performance test standard for measuring the energy consumption of refrigerating appliances has been revised. A new measurement methodology is going to be published for refrigerating appliances and dishwashers in the EU. They are going to be effective with the introduction of a new energy label. R&D test methodologies and product designs are to be updated accordingly. A new label will introduce the downgrading of current energy efficiency classes. A+++ of today will become C, D, or E based on energy consumption of products. This will eventually cause manufacturers to design more efficient appliances to meet consumer demands towards higher energy-efficient products. Performance standards for washing machines and washer dryers are also in the revision process.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

21,523,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

80% of Arçelik's revenue came from Turkey and EU sales. If Arçelik will not comply with the new EU energy labelling regulation, Arçelik's products cannot be put on the both EU and Turkey market. In this case, this risk will cost to Arçelik as its total sales revenue of Turkey and EU markets which is calculated as 21,523,000,000 TL (80% of Arçelik's 2018 revenue (26,904,000,000 TL)).

Cost of response to risk

807,300,000

Description of response and explanation of cost calculation

Arçelik closely follows the new EU energy labelling and eco-design legislation through APPLiA membership and takes necessary internal actions. In strong collaboration with TÜRKBESD, we convey developments about EU eco-design and energy labelling to Turkish Ministry of Industry and Technology and lead the sector. The financial impact of membership to some associations (APPLiA, TÜRKBESD etc.) is around 1,000,000 TL per year to follow the related regulations closely.

To comply with the new labelling regulations Arçelik has environmentally friendly R&D activities. In 2018, the cost of R&D studies for environmentally friendly products is approx. 76.3 million TL.

In addition, Arçelik took out a loan from the European Bank for Reconstruction and Development (EBRD) more than 100 million Euro (730 million TL) for the transition to low-carbon economy. EU energy efficiency target for 2030 is at least 32.5% reduction. In parallel with this target, Arçelik aims to use this loan for transition of its products into the new EU energy labelling scheme. Products complying with the new EU energy labelling regulations will consume less energy and contribute to Arçelik's low-carbon road-map.

So, the total cost of the response to this risk is calculated as 807,300,000 TL.

Comment

Membership to some associations (APPLiA, TÜRKBESD etc.) is around 1,000,000 TL in 2018 to follow the related regulations closely.

In 2018, the cost of R&D studies for environmentally friendly products is approx. 76.3 million TL.

Arçelik took out a loan from the European Bank for Reconstruction and Development (EBRD) more than 100 million Euro (730 million TL) for the transition to low-carbon economy.

So, the total cost of the response to this risk is calculated as 807,300,000 TL.

Identifier

Risk 5

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Legal

Exposure to litigation

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

Regulation on the Control of Waste Electrical and Electronic Equipment was published in the Official Gazette No. 28300 of 22.05.2012. Producers are responsible for financing the costs of the collection, treatment, recovery, and environmentally sound disposal of WEEE from private households after collection points and distributors. In the WEEE Regulation, WEEE from private household collection targets: 0.3 kg per inhabitant in 2013, growing to 4 kg/inhabitant in 2018. Collection targets of WEEE from private households are separated according to 6 WEEE collection categories. Producers shall provide to achieve the collection targets. Producers and treatment plants shall meet the recycling and recovery targets. The most important climate change issue for white goods sector is old refrigerators because of the refrigerants inside with high GWP. Due to the collection and destruction of the refrigerants originating from old refrigerators costs will be incurred under Regulation on Waste Electric and Electronic Equipment (WEEE).

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

16,200

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

During the lifetime of the refrigerators and coolers, there are annual losses of blowing agents. The losses change according to the age of the equipment. The quantity of collected blowing agents in the WEEE treatment plant has been estimated. For the last 3 years, the cost of disposal of the gases to prevent fugitive emissions is approx. 16,200 TL.

Cost of response to risk

9,000,000

Description of response and explanation of cost calculation

To manage this risk Arçelik established 2 treatment plants to recycle WEEEs. Refrigerators and other cooling appliances contain Chlorofluorocarbons (CFCs) are environmentally recycled. Take-back campaigns are organized to collect old home appliances. The goal of the take-campaigns is transforming the old refrigerators and other old cooling appliances with the new and environmentally friendly ones that have the refrigerants with low GWP gas and are more energy-efficiently. The investment cost of Arçelik's WEEE recycling plants are approximately 9 million TL.

Comment

The investment cost of the WEEE recycling plants is approximately 9 Million TL.

Identifier

Risk 6

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Technology

Transitioning to lower emissions technology

Primary potential financial impact

Increased capital expenditures

Company-specific description

Utilization of domestic renewable energy sources has vital importance for Turkey to reduce its dependence on foreign energy supplies and prevent the increase in greenhouse gas emissions. Due to that reason, governmental authorities have been working on lots of regulations about renewable energy investments. Regardless of capacity, if a power plant generating electricity from renewable energy resources is isolated from the transmission and distribution grid, it will be exempt from the requirement of obtaining a production license. Our factory located in Çerkezköy is a suitable facility for wind energy, and our factories in Eskişehir and Çayırova are suitable facilities for solar energy. For wind energy investments the most important financial risks are; stability of wind, land costs, unpredicted maintenance costs. In Cerkezköy region, mean wind speed is really close to the critical operating speed for sustainable energy production, and 0.5 m/sec wind speed reduction will result in low energy production. It is not needed a large area for base construction for wind turbines. However, the important issue is the area needed for security. The area needed for secure operation is a risk for possible future investment on land. For solar energy investments, the most important financial risks are; high prices, land costs, re-installation costs. Because of its high technology, the prices of PV panels and other constructional parts are high but they are decreasing yearly. According to our evaluation, the payback time for such kind of investment inTurkey is nearly 6-10 years. Such investment with higher payback time is a real financial risk for the industry. Land cost is one of the most important costs of PV projects. For industrial areas, to use such kind of valuable land for PV installation is too risky. It is possible to use this land for

increasing production capacity. Another financial risk is re-installation cost. If it is installed a PV project on a specific site and if the PV power plant has to be moved to another location, the payback time of the investment will increase up to 25% due to re-installation costs. The technology of equipment is changing rapidly. There is a possibility that the technology and efficiency of PV and wind turbines will change. Depend on technological changes, there is a risk of higher payback time.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

658,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

For the last 8 years, electricity unit price has increased by an average of 8.3% per year. Between 2017-2018 electricity unit price increased 27%. It will possibly increase during further years. If unit price increases more than expected, not to invest in renewable energy will affect our operational costs. If not, investing in renewable energy will reduce our capital availability. For each MW of peak, renewable energy investments result in a 4.3 million TL reduction in capital availability. For whole Arçelik plants in Turkey 150 MW peak and nearly 658 million TL investment needed.

Cost of response to risk

6,050,000

Description of response and explanation of cost calculation

As Arçelik we have been tracking closely the renewable energy technologies and decrease in their investment costs. We also have pilot projects about solar energy technologies in Arçelik's different regions. However, due to high investment costs as 658 million TL budget and higher return of investment rates it is not possible to make such investment in a short period of time. Instead, we have supplied 75% of our total electric consumption which was generated from renewable sources to decrease our GHG emissions in 2018. Besides, we have applied approximately 120 energy efficiency projects in 2018 and have spent approximately 6.05 M TL to manage the risk, we

modernised/renewed our production equipment and auxilary facilities with high efficient equipment.

Comment

Green electricity has been supplied and energy efficiency projects have been applied. Details about applied 120 projects can be found in C4.3b section.

Identifier

Risk 7

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

Decreased revenues due to reduced production capacity

Company-specific description

Gradual increase of concentration of gases causing the greenhouse effect in atmosphere causes the world to warm more than normal and climate changes. Sea levels increase because of melting glaciers due to temperature rise; on the other hand some parts of Antarctica get colder. Important effects of climate change include more arid climate, fall in precipitation quantities, increase in forest fires, decrease in agricultural yield, exhaustion of surface waters, floods, loss of plant species and dissemination of invasive species. Globally, much more extreme and variable weather conditions are anticipated in the future, it is anticipated that while precipitation quantities will increase in coastal regions, aridity will arise at internal regions because of hot weather, more floods will occur due to increasing storms and rises at sea levels. A 2˚C temperature increase globally will have many significant impacts on Mediterranean Basin which also includes Turkey. If global temperature increase reaches 2˚C, the Mediterranean climate will get warmer, aridity will be felt at extensive lands and there will be changes in climate. While general temperature rise in the region reaches to 1-2˚C, this rise may reach to 5˚C at Turkey's internal regions which are away from alleviating the impact of sea. Such temperature changes will cause sudden and important changes at costs of energy spent for heating and cooling systems of plants in particular, and affect operational and investment costs. Floods that may happen due to sudden temperature rises and decreases constitute risk for our plants in particular which have stream beds nearby. By handling such circumstances as emergency, emergency drills are conducted; emergency action plans are prepared and implemented. This is a factor that may increase our operational costs too.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,100,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

We have a new production plant in Romania. The investment cost for the new production plant in Romania project is approx. 150 million Eur (approx 1.1 billion TL).

Cost of response to risk

1,100,000,000

Description of response and explanation of cost calculation

Changes and mean temperature and related risks/emergencies are considered in new investments including facility location choices. Since the production of all of the products only in one location is very precarious due to impossibility of continuing to production in case of a natural disaster or any emerging situation, our products are manufactured more than one location; in South Africa, Russia, Romania, China, Thailand, Pakistan, Bangladesh, and India. The investment cost for the Romania project is approx. 150 million Eur (approx 1.1 billion TL).

Comment

We have a new production plant in Romania. The investment cost for the new production plant in Romania project is approx. 150 million Eur (approx 1.1 billion TL)

Identifier

Risk 8

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Market

Uncertainty in market signals

Primary potential financial impact

Other, please specify

Abrupt and unexpected shifts in energy costs

Company-specific description

We have 2 cogeneration systems with 6.3 MW capacities of each in Eskişehir and Çayırova plants. Çayırova plant has been working for 24 years with a total efficiency of 78.2%, however, due to the need of additional investment in order to continue its operation and decrease in heat demand in Eskişehir factory, Eskişehir plant has been shut down in 2015. Both plant's electricity efficiency is nearly 40.3% and heat efficiency is nearly 37.9%. We use natural gas and fuel oil as well for primary fuels. We use the produced electricity and heat in our factories. Since the capacities are lower than the requirements we supply electricity from the grid as well. It is possible to invest in new more efficient cogeneration systems or modernization of current systems. However, natural gas prices and supply are the most important risks for both of the cases. The price of natural gas has been increased dramatically in previous years especially due to fluctuation in USD/TL. Since Turkey is an energy-dependent country on natural gas, political situations may affect to supply of natural gas. Therefore, it seems there is a risk of investing in natural gas-based power plants.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

36,500,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

If we invest cogeneration systems and if natural gas price increases more than expected, we would have to stop energy production and we have to purchase electricity from the grid. If Çayırova and Eskişehir cogeneration plants would be renewed, the total cost will be approximately 36.5 M TL. On the other hand, approximately 2.9 M TL per MW budget will be required to invest in CHP systems in order to supply Arçelik plants' whole electricity and heat demand in Turkey.

Cost of response to risk

6,050,000

Description of response and explanation of cost calculation

We are working on possible cogeneration investments with purchasing, finance and strategic planning departments. We are trying to estimate a possible natural gas unit price for further years. There is no cost to work on the possible cogeneration investments. To manage risk, energy consumption quantity per product is followed in "kWh/product", "m3/product" and reported. In the light of data, obtained projections are made and long term targets are determined. We determine the energy consumption levels at all the stages of our production processes, we query energy efficiency through periodical analyses, we identify areas open to improvement, and we design and realize projects that will increase energy efficiency in production. We applied approximately 120 energy efficiency projects in 2018 and have spent approximately 6.05 M TL.

Comment

Details about applied 120 projects can be found in C4.3b section.

Identifier

Risk 9

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Reputation
Increased stakeholder concern or negative stakeholder feedback

Primary potential financial impact

Decreased access to capital

Company-specific description

According to Harvard Business School study, long term market share and share certificate value of companies having high sustainability performances and reporting them to increase in comparison with those with low sustainability performance and such companies draw the attention of investors.
In line with this approach, all stakeholders including investors care about companies' green energy investment and usage.
It is possible to reduce carbon emissions by using renewable energy in two ways; it can be produced or it can be supplied from a renewable energy supplier. In Turkey, there are some energy companies that are producing electricity from renewable sources like hydropower, solar, and wind. As Arçelik, while we are signing a contract for electricity purchasing, we are asking to be sure that energy companies use renewable sources. Starting from 2012 June, we have been using electricity generated from renewable energy sources. In 2018, we have continued, our practice of supplying energy generated from renewable energy resources to our HQ and production plants. As part of the practice in 2018, 75% of energy electricity consumption was generated through renewable energy sources. We plan to generalize this to all of our domestic plants in the coming years. If we can purchase all of our electricity from a renewable source we can reduce our emissions by nearly 94,000 tonnes of CO2e. The risk is here can be

identified as a financial risk. If we can purchase electricity from non-renewable energy plants with just 0.01 TL cheaper than renewable energy plants, it will cause 1.94 million TL extra cost for electricity in Turkey.
Arçelik aims to have net-zero carbon emission by eliminating the total CO2e emissions of its domestic production plants until 2025 by implementing new energy efficiency projects (emission reduction projects), using the electricity generated from renewable energy sources, renewable energy plant investments and carbon offsets.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,940,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Nearly 1.94 million TL extra cost for each year in case of 0.01 TL/kWh higher electricity cost.

Cost of response to risk

208,780,000

Description of response and explanation of cost calculation

We aim to decrease our energy consumption and increase our installed renewable energy capacity to 15 megawatts in our operations by 2030. To achieve these goals, we will invest a total of 9.1 million Euro (66.4 million TL) to establish renewable energy systems and 19.5 million Euro for energy efficiency projects (142,350,000 TL) globally (Total 208,780,000 TL).

