## Module: Introduction

## Page: Introduction

**0.1**

**Introduction**
Please give a general description and introduction to your organization

Arçelik A.Ş., founded in 1955,has operations in durable consumer goods and electronics sector with production,marketing and after sales services,offers products and services more than 100 countries around the world with its around 23,000 employees (and over 900 R&D employees).
Arçelik A.Ş.,has 14 production plants in 5 countries (Turkey,Russia,Romania,China and South Africa), sales and marketing companies all over the world with its 10 own brands (Arçelik,Beko,Grundig,Altus,Blomberg,ElektraBregenz,Arctic,Leisure,Flavel,Defy).
Arçelik management provides its commitment to present future environmental and social issues with its recently announced vision "Respects the Globe,Respected Globally".
With a "sustainable development" approach parallel to its vision,Arçelik aims to develop and market products that are resource and energy efficient technologically innovative in design and easy to use, while also fulfilling its commitment to work on solutions against future threats such as drought,global warming,diminishing natural resources.
Arçelik conducts its business processes in accordance with ISO 14001 Environment Management System (EMS), which is integrated with ISO 9001 Quality Management System (QMS) and adopted to Total Quality Approach,since 1994.
In 2011, Arçelik established Greenhouse Gas (GHG) Management and Reporting System based on continuously improvement principle.
Arçelik calculated the GHG emissions sourced by its facilities by using IPCC-2006 and in accordance with ISO 14064-1 GHG Standard.
Arçelik's 2010 and 2011 GHG values have been audited and verified by an independent body in "100% verification" and "reasonable assurance" level.
In 2012,Arçelik established Energy Management System in a more systematic structure by using ISO 50001 Energy Management Standard (EnMS).
Arçelik's EnMS has been audited and certified by an independent accredited body.Arçelik EnMS and GHG Management System are integrated.
Arçelik's environmentally responsive "sustainable development" approach which is controlled in all processes from design to product cycle has been achieved as a result of mentioned management systems and vision.
With its environmental management system,Arçelik has become a finalist in the "Management" category within the framework of the "European Business Awards for the Environment-European Programme",in 2010.Arçelik also won first prizes in "Management" category and in "Product" category under "European Business Awards for the Environment-Turkey Programme",in 2010.
Considering climate change as a global problem,Arçelik signed on 28 Nov 2011 "The 2oC Challange Communique" prepared by Corporate Leaders Nerwork (CLN) and signed by more than 200 corporate officersoperating in various industries in 29 countries.Levent Çakıroğlu,Arçelik A.Ş. CEO,represented Turkey as the Term Spokesman of Climate Changes Leaders in the World Climate Summit held in Durban (2011) and Doha (2012).
Parallel to its vision,one of Arçelik's other goals is to prevent consuming of resources.Arçelik focuses to achieve continuous improvement of the products,starting

from design stage.In Arçelik, Central R&D, Central Industrial Design Dept. and Product Development Departments of the plants are responsible to conduct technological and product development studies to achieve continuously improvement. These efforts are being recognized by various awards and prizes.
As an example,in 2012,"Cactus Diswasher" was awarded with first place in Energy Efficient Products category by the Ministry of Energy and Natural Resources and in Environmentally-Friendly Product category by Istanbul Chamber of Industry.It was entitled to represent Turkey in 2012,at "Rio+20 United Nations Sustainable Development Conference" in "Sustainable Development and Green Economy" category,beside the Turkey's best practices.
Arçelik production plants carried various projects to reduce water,energy and waste with the "energy efficiency in production" approach.
All domestic production plants achieved a "Gold" certificate for energy efficiency.Arçelik also first home appliances company to be achieved "Platinium" certificate.Arçelik continues to raise its bar of success with each passing year: For the first time in the global household appliances market,its refrigerator,washing machine, cooking appliances and compressor plants achieved the "Platinium" certificate.
Arçelik also implements Total Productive Maintenance (TPM) and Six Sigma methodologies for cost reduction,quality and process improvement while increasing its competitive edge day by day through its flexible production structure.The company's plants adhere to international production and quality standards.
Arçelik shares its sustainability approach with Sustainability Reports (SR). Arçelik's first SR was in 2007.SR 2008-2009 was based on the GRI's G3 Sustainability Reporting Guidelines which is also approved by the GRI's Secretariat at C level.SR 2010 and 2011 were also based on the GRI's G3 Sustainability Reporting Guidelines which was also approved and checked by the GRI Secretariat at B(+) level and SR 2010 was first approved B(+) report in white goods sector in Turkey.Arçelik's SR 2012 is under process.

**0.2**

**Reporting Year**
Please state the start and end date of the year for which you are reporting data.
The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.
We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.
Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

| Enter Periods that will be disclosed |
| --- |
| Sat 01 Jan 2011 - Sat 31 Dec 2011 |

**0.3**

**Country list configuration**

Please select the countries for which you will be supplying data. This selection will be carried forward to assist you in completing your response

| Select country |
| --- |
| Turkey |

**0.4**

**Currency selection**

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

TRY

**0.6**

**Modules**

As part of the request for information on behalf of investors, electric utilities, companies with electric utility activities or assets, companies in the automobile or auto component manufacture sectors, companies in the oil and gas industry and companies in the information technology and telecommunications sectors should complete supplementary questions in addition to the main questionnaire.

If you are in these sectors (according to the Global Industry Classification Standard (GICS)), the corresponding sector modules will not appear below but will automatically appear in the navigation bar when you save this page. If you want to query your classification, please email respond@cdproject.net.

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below. If you wish to view the questions first, please see https://www.cdproject.net/en-US/Programmes/Pages/More-questionnaires.aspx.

**Further Information**

For further information, please see attached Arçelik Sustainability Report 2011.

**Attachments**

https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/Introduction/Sustainability Report2011(1).pdf

# Module: Management [Investor]

## Page: 1. Governance

**1.1**

**Where is the highest level of direct responsibility for climate change within your company?**

Individual/Sub-set of the Board or other committee appointed by the Board

**1.1a**

**Please identify the position of the individual or name of the committee with this responsibility**

ARÇELİK Management proves its commitment to present and future environmental and social issues with its recently announced vision "Respects the Globe, Respected Globally". With its sustainability based vision, ARÇELİK manages its systems and implementations in accordance with sustainability principles, based on environmental, economic, social and corporate governance issues.
The top responsible of sustainability and climate change efforts (also including performance monitoring) is Mr. Fatih Ebiçlioğlu, PhD, ARÇELİK Assistant General Manager, Finance and Accounting (CFO).
Mr. İsmail Hakkı Sağır, ARÇELİK Assistant General Manager, Production and Technology (CTO) is responsible for energy and environment implementations, target determination and performance monitoring.
Within the framework of Arçelik's vision, the Energy and Environment Department has been established in 2010, which performs guidance, planning, coordinating and follow-up of the environmental sustainability and climate change efforts at all production sites and all operational activities and services. This department is distinctly structured to integrate environmental sustainability, energy management, climate change efforts and ensures that all efforts comply to ARÇELİK's vision, strategies, policies and procedures, including legal regulations.
Mr. Fatih Özkadı, MSc, ARÇELİK Energy and Environment Manager, reports directly to ARÇELİK Executive Top Management for the environmental sustainability and climate change performance and efforts. ARÇELİK's environmental sustainability and climate change performance are evaluated by ARÇELİK Executive Top Management, annually. The sustainability and climate change strategies are determined by ARÇELİK Executive Top Management.
The environmental sustainability and climate change implementations are studied and carried out by the Environmental Coordination Committee. The energy efficiency improvement projects which is directly related to climate change efforts are studied and carried out by the Energy Coordination Committee. The Committees are led by the Energy and Environment Manager. The commitees come together monthly to monitor implementations, performances and share best practices. The commitee members are also reponsible for the environmental sustainability and climate change efforts of the related production site. All of the environmental committee members are Environmental Engineers, certified as Environmental Responsible by the Ministry of Environment and Urban Planning.
The energy committee members are Mechanical/Electrical Engineers, certified as Energy Managers, by the Ministry of Energy.
The performance results of the plants are also reviewed by each Product Director, annually.
The energy efficiency projects of the products are executed by R&D Department. R&D Department directly reports to CTO.

**1.2**

**Do you provide incentives for the management of climate change issues, including the attainment of targets?**

Yes

**1.2a**

**Please complete the table**

| Who is entitled to benefit from these incentives? | The type of incentives | Incentivized performance indicator |
|---|---|---|
| All employees | Monetary reward | In order to increase motivation,succes and productivity of its employees and to materialize best practices and ensure their dissemination;Arçelik evaluates,rewards and ensures promotion within the company all success,invention and suggestions that provide benefit. In this context,since 2005 Human Resources Department of Arçelik has been implementing an "Pyramid Climbers Award" annually,all employees who are succesful are encouraged and rewarded.One category of this award process is "Adding Value to Life". Projects nominated in this category are evaluated and concluded according to 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 "Runners to Zenith Award Ceremony" which is held in October annually. Arçelik develops environmentally friendly,innovative and technological products which increase life standards of customers with R&D employees (over 900 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 performence points in consideration of TPM activities they perform and they are rewarded at year end in response to these points by using tools like situational reward. |
| Other: product directors | Monetary reward | Energy Reduction Ratio (thus carbon emissions reduction) KPI is the part of the product director's performance evaluation. |
| Other: CTO | Monetary reward | Energy Reduction Ratio (thus carbon emissions reduction) KPI is the part of the CTO's performance evaluation. |

| Who is entitled to benefit from these incentives? | The type of incentives | Incentivized performance indicator |
|---|---|---|
| Other: Energy and Environment Manager | Monetary reward | Energy Reduction Ratio (thus carbon emissions reduction) KPI is the part of the Energy and Environment Manager's performance evaluation. |
| Other: White and blue collar employees | Monetary reward | Energy Reduction Ratio (thus carbon emissions reduction) KPI is the part of related employees' performance evaluation. |

## Page: 2. Strategy

**2.1**

**Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities**

Integrated into multi-disciplinary company wide risk management processes

**2.1a**

**Please provide further details**

i.In Arçelik, Risk Management System (including climate change) is an integrated multi-disciplinary process, including different type of processes and handled with a holistic perspective.Strategic,operational,physical,financial,reputational and environmental risks and oppurtinities are covered in Arçelik Risk Management System, to the fulfillment of the short and long term goals.
ii. In Arçelik, the Risk Management Committee is formed to carry out its activities by making proposals and recommendations to the Board of Directors concerning the determination and assessment of the risks and opportunities,estimation of their impact to company level, probability of the occurance,the management of these risks in accordance with Arçelik's corporate risk-taking profile,their consideration in decision-making mechanisms,the establishment and integration of effective internal control systems. The risk and opportunity results are monitored and assessed by the Board of Directors, annually.
Risk Management Committee consists of minimum two members and Committee Chairman is selected from independent Board Members.Risk Management Committee may establish sub-working groups comprised of its own members and/or persons externally selected who have adequate experience and information about risk management in order to ensure efficiency of its operations. Enterprise Risk Management subject is one of the core subject of these meetings and Arçelik Risk Management Department is located within this sub-working groups. This committee meets bimonthly. Enterprise Risk Management principle is also influenced by the business strategies.
Arçelik Corporate Governance approach is detailed at:

http://www.arcelikas.com/UserFiles/file/PDF/EN/Kurumsal%20Y%C3%B6netim%20Uyum%20Raporu%20%C4%B0ngilizce.pdf
iii. In accordance with resolutions adopted by the Board,Risk Management Committee defines related asset levels and prepares procedures that would integrate main risks into the related business processes and managing methods. Strategic and reputational risks can impact the whole company levels and stakeholders (such as employees, investors, customers, suppliers and dealers). Operational, financial, physical and environmental risks can effect especially production plants, sales, purchasing, distribution and production engineering departments.
iv. Department Managers integrate and implement the procedures that formed in line with the risk management methods. Product Directors are responsible to monitor and ensure that the risks are under control."GTP-16718 Arçelik Corporate Risk Management Procedure" is published to determine the method of managing the risks. The risks and opportunities are monitored in management review meetings at the production plants, annually.
v. In Arçelik, risk determination and prioritization method has been defined and published in the GTP-16718 procedure. The prioritization of the risks is based on the scoring methodology, defined by Arçelik and realized by the related departments. Prioritized risk and opportunity results are monitored and assessed by the Board of Directors, annually.
Acting on the vision "Respects the Globe,Respected Globally",Arçelik considers it is an opportunity to increase company's prestige further and be prepared for climate change process already.
In Arçelik,national and international developments regarding climate change are risk and also opportunity for the company.Considering the current status of Turkey,the verification of Arçelik greenhouse gas emission inventory was an opportunity and the verification by an international independent body decision was given by Arçelik Board of Directors.
Within the process,Arçelik has published the "GCP-16344 Greenhouse Gas Emission Inventory Reporting Procedure" integrated into Environmental Management System and calculated the GHG emissions for 8 domestic plants and Head Office in accordance with the "ISO 14064-1 Quantification and Reporting Standard for Greenhouse Gas Emission" and IPCC guideline.Arçelik's GHG inventory and calculation methodology have been verified by an independent accredited body at "100% verification" and "reasonable assurance" level.
vi. Arçelik's GHG emission results and reduction activities are reported to the Top Management annually and announced to the stakeholders by Arçelik A.Ş. Sustainability Report (See;http://www.arcelikas.com/UserFiles/file/surdurulebilirlik/SustainabilityReport2011(1).pdf)
Energy consumption is the prior risk on climate change. Arçelik production plants are "energy efficient" areas.According to energy audits work with a T.R.Ministry of Energy and Natural Resources Directorate General of Renewable Energy licensed and TÜV certificated energy efficiency consultancy firm,in 2010 all domestic Arçelik production plants received "Gold Certificate";during 2011 4 plants (Eskişehir Refrigerator and Compressor Plant,Çayırova Washing Machine Plant,Bolu Cooking Appliances) reached to "Platinium Certificate" level.Thanks to these certificates,Arçelik has the title of being first and unique company in the world in its sector.
Also, Arçelik Eskişehir Plant has applied to LEED (Leadership in Energy and Environmental Design) (the Registration ID no is 1000027426). The process is continuing.
In Arçelik, GHG emission sourced by logistic operations is another prior risk on climate change. In order to ensure less climate change risks and sustainable development, Arçelik performs its logistic operations environmental-friendly,smart and safe way.
In the framework of "Eloborated Producer Responsiblity", "Logistic Mode Alteration Project" has been realized in order to decrease GHG emissions.Thanks to this project, ratio of road transportation to total transportation has decreased from 17.8%to 16.8%.The distribution process and operationin the product storage areas are also performed in environmental-friendly way. E.g., LPG fueled forklifts at the productstorageareas were replaced with electric forklifts.Thus 6400 tons of CO2GHGemission have beenreduced per year. Storage plans were arranged on the basis of minimum vehicle movement.
Energy saver illumination was commenced at the storage area which works in three shifts; 67% energy has been saved in Eskişehir,Çayırova and Ankara storage areas.
For dealer transportations in Turkey, 10% distance optimizationhas been achieved for product distribution and 3200 tons of CO2GHG emissions reduction has been achieved per year.
Also, Arçelik developed an Environmental and Health&Safety Principle Framework, which should be conducted and implemented by the suppliers. This document is specified in the supplier portal. Arçelik evaluates the commissioning of the suppliers and ensures via the frameworkis realized by the suppliers.
With its strategy on climate change and the studies on this issue, management way of risks and opportunities related to climate change Arçelik has been 2012

Carbon Disclosure Leader.