Comment

We aim to decrease our energy consumption and increase our installed renewable energy capacity to 15 megawatts in our operations by 2030. To achieve these goals, we will invest a total of 9.1 million Euro (66,400,000 TL) to establish renewable energy systems and 19.5 million Euro for energy efficiency projects (142,350,000 TL) globally (Total 208,780,000 TL).
Please see our strategy to combat climate change:

https://www.arcelikglobal.com/media/5180/05_2020-strategy-to-combat-climate-crisis_1.pdf

Identifier

Risk 10

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Technology

Transitioning to lower emissions technology

Primary potential financial impact

Increased capital expenditures

Company-specific description

For the post-2012 period, Turkey has been signed the Paris Agreement in COP21 and submitted its NDC plan which includes the reduction target to the UN Secretariat. But it is still not clarified that how this target is distributed to sectors. In case of designation of a reduction target, companies would be required to adapt in a short period of time and fully comply with targets. In addition, when Turkey's new Integrated Environmental Directive draft (for EU IPPC implementation) comes into force, there will be investment costs for GHG mitigation emitted from industries operations. In order to be ready to this, requirements to implement additional operational activities and/or BAT (Best Available Technologies) will arise; additional cost and investments shall be required. If sector/company target may not be achieved, requirement for carbon purchase will arise; this would affect costs significantly in turn. This may cause impact on company share certificates before investors. When it is needed to reflect operational and investment cost increase to product price, we may have disadvantage in competition.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

210,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Turkish Ministry of Environment and Urbanization's EU Integrated Environmental Compliance Strategy Report 2016-2023 declares if Turkey starts to implement IPPC Directive requirements as in EU, the investment financial resource for Turkish industries will be approx. 28.8 billion EUR (210 billion TL).

Cost of response to risk

22,750,000

Description of response and explanation of cost calculation

Most of the production processes of Arçelik production plants comply with IPPC and BAT documents. Nanotechnology applications are implemented in production. The integration process for introducing "Environmentally Friendly Nanotechnology Product" has been using for the entire plants to reduce the use of pre-treatment chemicals and energy during the surface finishing before the implementation of sheet piece powder coating. Thanks to this product, the related process is completed at 25 oC instead of 50-55 oC. Therefore, a significant level of energy is saved due to heat reduction, while also the process also no longer produces any phosphate sludge. As one of the best practices for example; in our dishwasher plant, the nanotechnology surface treatment process is being used in the production process since 2012. This technology provides less natural gas consumption (35053 m3/year reductions) and less GHG emission emitting (70 tCO2e/year reduction). Thanks to this transition, our dishwasher plant has been selected as "Best Available Technology (BAT) using plant" by T.R. Ministry of Environment and Urbanization. In addition, the powder dye coating transition has been implemented in Arçelik plants. And this transition reduced VOC (volatile organic compound).

Arçelik attaches to environmental management is supported with investments on the relevant subjects in the term of employment. In this regard, TRY 22.75 million in Turkey operations were allocated to environmental protection and investment expenditures in 2018.

Comment

Most of the production processes of Arçelik production plants comply with IPPC and BAT documents. Nanotechnology applications are implemented in production. The integration process for introducing "Environmentally Friendly Nanotechnology Product" has been using for the entire plants to reduce the use of pre-treatment chemicals and energy during the surface finishing before the implementation of sheet piece powder coating. Thanks to this product, the related process is completed at 25 oC instead of 50-55 oC. Therefore, a significant level of energy is saved due to heat reduction, while also the process also no longer produces any phosphate sludge. As one of the best practices for example; in our dishwasher plant, the nanotechnology surface treatment process is being used in the production process since 2012. This technology provides less natural gas consumption (35053 m3/year reductions) and less GHG emission emitting (70 tCO2e/year reduction). Thanks to this transition, our dishwasher plant has been selected as "Best Available Technology (BAT) using plant" by T.R. Ministry of

Environment and Urbanization. In addition, the powder dye coating transition has been implemented in Arçelik plants. And this transition reduced VOC (volatile organic compound). Arçelik attaches to environmental management is supported with investments on the relevant subjects in the term of employment. In this regard, TRY 22.75 million in Turkey operations were allocated to environmental protection and investment expenditures in 2018.

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?

Direct operations

Opportunity type

Markets

Primary climate-related opportunity driver

Access to new markets

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

Arçelik has started operations for voluntary carbon trade to quickly adapt to system the moment obligatory trade commences and to turn it into opportunity after the post-2012 period. Since the Green Climate Fund steps, we constantly compile information about future carbon markets. We plan advanced level operations so that our Company will benefit to a maximum level from carbon trade both domestic and abroad. As a start, we have developed a voluntary Carbon Trade Project, “Arçelik Energy Efficient Refrigerators Grouped Project”. The aim of the project is to manufacture of energy-efficient refrigerators by applying advanced technologies and to sell them to Turkish customers. The Project crediting period is 10 years (2012-2022) and the estimated average emission reductions resulting from this project is estimated around 1.8 million tCO2e, totally (The project is currently at the approval stage by the related authorities, the estimation was based on the assumptions made in line with the CDM methodology).

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)

2,600,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

In voluntary carbon market, the unit price of carbon is assumed as approx. 0.20 – 0.40 EUR for VCS. The estimated average emission reductions resulting from this project are estimated at around 1.8 million tCO2e, approx. 360 K – 720 K EUR (approx. 2.6 million – 5.3 million TL)

Cost to realize opportunity

200,000

Strategy to realize opportunity and explanation of cost calculation

To manage this opportunity we have developed a carbon trade project called “Arçelik Energy Efficient Refrigerators Grouped Project” as a voluntary carbon trade project. The total management cost of realizing this project is around 200,000 TL.

Comment

To manage this opportunity we have developed a carbon trade project called “Arçelik Energy Efficient Refrigerators Grouped Project” as a voluntary carbon trade project. The total management cost of realizing this project is around 200,000 TL.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

The EU regulation for ecodesign requirements for refrigerating appliances were published in 2009. It introduces a gradual ban of less efficient products in the market. Placing refrigerators of energy class B and lower on the market are banned as of 1 July 2010. It is ruled that energy class of A cannot be put on the market from July 2012 on. In July 2014, minimum allowable energy efficiency index set to 42 which is 44 before. In Turkey, the same regulations are transposed into national law in order to be harmonized with the EU laws. As a result, “A” energy class products cannot be put on the market as of today both in Turkey and EU. EU Commission has completed first analysis of current situation and comparison with technological development of the industry. Preparatory studies for ecodesign & energy labelling revisions has been completed for refrigerators, washing machines, dishwashers, and washer-dryers. Draft regulations have been sent to EU Parliament and Council for scrutiny. A common goal in all these regulations is to revise the label scale into A(most efficient) to G(least efficient).

Time horizon

Medium-term

Likelihood

Very 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)

18,479,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

In 2005, the Company’s consolidated sales revenue was 3.1 billion EUR (approx 4.96 billion TL), while the international sales share was 40%of total sales revenue (1.2 billion EUR ~ 1.92 billion TL). In 2018, the consolidated net sales turnover reached 26.904 billion TL, and international sales comprised 68% of consolidated sales (Approx. 18.48 billion TL). One of the main reasons for the increase in international sales share is our investment in environmentally friendly R&D activities and producing competitive energy-efficient products.

Cost to realize opportunity

76,300,000

Strategy to realize opportunity and explanation of cost calculation

The overall energy efficiency of Arçelik refrigerators sold in Turkey and the EU are classified as “A+” by the end of 2012. It is projected to reach A++ efficiency level by 2019. Investment in the improvement of high-efficiency components is a key element to maintain sustainable energy efficiency increase. A compressor is one of the key components of the refrigerator. R&D activities on variable speed compressors have reached an advanced level. Variable speed compressors enable the refrigerator to consume less energy. In addition, continuous R&D activities have yielded efficient fan blade designs that are being used in today’s products. Another tool to reach high energy-efficient refrigerating appliance is considered insulation. The better the insulation, the higher the energy efficiency. Vacuum insulation panels(VIP) provides excellent insulation compared to PU insulation. Besides Arçelik endeavors to create a new level of VIPs with a very low thermal conductivity that leads to design high energy efficiency. Strong background in cooling design is a powerful tool in the hands of Arçelik to reach energy efficiency targets of 2018. Arçelik's long term plan and product roadmap systematic constitutes our main method. At least once in a year, energy & environmental-friendly product range and portfolio definition is made with top management, through this strong method we have towards domestic target markets environmental-friendly products.
The cost of R&D studies for environmentally friendly products is approx. 76.3 million TL in 2018.

Comment

The cost of R&D studies for environmentally friendly products is approx. 76.3 million TL in 2018.

Identifier

Opp3

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

Within the scope of its Extended Product Responsibility, Arçelik made investments for encouraging the recovery of the old products (WEEE) and established its own WEEE recycling plants in Bolu and Eskişehir to provide the usage of WEEEs as resources.

Large white goods and small household appliances are recycled in Arçelik's WEEE Recycling Plants. Therefore, the reduction of GHG emissions is ensured, especially through the recycling of old and high electricity consuming products at the WEEE recycling plants, thereby also contributing to our country's combat climate change. To increase the tendency of consumers' buying behavior towards energy-efficient products, "The Greatest Renewal Movement of Turkey Campaign" has been started across Turkey for the purpose of collecting WEEEs and gain them to nature and national economy, with the slogan "Let the Return to Nature Begin". Recycling is also encouraged through our sales campaigns. The campaign contributed to shape and develop our sustainable business model. Accordingly, it is seen that there is a gradual tendency in consumers' changing their old and low efficient products with new energy-efficient products. This is an opportunity for Arçelik.

Time horizon

Short-term

Likelihood

Very unlikely

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)

123,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

A significant contribution to energy efficiency in our country is ensured through the recycling of high energy-consuming old products. Arçelik, the first and only company to establish its own recycling plant, also initiated the Great Renewal Movement in 2018 and took used white goods regardless of their brand from end-users' and replaced them with new environmentally friendly products. Between the years of 2014-2018, the energy-saving as a result of the recycling processes within the two plants is 202.1 GWh. This amount is equivalent to the annual energy production of 32 wind turbines with a capacity of 2.5 MW. This means approx. 123 million TL gain to the Turkish economy.

Cost to realize opportunity

9,000,000

Strategy to realize opportunity and explanation of cost calculation

Within the scope of its Extended Product Responsibility, Arçelik made investments for encouraging the recovery of the old products (WEEE) and established its own WEEE

recycling plants in Bolu and Eskişehir to provide the usage of WEEEs as resources. Large white goods and small household appliances are recycled in Arçelik's WEEE Recycling Plants. The investment cost of the WEEE recycling plants is approximately 9 Million TL.
To increase the demand for consumers' changing buying behavior towards energy-efficient products. "The Greatest Renewal Movement of Turkey Campaign" has been started across Turkey for the purpose of collecting WEEEs and reintroducing them to nature and national economy, with the slogan "Let the Return to Nature Begin". As part of the market transformation campaign, WEEEs collected from customers by Arçelik and Beko dealers and authorized services were sent to Arçelik's own licensed recycling plants. Materials obtained from WEEEs recycled at plants are regained to the economy in accordance with the concept of "Circular Economy".

Comment

The investment cost of the WEEE recycling plants is approximately 9 Million TL.

Identifier

Opp4

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

According to a study conducted by Harvard Business School by reviewing 180 companies, long term market share, and share certificate value of companies having high sustainability performances and reporting them to increase in comparison with those with low sustainability performance and such companies draw the attention of investors. In this scope, all activities concerning the environment including also activities performed in connection with climate change are deemed as an opportunity financially. As Arçelik, we are aware that our environmentally-friendly products and production activities are opportunities to increase our brand value. We perform our activities and set our sustainability targets including climate-related targets in line with UN 2030 SDGs. We share our sustainability management, approaches, activities, and results through our sustainability reports with our stakeholders yearly.

Time horizon

Short-term

Likelihood

Very 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)

18,479,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

In 2005, the Company's consolidated sales revenue was 3.1 billion EUR (approx 4.96 billion TL), while the international sales share was 40%of total sales revenue (1.2 billion EUR ~ 1.92 billion TL). In 2018, the consolidated net sales turnover reached 26.904 billion TL, and international sales comprised 68% of consolidated sales (Approx. 18.48 billion TL). One of the main reasons for the increase in international sales share is our investment in environmentally friendly R&D activities and producing competitive energy-efficient products.

Cost to realize opportunity

76,300,000

Strategy to realize opportunity and explanation of cost calculation

Environmentalist approaches in production and environmentally-friendly products are the main elements of Arçelik's sustainability management. Arçelik manages sustainability within its activities via Sustainability Council.
The cost of R&D studies for environmentally friendly products is approx. 76.3 million TL in 2018.

Comment

The cost of R&D studies for environmentally friendly products is approx. 76.3 million TL in 2018.

Identifier

Opp5

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

We adopted to go beyond the legislations&standards regarding efficiency in all countries that we have production plants to lead our sector. In this context,we produce our products with standard production rules that indicate environmental protection and energy efficiency are the priority in all areas. In new investments, we take our product&production technologies to that country and ensure that country also become aware of energy-efficient products, therefore we seize the opportunity to contribute to the reduction of country's GHG emissions.E.g. in 2014,Arçelik became a partner of the project called United for Efficiency which organized by UNEP and GEF to widen energy-efficient products in houses contributing GHG emission reduction. In this project, Arçelik gave technical support to developing countries particularly Thailand and South Africa(SA) to increase energy efficiency in refrigerators. In SA our employees climbed to Kilimanjaro mountain to attract attention to global warming.We contribute to the development of countries where we invest. Following our acquisition of Defy in South Africa in 2011, we have made enormous investments in innovation and product energy efficiency. The result: the average energy efficiency class of our refrigerator sales in South Africa increased from "E" to "A" in 5 years. That equates to a more than 50% decrease in energy consumption. Now, we have upgraded our refrigerator product range to A+. Having said that, the minimum energy efficiency standard in South Africa is B (and C for freezers). The gap between what we offer at minimum and the legal limit is a more than 40% energy saving. In addition,in our SA plant,we are planing to transition to environmentally friendly refrigerants used in refrigerators.It is planing to finalize in upcoming period(2019-2020).

Time horizon

Short-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)

523,650,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The average energy efficiency class of our refrigerator sales in South Africa increased from “E” to “A” in 5 years, which equals to more than 50% decrease in energy consumption. Considering the 50% increase in energy efficiency of the products in the last 8 years and the market share of the products sold by Arçelik, an annual reduction of 874,800,000 kWh has been achieved in the country's electricity consumption. According to 2018 South Africa electricity unit price (0.082 USD/kWh), potential financial impact figure has been calculated as 523,650,000 TL.