**2.2**

**Is climate change integrated into your business strategy?**

Yes

**2.2a**

**Please describe the process and outcomes**

ARÇELİK conducts its business processes in accordance with ISO 14001 Environmental Management System (EMS), since 1994.
In 2011, ARÇELİK calculated the GHG emissionsin accordance with ISO 14064-1 GHG Standard.GHG values have been verified by an independent body in "reasonable assurance" level.
In 2012 ARÇELİK established Energy Management System by using ISO 50001 Standard.
ARÇELİK specified its "Climate Change Business Strategy" from the point view of 4th main business targets "to increase the ability to offer enriching,pioneer,innovative and environmental friendly products and solutions to customers".
i. Arçelik's internal process to ensure that climate change influences the business strategy at the company-level, is based on below mentioned Departments:
a) The Energy and Environment Department, is responsible to integrate environmental sustainability, climate change efforts and ensures that all efforts comply to the vision, business strategy, policy and procedures, including legal regulations.Energy and Environment Manager, reports directly to Executive Top Management.
b) The environmental sustainability and climate change efforts, which influence the business strategy, are studied and carried out by the Environmental Coordination Committee. The energy efficiency improvement projects which is directly related to climate change influences are studied and carried out by the Energy Coordination Committee. The information are being collected and reported by these commitees. The commitees come together monthly.
c) The Risk Management Committee is formed to carry out its activities by making recommendations to the Board of Directors concerning the determination and assessment of the risks and opportunities,estimation of their impact to company level and influence to business strategy, probability of the occurance,the management of these risks in accordance with corporate risk-taking profile.
d) Productenergy efficiency studies, risks and influence to business strategy are determined and executed by R&D.
e) Corparate Sustainability Reporting is conducted and coordinated by the Corporate Communications Department.
f) The sustainability and climate change risks, strategies and influence to business targets are monitored and assessed by Executive Top Management, annually.
ii. We focus on climate change in our long and short term strategies, which are based on 3 main issues:
to continuously increase resource efficiency from supply to distribution; to provide our customers with green products that has the highest water and energy saving values; to conduct awareness raising informing studies regarding climate change and to support solution initiatives.
iii-iv. In line with these,"Arçelik Climate Change Strategy" is designated as:
• Resource-saving and environmental-friendly product development, (long term / related to the opportunities / gaining Arçelik strategic advantage over competitors)
• Resource productivity at production processes, (long term / related to the risks)
• Raise the awareness of public (short term / related to the risks)

and shared with our stakeholders by "Arçelik A.Ş. Sustainability Reports 2010 and 2011.
Based on this strategy, Arçelik's 2015 climate change target is to reduce the GHG emissions per sales revenue by 15%.
v-vi.**Resource-saving and environmental-friendly product development:** In consideration of product life cycle assessment,GHG emission emitted during to use of the products is more higher.(94-95% consumer use,<4% production and raw material supply,<0.1% product logistics).
Operations intended for improving energy performance of products have great importance. In consideration of the foregoing and managing this opportunity, R&D performs operations intended for improving product energy performance.E.g., return on efficiency in products is a prerequisite element of competition now. In this matter legal regulations related to energy efficiency and labelling in particular come into prominence.
Since 1992, energy consumption of our refrigerators were reduced in the ratio of 72%, energy consumption of washing machine, dryer, TV, dishwasher, oven are reduced in the ratios of 65%, 66%, 54%, 53%, 47%.
As a result of ongoing R&D efforts, Arçelik energy efficient product range has an important advantage overthe competitors, some examples:
• Refrigerator which consumes 10% less energy than A+++ energy class
• Washing machine which consumes 40% less energy than A+++ energy class
• Dishwasher which consumes 10% less energy than A+++ energy class
We have spared TL 18.125 million to environmental-friendly R&D investment and expensesto develop environmental-friendly products in 2011.
In refrigerators, R134a replaces with R600a which is an environmentaly friendly gas. By the year of 2012, R600a have been used in 98% of products. Thanks to transition projects, GHG effect per refrigeratoris1 over 222 of 1995 GHG emissions.
**Resource productivity at production processes:** Although the GHG emission from production has a low proportion on footprint,Arçelik reduces its GHG emissions with energy efficiency projects.In this scope,our target is to mitigate the GHG emissions by reducing energy consumption at production in the ratio of 5%. Arçelik announces its climate related targets in its Sustainability Report.
All domestic production plants achieved a "Gold" certificate on energy efficiency. 4 of the plants also achieved the "Platinium Certificate".Also, Eskişehir Plant has applied to LEED.
With energy efficiency Projects in Production Plants at last 2 years, we have saved:
• 71137 GJ in 2010 with 138 energy efficiency projects,
• 109516 GJ in 2011 with 173 energy efficiency projects,
Totally; 18650 GHG emission has been reduced.
Arçelik Headquarter has purchased its electricity from renewable energy supplier, since 2012. Thus 2780 ton eCO2 have been reduced. Additionally, Cooking Appliances Plant and Electronics Plant will purchase its electricity from renewable energy supplier. Thus 27800 ton eCO2 will be reduced.
"Logistic Mode Alteration Project" has been realized. Ratio of road transportation has decreased from 17.8% to 16.8%.
**Raise the awareness of public:**An important step of our climate change strategy is activities for raising awareness of society.
Arçelik started "Market Transformation of Energy Efficient Products"Project, jointly with UNDP,GEF,TÜRKBESD,T.R.Ministry of Science,Industry and Technology and T.R.Ministry of Energy and Natural Resources Directorate General of Renewable Energy.
The aim of this project is to enhance the transformation to less energy consuming electrical home appliances thus reducing the domestic electric consumption and GHGemissions.In addition,one of the most commonly used tools to draw attention of consumers to energy efficient products is product commercials.Our products are introduced in advertisement on the forefront of eco-friendly qualities.
The legal regulations related risks and their influence on business strategy have been detailed in Question 5.1.a.

2.2b

Please explain why not

**2.3**

**Do you engage in activities that could either directly or indirectly influence policy on climate change through any of the following? (tick all that apply)**

Direct engagement
Funding research organizations
Other

**2.3a**

**On what issues have you been engaging directly?**

| Focus of legislation | Corporate Position | Details of engagement | Proposed solution |
|---|---|---|---|
| Energy efficiency | Support | 1) Arçelik supported the "En-Ver (Energy Efficiency) Project" launched in collaboration with T.R.Ministry of Energy and Resources as the corporate sponsor."En-Ver Project" is in cooperation with public,private sector and NGO's,for the purpose of raising awareness for using energy efficiency at all segments of society and sectors. 2) Arçelik started the project "Market Transformation of Energy Efficient Products" jointly with UNDP, GEF, T.R. Ministry of Science,Industry and Technology and T.R.Ministry of Energy and Natural Resources Directorate General of Renewable Energy.The aim of the project which is going to end until 2014 is to enhance the transformation to less energy consuming electrical home appliances thus reducing domestic electric consumption and greenhouse gas emissions. 3) Arçelik participates and gives comment on the preliminary phase of EU regulations on energy efficiency, labelling and F-Gas by the membership in CECED (European Comittee of Domestic Equipment Manufacturers). Arçelik is the single Turkish company that is the member of European Committee of Domestic Equipment, since 2002. 4) Arçelik has a close relationship with all relevant ministry departments and work together on the preliminary phase of EU regulations to Turkish regulations system. Arçelik took part in the consultation of Turkish energy labelling and eco-design directives, which are published in official journal, dated 22 June 2012. 5) 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. | |
| Other: climate | Support | 1) Arçelik takes part in the working group which has been established by the Ministry of Environment and Urban Planning & UNIDO. The group is working on the technical specifications of determining, collecting and disposal of the | |

| Focus of legislation | Corporate Position | Details of engagement | Proposed solution |
|---|---|---|---|
| change | | Ozone Depletion Substances that are banned for usage. 2) Arçelik became a member of Climate Platform of Turkey which is established as an independent non-profit initiative for providing support for operations to combate climate change, in cooperation with Regional Environmental Center Turkey and TÜSİAD (Turkish Industry and Business Association). 3) Arçelik gave comments on the draft regulation of Turkish Monitoring and Reporting Directive, 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) During the 17th United Nations Framework Convention on Climate Change (COP17), held with participation of government representatives of 190 countries,international organizations and representatives of NGO's, Mr. Levent Çakıroğlu, Arçelik A.Ş. CEO, represented Turkey as "Turkey Climate Change Group of Leaders Term Speaker". Mr. Levent Çakıroğlu presented his opinions about role and leadership of private sector for eco-friendly and green development at the "Towards Rio +20,Business Leaders Build Change" panel. 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 in international arena.In this scope,Arçelik signed "The 2 oC Challenge Communiqué" prepared by Corporate Leaders Network (CLN) including Turkey and signed by more than 200 corporate officers operating in various industries in 29 countries. 7) Arçelik takes part in Istanbul Stock Exchange Index formation on the sustainability which also includes climate change performance indicators. 8) Old WEEEs (waste of electrical and electronic equipment), such as refrigerator, air conditioner, etc. contain ODS which have high global warming potential (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 Urban Planning to publish the “WEEE Regulation” in Turkey. | |

**2.3b**

**Are you on the Board of any trade associations or provide funding beyond membership?**

**2.3c**

**Please enter the details of those trade associations that are likely to take a position on climate change legislation**

| Trade association | Is your position on climate change consistent with theirs? | Please explain the trade association's position | How have you, or are you attempting to influence the position? |
|---|---|---|---|

**2.3d**

**Do you publically disclose a list of all the research organizations that you fund?**

No

**2.3e**

**Do you fund any research organizations to produce public work on climate change?**

Yes

**2.3f**

**Please describe the work and how it aligns with your own strategy on climate change**

Arçelik is the first member of Climate Change Platform Turkey, which has been set in 2011 and Arçelik contributes to fund this Platform with TL 7000 per year.

**2.3g**

**Please provide details of the other engagement activities that you undertake**

Arçelik also 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 Mechanical Engineering,Master Degree Thesis Study.

**2.3h**

**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?**

Arçelik production plants are "energy efficient" areas.According to energy audits work with a T.R.Ministry of Energy and Natural Resources Directorate General of Renewable Energy licensed and TÜV certificated energy efficiency consultancy firm,in 2010 all domestic Arçelik production plants received "Gold Certificate";during 2011 4 plants (Eskişehir Refrigerator and Compressor Plant,Çayırova Washing Machine Plant,Bolu Cooking Appliances) reached to "Platinium Certificate" level.Thanks to these certificates,Arçelik has the title of being first and unique company in the world in its sector.
With energy efficiency Projects in Production Plants at last 2 years, we have saved:
• 71137 GJ in 2010 with 138 energy efficiency projects,
• 109516 GJ in 2011 with 173 energy efficiency projects,
Totally; 18650 GHG emission has been reduced.
In addition to energy efficiency projects in our Plants, Arçelik has also lead its suppliers to do energy efficiency projects.

2.3i

Please explain why you do not engage with policy makers

## Page: 3. Targets and Initiatives

**3.1**

**Did you have an emissions reduction target that was active (ongoing or reached completion) in the reporting year?**

Absolute and intensity targets

**3.1a**

**Please provide details of your absolute target**

| ID | Scope | % of emissions in scope | % reduction from base year | Base year | Base year emissions (metric tonnes CO2e) | Target year | Comment |
|---|---|---|---|---|---|---|---|
| ARAT1 | Scope 3: Downstream | 100% | 40% | 2010 | 57760 | 2011 | Decreasing of GHG emissions of road |

| ID | Scope | % of emissions in scope | % reduction from base year | Base year | Base year emissions (metric tonnes CO2e) | Target year | Comment |
|---|---|---|---|---|---|---|---|
| | transportation and distribution | | | | | | transportation by the “Logistic Mode Alteration Project”. |

**3.1b**

**Please provide details of your intensity target**

| ID | Scope | % of emissions in scope | % reduction from base year | Metric | Base year | Normalized base year emissions | Target year | Comment |
|---|---|---|---|---|---|---|---|---|
| ARIT1 | Scope 1+2 | 100% | 15% | metric tonnes CO2e per unit revenue | 2010 | 0.000036 | 2015 | Since there are different product ranges at our 8 production plants, company performance cannot be followed on equivalent product. For this reason, performance follow-up is made on sales revenue. |

**3.1c**

**Please also indicate what change in absolute emissions this intensity target reflects**

| ID | Direction of change anticipated in absolute Scope 1+2 emissions at target completion? | % change anticipated in absolute Scope 1+2 emissions | Direction of change anticipated in absolute Scope 3 emissions at target completion? | % change anticipated in absolute Scope 3 emissions | Comment |
|---|---|---|---|---|---|
| ARAT2 | Increase | 10 | Decrease | 40 | From 2010 year to 2015; it's to be expected to increase the absolute target |

| ID | Direction of change anticipated in absolute Scope 1+2 emissions at target completion? | % change anticipated in absolute Scope 1+2 emissions | Direction of change anticipated in absolute Scope 3 emissions at target completion? | % change anticipated in absolute Scope 3 emissions | Comment |
|---|---|---|---|---|---|
| | | | | | due to the planned investments, planned production capacity and planned production increase. Beside, there is a reduction target in intensity emissions. Also, the road transportation emissions have been decreased. |

**3.1d**

**Please provide details on your progress against this target made in the reporting year**

| ID | % complete (time) | % complete (emissions) | Comment |
|---|---|---|---|
| ARPR1 | 20% | 100% | In 2011, we decreased our scope 1+2 emissions per sales revenue 40% compared to our base year (2010) before the target year (2015). |
| ARPR2 | 100% | 100% | With the "Logistic Mode Alteration Project" realized in 2011, ratio of road transportation to total transportation has decreased from 17.8% to 16.8%. Totally 25050 ton CO2e GHG emission has been decreased, compared to base year. |

**3.1e**

**Please explain (i) why not; and (ii) forecast how your emissions will change over the next five years**

**3.2**

**Does the use of your goods and/or services directly enable GHG emissions to be avoided by a third party?**

Yes

**3.2a**

**Please provide details (see guidance)**

Operations aimed at developing product energy efficiency have great importance in terms of ensuring GHG emission mitigation at national and international level, the environmental impact of the products generated in usage phase. Therefore, R&D carries out studies on product energy efficiency development.
Dishwasher: Arçelik Cactus dishwasher, which was commissioned in 2011, is the world's most efficient water saving dishwasher at A++ class with 6 liter water consumption. The aluminium isolation material, which is only utilized by Arçelik in the world, helps the product save 10% energy.
According to the CECED (EU) database, 70% of all dishwashers used in Turkey are A energy class. If these dishwashers are replaced with Cactus, 900 GWh energy could be saved and 420000 tons of GHG emission can be prevented. Cactus Diswasher was also entitled to represent Turkey at Rio+20 United Nations Sustainable Development Conference in "Sustainable Development and Green Economy" category.
Washing Machine: Arçelik washing machines; A+++ -20% for 9 kg, A+++ -30% for 8 kg, A+++ -10% for 7 kg, A+++ for 6 kg and A++ for 5 kg products, have the highest energy efficiency levels.
The Environment Award organized by Istanbul Chamber of Commerce (ISO), Arçelik Dishwasher Plant achieved the Large Scale Corporation Sustainable Environment Product Top Award for its "Cactus" dishwasher and the Washing Machine Plant achieved the Large Scale Corporation Sustainable Environment Product Second Award for its "Ekonomist" washing machine.
Oven: CSM 62520 DWL, which was produced in 2011, is the world's most energy efficient oven and due to strengthened isolation, it saves 40% more energy in comparison to A class in the eco-turbo cooking mode.
There are approximately 11.7 million household ovens used in Turkey and on average they are A energy class products. In the event that these ovens are replaced with CSM 62520 DWL, annual return on energy would be 511 GWh which is 1.7 times of the energy generating capacity of Tigris Dam. The energy that is saved can prevent 245339 tons of GHG emissions.
Arçelik Cooking Appliances Plant awarded with the first prize in the 'Innovative Environmentally Friendly Device' category with its product named as 9658 ETI in 13th ISO Environmental Awards Ceremony organized by the Ministry of Environment and Urban Planning.
Electric Motor: Energy consumption of electric motors constitutes 70% of total energy consumption of industry in Turkey. According to research, 90% of electric motors used in industry has less energy efficiency.Arçelik is the first domestic manufacturer of IE3 class high energy efficient motors. Although IE3 class motors will be mandatory in 2015, Arçelik has already put on market this product range before this date.
Arçelik's electric motors with class IE3 energy efficiency were ranked first in the 'Most Efficient Product' at the Project Contest for Enhancing Energy Efficiency in the Industry (SENVER) organized by the Ministry of Energy and Natural Resources / Directorate General of Renewal Energy.
Refrigerator: In 2011, Arçelik designed and produced 4 new A+++ class refrigerators. A+++ class products save 60% more energy than A class products. Turkey's first A+++ Combi No-Frost designed 2488 CNG A+++ and first A+++ shelf level TSM 1541 A+++ models have been produced.
Tumble Dryer: With the help of new generation heat pump tumble dryers developed in 2011, Arçelik began to produce 50% more energy efficient models at 7 kg A class. Thus annual energy consumption has been reduced from 152.6 kWh to 115.8 kWh and 12% improvement was achieved in the declaration program timing.
Arçelik received three awards at the 11th "Energy Efficiency in Industry Project Contest (SENVER)", organized by the Ministry of Energy and Natural Resources: "Projects for the Improvement of Energy Efficiency in Industry (SEVAP 1)" category award for its Tumble Dryer Factory.
Television: Research shows that energy consumed by electronic household goods on stand-by mode account for 11% of a household's total energy consumption. For that reason, further research and studies have been conducted on the energy consumed by household goods on stand-by mode.