Cost to realize opportunity

2,106,000,000

Strategy to realize opportunity and explanation of cost calculation

Cost of Defy acquisiton realized as 324 million USD. (2,106,000,000 TL)

Comment

Cost of Defy acquisiton realized as 324 million USD. (2,106,000,000 TL)

Identifier

Opp6

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of climate adaptation, resilience and insurance risk solutions

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

Arçelik’s CEO is a commissionaire of the High Level Commission on Carbon Pricing and Competitiveness and attends to meetings. Arçelik is the only Turkish company in this commission. Arçelik follows the decisions about carbon pricing management for both the company itself and Turkey.

Time horizon

Short-term

Likelihood

Very 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)

0

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

There is no financial impact of being a commissionaire of the High-Level Commission on Carbon Pricing and Competitiveness.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Arçelik's CEO became a commissionaire of the High-Level Commission on Carbon Pricing and Competitiveness in 2019 and attends meetings. Arçelik is the only Turkish company in this commission. Arçelik follows the decisions about carbon pricing management for both the company itself and Turkey. Arçelik sets carbon management strategies and targets including internal carbon pricing for its all production plants. There is no cost for being a commissionaire of the High-Level Commission on Carbon Pricing and Competitiveness.

Comment

Arçelik's CEO became a commissionaire of the High-Level Commission on Carbon Pricing and Competitiveness in 2019 and attends meetings. Arçelik is the only Turkish company in this commission. Arçelik follows the decisions about carbon pricing management for both the company itself and Turkey. Arçelik sets carbon management strategies and targets including internal carbon pricing for its all production plants. There is no cost for being a commissionaire of the High-Level Commission on Carbon Pricing and Competitiveness.

Identifier

Opp7

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Reduced direct costs

Company-specific description

Arçelik took out a loan from the European Bank for Reconstruction and Development (EBRD) more than 100 million Euro for transition to low-carbon economy. EU energy efficiency target for 2030 is at least 32.5% reduction. In parallel with this target, Arçelik aims to use this loan for transition of its products into new EU energy labelling scheme. Products complying with the new EU energy labelling regulations will consume less energy and contribute to Arçelik's low-carbon road-map.

Time horizon

Medium-term

Likelihood

Virtually certain

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)

21,523,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

80% of Arçelik's revenue came from Turkey and EU sales. When Arçelik complies with the new EU energy labelling regulation, Arçelik's products can be put on the both EU and Turkey market. In this case, on the base of calculation by using 2018 revenue, this will be an opportunity for Arçelik as its total sales revenue of Turkey and EU markets which is calculated as 21,523,000,000 TL (80% of Arçelik's 2018 revenue (26,904,000,000 TL)).

Cost to realize opportunity

730,000,000

Strategy to realize opportunity and explanation of cost calculation

Arçelik took out a loan from European Bank for Reconstruction and Development (EBRD) more than 100 million Euro (730,000,000 TL) for the transition to low-carbon economy. EU energy efficiency target for 2030 is at least 32.5% reduction. In parallel with this target, Arçelik aims to use this loan for transition of its products into new EU

energy labelling scheme. Products complying with the new EU energy labelling regulations will consume less energy and contribute to Arçelik's low-carbon road-map.

Comment

Arçelik took out a loan from European Bank for Reconstruction and Development (EBRD) more than 100 million Euro (730 million TL) for transition to low-carbon economy.

Identifier

Opp8

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of new technologies

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

Energy-efficient electric motor transformation in our production plants

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

500,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Arçelik has started its electric motor transformation movement in 2014. The target was set as to change all inefficient elekctric motors (IE0, IE1, IE2) with the capacity of 5.5

kW and above. From 2014 until today, we changed hundreds of inefficint motors with efficient ones (IE3 and IE4). By transforming remaining inefficient motors, it is estimated to save 500,000 TL yearly.

Cost to realize opportunity

1,300,000

Strategy to realize opportunity and explanation of cost calculation

First of all, we prepared our electric motor inventory including all motors with a capacity of 5.5 kW and above. We made a feasibility analysis by using data of motors capacity, load factor, efficiency class, working hours, etc. Then, we started to change inefficient motors started with the ones which have the lowest payback time. With this transformation, our energy consumption in our production plants is being reduced. So that our GHG emissions are being decreased dependently. One of the main reasons fort he rapid realization of this project is purchasing these energy-efficient motors from WAT Motor A.Ş. which is an association of Arçelik A.Ş. The investment cost of the energy-efficient motor transformation project has been calculated as 1,300,000 TL.

Comment

The investment cost of the energy-efficient motor transformation project is 1,300,000 TL.

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, but we plan to add quantitative in the next two years

C3.1b

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

Climate-related scenarios and models applied	Details
IEA 450	Arçelik scenario analysis is based on 2 main pillars: transition risk and physical risks. To manage transition risk we utilize from IEA WEO 450. Operational, policy, reputation risks are evaluated in the scope of transition risks. Arçelik's resilience on climate-related impacts on operations, market demand, reputation, revenues is analysed carefully based on how well Arçelik can align its strategies with the

	requirements for transition to a low carbon economy. Arçelik considers the below mentioned risks in a medium-long term horizon(3-10 years, with the financial impact being high on input costs, operating costs, revenues, profitability, physical risks). Transition Risks: Operational Risk: Arçelik has 8 plants in Turkey. Arçelik has a target to become carbon neutral in 2025 in Turkey productions. Arçelik is also committed to the Science-Based Targets and is currently studying on its targets based on well below 2-degree scenario. This requires further investment in energy efficiency projects, divesting from natural gas projects in manufacturing and working on reducing Scope 3 emissions resulting from product use phase (almost 99% of Arçelik GHG emission reduction target calculation), the last one being the most challenging and most risky, increasing operational costs, risk of decreasing profitability and even decreasing revenues. This is due to the requirements to changes in product models to produce the most energy-efficient ones even if there is no legal requirement to do so. Reputation Risk: If Arçelik cannot meet the criteria demanded based on Science Based Targets as well as other reputable indices and TCFD, Arçelik will face a reputation risk combined with a financial risk. 25% of Arçelik shares are publicly related. Majority of these shares are owned by foreign investors. There is increasing demand from foreign investors for companies to adopt climate-resilient strategies and move further in the direction of clean technologies and carbon neutral value chain. Policy Risk: Turkey signed the Paris Agreement but did not ratify the agreement. According to INDC, Turkey has 21% emission reduction target by 2030 but the target has not been allocated to specific sectors. If Turkey pursues potential GHG emission reduction targets, there will be a potential increase in price of carbon and potential introduction of carbon taxes, ETS (emission trading system) in Turkey. Likewise, if Europe sets aggressive GHG emission reduction targets, production costs of the plants in Turkey will increase significantly as most of the production sent to Europe is made from Turkey. This will impact company exports. Increased cost of voluntary carbon credits, potential taxes, increased price of green electricity increases will cause significant CAPEX and OPEX risks. Actions to mitigate such risks to enhance Arçelik's reputational, financial, operational and market resiliency are as follows: Setting annual energy reduction targets, conducting hundreds of energy efficiency projects annually, setting a 6MWp renewable energy plant by 2020, working on long term 2025 and 2030 targets, exploring the possibility of new technologies (including technologies to move away from natural gas such as hydrogen in production), calculating investment budget for energy and resource-efficient products to decrease scope 3 emissions, developing an internal shadow price mechanism- we believe price of carbon will increase to EUR 30 per ton as of 2030 (we currently use implicit price), participating in voluntary carbon markets, investing in carbon credit projects. (305k tons of carbon credits generated from transformation of energy-efficient refrigerators in Turkey between 2013-2018 will

	be sold to a voluntary business partner). Arçelik has collaborations with NGO's such as United4Efficiency, Cool Coalition,SE4ALL for enabling clean energy transition. Arçelik collaborates with universities and Ministry of Energy in Turkey for increasing awareness on energy efficiency).
RCP 4.5 RCP 8.5	Arçelik's scenario analysis is based on 2 main pillars: transition risk and physical risks. To manage physical risk we utilize from IPCC RCP 4.5 and RCP 8.5. Acute and chronic risks are under physical risks. Arçelik may face the risk of water scarcity due to climate change in especially high water-stressed regions. As a result of water scarcity, water shortages may cause disruption in production. Also, there is a business interruption risk due to extreme weather events. Insurance Management Team under Enterprise Risk Directorate; calculates financial and non-financial risks related to the consequences of climate events such as floods, storms, tsunami, earthquake etc. based on countries where Arçelik operates. Related Department Managers develop proactive solutions to handle risks and opportunities and integrate into the business procedures. Also, to manage climate change effects on water resources; the structure for the internal water pricing system was generated based on the true cost of water and in-depth analysis of water consumption by Arçelik from different sources. The internal water price will initially be applied in the manufacturing facilities in Turkey in line with RCP 4.5. and 8.5.
Other, please specify A2 scenario of IPCC	The fifth assessment report of IPCC states that climate change is extremely likely due to human activities. Based on different scenarios, climate scientists estimate increases between 1.5 and 4.5 oC by the end of the present century. Arçelik has 8 production plants located in Turkey (Eskişehir, İstanbul, Tekirdag, Ankara, Bolu). Turkey is one of the countries that could be profoundly affected by climate change. Arçelik considers climate change impacts to sustain its activities and use climate scenario analysis to assess the impacts. Arçelik use A2 scenario of IPCC. Due to the assessment of climate change impact studies for Turkey are generally based on the A2 scenario of IPCC, we also select this scenario. In addition, the future climate analysis of Turkey based on CMIP3 simulation that was used in the fourth Assessment Report of IPCC. The projection involves the simulation of the ECHAM5 General Circulation Model. For the wind projections, the northwestern parts of Turkey have the highest wind potentials. It could be said that the wind potential in these areas will increase in the future. The wind speeds in the Marmara region and northwestern parts of the Aegean region are projected to increase up to 15% by the mid-century (2041-2070) and up to 20% and more by the end of the century (2071-2099).On the other hand, the wind speeds are simulated to decrease in the eastern parts of Turkey. According to these projections, the most sufficient plants are located in Tekirdağ and İstanbul. Because future projections show that there will be an increase of wind above 15% in these cities and in the current situation the wind average wind speed is sufficient (6.5-7 m/s). For solar radiation, the climate change projections indicate that solar radiation will slightly increase in much of Turkey. The increase will be up to 3% by the mid-century and up to 6% by the end of the century except for eastern Black Sea

	coastal areas. All Arçelik plants are located in the areas that solar radiation will increase. For the current situation, Turkey has already high solar energy potential due to its geographical location. In line with these projections, Arçelik integrates renewable energy use to its business strategy and working on possible renewable energy production investments and following up the developments in technology and falling costs of renewable energy. Arçelik also has a target for 2020 to invest in 6 MWp renewable power plant. According to the Solar Energy Map of Turkey prepared by the Renewable Energy General Directorate, it has been determined that the total annual insolation time is 2741 hours (a total of 7.5 hours per day), and the total solar energy derived per year is 1.527 kWh/m2 per year which is better than EU countries. With the actual unit electricity prices in the industry, payback time is around 10-11 years in Turkey (This feasibility is done for 100% self-consumption and including yearly performance loss of PV panels and maintenance/operation costs of the plant). Due to that reason, Arçelik plans to establish 450 kWp solar PV plant on the roof of its Eskisehir plant at 2019. We are also preparing detailed feasibilities in Pakistan, Thailand, and South Africa, where we also have factories.In these countries, unit electricity prices are almost 50% percent higher than electricity prices in Turkey. Solar irradiation levels are also the same or higher than Turkey as well. Because of these reasons, payback time is around 5-7 years in these countries. On the other hand, we constructed a new factory in Romania. This new plant, which is built with the building management system, smart building concept, has LEED Platinum certificate and the most energy-efficient machines and equipment, has 930 kWp solar PV and 700 kW CSP systems. Information on scenario analysis and Turkey's projections mentioned in this section is quoted from A Holistic View of Climate Change and Its Impacts In Turkey Report prepared by İstanbul Policy Center.