Arçelik has developed TVs that have stand-by energy consumption levels <0.5W in the framework of European Union ErP Regulation (EC No 642/2009), enabling a 50% more energy efficiency per unit.
Arçelik has expanded the use of LED panels in new products and projects to achieve more energy efficiency.Since 1992, energy consumption of our refrigerators was reduced in the ratio of 72%, energy consumption of washing machine, drying machine, TV, dishwasher, oven are reduced in the ratios of 65%, 66%, 54%, 53%, 47%.
In refrigerators, R134a replaces with R600a which is a environmentaly friendly gas.By the year of 2012, R600a have been used in 98% of products. Thanks to transition projects, GHG effect per refrigeratoris1 over 222 of 1995 GHG emissions.
GWP (Global Warming Potential) (100 year) of R134a GWP is 1300, and R600a GWP is 8. GWP of R134a is 162 times higher thanGWP of R600a. To calculate GHG emissions reductions, we use grid emission factor as 0.532 ton/kwh and calculation method as "activity data x emission factor".

**3.3**

**Did you have emissions reduction initiatives that were active within the reporting year (this can include those in the planning and implementation phases)**

Yes

**3.3a**

**Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings**

| Stage of development | Number of projects | Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *) |
|---|---|---|
| Under investigation | | |
| To be implemented* | | |
| Implementation commenced* | | |
| Implemented* | 173 | 11090 |
| Not to be implemented | | |

**3.3b**

**For those initiatives implemented in the reporting year, please provide details in the table below**

| Activity type | Description of activity | Estimated annual CO2e savings (metric tonnes CO2e) | Annual monetary savings (unit currency - as specified in Q0.4) | Investment required (unit currency - as specified in Q0.4) | Payback period |
|---|---|---|---|---|---|
| Energy efficiency: Processes | Cutting energy when there is no production, economizer installation to boilers, efficiency in pneumatic systems, optimization of heating line, reduction of robot cycle duration etc. | 4167 | 1532549 | 2680737 | 1-3 years |
| Low carbon energy installation | Use of high efficiency fluorescent armatures, use of motion detectors, positioning illumination lamps etc. | 1119 | 411727 | 230270 | <1 year |
| Energy efficiency: Processes | Improvement at processes using natural gas etc | 3761 | 995154 | 689783 | <1 year |
| Energy efficiency: Processes | Improvement operations regarding electric motors etc. | 1275 | 468919 | 233647 | <1 year |
| Energy efficiency: Processes | A/C fans' being variable-speed, improvement of funnel ventilation, use of dehumidifiers instead of A/C plants etc. | 5 | 1720 | 0 | <1 year |
| Energy efficiency: Processes | Reduction of compression losses, creation of control systematics etc. | 187 | 68762 | 4000 | <1 year |
| Low carbon energy installation | Installing inverters to electric motors, efficient motor implementation etc. | 164 | 60296 | 32008 | <1 year |

**3.3c**

**What methods do you use to drive investment in emissions reduction activities?**

| Method | Comment |
|---|---|
| Compliance with regulatory requirements/standards | Arçelik complies with legal legislations on GHG emission reduction and fully comply with eco-design legal legislation which describes product energy efficiency limits. Thanks to membership in CECED (European Comittee of Domestic Equipment Manufacturers) 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 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. Despite the fact that Turkey is a party to Kyoto Protocol but did not obtain country target, greenhouse gas emission mitigation is achieved with energy efficiency operations at product and production. |
| Dedicated budget for energy efficiency | Annually,energy budgets and energy efficiency investment budgets are designated, projects are materialized. At the beginning of each year, targets aimed at reducing energy consumption are designated and at the end of the every year, compliance status with planned target is followed. Emission reduction is rendered systematic with constant follow-up of the process. |
| Dedicated budget for low carbon product R&D | R&D Departments in Arçelik plants design least consuming products in the world in terms of both energy and water consumption and carry out projects aimed at efficient use of resources used in products. Currently Arçelik holds records about white goods consuming least energy in the world. |
| Financial optimization calculations | Arçelik performs operations aimed at optimization of energy consumption. Financial optimizations are made about energy efficiency and road for investments 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 designated. While increase in production is targeted, goals for decline in energy consumption and energy budgets are set; operations are executed on this basis. |
| 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 product and production technologies are developed. Projects are carried out also under European Union 7th Framework Program. 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. |

**3.3d**

**If you do not have any emissions reduction initiatives, please explain why not**

## Page: 4. Communication

**4.1**

**Have you published information about your company'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 | Page/Section reference | Attach the document |
|---|---|---|
| In voluntary communications (complete) | Arçelik GHG Emissions - Arçelik A.Ş. Sustainability Report 2011, Section: System, Page: 22-23 | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifytAttachment/SustainabilityReport2011(1).pdf |
| In voluntary communications (complete) | Ministry of Energy - Arçelik, Akşam Newspaper | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifytAttachment/aksam_cok yakanı getir yenisini2.jpg |
| In voluntary communications (complete) | Arçelik won Gold Certificate, Green Business, February 2011, Page:19 | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifytAttachment/capital ek2_hedefler asıldı4.jpg |
| In voluntary communications (complete) | ISO 2010 Environment Prizes, Cumhuriyet Newspaper | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifytAttachment/cumhuriyet bilim_iso 2010 cevre odulleri verildi.jpg |
| In voluntary communications (complete) | Arçelik Carbon Disclosure Leader | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifytAttachment/dunya_arcelik ve garanti bankası karbon2.jpg |
| In voluntary communications (complete) | Discounts in Energy Efficient Products, Ekonomik Çözüm | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifytAttachment/ekonomik cozum_arcelik enerji tasarrufunda.jpg |
| In voluntary communications (complete) | Arçelik Climbed Klimanjaro, Hürriyet | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifytAttachment/hurriyet_afrikada defyi aldı, tırmandı.jpg |
| In voluntary communications (complete) | Doha Climate Summit, Küresel Ana Haber | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifytAttachment/kuresel ana haber_dohada yapılan dunya iklim zirvesinde.jpg |
| In voluntary communications (complete) | Europe's Green Brand, Star | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifytAttachment/star_avrupanın yesil markası.jpg |
| In voluntary communications | SENVER, Türkiye | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifytAttachment/turkiye_arcelik enerji |

| Publication | Page/Section reference | Attach the document |
|---|---|---|
| (complete) | | verimliliğini.jpg |
| In voluntary communications (complete) | Kaktüs Washing Macnine - RIO+20, Dünya | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-4.1-C3-IdentifytAttachment/dunya ozel ek_arcelik2.jpg |

## Module: Risks and Opportunities [Investor]

### Page: 5. Climate Change Risks

**5.1**

**Have you identified any climate change risks (current or future) that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply**

Risks driven by changes in regulation
Risks driven by changes in physical climate parameters
Risks driven by changes in other climate-related developments