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	At homes, 40% of energy consumption is related to home appliances.As a home appliance manufacturer, Arçelik has a responsibility to produce energy-efficient products in the market to decrease GHG emissions resulting from the use phase. Based on Science-Based Targets calculations, nearly 90% of downstream emissions of Arçelik result from product use phase. Producing energy-efficient products is critical to decrease Arçelik's Scope 3 emissions. The new EU Energy Labelling requirements will demand

		products put on the market to be at least 40% energy efficient compared to current ones and the labeling system will change significantly which will provide clear guidance for customers. (A return to A-G label instead of existing A+-A+++ labels). This regulation puts Arcelik and the others players in the sector in a challenging position since it requires effective inventory management of the remaining products before the enforcement date of regulation and it also requires and an extensive amount of investment in financial resources as well as R&D know-how on how to strategically position our products to serve the requirements of the best energy efficiency labels in the market. Arçelik is working on applying the requirements for products produced for the EU market as well as the Turkish market. R&D designs less consuming products in terms of both energy and water consumption and carry out projects aimed at efficient use of resources used in products. The cost of R&D studies for energy-efficient and environmentally friendly products is 76.3 million TL in 2018. In the Turkish market, Arçelik organizes “Return to Nature” campaigns where old products put on the market are collected regardless of their brand and changed with new, energy-efficient ones. The old products are sent to Arçelik WEEE (Waste Electrical and Electronic Equipment) facilities to be recycled and sold to recyclers. Between 2014-2018, approximately 100,000 tons of CO2e emission was prevented and 3,6 million tons of water was saved by replacing old products in the market with new ones. As a result of the recycling process, energy-saving equivalent to 202,1GWh was generated. Arçelik was involved in the transformation of energy-efficient refrigerator projects in Turkey as a result of which 305.000 tons of carbon credits were obtained which are planned to be sold in the voluntary market.
Supply chain and/or value chain	Yes	Arçelik initiated the Supplier Sustainability Index in 2018 for the assessment of sustainability risks of suppliers. Arçelik conducts an initial analysis based on Kraljic methodology to assses critical and strategic suppliers based on purchasing volume, supplier dependency, supplier performance, technology and innovation level of the supplier. The critical and strategic suppliers are then sent a questionnaire consisting of economic, environmental, and social dimension. Environmental dimension focuses on ISO14001 and other environmental management systems, GHG management, energy, gas, waste, chemical, fuel, water

		consumption as well as compliance with legislation. For 2018 questions, 73% of the suppliers participated in the survey. 9.1% of the participants were included in the high and medium risk categories. Arçelik a target to reduce the rate of medium and high-risk suppliers to 8% by 2020. Arçelik is also working on ARGreen, which is a green purchasing procurement analysis system for Arçelik to label and incentivize the suppliers that receive the highest scores based on Arçelik environmental rules and regulations. Arçelik organizes Supplier Innovation Programs where Arçelik and suppliers work on joint R&D projects. Based on energy efficiency studies carried out with suppliers in 2018, 87 energy projects were completed and a total energy saving of 10,46 million kWh/year was achieved. Arçelik organizes annual Supplier Day events and suppliers who work on Energy and Environment projects receive special awards during these organizations.
Investment in R&D	Yes	Arçelik aims to contribute to a sustainable future with environmentally friendly, innovative and distinguished products. The company works on reducing the environmental impacts of its products with the R&D studies carried out. In this context, resources worth TL 76.3 million in Turkey operations and 1.6 million EUR in Romania operations were allocated to R&D studies. In 2018, 53% of Arçelik's revenue was generated from the sale of energy-efficient products. Improvement of 4.7% was achieved in the average energy consumption of all cooking appliances in Turkey operations in 2018, thanks to the energy efficiency studies for products. In the same period, improvement of 3.8% was achieved in the energy consumption of all televisions. As a result of the increase in the share of high-capacity washing machines, the average energy consumption increased by 1.9% in all the washing machines produced. During the reporting period, total savings of 75,743 GJ are achieved in the annual energy consumption of the products produced in all plants in Turkey compared to the previous reporting year.
Operations	Yes	Arçelik conducts hundreds of energy efficiency projects as well as water efficiency and waste projects in the production process. Arçelik has a 2020 target to reduce energy consumption per product in production by 45% and water consumption in production per product by 52%. With energy efficiency projects in Arçelik's production plants in last 9 years (2010-2018), it has been saved nearly 798,000 GJ energy with 1,178 projects. Totally; 75,874 tCO2e emissions

		have been reduced since 2010. Arçelik, starting from 2012, has been using electricity produced from RES. The supply rate of electricity generated from RES, which was realized approximately as 1% in 2012, 28% in 2013, 78% in 2014, 82% in 2015, 88% in 2016, 77% in 2017 and occurred 75% in 2018. Arçelik has a target to become carbon neutral in Turkey in manufacturing as of 2025. Arçelik has a 2020 target to reach a 6MWp renewable energy power plant. In line with this target, Arçelik invested for 930 kWp solar PV and 700 kWp CSP systems. The PV will be used for electricity and the CSP will be used for heating and cooling in the new Washing Machine Plant in Romania, Arctic 4.0 which is equipped with the latest digital manufacturing technologies. Arçelik has a target to procure 100% green electricity as of 2019. Arçelik currently uses implicit internal carbon price mechanism and studies are ongoing to switch into an internal shadow price mechanism, where the price of carbon is expected to reach EUR 30 as of 2030 based on our forecast. Arçelik is also working on long term 2030 targets in operations. Additionally, in case Turkey's new Integrated Environmental Directive draft (for EU IPCC implementation) comes into force, there will be potential investment cost for GHG emission mitigation from our own 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 Indirect costs Capital expenditures	Revenues:Arçelik continuously produces appliances with higher energy efficiency classes and aims to increase the percentage of energy-efficient products' turnover in its total revenue. In 2018, 53% of Arçelik's revenue was generated through the sale of energy-efficient products. In 2018,Arçelik generated 49% of its revenues from Europe and 31% of its revenues from Turkey.The challenging EU Energy Labelling Requirements will require products put on the EU market to be ever more energy efficient in order to keep up with the GHG emission reduction demands of the EU.We closely follow such legislation and although these requirements are not mandatory in Turkey, we are working with the Turkish Ministry of Energy and Natural Resources to voluntarily produce products in Turkey according to new EU Energy Labelling Requirements. Electricity use will soar as global middle class demands more major

		domestic appliances such as refrigerators, washing machines,air-conditioners. The challenge comes from keeping up with the rising consumption demand from consumers and balancing it with innovative, sustainable and affordable products in line with SDG 12, Responsible Production and Consumption as well as SDG 7, Affordable and Clean Energy. By shifting to energy-efficient and climate-friendly air conditioners and refrigerators, developing and emerging economies can reduce their annual carbon dioxide emissions by 570 million tons by 2030. With the sale of high energy-efficient refrigerators between 2013-2018 in line with Energy-Efficient Refrigerators Carbon Finance Project carried out in Turkey, 305,000 ton CO2e reductions have been obtained. We are planning to launch these credits to the market.Following our acquisition of Defy in South Africa in 2011, we have made enormous investments in innovation and product energy efficiency. The average energy efficiency class of our refrigerator sales in S. Africa increased from “E” to “A” in 5 years, that means more than 50% decrease in energy consumption. Now, we have upgraded our refrigerator product range to A+. Direct Costs: Each year we strive to increase efficiency in production in terms of energy efficiency, water management and waste management which also enables reduction in costs. In 2018, with 120 energy efficiency projects carried out in Turkey, financial savings of around 5 million TL were obtained and 6,504 tCO2e GHG emissions were prevented. In comparison to 2010 baseline, energy consumption per product decreased by 40.22%. In line with our mission to create sustainable and innovative products, thanks to our in house R&D formulations, we are also developing innovative solutions from using recycled plastics in production. One example can be the LeoPet Project where we use recycled PET bottles in the washing machine tubs. By recycling more than 25 million PET bottles since the project started, we have helped prevent 885 tCO2e emissions. We also achieved cost savings in production. Aside from cost savings, we also need to be cautious of the additional cost burden resulting from either legislative policies, investment demand coupled with pressure from international indices. For instance, as we have committed to the Science-Based Targets, we will face additional costs in production while trying to reduce our Scope 3 emissions resulting from the energy efficiency level of our products. This might event affect our profitability and revenue. In the same manner, the EU Energy Labelling requirements and other legislative requirements such as potential carbon taxes, increase in the price of green electricity or increasing price of using new technologies instead of natural gas in production might result in increased costs. To mitigate such risks, we factor the probability and impact of such risks into cost calculations while working on our 5-year strategic plans and planning the production scenarios.

		Indirect Costs: To comply with new regulations has a financial impact and they are assessed in our financial assessment. E.g. approved GHG emission reports to be prepared and sent to T.R. Ministry of Environment and Urbanization yearly under "The Regulation on Monitoring of GHG Emissions". GHG reports of 3 of Arçelik's production plants which are in the scope of this regulation have been audited and verified by the licenced auditor company. In 2010, before Turkish GHG regulation published, Arçelik established GHG Emissions Management and Reporting System. Since 2010, Arçelik's GHG values have been audited and verified by an independent body in "100% verification" and "reasonable assurance" level. Total estimated financial implication for both ISO 14064&Ministry verification process and training are around 35,500 TL for the verification period in 2018. Additionally, environmental and energy studies and projects, and their CAPEX and OPEX values are the main components of our strategical planning process. We develop environmental and energy medium-term strategic plan of each factory and update and monitor it every year. The budgets of environment and energy projects are defined in accordance with this strategic plan. Capital Expenditures: For financial planning purposes, each year, energy efficiency and environmental management budget needs of each production factory are factored into CAPEX/OPEX calculations and the amount spent is monitored. In 2018, the budget allocated to environmental protection and investment expenditures amounted to TL 22.75 million in Turkey. In Romania, we are constructing a new factory, Arctic 4.0 Washing Machine factory which will be equipped with the latest available technology in accordance with Industry 4.0 needs. 1,6MWp solar energy investment as well as investments for rainwater collection, water recycling etc were factored into the CAPEX calculations. We are also working on an internal shadow carbon price mechanism which will affect the CAPEX approval decision process for machinery and equipment purchases greater than EUR 50,000. We expect the internal shadow pricing mechanism studies to be completed in 2019. In the same manner, we are also working on building an internal water price mechanism to affect the CAPEX approval decision for water efficiency investments. Our commitment to produce sustainable and innovative products results in investments in R&D expenditures. In 2018, Arçelik became one of the four Turkish companies that were included in the "2018 EU R&D Scoreboard" that lists 2,500 companies around the world with the most R&D expenditure. In 2018, TL 76.3 million R&D expenditures were allocated for environmentally friendly products in Turkey.

C3.1f

(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

Arçelik's strategy involves embracing sustainability as a business model and embedding sustainability into core company strategy to leverage company and brand value and differentiate from competitors. Board of Directors and the Executive Management Team are directly involved in the company's sustainability strategy road map. A member of the Board of Directors is appointed to inform the Board of Directors on sustainability-related operations, strategies, decisions. There is a Sustainability Council chaired by the CFO which meets quarterly to discuss sustainability operations, make important decisions on sustainability investments and strategies. Arçelik's efforts to combat climate change will continue in the areas of responsible production and consumption as well as the circular economy. In this regard, our sustainability practices primarily serve SDG12, Responsible Production and Consumption, SDG 7, Affordable and Clean Energy as well as SDG 13, Climate Action, SDG 17, Partnership for the Goals. The operations carried out to combat climate change and resource scarcity is indicated below:

Long term 2020 targets linked to SGD's:

- 45% energy consumption reduction target per product compared to the base year 2010 and 52% water withdrawal reduction target per product compared to the base year 2012 for our Romania, China, Russia, and South Africa productions. As of 2018, we achieved 40% energy reduction and 48% water withdrawal reduction per product in production.
- Setting 6 MWp renewable energy target. 1,6MWp solar systems set in new washing machine factory in Romania. The PV provides electricity for the plant and the CSP (Concentrated Solar Power) system is used for heating and cooling demand. All waste heat is evaluated as a heat source in the factory. Heat recovery systems for VRS and Air Compressor have been invested.
- Increasing the waste recycling rate to 98% in Turkey operations.

GHG Mitigation:

- Target to become carbon neutral in Turkey in production by 2025
- Setting Science-Based Targets (Arçelik committed to the Science-Based Targets, the target is in the approval stage.)
- 5% energy saving target, hundreds of energy efficiency projects annually. In 2018, 120 energy efficiency projects were carried out in Turkey and 6,504 tCO2e GHG emissions have been prevented
- Purchasing 79% of green electricity for production
- Energy-efficient refrigerator conversion project between 2013-2019 resulting in 305,000 tones of carbon credit which is targeted to be sold in voluntary markets after verification
- Providing energy efficiency by using our own production "WAT" and "TEE" the energy-efficient electric motors (IE3 and IE4) in our production plants.
- Verification of GHG emissions with reasonable assurance by a third party since 2010
- Working on implementing internal carbon pricing shadow price mechanism
- Engaging with suppliers to work on energy efficiency projects
- Working on New EU Energy Labelling regulation requirements to create energy-efficient products to mitigate Scope 3 emissions by decreasing GHG emission generation in product use-phase
- Increasing investment need to use Best Available Technology to stay ahead of regulation and put on the market the best energy class products
- Delivery Partnership Agreement with SE4ALL with the aim to increase clean and affordable energy solutions in the developing World

- Partnering with U4E to support the transition to energy-efficient refrigerators in households, supporting Kigali Amendment to reduce production and consumption of F gases.
- Working on a solar refrigerator that runs on solar to provide clean energy solutions.
- The flexibility of the products to work based on overall demand in the electricity, allowing the products to work when the prices are low, creating savings for the customer.

Water Efficiency:

- In the last eight years, water savings equivalent to the daily water consumption of 1,7 M households has been achieved by water recycling and efficiency projects.

Pioneering sustainable innovation and circular economy solutions:

- Using recycled PET bottles in washing machine tubs. 15 million recycled PET bottles have been used in 2018
- Using ghost fishing nets in oven plastic parts in serial production: 65 tons of material used in 2018 in oven composites
- Microfiber filter washing machine: Developing a microfiber filter washing machine that will filter 90% of the microplastics that break away from clothes and get discharged to waterways
- Bio-plastics: Developing bioplastics from natural resources such as corn starch. Working on developing a bioplastic refrigerator
- Two WEEE (Waste Electrical and Electronic Equipment) Recycling facilities, collecting old products from the customers, replacing them with new, energy-efficient ones. Between 2014-2018, 202.1 GWh energy savings have been obtained from recycling, 100,000 tons of CO2e were prevented, 3.6 million tons of water were saved due to the replacement of old products with new ones.

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

2014

Target coverage

Country/region

Scope(s) (or Scope 3 category)
Scope 1+2 (location-based)

Base year
2010

Covered emissions in base year (metric tons CO2e)
157,725

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)
100

Target year
2020

Targeted reduction from base year (%)
60

Covered emissions in target year (metric tons CO2e) [auto-calculated]
63,090

Covered emissions in reporting year (metric tons CO2e)
78,088

% of target achieved [auto-calculated]
84.1517408992

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)
Arçelik aims to reduce total eCO2 emissions of its domestic production plants in Turkey from 2010 (base year) to 2020 by 60% by implementing new energy efficiency projects (emission reduction projects) and using the electricity generated from renewable energy sources.
Thanks to energy efficiency studies and the supply of electricity produced by renewable energy sources, we have reduced our GHG emissions by 50.49% compared to the base year 2010.

Target reference number
Abs 2

Year target was set
2015

Target coverage
Country/region

Scope(s) (or Scope 3 category)
Scope 1+2 (location-based)

Base year
2010

Covered emissions in base year (metric tons CO2e)
157,725

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)
100

Target year
2025

Targeted reduction from base year (%)
100

Covered emissions in target year (metric tons CO2e) [auto-calculated]
0

Covered emissions in reporting year (metric tons CO2e)
78,088

% of target achieved [auto-calculated]
50.4910445395

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)
Arçelik aims to have net-zero carbon emission by eliminating the total eCO2 emissions of its domestic production plants in Turkey until 2025 by implementing new energy efficiency projects (emission reduction projects), using the electricity generated from renewable energy sources and carbon offsets.
Thanks to energy efficiency studies and the supply of electricity produced by renewable energy sources, we have reduced our GHG emissions by 50.49% compared to the base year 2010.