**5.1a**

**Please describe your risks driven by changes in regulation**

| ID | Risk driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| ARRR 1 | International | Countries that are signatories to Kyoto Protocol United Nations Framework Convention on Climate Change(UNFCCC) which is single international | Increased operational | 1-5 years | Direct | Very likely | Medium |

| ID | Risk driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | agreements | framework aimed at combatting global warming and climate change are committed to reduce release of CO2 and other gases causing greenhouse effect or if they fail that to buy rights through carbon trade. Turkey became a party to Kyoto Protocol on 26 August 2009 following Turkish Grand National Assembly's passing "The Act Regarding Approval of Participation to Kyoto Protocol aimed at United Nations Framework Convention on Climate Change (UNFCCC)" no. 5386 on 5 February 2009 and Cabinet Decree dated 13 May 2009 and no. 2009/14979, upon presentation of instrument for accession to the United Nations. Turkey which was not a party to UNFCCC when protocol was adopted was not included in Protocol Annex-B list which contains Annex-I signatory countries, where numerical limitations and reduction obligations are defined. Accordingly, Turkey has no numerical release limit or reduction target in first obligation phase which covers 2008 to 2012 of the Protocol. However, according to the Kyoto Protocol, a new mechanism will be set up in the post 2012 phase and all countries may be included in this mechanism. For this reason, in the forthcoming period it is probable that Turkey will receive a greenhouse gas reduction target. When the country receives a target and this target is distributed to sectors, sectors will have important tasks, need for investment on product and production will arise and this will cause significant increase in costs. Nonetheless, in the event of failing to achieve the target assigned to sectors the country carbon purchase need may arise and costs could be affected significantly, 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 be disadvantaged in competition. | cost | | | | |
| ARRR 2 | Air pollution limits | Upon entering post -2012 new obligation period under the Kyoto Protocol, the status of Turkey is still not clarified yet, who has no greenhouse gas emission reduction target currently. 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 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 | Increased operational cost | 1-5 years | Direct | Very likely | Medium |

| ID | Risk driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | | and investment cost increase to product price, we may have disadvantage in competition. | | | | | |
| ARRR 3 | Emission reporting obligations | 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, dated 25 April 2012 and no. 28274, contains calculating and verifying of GHG emissions and GHG monitoring plans. Under the regulation, first reporting obligation period for industry will start in 2016 for GHG emissions of 2015. The GHG emissions and monitoring plan should be verified by the third parties which are accredited by TURKAK and the Ministry of Environment and Urban Planning. 3 of Arçelik Production Plants (Çayırova, Bolu, Beylikdüzü) are in the scope of this regulation. Arçelik has calculated greenhouse gas emissions released during its activities since 2006. In 2011, ARÇELİK established Greenhouse Gas (GHG) Management and Reporting System, before the regulation publishment date. ARÇELİK calculated the Greenhouse Gas (GHG) emissions sourced by its facilities by using IPCC-2006 and in accordance with ISO 14064-1 GHG Standard. ARÇELİK's 2010 and 2011 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 Head Office. Arçelik shares the GHG emissions with all stakeholders through "Sustainability Report 2011". (Please see; http://www.arcelikas.com/UserFiles/file/surdurulebilirlik/SustainabilityReport2011(1).pdf) However, the fact that Turkey's grid emission factors have not been published in the reporting year. It can cause uncertainties and differencies (calculation results, acceptances etc.) can be generated between industries. Therefore, Arçelik made a joint study with T.R. Ministry of Energy and Natural Resources Directorate General of Energy Affairs to calculate grid emission factor to reduce risk of sourced by the electricity consumption. According to the Energy Efficiency Law, we notified energy consumption of our plants to Ministry of Energy and Natural Resources every year in March. According to the "Official Statistical Programme 2012-2016 (O.J:28164 and 05.01.2012) we notified electricity production in our cogeneration units and energy consumption in our cogeneration units to Ministry of Energy and Natural | Increased operational cost | 1-5 years | Direct | Likely | Medium |

| ID | Risk driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | | Resources every year. | | | | | |
| ARRR 4 | Fuel/energy taxes and regulations | Besides uncertainties regarding calculation and reduction of greenhouse gas emissions, another subject that may cause problem at international competition is legal requirements related to energy. Operational costs are directly impacted by prices' being dependent on global changes since Turkey is foreign-dependent in energy, intensification of general tax approach on energy sources, electric generation from renewable energy sources is not at adequate level. With new legal regulations, it is highly probable that electricity and natural gas costs increase to extend that may cause problem in competition. On the other hand, through the method of publishing energy reports on a monthly basis, energy consumption quantity per product is followed in "kWh/product" and reported. In the light of data obtained projections are made and long term targets are determined. In addition to that, developments regarding renewable energy are closely followed; operations are carried out to include this subject into prospective business plans. | Increased operational cost | Current | Direct | Virtually certain | Medium |
| ARRR 5 | Product efficiency regulations and standards | Intense work was performed in past period in EU market on the subject of energy efficiency. Legislation harmonization works in Turkey became simultaneous with EU recently. For this reason, domestic operational costs are affected. | Increased operational cost | Current | Direct | Virtually certain | Medium |
| ARRR 6 | Product labeling regulations and standards | Operations which commenced in 1995 about energy labelling in white goods and TV's in EU market currently continue intensively. Even if legislation harmonization works in Turkey came from behind a little in recent past (beginning of 2000's) now there is no phase difference with EU in terms of time. For this reason domestic operational costs are directly affected. However, other than energy labelling more labelling operations (return on equity labelling, carbon label, eco- labelling etc.) are also made abroad, but they have not started in Turkey yet. In the future, if such implementations start both at home and abroad this would affect costs and this will also be an important parameter in competition. If calculation criteria and standards of environmental labellings do not have same quality in national and international platform, companies will use calculation methods and acceptance criteria specific to companies/countries, this will render some companies disadvantaged and render some advantageous in case of making comparison among companies. This will cause unfair competition. When considered on | Reduced demand for goods/services | Current | Direct | Very likely | Medium |

| ID | Risk driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | | product quantity basis, exports to EU market are approximately in excess of 50%. For this reason, in the current situation legislation and standards regarding product labelling continue to impact the Arçelik financially. | | | | | |
| ARRR 7 | Uncertainty surrounding new regulation | "The Regulation on Monitoring of Greenhouse Gas Emissions" published in Turkey, requires reporting of GHG emissions. However, there are uncertainties about whether there is a greenhouse gas emission mitigation target for country may potentially get, if a target is to be got, how it would be distributed to industries. While Turkey gets the mitigation target, the target will be distributed to the relevant sectors and there will be necessity for the investment to develop more environmental-friendly products and production activities. Thus, the costs will increase. Nonetheless, in the event of failing to achieve the target distributed to sectors carbon purchase need may arise and costs could be affected significantly, this may cause impact on company share certificates care of investors. When it is needed to reflect operational and investment cost increase to product price, we may be disadvantaged in competition. However, the fact that Turkey's grid emission factors have not been published in the reporting year. It can cause uncertainties and differencies (calculation results, acceptances etc.) can be generated between industries. Therefore, Arçelik made a joint study with T.R. Ministry of Energy and Natural Resources Directorate General of Energy Affairs to calculate grid emission factor to reduce risk of sourced by the electricity consumption. | Increased operational cost | 1-5 years | Direct | Likely | Medium |
| ARRR 8 | Other regulatory drivers | Initial intergovernmental contacts in connection with Reduction of Ozone-Depleting Substances (ODS) commenced in 1981 and this initiative came to a conclusion with agreement upon Vienna Convention for the Protection of the Ozone Layer in March 1985. Following the agreement on convention, operations commenced on a protocol that would ensure bringing under control utilization and production of ODS.In September 1987, the Montreal Protocol on ODS was agreed upon. Turkey became a party to the protocol on 19 December 1991 and agreed all amendments. In this scope, "The Regulation on the Reduction of Ozone-Depleting Substances" was published at Official Journal dated 12 November 2008 and no. 27052. Arçelik is the first white goods manufacturer which produced CFC-free refrigerators in Turkey in 1995, long before compliance date determined for Turkey. In EU "F-Gas Regulation" studies are currently continuing. In this context HFCs may be restricted. We are also following EU F-gas Regulation very closely and examine the effects | Increased operational cost | 1-5 years | Direct | Likely | Medium |

| ID | Risk driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | | about when it will become Turkey's law .Since HFC-410a is used for A/C production and HFC-134a is used for production of heat pump driers, there is a risk for production of products containing these gases in the future. However, in refrigerators, R134a replaces with R600a which is an environmentally friendly gas, in Arçelik. By the year of 2012, R600a have been used in 98% of products. In the event of need to replaces these gases operational costs for both R&D and production activities will increase. In order to make sure that refrigerators, driers and A/C's are both more efficient and more environmental-friendly, alternative cooling technologies should be studied instead of coolant based cycle. In addition to this, one of the operations performed under ODS is collection of CFC's. One of main factors in collection of CFC's is CFC-11 and CFC-12 gases used in refrigerators produced in Turkey ahead of 1995. Due to collection and destruction of these gases originating from old refrigerators costs will be incurred under "Regulation on Waste Electric and Electronic Equipment (WEEE).We are working for the feasibility to do collection and destruction of the CFCs by ourselves as if these initiatives have failed. Our target is to collect and eliminate CFCs from products that are produced before 1995 and to study on a Carbon Finance Project, where possible. | | | | | |