Target reference number
Abs 3

Year target was set

2014

Target coverage

Country/region

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Base year

2010

Covered emissions in base year (metric tons CO2e)

157,725

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

100

Target year

2040

Targeted reduction from base year (%)

100

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

0

Covered emissions in reporting year (metric tons CO2e)

78,088

% of target achieved [auto-calculated]

50.4910445395

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)

Arçelik aims to continue having net-zero carbon emission by eliminating the total eCO2 emissions of its domestic production plants in Turkey until 2040 by implementing new energy efficiency projects (emission reduction projects), using the electricity generated from renewable energy sources and carbon offsets. Arçelik's first target year to meet this goal is 2025 but, Arçelik also aims to continue this target in the long term.
Thanks to energy efficiency studies and the supply of electricity produced by renewable energy sources, we have reduced our GHG emissions by 50.49% compared to the base year 2010.

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
2015

Target coverage
Country/region

Scope(s) (or Scope 3 category)
Scope 1+2 (location-based)

Intensity metric
Metric tons CO2e per unit revenue

Base year
2010

Intensity figure in base year (metric tons CO2e per unit of activity)
0.0000356

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure
100

Target year
2025

Targeted reduction from base year (%)
100

Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]
0

% change anticipated in absolute Scope 1+2 emissions
-100

% change anticipated in absolute Scope 3 emissions
0

Intensity figure in reporting year (metric tons CO2e per unit of activity)
0.0000048

% of target achieved [auto-calculated]

86.5168539326

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)

Arçelik aims to reduce total eCO2 emissions of its domestic production plants in Turkey from 2010 (base year) to 2025 by 100% per sales revenue* by implementing new energy efficiency projects (emission reduction projects) and using the electricity generated from renewable energy sources and carbon offsets.
In 2018, we decreased our Scope 1+2 emissions per revised sales revenue by 86.5% compared to our base year (2010) thanks to energy efficiency projects and the supply of electricity produced by renewable energy sources.

Target reference number

Int 2

Year target was set

2014

Target coverage

Country/region

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Intensity metric

Metric tons CO2e per unit revenue

Base year

2010

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

0.0000356

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

100

Target year

2040

Targeted reduction from base year (%)

100

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

0

% change anticipated in absolute Scope 1+2 emissions

-100

% change anticipated in absolute Scope 3 emissions

0

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

0.0000048

% of target achieved [auto-calculated]

86.5168539326

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)

Arçelik aims to continue having net-zero carbon emission by eliminating the total eCO2 emissions of its domestic production plants until 2040 by implementing new energy efficiency projects (emission reduction projects), using the electricity generated from renewable energy sources and carbon offsets. Arçelik's first target year to meet this goal is 2025 but, Arçelik also aims to continue this target in the long term.
In 2017, we decreased our Scope 1+2 emissions per revised sales revenue by 86.5% compared to our base year (2010) thanks to energy efficiency projects and the supply of electricity produced by renewable energy sources.

C4.2

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

Target(s) to increase low-carbon energy consumption or production
Other climate-related target(s)

C4.2a

(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.

Target reference number

Low 1

Year target was set

2016

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: energy carrier

Electricity

Target type: activity

Production

Target type: energy source

Renewable energy source(s) only

Metric (target numerator if reporting an intensity target)

MWh

Target denominator (intensity targets only)

Base year

2016

Figure or percentage in base year

0

Target year

2020

Figure or percentage in target year

6

Figure or percentage in reporting year

1.63

% of target achieved [auto-calculated]

27.1666666667

Target status in reporting year

Underway

Is this target part of an emissions target?

Yes, the result of this target (Low 1) will affect our Abs 1, Abs 2, Int 1, and Int 2 targets.

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

We are working on possible renewable energy production investments and following up the developments in technology and falling costs of renewable energy. Arçelik has a target to establish renewable energy systems with a total capacity of 6 MWp (nearly

7,800 MWh annual electricity production), by the end of 2020. In 2018, we established 1.63 MWp solar power plant.

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number
Oth 1

Year target was set
2016

Target coverage
Country/region

Target type: absolute or intensity
Intensity

Target type: category & Metric (target numerator if reporting an intensity target)
Energy consumption or efficiency
toe

Target denominator (intensity targets only)
unit of production

Base year
2010

Figure or percentage in base year
0

Target year
2020

Figure or percentage in target year
45

Figure or percentage in reporting year
40.22

% of target achieved [auto-calculated]
89.3777777778

Target status in reporting year
Underway

Is this target part of an emissions target?

Yes, the result of this target (Low 2) will affect our Abs 1, Abs 2, Int 1, and Int 2 targets.

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

Arçelik has a target to reduce its energy consumption per product in Turkey, Romania, China, Russia, and South Africa operations by 45% in 2020, in comparison with the base year of 2010. Energy consumption per product has been reduced by 40.22% in 2018 compared to the base year 2010.

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		
To be implemented*		
Implementation commenced*		
Implemented*	122	11,500.93
Not to be implemented		

C4.3b

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

Initiative category & Initiative type

Energy efficiency in production processes

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

2,750.94

Scope(s)

Scope 1

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

1,795,727

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

1,047,928

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Process optimisation projects are usually low-budget activities, thus they have short-term payback periods such as implementing new sensors or monitoring devices in several areas, reducing the cycle times of the processes, changing or cancelling the unnecessary operations to provide the same work with less energy consumption. As Arçelik, we analyse our processes and implement optimisation projects to decrease our base consumption.

Initiative category & Initiative type

Energy efficiency in production processes
Compressed air

Estimated annual CO2e savings (metric tonnes CO2e)

1,584.9

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

1,345,255

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

326,285

Payback period

<1 year

Estimated lifetime of the initiative

6-10 years

Comment

Compression losses can be reduced by using fittings with low losses, revising the pipeline and compressor rooms, reducing the number of equipment which use compressed air, reducing the set pressure of air compressors, making regular checks for leak detection and making air production more effective. Most of the initiatives can be implemented with low financial investments or no budget required, and lifetime of application is usually long.

Initiative category & Initiative type

Energy efficiency in production processes
Machine/equipment replacement

Estimated annual CO2e savings (metric tonnes CO2e)

416.3

Scope(s)

Scope 1
Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

502,975

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

3,498,600

Payback period

4-10 years

Estimated lifetime of the initiative

6-10 years

Comment

High efficient technologies can help to reduce the energy consumption during their lifetime. Life cycle cost analyse is one of the important decision criteria while procuring an equipment in Arçelik. Thus, we are using low-carbon technology equipment in our operations.

Initiative category & Initiative type

Energy efficiency in production processes
Other, please specify
Insulation

Estimated annual CO2e savings (metric tonnes CO2e)

103.54

Scope(s)

Scope 1
Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

63,616

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

33,000

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Insulation of exposed pipings, boilers, drying ovens with materials which have low thermal conductivity. As Arçelik, we conduct periodical controls to check the insulations of process pipelines, machines/equipment, auxilary facilities with thermal monitoring cameras to find and execute the insulation activities. Insulation of exposed surfaces can help to reduce the heat leakages, that brings out the reduction of energy consumption (both for cooling and heating side). Furthermore, insulation of cooling pipelines prevents the pipings from corrosion as well.

Initiative category & Initiative type

Energy efficiency in production processes
Motors and drives

Estimated annual CO2e savings (metric tonnes CO2e)

562.74

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

444,087

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

548,145

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

As Arçelik, we generally use new energy efficient electric motors in IE3 and IE4 classes. To decrease the mechanical losses and increase the efficiency we have implemented permanent magnet motor technology in some projects. We also apply inverters to electric motors which have varying loads according to their feasibilities.

Initiative category & Initiative type

Energy efficiency in buildings
Insulation

Estimated annual CO2e savings (metric tonnes CO2e)

59.37

Scope(s)

Scope 1
Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

40,215

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

7,000

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Insulation of exposed building surfaces can help to reduce the heat leakages, that brings out the reduction of energy consumption (both for cooling and heating side). As Arçelik, we check the building insulations with thermal monitoring cameras periodically.

Initiative category & Initiative type

Energy efficiency in buildings
Building Energy Management Systems (BEMS)

Estimated annual CO2e savings (metric tonnes CO2e)

240.04

Scope(s)

Scope 1
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
177,564

Investment required (unit currency – as specified in C0.4)
322,300

Payback period
1-3 years

Estimated lifetime of the initiative
6-10 years

Comment
Building Energy Management Systems can help to increase the efficiency of buildings (HQ, factory building, auxilary facilities etc) by controlling the HVAC and lighting systems with integrated control equipment such as timers, lighting automation with daylight sensors, presence sensors etc. BEM systems provide reports and enable us to monitoring the real time consumptions.

Initiative category & Initiative type
Energy efficiency in production processes
Automation

Estimated annual CO2e savings (metric tonnes CO2e)
230.22

Scope(s)
Scope 1
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
147,503

Investment required (unit currency – as specified in C0.4)
5,250

Payback period
<1 year

Estimated lifetime of the initiative
11-15 years

Comment

Automation projects are usually low budget activities. Thus they have short-term payback periods; such as adding new sensors or monitoring devices in several areas, adapting the automation codes to the equipment and SCADA. Projects, which are categorised as automation, as follows; preventing the redundant usages in inactive machines/equipment and inactive hours (such as brake times).

Initiative category & Initiative type

Energy efficiency in buildings
Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

488.14

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

401,112

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

179,048

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Lighting projects include the changing of inefficient lighting armatures (flourescent, metal halide lamps) with LED technology, using the motion detectors to reduce the consumption when there is no occupancy, increasing the daylight usage in plants etc.

Initiative category & Initiative type

Energy efficiency in buildings
Heating, Ventilation and Air Conditioning (HVAC)

Estimated annual CO2e savings (metric tonnes CO2e)

67.76

Scope(s)

Scope 1
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
40,285

Investment required (unit currency – as specified in C0.4)
75,000

Payback period
1-3 years

Estimated lifetime of the initiative
6-10 years

Comment
Implementing high efficient HVAC technologies reduce the GHG emmissions and energy consumptions. As Arçelik, we are following and if applicable, implementing the new technologies in HVAC equipment just like in other improvement activities. (Such as using variable speed A/C fans, improvement of funnel ventilation, using dehumidifiers instead of A/C plants, using new and high efficient technologies, using air curtains to prevent conditioned air leakages etc.)

Initiative category & Initiative type
Waste reduction and material circularity
Product/component/material recycling

Estimated annual CO2e savings (metric tonnes CO2e)
2,262

Scope(s)
Scope 1
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
5,037,500

Investment required (unit currency – as specified in C0.4)
0

Payback period
No payback

Estimated lifetime of the initiative
6-10 years

Comment

With the innovative products we offer and the improvements we make in our operations, we strive to protect natural resources in the world and to reduce our environmental footprint. To produce solutions for global environmental problems such as the climate crisis, plastic pollution, we integrate sustainability into the products we develop. Arçelik has a Central R&D department which develops recycled material formulation to reduce virgin plastic use as well as raw material consumption. We contribute to the circular economy with our innovative products and materials and aim to increase the use of alternative materials. Arçelik develops projects to recycle materials via the innovative technologies it develops. Arçelik uses recycled PP, PA, PE and recycled PET bottles (LeoPET project: With patented technology, by using recycled PET bottles inside the plastics in the tubs of washing machines, Arçelik recycled 15 million PET bottles in 2018) in products. Arçelik has recycled 730 tons of plastics and reduced 150 tons of plastics by using blowing agents in the formulation.
Our recycled content improvement projects will continue in the coming years therefore we selected ongoing and we do not have specific investments and thus there is no specific CAPEX allocation, the recycled material cost is reflected either as saving or a cost up in the cost of production.

Initiative category & Initiative type

Waste reduction and material circularity
Remanufacturing

Estimated annual CO2e savings (metric tonnes CO2e)

2,735

Scope(s)

Scope 1
Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

2,363,143

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

55,308

Payback period

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

All production plants in Turkey have their own remanufacturing operations. In 2018, we re-manufactured 2,338 tons of our products. By doing so, we have saved approximately

2.37M TL, and prevented 2,735 tons of CO2e. Also, we have invested 55,308 TL for our remanufacturing operations.

C4.3c

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

Method	Comment
Compliance with regulatory requirements/standards	Arçelik complies with legal legislation on GHG emission reduction and fully comply with eco-design legal legislation which describes product energy efficiency limits. Thanks to membership in APPLiA (Home Appliance Manufacturers Association in EU) we participate in all operations carried out in EU regarding product energy performances and labelling and developments are closely followed. Arcelik has a close relationship with all relevant ministry departments and work together on the implementation of EU regulations to Turkish regulations system. Energy efficiency operations in production are performed in accordance with all legal requirements described at Turkish Energy Efficiency Act. Greenhouse gas emission mitigation is achieved with energy efficiency operations at the product and production levels.
Dedicated budget for energy efficiency	Annually, energy budgets and energy efficiency investment budgets are allocated, and projects are realized according to allocated budgets. Targets to reduce energy consumption are set at the beginning of each year and compliance with the planned target is monitored systematically and periodically. GHG emission reduction is calculated, followed up systematically and periodically as well.
Dedicated budget for low-carbon product R&D	Arçelik's R&D Departments design innovative and environmentally friendly products with less energy and water consumption in use-phase while they provide resource efficiency in the production phase by decreasing raw material consumption and increasing recycled content in the products. Currently, Arçelik holds a number of records about white goods consuming the least energy.
Financial optimization calculations	Arçelik performs operations to optimize the energy consumption. Financial optimizations are made about energy efficiency and road for investment is paved. Short and medium term energy efficiency projects are constantly followed; financial optimization is made and put into practice in a short span of time.
Marginal abatement cost curve	Energy related expense items are followed and reduction targets are set. While increase in production is targeted, goals for decline in energy consumption and energy budgets are set.
Partnering with governments on technology development	In order to increase energy efficiency in products and production, joint works with both governmental agencies and universities are performed. Projects are carried out with TÜBİTAK (The Scientific and

	Technological Research Council of Turkey), energy-efficient products and production technologies are developed. Projects are carried out also under European Union Framework Programs. In addition, many projects are carried out with both state and foundation universities and operations for increasing efficiency in product and production are carried out. Various cooperation projects are also carried out with Ministries.

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

Group of products

Description of product/Group of products

Highly energy efficient household products

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

2009/125/EC and 2010/30/EU Directives

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

53

Comment

Description of Arçelik's low carbon products is that the products which consume less energy & water than the lowest "allowable" energy and water efficiency classes. Our low-carbon products contribute to the low carbon economy and have avoided emissions for third parties (such as our customers). In 2018, 53% of Arçelik's revenue was generated through the sale of low-carbon products. In 2018, the total savings of 75,743 GJ are achieved in annual energy consumption of the products produced in all plants in Turkey compared to 2017. This saving prevented 9,807 tons of CO2e generation in the reporting year.

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, 2010

Base year end
December 31, 2010

Base year emissions (metric tons CO2e)
77,038

Comment
Scope 1 GHG emissions in the base year 2010 have been calculated as 77,038 metric tons CO2e according to ISO 14064-1 Standard.

Scope 2 (location-based)

Base year start
January 1, 2010

Base year end
December 31, 2010

Base year emissions (metric tons CO2e)
80,687

Comment
Scope 2 GHG emissions in the base year 2010 have been calculated as 80,687 metric tons CO2e according to ISO 14064-1 Standard.

Scope 2 (market-based)

Base year start
January 1, 2010

Base year end
December 31, 2010

Base year emissions (metric tons CO2e)
0

Comment
There were no market-based Scope 2 GHG emissions in the base year 2010.

C5.2

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

ISO 14064-1

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)

55,236

Comment

Arçelik's Scope 1 emissions were calculated as 55,236 tons of CO2e in 2018 and verified by an accreditated third party.

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 are reporting a Scope 2, market-based figure

Comment

Our Scope 2 (location-based) emissions are emitted from grid electricity and calculated by using grid electricity emission factor and verified by accredited body. Our Scope 2 (market-based) emissions are only emitted from electricity that supplied from renewable energy sources and verified by accredited body as "0".

C6.3

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

Reporting year

Scope 2, location-based

22,852

Scope 2, market-based (if applicable)

0

Comment

Arçelik's Scope 2 emissions were calculated as 22,852 tons of CO2e in 2018 and verified by an accreditated third party.

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, calculated

Metric tonnes CO2e

144,385

Emissions calculation methodology

2006 IPPC Guidelines for National Greenhouse Gas Inventories

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

21

Please explain

Scope 1 (stationary combustion (natural gas, LPG, diesel, fuel oil, purchased steam, LNG) and Scope 2 (electricity) emissions of our suppliers' production activities have been calculated. Domestic suppliers and suppliers located in risky countries (in the scope of sustainability) with a total of 80% of Arçelik purchasing revenue are considered. 21% of the suppliers that the questionnaire was sent have answered our questionnaire about GHG. This information is considered to calculate the GHG emissions of suppliers.

Capital goods

Evaluation status

Not relevant, explanation provided

Please explain

The capital goods are not relevant for Arçelik. Because our owned capital goods' emissions are estimated to be at a negligible quantity of our total emissions in 2018.

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

Evaluation status

Not relevant, explanation provided

Please explain

All Scope 1 and Scope 2 emissions of our activities are calculated. There are no emissions out of Scope 1 and Scope 2 such as heat, steam, etc.

Upstream transportation and distribution

Evaluation status

Relevant, not yet calculated

Please explain

GHG emissions from upstream transportation and distribution have not been calculated yet.

Waste generated in operations

Evaluation status

Not relevant, explanation provided

Please explain

Production waste disposal and recycling operations are not implemented in Arçelik plants. Disposal and recycling companies do not under the control of Arçelik.

Business travel

Evaluation status

Relevant, not yet calculated

Please explain

GHG emissions from business travel have not been calculated yet.

Employee commuting

Evaluation status

Relevant, not yet calculated

Please explain

GHG emissions from employee commuting have not been calculated yet.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

We have no leased assets for storing supplied materials from suppliers.

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

132,828

Emissions calculation methodology

EPA Center for Corporate Climate Leadership GHG Emission Factors Hub Emission Factors for Greenhouse Gas Inventories . The emission factors are taken from Table 9: Product Transport Emission Factors.

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

100

Please explain

The sources of greenhouse gas emissions from downstream transportation and distribution are road, off-road, air, railways, and water-borne navigation activities. The GHG emissions emitted by our domestic, import, and export product transportation activities have been calculated in accordance with ISO 14064-1 and verified by an independent body in accordance with ISO 14064-3 in 2018. The calculation methodology is “EPA Center for Corporate Climate Leadership: GHG Emission Factors for Greenhouse Gas Inventories”.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

We produce and sell the final products. Because of this reason, the processing of sold products is not relevant.

Use of sold products

Evaluation status

Relevant, not yet calculated

Please explain

GHG emissions from the use of sold products in 2018 have not been calculated yet.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Please explain

We have established WEEE recycling plants in two locations (Eskişehir and Bolu) for the end of life of our products. GHG emissions generated from these WEEE recycling plants are in the scope of Arçelik's Scope1&2 GHG emissions inventory.

Downstream leased assets

Evaluation status

Relevant, not yet calculated

Please explain

GHG emissions from downstream leased assets have not been calculated.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

Arçelik has no franchising activities.

Investments

Evaluation status

Not relevant, explanation provided

Please explain

GHG emissions of Arçelik's new factory investments will be accounted in Arçelik's Scope 1&2 emissions. So, GHG emissions of factory investments are not relevant for Scope 3 emissions.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Please explain

There are no other upstream GHG sources in Arçelik's GHG inventory.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

There are no other downstream GHG sources in Arçelik's GHG inventory.

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
0.0000048

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
78,088

Metric denominator
unit total revenue

Metric denominator: Unit total
16,323,831,832

Scope 2 figure used
Location-based

% change from previous year
20

Direction of change
Decreased

Reason for change
Greenhouse gas emissions per revenue decreased by 20% in 2018 compared to the previous year. The main reasons for this decrease are energy consumption reduction activities, energy efficiency projects performed in Arçelik's production plants, and an increase in revenue compared to the previous year.

C7. Emissions breakdowns

C7.1

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

C7.1a

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

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	41,540	IPCC Third Assessment Report (TAR - 100 year)
CH4	42	IPCC Third Assessment Report (TAR - 100 year)
N2O	84	IPCC Third Assessment Report (TAR - 100 year)
HFCs	13,431	IPCC Third Assessment Report (TAR - 100 year)
Other, please specify Chemicals	139	IPCC Third Assessment Report (TAR - 100 year)

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	55,236

C7.3

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

By facility

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
Ankara Dishwasher Plant	1,936	39.97582	32.563568
Çerkezköy Tumble Dryer and Electric Motors Plant	13,785	41.306196	27.965484
Bolu Cooking Appliances Plant	9,342	40.763176	31.64291
Beylikdüzü Electronics Plant	3,217	41.017437	28.633986
Eskişehir Refrigerator and Compressor Plant	9,498	39.746225	30.618559

Çayırova Washing Machine Plant	16,149	40.821279	29.361822
Sütlüce Headquarter	1,309	41.047518	28.941751

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Turkey	22,852	0	194,414	145,387

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By facility

C7.6b

(C7.6b) Break down your total gross global Scope 2 emissions by business facility.

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Ankara Dishwasher Plant	3,367	0
Çerkezköy Tumble Dryer and Electric Motors Plant	3,363	0
Bolu Cooking Appliances Plant	0	0
Beylikdüzü Electronics Plant	1,369	0
Eskişehir Refrigerator and Compressor Plant	1,618	0
Çayırova Washing Machine Plant	13,135	0
Sütlüce Headquarter	0	0

C7.9

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

Decreased

C7.9a

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

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	8,151	Increased	10	In 2017, Arçelik purchased electricity produced from renewable sources was 162,874 MWh. In the reporting year, in 2018, this amount decreased to 145,387 MWh. Because of decrease in purchased electricity from renewable sources, Scope 2 emissions increased as 8,151 tCO2e. Calculation of this GHG emissions amount: 1) 162,874-145,387=17,486 MWh 2) 17,486 MWh*0.465 tCO2e/MWh = 8,151 tCO2e Previous year, the total of Scope1+2 GHG emissions was 78,438 tCO2e. Calculation of the emission value (percentage) = (8,151/ 78,438)*100 = 10%. (Note: Although decrease in purchased electricity from renewable sources caused an increase in GHG emissions, the total Scope1+2 GHG emissions in 2018 has been decreased 0,5% compared to 2017 due to energy efficiency projects performed in Arçelik's production plants.)
Other emissions	6,504	Decreased	8	Thanks to energy efficiency studies realized in 2018, 6,504 tCO2e emissions were prevented. Previous

reduction activities				year the total Scope1+2 emissions was 78,438 tCO2e. Calculation of the emission value (percentage) = (6,504/78,438)*100= 8%
Divestment	0	No change	0	There is no GHG emission changes from divestment.
Acquisitions	0	No change	0	There is no GHG emission changes from acquisitions.
Mergers	0	No change	0	There is no GHG emission changes from mergers.
Change in output	0	No change	0	There is no GHG emission changes from change in output.
Change in methodology	0	No change	0	There is no change in GHG calculation methodology.
Change in boundary	0	No change	0	There is no change in GHG reporting boundaries.
Change in physical operating conditions	0	No change	0	There is no change in physical operating conditions.
Unidentified	0	No change	0	There is no change due to unidentified conditions.
Other	3,347	Decreased	4.27	Due to process outsource activities in our Beylikdüzü Plant, natural gas consumption of the plant has been decreased as around 1,7 million Sm3. This reduction is equal to 3,347 tons CO2e. Previous year the total Scope1+2 emissions was 78,438 tCO2e. Calculation of the emission value (percentage) = (3,347/78,438)*100= 4.27%

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 0% but less than or equal to 5%

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	200,997.52	200,997.52
Consumption of purchased or acquired electricity		145,386.85	49,027.15	194,414.01
Consumption of self-generated non-fuel renewable energy		0		0

Total energy consumption		145,386.85	250,024.67	395,411.52

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	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

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

Fuels (excluding feedstocks)

Acetylene

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

291.83

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

291.83

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

3.38

Unit

metric tons CO2e per metric ton

Emissions factor source

Stoichiometric CO2 calculation was made.
2H2C2 + 5O2 ---- 4CO2 + 2 H2O
52 gr H2C2 = 176 gr CO2
tons CO2/tonsH2C2 = 3.38

Comment

Acetylene is consumed for welding processes.
Stoichiometric CO2 calculation has been done.

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

6,714.77

MWh fuel consumed for self-generation of electricity

308.69

MWh fuel consumed for self-generation of heat

6,406.08

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0741

Unit

metric tons CO2 per GJ

Emissions factor source

IPCC Guidelines for National Greenhouse Gas Inventories Chapter 2: Stationary Combustion- Volume 2: Energy Intergovernmental Panel on Climate Change, Table 2.2: Default emission factors for stationary combustion in the energy industries, Table 2.3: Default emission factors for stationary combustion in manufacturing industries and construction
IPCC Guidelines for National Greenhouse Gas Inventories Chapter 3: Mobile Combustion- Volume 2: Energy Intergovernmental Panel on Climate Change 2006, Table 3.2.1: Road transport default CO2 emissions factors and uncertainty ranges, Table 3.2.2: Road transport N2O and CH4 default emissions factors and uncertainty ranges

Comment

Diesel is consumed for both mobile and stationary (Diesel Gensets) combustion.

Fuels (excluding feedstocks)

Fuel Oil Number 4

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

5,633.87

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-cogeneration or self-trigeneration

5,633.87

Emission factor

0.0774

Unit

metric tons CO2 per GJ

Emissions factor source

IPCC Guidelines for National Greenhouse Gas Inventories Chapter 2: Stationary Combustion- Volume 2: Energy Intergovernmental Panel on Climate Change, Table 2.2: Default emission factors for stationary combustion in the energy industries, Table 2.3: Default emission factors for stationary combustion in manufacturing industries and construction

Comment

Fuel Oil No.4 is consumed in cogeneration plant.

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

3,867.85

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

3,867.85

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0631

Unit

metric tons CO2 per GJ

Emissions factor source

IPCC Guidelines for National Greenhouse Gas Inventories Chapter 2: Stationary Combustion- Volume 2: Energy Intergovernmental Panel on Climate Change, Table 2.2: Default emission factors for stationary combustion in the energy industries, Table 2.3: Default emission factors for stationary combustion in manufacturing industries and construction
IPCC Guidelines for National Greenhouse Gas Inventories Chapter 3: Mobile Combustion- Volume 2: Energy Intergovernmental Panel on Climate Change 2006, Table 3.2.1: Road transport default CO2 emissions factors and uncertainty ranges, Table 3.2.2: Road transport N2O and CH4 default emissions factors and uncertainty ranges

Comment

LPG is consumed in both mobile and stationary combustion.

Fuels (excluding feedstocks)

Methane

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

7.06

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

7.06

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

21

Unit

metric tons CO2e per metric ton

Emissions factor source

ISO 14064-1 GHG Reporting Standard - Annex C: Greenhouse Gas Global Warming Potentials

Comment

Methane is consumed in Quality Assurance processes.

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

3,397.24

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

3,397.24

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0693

Unit

metric tons CO2 per GJ

Emissions factor source

IPCC Guidelines for National Greenhouse Gas Inventories Chapter 3: Mobile Combustion- Volume 2: Energy Intergovernmental Panel on Climate Change 2006, Table 3.2.1: Road transport default CO2 emissions factors and uncertainty ranges, Table 3.2.2: Road transport N2O and CH4 default emissions factors and uncertainty ranges, Table 3.3.1 Default Emission Factors For Off-Road Mobile Sources And Machinery

Comment

Gasoline is consumed in mobile combustion.

Fuels (excluding feedstocks)

Natural Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

180,878.92

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

138,495.1

MWh fuel consumed for self-cogeneration or self-trigeneration

42,383.82

Emission factor

0.0561

Unit

metric tons CO2 per GJ

Emissions factor source

IPCC Guidelines for National Greenhouse Gas Inventories Chapter 2: Stationary Combustion- Volume 2: Energy Intergovernmental Panel on Climate Change 2006, Table 2.2: Default emission factors for stationary combustion in the energy industries, Table 2.3: Default emission factors for stationary combustion in manufacturing industries and construction

Comment

Natural gas is consumed to acquire process heat, provide space heating, and generate electricity in cogeneration plant.