**5.1b**

**Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk and (iii) the costs associated with these actions**

Turkey did not receive GHG emission reduction target yet.But,in post-2012 period it is probable that Turkey will also receive greenhouse gas reduction target. When the country receives target, it mightcause additionalcosts for the companies. In addition to this,in the event of failing to achieve the target distributed,carbon purchasing necessity may arise and this may cause a negative effect on investors.When it is needed to reflect operational and investment cost increase to product price,we may be disadvantaged in competition (i).In Doha, Turkey published a non-paper for the first time. This non paper includes, Turkey's sectoral plans, targets and expectations about the climate change issues. It is seen in the paper, Turkey follows its emissions on the basis of GDP. In line with this procedure, we also follow our emissions on the basis of Arçelik's revenue. Besides,it is very important to take action towards reduction of GHG.In this scope, Arçelik senior management gives targets every year for increasing energy efficiency in production to reduce GHG.With energy efficiency Projects in Arçelik Production Plants at last 2 years, we

have saved:
• 71137 GJ in 2010 with 138 energy efficiency projects,
• 109516 GJ in 2011 with 173 energy efficiency projects.
This saving is equal to 4.8% of Keban Dam 3-month production. Totally; 18650 GHG emission has been reduced. As a result of this studies we reduce energy consumption per product last 3 years as follows per:
o TV production: 46%
o Refrigerator production: 28.2%
o Tumble dryer production: 27%
o Washing machine: 16.1%
o Dishwasher: 9.6%
o Oven: 8.4%(ii) (Risk ID:ARRR1, ARRR2).
Under the "The Regulation on Monitoring of GHG emissions" published in Turkey, first reporting obligation period for industry will start at 2016.3 of Arçelik Plants (Çayırova, Bolu, Beylikdüzü) are in scope of this Regulation.Under the regulation, first reporting obligation period for industry will start in 2016 for GHG emissions of 2015. The GHG emissions and monitoring plan should be verified by the third parties which are accredited by TURKAK and the Ministry of Environment and Urban Planning (i).
Arçelik has been calculating GHG emitted since 2006 and has been certified its GHG according to ISO 14064-1 and IPCC which is verified by an independent body in "reasonable assurance" level, since 2010. Therefore our data management system is suitable for GHG calculations, defined in the regulation.The Regulation only includes calculation of emissions sourced from stationary combustion. We have been calculating all of our emissions sourced from stationary combustion, mobile combustion, other direct (leakages) and indirect emissions. For this reason we have calculated our emissions more comprehensive than Ministry of Environment and Urban Planning wants (ii)(Risk ID:ARRR3).
However the risk is; emission factors, oxidation factors, calculation methods etc. differencies. These values are very important to prevent differencies between the calculations of the companies. Unless these values have been published by the Ministry of Environment and Urban Planning, it is unable to reached current country GHG emissions values. Additionally, there aren't any companies which are certified by TURKAK. Without solving these problems, it is impossible to comply with this Regulation (i) Arçelik made a joint study with government to reduce risk of reflection of uncertainties (ii) (Risk ID:ARRR7).
Cost analysis of targets intended for taking risks and to meet designated targets may be summarized as follows:accredited organization certification costs under the standardsISO-14064-1,ISO 14001 and ISO 50001 amounts to approximately TL 76000 per year;energy efficiency projects expenditure and investment costs amounts to approximately TL 2 million per year and environmental management costs amounts to approximately TL 3.4 million per year (iii) (Risk ID:ARRR1, ARRR2, ARRR3, ARRR7).
With new legal regulation,it is highly probable that our electricity and natural gas costs may increase to an extent that will reduce convertibility which will effect our competition (i).In spite of this,the energy consumption quantity per product is followed on the monthly basis, in "kWh/product" indicator and long term targets are designated.Operations are carried out for incorporating renewable energy into prospective business plans.In line with these plans, Arçelik purchased its electricity from a renewable energy supplier, for the Head Office and other administrative.Thus, 2780 ton eCO2 emissions have been reduced.Bolu Plant and Beylikdüzü Plant also plan to purchase the renewable energy (ii).Expenditure planned for basic test assembly to determinethe measurement to be performed for wind energy, it will costTL 70000 (iii) (Risk ID:ARRR4, ARRR7).
Legislation harmonization works of the energy labelling in Turkey became simultaneous with EU now.This also impact domestic operational costs.In case of failure to ensure simultaneous transition with EU,the sector would encounter the risk of surviving in Turkish market (i). Since 2002, Arçelik is the single Turkish company that is the member of CECED. Arçelik closely follows the new energy labellingby CECED and takes necessary actions.In case of failure to take action for developments in EU, there is risk of failure to survive in the market.Working in collaboration with TÜRKBESD,we convey developments about energy labelling in EU to T.R.Ministry of Science, Industry and Technology and direct the sector.
However,other labelling issues (carbon label,environmental labelling etc.) are also made abroad,but they did not start in Turkey yet.In the future,if such implementations start, this would affect costs and this will also be an important parameter in competition (ii).
Arçelik took part in ATLETE I (Appliance Testing for Energy Label Evaluation) Project which tests accuracy of products' energy efficiency labels which is conducted by CECED jointly with EC;all measurements and tests of 3 different models of Beko refrigerators,were successfully completed in ATLETE.Arçelikspends TL 300000

per year for these test. Arçelik spends about TL 100 million per year for R&D activities, totally (iii) (Risk ID:ARRR5,ARRR6,ARRR7).
In EU "F-Gas Regulation" studies are currently continuing. HFCs may be restricted. Since HFC-410a is used for A/C production and HFC-134a is used for production of heat pump driers, there is a risk for production of products containing these gases in the future (i).In order to environmental friendly products, we are working on alternative cooling technologies.By the year of 2012, R600a have been used in 98% of products. Thanks to transition projects, GHG effect per refrigeratoris1 over 222 of 1995 GHG emissions."The Regulation Regarding Reduction of ODS" was issued in Turkey.Arçelik is the first white goods manufacturer which produced CFC-free refrigerators in Turkey in 1995.Thanks to this,since 1995 we ensured 280000 tonnes eq. CO2 GHG only with coolant gas (ii) (Risk ID:ARRR8).

**5.1c**

**Please describe your risks that are driven by change in physical climate parameters**

| ID | Risk driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| ARRC1 | Change in mean (average) temperature | 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. 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, 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. Floods | Increased operational cost | 1-5 years | Direct | Very likely | Medium |

| ID | Risk driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | | 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. | | | | | |
| ARRC2 | Induced changes in natural resources | Depending on population increase; increase in energy consumption today causes that world is unable to balance its precise balance with its own natural facilities. Scientific researches may suggest different schedules but the point they all agree on is that climate change will constitute a threat in a future not too distant towards resources on the world and extinction of living creatures. Changes in physical life conditions will cause deep-rooted changes also in socio-economic structure of the world. For this reason climate changes is not only an environmental threat but also an economical threat. Together with ever increasing population the fact that natural resources are diminishing fast will impact not only industrialists but all life. From this point of view, supply prices of natural resources will increase, despite this increase in the future it would be impossible to obtain resources to satisfy demand. For this reason operations will be accelerated for recycling resources but providing budget that would cover investment needs to be formed will be gradually grow difficult. Some of indispensable natural resources for white goods and TV are water, energy and basic minerals like iron, copper, aluminium. Significant quantities of decreases in such resources will directly and severely affect our sector. This would affect product R&D activities and innovation significantly might effect the competition.Operations to recycle and reuse basic minerals and materials from scraps from production and end-of life products on systematic of return on equity methodology are carried out by our plants and Purchasing Department. Further, there is need for operational cost for implementation of integrated waste management systematic and to ensure recycling of product packages. | Increased operational cost | >10 years | Direct | Likely | Medium |