Fuels (excluding feedstocks)

Propane Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

29.83

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

29.83

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

2.86

Unit

metric tons CO2e per metric ton

Emissions factor source

American Petroleum Industry Compendium (2009) Table 3.8 Densities, Higher Heating Values and Carbon Contents for Various Fuels, Table 4.3. CO2 combustion emissions factor for common industry fuel types

Comment

Propane is consumed for welding processes.

Fuels (excluding feedstocks)

Other, please specify

Industrial Base Oil

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

176.15

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-cogeneration or self-trigeneration

176.15

Emission factor

0.0733

Unit

metric tons CO2 per GJ

Emissions factor source

IPCC Guidelines for National Greenhouse Gas Inventories Chapter 2: Stationary Combustion- Volume 2: Energy Intergovernmental Panel on Climate Change 2006, Table 1.2: Default net calorific values, Table 1.4: Default CO2 emission factors for combustion

Comment

Industrial base oil is consumed in cogeneration plant.

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	9,590.8	9,590.8	0	0
Heat	52,563.7	52,563.7	0	0
Steam	0	0	0	0
Cooling	22,639.4	22,639.4	0	0

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method

Power purchase agreement (PPA) with a grid-connected generator without energy attribute certificates

Low-carbon technology type

Low-carbon energy mix

Country/region of consumption of low-carbon electricity, heat, steam or cooling

Turkey

MWh consumed accounted for at a zero emission factor

145,386.85

Comment

Electricity supply company holds hydropower and wind turbine power plants in its asset portfolio. According to agreement for specified period and amount, supplied electricity is generated by renewable plants as mentioned above.

C9. Additional metrics

C9.1

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

Description

Waste

Metric value

87,954

Metric numerator

tons

Metric denominator (intensity metric only)

% change from previous year

1.07

Direction of change

Decreased

Please explain

Thanks to waste reduction projects performed in Arçelik's production plants, the total waste amount generated from production activities was reduced by 1.07% in 2018 compared to 2017.
2017 Waste amount: 88,904 tons
2018 Waste amount: 87,954 tons
(87,954 - 88,904) / 88,904 = -1.07% (Decreased)

Description

Energy usage

Metric value

1,421,663

Metric numerator

GJ

Metric denominator (intensity metric only)

% change from previous year

13.3

Direction of change

Decreased

Please explain

Thanks to energy efficiency projects performed in Arçelik's production plants, the energy consumption amount was reduced by 13.3% in 2018 compared to 2017.
2017 Energy Consumption: 1,639,804 GJ

2018 Energy Consumption: 1,421,663 GJ
(1,421,663 - 1,639,804) / 1,639,804 = -13.3% (Decreased)

C10. Verification

C10.1

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

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

C10.1a

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

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Reasonable assurance

Attach the statement

Arcelik_GHG_Verification Reports_2018.pdf

Page/ section reference
Arçelik Carbon Footprint Verification Certificate (Page:1-3), CDP Verification Document (Page:4-5), Renewable Energy Declarations (Page: 6-7)

Relevant standard
ISO14064-3

Proportion of reported emissions verified (%)
100

C10.1b

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

Scope 2 approach
Scope 2 location-based

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Reasonable assurance

Attach the statement

Arcelik_GHG_Verification Reports_2018.pdf

Page/ section reference
Arçelik Carbon Footprint Verification Certificate (Page:1-3), CDP Verification Document (Page:4-5), Renewable Energy Declarations (Page: 6-7)

Relevant standard
ISO14064-3

Proportion of reported emissions verified (%)
100

Scope 2 approach
Scope 2 market-based

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Reasonable assurance

Attach the statement

Arcelik_GHG_Verification Reports_2018.pdf

Page/ section reference

Arçelik Carbon Footprint Verification Certificate (Page:1-3), CDP Verification Document (Page:4-5), Renewable Energy Declarations (Page: 6-7)

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.1c

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

Scope 3 category

Scope 3: Downstream transportation and distribution

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

Arcelik_Scope 3_Verification Statement_2018.pdf

Page/section reference

Verification Opinion Statement Pages 1-3

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.2

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

Yes

C10.2a

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C4. Targets and performance	Change in Scope 1 emissions against a base year (not target related)	ISO 14064-3	Besides, GHG procedures, operational instructions “on-site” implementations GHG emissions, uncertainty and materiality calculations, energy efficiency projects’ GHG performances are also submitted to Verification Body as "Arçelik A.Ş. Green House Gas Emissions Report (2018)". In this report changes in Scope 1&2&3 emissions against the base year have been verified.
C4. Targets and performance	Change in Scope 2 emissions against a base year (not target related)	ISO 14064-3	Besides, GHG procedures, operational instructions “on-site” implementations GHG emissions, uncertainty and materiality calculations, energy efficiency projects’ GHG performances are also submitted to Verification Body as "Arçelik A.Ş. Green House Gas Emissions Report (2018)". In this report changes in Scope 1&2&3 emissions against the base year have been verified.
C6. Emissions data	Change in Scope 1 emissions against a base year (not target related)	ISO 14064-3	Besides, GHG procedures, operational instructions “on-site” implementations GHG emissions, uncertainty and materiality calculations, energy efficiency projects’ GHG performances are also submitted to Verification Body as "Arçelik A.Ş. Green House Gas Emissions Report (2018)". In this report changes in Scope 1&2&3 emissions against the base year have been verified.
C6. Emissions data	Change in Scope 2 emissions against a base year (not target related)	ISO 14064-3	Besides, GHG procedures, operational instructions “on-site” implementations GHG emissions, uncertainty and materiality calculations, energy efficiency projects’ GHG performances are also submitted to Verification Body as "Arçelik A.Ş. Green House Gas Emissions Report (2018)". In this report changes in Scope 1&2&3 emissions against the base year have been verified.
C6. Emissions data	Change in Scope 3 emissions against a base	ISO 14064-3	Besides, GHG procedures, operational instructions “on-site” implementations GHG emissions, uncertainty and materiality calculations, energy efficiency projects’ GHG performances are also

	year (not target related)		submitted to Verification Body as "Arçelik A.Ş. Green House Gas Emissions Report (2018)". In this report changes in Scope 1&2&3 emissions against the base year have been verified.

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 Paris COP21, Turkey signed the Paris Agreement and submit its INDC plan to the UN Secretariat. According to the NDC, Turkey's target is to reduce 21% of its emissions according to business as usual scenario by 2030.
This target has not been allocated to the sectors yet. And method of GHG reduction has not been identified yet. It is under progress. But it is anticipated that there will be carbon tax.
In this context, it is deduced that the targets or taxes will be related to energy efficiency projects and the possible use of renewable energy resources. Because of this reason renewable energy usage and energy efficiency investment requirements will need to be increased. Companies may need to buy electricity from renewable sources with higher prices. Energy efficiency projects and carbon credit purchasing needs will be increased.
To manage this possible obligation, Arçelik has energy efficiency targets annually and Arçelik has determined its GHG emission target as Net Zero Emission in production in Turkey operations by 2025.
Arçelik SC contributes this targets every year for increasing energy efficiency in production and using electricity produced by renewable energy sources (RES) to reduce GHG.With energy efficiency projects in Arçelik Production Plants at last 9 years (2010-2018),we have saved nearly 798,000 GJ energy with 1,178 projects. Totally;75,875 tCO2e GHG emission has been reduced since 2010. Arçelik, starting from 2012,has been using electricity produced from Renewable Energy Sources (RES).The supply rate of electricity generated from RES,which was realized approximately as 1% in 2012, 28% in 2013, 78% in 2014, and 82% in 2015, 88% in 2016, 77% in 2017 and was occured as 75% in 2018. Arçelik aims to increase the share of the supply of electricity generated from renewable energy resources to the level of 100% as of 2020.

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

Energy efficiency: households

Project identification

We have developed an Arçelik Energy-Efficient Refrigerators Carbon Financing Project. It is a voluntary emission reduction Project, because there is not any regulatory emission trading scheme in Turkey and so that there are no allowances allocated or purchased in the scope of our Project.
The project activity is manufacturing enhanced energy-efficient refrigerators by applying advanced technologies and selling them to Turkish customers. The Project crediting period is 10 years (2012-2022) and the estimated average emission reductions resulting from this project is estimated around 1.8 million tCO2e, totally (The estimation was based on the assumptions made in line with the CDM methodology). The validation process and registration phase have been completed (Registry: APX; Project ID:1117). Thanks to this project, approximately 305,000 tons of CO2e emissions reduction have been verified for 2013-2019, where 103,596 tons of CO2 originated only in 2018.

Verified to which standard

VCS (Verified Carbon Standard)

Number of credits (metric tonnes CO2e)

103,596

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

103,596

Credits cancelled

No

Purpose, e.g. compliance

Voluntary Offsetting

C11.3

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

Yes

C11.3a

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

Objective for implementing an internal carbon price

Navigate GHG regulations
Stakeholder expectations
Change internal behavior
Drive energy efficiency
Drive low-carbon investment
Identify and seize low-carbon opportunities

GHG Scope

Scope 1
Scope 2

Application

Arcelik uses an implicit price system on plants. Every plant has its own budget about energy efficiency improvement projets and other emission reduction projects. Thanks to these projects which are already mentioned in C4.3b, GHG emissions can be reduced while efficiency improvement projects are developed. At the end of the year, total investment of energy projects is divided by total CO2 reduction to calculate the implicit carbon price. Moreover, Arcelik is currently working on to implement the Shadow Price or Internal Carbon Fee models.

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

530.21

Variance of price(s) used

Arçelik uses a voluntary pricing method for carbon pricing.
Carbon price varies according to the amount of investment and the total GHG saving.

Type of internal carbon price

Implicit price

Impact & implication

Energy improvement projects cause to drive the company to low carbon emmission technologies. Thus energy improvement project budgets are directly affecting to low carbon emmissions technologies. Arcelik uses an implicit price system on plants. Every plant has its own budget about Energy Efficiency Improvement Projets. Thanks to these “Efficiency Improvement Projects” which are already mentioned in C4.3b, GHG emissions can be reduced while efficiency improvement projects are developed. At the end of the year, total investment of energy projects is divided by total CO2 reduction to calculate the implicit carbon price.
2018 Energy Efficiency Projects Investment Amount:

C12. Engagement

C12.1

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

Yes, our suppliers
Yes, our customers
Yes, other partners in the value chain

C12.1a

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

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

15

% total procurement spend (direct and indirect)

80

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

21

Rationale for the coverage of your engagement

As Arçelik, we adopt our "sustainability" approach is adopted in the direct focus of our strategy and business model, and all our activities are carried out within this frame. However, Corporate Sustainability covers not only managing governs the economic, social, and environmental impacts of our company, but also includes the monitoring and development of sustainability performances of our suppliers. In line with this approach, Arçelik initiated the Supplier Sustainability Index in 2018 for the assessment of sustainability risks of suppliers. Arçelik conducts an initial analysis based on Kraljic methodology to assses critical and strategic suppliers based on purchasing volume, supplier dependency, supplier performance, technology and innovation level of the supplier. We collect information about suppliers' GHG data and energy consumption data with this survey.
For the coverage of this survey; we prioritized the suppliers to send this questionnaire. The coverage of this survey is; domestic suppliers and suppliers located in risky countries (in the scope of sustainability) with a total of 80% of Arçelik purchasing revenue. In 2018, 21% of the suppliers that the questionnaire was sent, answered the climate change-related questions such as GHG emissions and energy consumptions.

Impact of engagement, including measures of success

The coverage of this survey is; domestic suppliers and suppliers located in risky countries (in the scope of sustainability) with a total of 80% of Arçelik purchasing revenue. In 2018, 73% of the suppliers answered the questionnaire. 21% of the suppliers that the questionnaire was sent, answered the climate change-related questions such as GHG emissions and energy consumptions.
Responses from suppliers are reviewed and evaluated. After the evaluation of the responses, suppliers are categorized according to their sustainability scores as 'high risk', 'middle risk', 'acceptable', 'good', 'excellent'. Arçelik does not work with 'high risk' and 'middle risk' suppliers until they reached to 'acceptable' level. As a result of the 2018 questions, 9.1% of suppliers (that answer the questions) are classified in medium and high-risk groups. Arçelik has a target to reduce rate of its medium and high-risk suppliers to 8% by 2020. Arçelik provides to its suppliers a lot of development studies (training, awareness, etc.) to ensure that suppliers at acceptable levels move up to higher levels. Incentives (awards, priorities, etc.) for suppliers reached higher levels are given.
Arçelik organizes Supplier Innovation Programs where Arçelik and suppliers work on joint R&D projects. Based on energy efficiency studies carried out with suppliers in 2018, 87 energy projects were completed and a total energy saving of 10,46 million kWh/year was achieved. Arçelik organizes annual Supplier Day events and suppliers who work on Energy and Environment projects receive special awards during these organizations.

Comment

As Arçelik, we adopt our "sustainability" approach is adopted in the direct focus of our strategy and business model, and all our activities are carried out within this frame. However, Corporate Sustainability covers not only managing governs the economic, social, and environmental impacts of our company, but also includes the monitoring and development of sustainability performances of our suppliers.

C12.1b

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

Type of engagement

Education/information sharing

Details of engagement

Share information about your products and relevant certification schemes (i.e. Energy STAR)

% of customers by number

100

% 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 and raise our customers' awareness with advertisements, documentaries, and publications related to energy efficiency, and by producing the best energy-efficient products. All of our customers are covered in this engagement. For customer awareness, our product's user manuals include information part of "Things to do to save energy". On our website, and on the product labels, customers can reach the energy consumption information of our products.

Impact of engagement, including measures of success

We try to raise awareness of our customers on energy efficiency. Our measure of success is to increase the demand of customers to our most energy-efficient appliances and increase the rate of revenue from the most efficient home appliance sales.

C12.1d

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

Arçelik has a close relationship with all relevant ministry departments with joining and leading their climate change projects. E.g. Arçelik was a partner to Market Transformation of Energy Efficient Appliances (EVÜdP) in Turkey. EVÜdP Project started in 2010 and completed by the end of 2015. UNDP, GEF, T.R. Ministry of Industry and Technology, T.R.Ministry of Energy and Natural Resources, and TÜRKBESD are also members of the Project. The aim was to enhance the strategy and infrastructure of market transformation towards more energy-efficient household appliances thus reducing domestic electricity consumption and decreasing greenhouse gas emissions. As a result of EVÜdP project, EU ecodesign and energy labeling regulations for washing machine, dishwasher, oven, hob, hood, refrigerator, freezer, air conditioners, dryer, and television implemented to Turkey in 2011 in parallel with EU laws. Under the EU harmonization efforts, non-energy efficient refrigerator, washing machine, and dishwasher are banned in 2011. In this way products are placed on the market as of today are 2 times more efficient compared to 2010. For implementing EU regulations to Turkish legislation; strong coordination between T.R. Industry and Technology Ministry, and the producers have been created.

Arçelik also supports national and international activities for combating climate change. Arçelik participates in Global Climate Conferences and shares its best practices in the panels since 2011. Arçelik attends meetings organized by the Ministry for defining Turkey's climate strategy. In addition, additionArçelik's CEO is a commissionaire of the High-Level Commission on Carbon Pricing and Competitiveness. Arçelik is the only Turkish company in this commission. Arçelik follows the decisions about carbon pricing management for both the company itself and Turkey. Arçelik sets carbon management strategies and targets including internal carbon pricing for its all production plants.

We are involved in a H2020 project called CSERVEES which aims to accelerate the transition to a circular economy in the Electronics sector. With the project, Arçelik will focus on increasing recycled content in production and try new circular economy business models such as rent and second-hand sale.

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
Energy efficiency	Support	1) Arçelik was a partner to Market Transformation of Energy Efficient Appliances (EVÜdP) in Turkey. EVÜdP Project started in 2010 and completed by the end of 2015. UNDP, GEF, T.R. Ministry of Science,Industry and Technology and T.R.Ministry of Energy and Natural Resources Directorate General of Renewable Energy and TÜRKBESD are also members of the Project. The aim was to enhance the strategy and infrastructure of market transformation towards more energy efficient household appliances thus reducing domestic electricity consumption and decreasing greenhouse gas emissions. 2) Arçelik participates and gives comment at the preliminary legislative phase of EU regulations on energy efficiency, energy labelling and circular economy package through the membership in APPLiA (European Domestic Equipment Manufacturers' Association). 3) Arçelik has a close relationship with relevant ministry directorates in Turkey and works together on the transposition of EU regulations into Turkish law. Arçelik has taken active part in the consultation phase of Turkish energy labelling and eco-design regulations for product groups that are published in parallel with EU versions.	1) As a result of EVÜdP project, EU ecodesign and energy labelling regulations for washing machine, dishwasher, oven, hob, hood, refrigerator, freezer, air conditioners, dryer and television implemented to Turkey in 2011 in parallel with EU laws. Under the EU harmonization efforts, non-energy efficient refrigerator, washing machine and dishwasher are banned in 2011. In this way products are placed on the market as of today are 2 times more efficient compared to 2010.. For implementing EU regulations to Turkish legislation; strong coordination between Science, Industry and Technology Ministry and the producers have been created. 2) In line with the opinions transmitted via APPLiA lobbied for a stable new energy labelling scheme to be included in the draft regulation. Finally, 10-year stability is guaranteed in the new framework regulation

			that is adpoted in June 2017. The new energy labelling regulation was published in August 2017 and it is foreseen that it will enter into forceon 1 March 2021 for refrigerators, washing machines, dishwashers, TVs and within 6 years after publication of framework regulation for other products. 3) For the purpose of dissemination of highly energy efficient products, "industry opinion" for incentives were provided to the Ministry of Finance. Arçelik give important contribution to these proposals. 4) In February 2017, extra tax (other than VAT) on durable goods was removed by the government. It was not applied until September 2017 as declared by the Ministry.
Other, please specify Climate change	Support	1) Arçelik took part in the working group which has been established by the Ministry of Environment and Urbanization&UNIDO.The group is working on the technical specifications of determining,collecting and disposal of the Ozone Depletion Substances that are banned.2)Arçelik became a member of Climate Platform of Turkey which is established as an independent non-profit initiative by REC Turkey and TÜSİAD).3)Arçelik gave comments on draft Regulation onTurkish Monitoring and Reporting,in 2012.4)Arçelik made a joint study with Ministry of Energy and Natural Resources Directorate General of Energy Affairs to calculate regional diffraction of emission factor to reduce risk of reflection of such uncertainty to GHG emissions. 5) Arçelik‘s former CEO represented Turkey as	1)In Turkey, Arçelik was the first household appliances manufacturer to produce refrigerators without ozone-depleting CFC gases in 1995, much earlier than 2006, which was the deadline set for Turkey under the Montreal Protocol. Arçelik contributed the national regulation in this area and lead to its sector for this transition. 2-5-6) Because of the responsibility being Climate Platform Leader of Turkey, Arçelik lead its sector to combate climate change and shared the sector’s view to the world in World Climate Summit. 3-

		"President of Turkey Climate Change Group of Leaders " and presented opinions of private sector at "Towards Rio +20,Business Leaders Build Change" panel in COP17. Arçelik also actively participated in work groups at the Ministry of Environment and Urbanization ahead of the WCC realized in Lima in 2014.Arçelik participated in the COP21, COP22, COP23, COP24 and COP25 represented Turkey. Arçelik CEO attended the "Dialogue for Climate Action" event in Vienna,which was launched by WB, within the frame of COP21 goals.Arçelik signed 'The Principles for Dialogue on Climate Action' in scope of this event.Arçelik made commitments to «Paris Pledge for Action» of Cambridge University and "Responsible corporate engagement policy" of "Road to Paris 2015 Project".Arçelik also committed to "Science Based Targets" initiative.6)Arçelik considers climate change as an important risk for world's sustainability,maintains its support to local and international projects executed by business world both in Turkey and abroad.In this scope,Arçelik signed "The 2oC Challenge Communiqué" prepared by Corporate Leaders Network (CLN).7) Arçelik takes part in Dow Jones Sustainabiliy Index and Istanbul Stock Exchange Sustainability Index (BIST SI) formation on the sustainability which also include climate change performance indicators.8) WEEEs such as refrigerator, air conditioner etc. may contain ODS which have high GWP.The gases must be properly extracted and treated in an environmental-friendly way. Arçelik made a joint study with the Ministry of Environment and Urbanization to publish the "WEEE Regulation" in Turkey.	4) Arçelik has given its comments to Ministry for Turkish MRV Regulation on the importance of specifying Turkish grid emission factor and specifying the tiers. 8) Arçelik has cooperate and communicate with Ministry for creating and implementing of Turkish WEEE Regulation. Arçelik contributed to WEEE Management System in Turkey.
Energy efficiency	Support	1) Arçelik has a close relationship with all relevant ministry departments and work together on the preliminary phase of transposition of EU regulations into Turkish law. Arçelik took active part in the consultation phase of Turkish energy	The aim is to have Turkish ecodesign and energy labelling regulations entered into force simultaneously with EU. Arçelik continuously provide its comments to

		labelling and ecodesign directives, which are published in official journal, dated 22 June 2012. 2) In order to increase energy efficiency in products and production, joint works with both governmental agencies and universities are performed. Projects are carried out with TÜBİTAK (The Scientific and Technological Research Council of Turkey), energy efficient product and production technologies are developed. Projects are carried out also under European Union 7th Framework Program. 3) Arçelik also has a close relationship with Ministry of Industry and Technology and work together on energy efficiency and energy regulations in industrial electric motors.	relevant governmental departments and participates in the meetings in the scope of public-private dialogues.

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

TUSIAD – Environment and Climate Change Working Group

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

This working group is established for supporting the development of environmental policies in Turkey and the development of regulations in order to provide economic growth in parallel with the sustainability of natural resources. The Working Group evaluates the effective implementation of the regulations, conducts research, and presents suggestions to relevant institutions and organizations in this framework. The Working Group contributes to the work of the Climate Change and Air Management Coordination Board, which TÜSİAD is a member, and to the COPs. The group also contributes to the work of the Turkish Climate Platform established by REC Turkey and TÜSİAD in order to raise awareness in the business world in the field of climate change in Turkey.

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

Arçelik's Quality, Sustainability and Corporate Affairs Director is the president of this working group.

Trade association

TOBB – Consumer Durable Goods Council Environmental Sub-Working Group

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

This working group is established for supporting durable goods sector to develop sectoral knowledge on environmental issues and the development of regulations in order to provide sectoral economic growth in parallel with the sustainability of natural resources. The sub-working group evaluates the effective implementation of the environmental regulations and presents suggestions to relevant institutions and organizations in this framework.

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

Arçelik's Environment Manager is a member of this sub-working group.

C12.3e

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

Arçelik conducts cooperation activities with universities on climate change subject:

- Sustainable Energy Efficient Project-The Union of Chambers and Commodity Exchanges of Turkey (TOBB) Economy and Technology University Mechanical Engineering,Degree Thesis Study,
- Life Cycle Engineering-Istanbul Technical University Mechanical Engineering,Degree Thesis Study
- Project for optimization of energy consumption at cooling system of plastic injection machines-Yıldız Technical University (YTU) Mechanical Engineering,Master Degree Thesis Study.
- Water Recycling, Minimization and İntegrated Water Management Project in Arçelik Cooking Appliances Plant-Istanbul Technical University, Environmental Engineering
- Water efficiency studies performed in Cooking Appliances Plant published in scientific papers (e.g. World Academy of Science Engineering and Technology, International Journal of Environmental and Ecological Engineering Vol:3, No:3, 2016, "Assessment of Water Reuse Potential in a Metal Finishing Factory", "Assessment of Waste Water Reuse Potential for an Enamel Coating Industry).
- Environmental impacts of a printed circuit board manufacturing plant via a streamlined approach – Istanbul Technical University Environmental Engineering, Thesis Study
- Arçelik has become a partner to the United For Efficiency (U4E) Project led by UNEP. Arçelik supports market transformation towards Energy Efficient Appliances and Equipment globally. In this context, Arçelik supports development of estimates on the benefits and policy status of the transition to energy efficient household refrigerators, particularly in the Republic of South Africa and Thailand. Arçelik contributes to the development of performance standards, monitoring and verification schemes, test methods and the installation of test facilities for energy efficient refrigerators and give support to the global action campaign to promote the global transition to energy

efficient refrigerators particularly at developing countries. The contribution will take different forms such as technical expertise and market insights to be provided, for instance, to meetings of the global multi-stakeholder platform, technical task forces and high level and expert discussions

- Arçelik has made a commitment to “Responsible corporate engagement policy” program in scope of “Road to Paris 2015 Project” which is a global project related to combat climate change launched by CDP.
- Arçelik has made a commitment to “Science Based Targets Initiative”.
- Arçelik signed 'The Principles for Dialogue on Climate Action' within the scope of the event.
- Arçelik has signed «Paris Pledge for Action» sent by Cambridge University Institute for Sustainability Leadership
- We collaborate with International Finance Corporation(IFC) to evaluate the water efficiency of our production plants.In the project,the efficiency of water consumption in each process is evaluated and benchmarked against global players in the industry In line with the project, we set our 2030 wtarget to reduce water withdrawal in production process by 45% per product compared to 2015 base year.
- Arçelik organizes Supplier Innovation Programs where Arçelik and suppliers work on joint R&D projects. Based on energy efficiency studies carried out with suppliers in 2018, 87 energy projects were completed and a total energy saving of 10,46 million kWh/year was achieved. Arçelik organizes annual Supplier Day events and suppliers who work on Energy and Environment projects receive special awards during these organizations.

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?

All business strategies and targets are being studied and implemented by Climate Change Coordination WG (CCC WG) which consists of Sustainability, Energy and Environment Managers, Environment and Energy Specialists and production managers.This Group is responsible to integrate climate change efforts and ensures that all efforts comply to Arçelik’s climate change strategy, policy and legal regulations.This Group collects and reports the information to influence the strategy. The Group meets quarterly.CCC WG identifies the company’s climate change related risks and opportunities at the asset level and reports to Sustainability Council.

Arçelik has an integrated ISO 50001 & 14001 & 14064-1 Management Systems. Energy managers of the plants reviews the projects that provides GHG mitigation and energy efficiency projects quarterly and reports the results to directors and CCC WG annually. CCC WG controls the compliance of the results with the climate change policy and strategy. The communication and coordination are handled by CCC WG.

Arçelik engages with policy makers on mitigation and adaptation as well as environmental legislative issues using a wide variety of communication channels. CCC WG representatives are also the member of T.R. Environment and Urbanization Ministry’s technical committees (TC) on climate change (Climate Change Awareness, Mitigation TC etc.). Energy and Environment Departments represent Arçelik in several NGOs in Turkey (TUSIAD, ISO, TOBB Durable Goods Council) and mainly in APPLiA for EU activities.

Arçelik’s CEO is a commissionaire of the High-Level Commission on Carbon Pricing and Competitiveness.

A member of the Arçelik Board of Directors is appointed to report to the Board of Directors on Climate Change Strategy and Sustainability issues. Quarterly reports are presented to the Board of Directors.
These organizations and activities exist to ensure that all engagement activities are in line with Arçelik's climate change policy and strategy.

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 mainstream reports

Status
Complete

Attach the document
Arcelik_Annual_Report_2018.pdf

Page/Section reference
1-115

Content elements
Governance
Strategy
Emissions figures
Other, please specify
Climate related awards (CDP etc.)

Comment
Governance, strategy, emission figures, and climate-related awards are located in Arçelik's annual reports.

Publication
In voluntary sustainability report

Status
Complete

Attach the document
Arcelik_Sustainability_Report_2018.pdf

Page/Section reference

1-107

Content elements

Governance
Strategy
Emissions figures
Emission targets
Other metrics
Other, please specify
Energy consumption, energy projects, climate-related awards etc.

Comment

Governance, strategy, emission figures, other metrics such as water consumption, energy consumption, energy projects, and climate-related awards are located in Arçelik's sustainability reports released every year.

C15. Signoff

C-FI

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

C15.1

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

	Job title	Corresponding job category
Row 1	Chief Financial Officer (CFO)	Chief Financial Officer (CFO)

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