**5.1d**

**Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk; and (iii) the costs associated with these actions**

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 costal regions, aridity will arise at internal regions because of hot weather, more floods will occur due to increasing storms and rises at sea levels.
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. "Smart casual" dress code implemented at beginning of summer during previous years against the possibility that temperature increases trigger utilization of A/C, started to be implemented in the beginning of April as of this year.
Floods that may occur due to sudden temperature increases and decreases constitute risk for our plants with stream beds nearby in particular. 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(i).
Production of all of the products only in one location is very precarious. Because when a natural disaster is happened in this location, it is impossible to continue manufacturing. To manage this risk our products are manufactured more than one location, South Africa, Russia, Romania, China etc. Further, Arçelik closely follows global climate change projections, while new investment assessments are made at home and abroad, risks related to climate change are also considered.
Considering climate change a global problem, Arçelik signed on 28 November 2011 "The 2°C Challenge Communiqué" prepared by Corporate Leaders Network and signed by more than 200 corporate officers operating in various industries in 29 countries. In addition to this, Mr. Levent Çakıroğlu, Arçelik A.Ş. CEO, Arçelik represented Turkey in the capacity of "Turkey Climate Change Group of Leaders Term Speaker" at the 17th United Nations Framework Convention on Climate Change and presented his opinions about role and leadership of private sector for environmentally friendly and green development at the panel under the summit themed "Towards Rio +20, Business Leaders Build Change".Subsequent to COP17, in 2012, Mr. Levent Çakıroğlu, represented Turkey as the Term Spokesman of Climate Change Leaders in the United Nations Framework Convention on Climate Change, 18th Conference of Parties (COP18) held in Doha. In the panel titled "Resource Efficiency: Creating More with Less", where Christiana Figueras, the Executive Secretary of the UN Framework Convention on Climate Change, Connie Heedegard, European Union Commissioner for Climate Action, and Paul Simpson, CEO of CDP were also speakers, Çakıroğlu was the only representative from the business world. In the panel where the role and leadership of the private sector for resource efficiency, climate friendliness and green development were discussed, Çakıroğlu explained pioneering works and contributions on decreasing carbon emissions and increasing resource efficiency. Further Arçelik A.Ş. employees climbed to Kilimanjaro, the highest mountain in the African Continent to attract attention to global warming. 85% of glaciers existing at the summit at 1912 are non-existent today, during the climb conducted from 17 to 25 September 2011, a team of 12 people comprised of Arçelik employees from Turkey, Russia, Germany, Romania and France participated (ii). Total amount of expenses incurred for this climb is over TL 170000 (iii)(RISK ID: ARRC1).
Changes in physical life conditions will cause deep-rooted changes also in socio-economic structure of the world. For this reason climate changes is not only an environmental threat but also an economical threat. Together with ever increasing population the fact that natural resources are diminishing fast will impact not only industrialists but all life. From this point of view, supply prices of natural resources will increase despite this increase in the future it would be impossible to obtain resources to satisfy demand.
Some of indispensable natural resources for white goods and TV are water, energy and basic minerals like iron, copper, aluminium. Significant quantities of decreases in such resources will directly affect our sector. This would affect product R&D and innovation significantly and cause serious problems in competition (i).

To keep up with this risk we have carried out some recovering projects:
 Thanks to the reduction of product weight studies:
• 60 cm solo type dishwasher weight decreased to 35 kg from 52 kg
• Washing machine motor weight decreased to 5.9 kg from 6.25 kg
• Dishwasher motor weight decreased to 1.9 kg from 2.1 kg
• Mini type compressor weight decreased to 6.5 kg from 7.4 kg
• Midi type compressor weight decreased to 9.1 kg from 10.8 kg
• Static function 60 cm built-in oven weight decreased to 29 kg from 36.5 kg
• 32" LCD TV weight decreased to 8 kg (with LED lighting) from 25.1kg.
 In 2010 and 2011, totally80000 m3water has been recycled in the production plants.
 In Eskişehir Plant, with transition to plastic track for transporting the products, usage of 1468.6 ton wood tracks have been prevented. This means we save 7967 trees from being cut
 Arçelik Electronic Plant shortened products' user manuals in 2011. While the existing manuals in 7 different languages were around 560 pages, new condensed manuals contain 280 pages and for further detailed manuals the customers are directed to our website. Thus, approximately 22368 trees have been saved.
Further we have some forestration projects:
In Bolu Campus, we planted 100 acasias and 200 spruces last 3 years. Further in this campus, we planted 100 endangered Bolu mountain nuts and these plants protected with ex-situ method by Bolu Directorate of Water Affairs and Forestry and Forestry Research Institute of the Western Black Sea.
We attempt to raise the biodiversity value of our impact areas via protection and improvement works we pursue to develop natural environment. In this regard, in Istanbul Kemerburgaz we established an “Arçelik Memorial Forest” planting 6500 saplings.
We are also working for publishing a Regulation in Turkey about GHG Sinks to increasing forests in Turkey(ii) (RISK ID: ARRC2).

**5.1e**

**Please describe your risks that are driven by changes in other climate-related developments**

| ID | Risk driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| ARRO1 | Reputation | Turkey didn't receive GHG emission reduction target yet.In post-2012 period it is probable that Turkey will receive GHG reduction target.When the country receives target,it will cause high costs for the companies.In addition to this,failing to achieve the target distributed,carbon purchasing necessity may arise and this may cause cost.When it is needed to reflect operational and investment cost increase to product price,we may be disadvantaged in competition.In Doha,Turkey published a non-paper first time. This non paper includes,Turkey’s sectoral plans,targets and expectations | Reduced demand for goods/services | 6-10 years | Direct | Unlikely | High |

| ID | Risk driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | | about climate change issues.It is seen in the paper, Turkey follows its emissions on the basis of GDP. In line with this procedure, we also follow our emissions on the basis of Arçelik's revenue.Besides,it is very important to take action towards reduction of GHG.In this scope,Arçelik senior management gives targets every year for increasing energy efficiency in production to reduce GHG. However, in the event of failing to achieve the target assigned to sector,this may cause risk of loss of reputation, penalties and negative impact on company share certificates care of investors,a requirement for purchasing carbon will arise,for this reason there may be important increases in costs.When it is needed to reflect operational and investment cost increase to product price, there may be disadvantage in competition. In the future only companies that quickly comply with such developments may survive.It is important that companies plan their activities also to manage risks concerning climate change,closely follow all national and international developments and quickly take action. Otherwise,with decrease of brand value we may encounter risks which are too hard to turn around like loss of market and financial losses.Acting on the vision "Respects the Globe, Respected Globally" Arçelik maintains his activities environmentally friendly in a manner also to include climate change. In the event of failure to do that,there is risk of becoming unable to maintain our cooperation with our stakeholders. There is also the risk that point of view of NGO's on the company may change.Besides, there is risk of change in taxation regime before governments.Respect for climate change is also becoming a marketing tool.For this purpose activities in technical and marketing group also increase operational costs. | | | | | |
| ARRO2 | Fluctuating socio-economic conditions | Both global and local economic instabilities may cause socio-economic conditions into lumpy demand. This, in turn is included among parameters that significantly impacts and steers preferences of consumers. While high economic stability steers consumers to purchase products by considering other effects (environment related effects included) in addition to | Reduced demand for goods/services | 6-10 years | Direct | Likely | Medium-high |

| ID | Risk driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | | product's price, on the contrary economic instability may steer consumer to preferences that are based on price politics only. This would cause companies sensitive to climate change and environment to slog in competition and not to allow that investments are oriented accordingly. For this reason, "Time to Market" i.e, putting right product on market at the right time is of great importance. In order to make this analysis, many various tools may be used. For instance; consumer surveys and consumer needs analyses are performed/caused to be performed, course of economy is followed, and business plans are issued accordingly. Operational costs are incurred for managing such risks. | | | | | |

**5.1f**

**Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk; (iii) the costs associated with these actions**

Turkey did not receive GHG emission reduction target yet. But, in post-2012 period it is probable that Turkey will also receive greenhouse gas reduction target. When the country receives target, it will cause high costs for the companies. In addition to this,in the event of failing to achieve the target distributed,carbon purchasing necessity may arise and this may cause cost.When it is needed to reflect operational and investment cost increase to product price,we may be disadvantaged in competition.In Doha, Turkey published a non-paper for the first time. This non paper includes, Turkey's sectoral plans, targets and expectations about the climate change issues. It is seen in the paper, Turkey follows its emissions on the basis of GDP. In line with this procedure, we also follow our emissions on the basis of Arçelik's revenue. Besides, it is very important to take action towards reduction of GHG.In this scope, Arçelik senior management gives targets every year for increasing energy efficiency in production to reduce GHG.
However, in the event of failing to achieve the target assigned to sector, this may case risk of loss of reputation, penalties and negative impact on company share certificates before investors hence, a requirement for purchasing carbon mightarise. In the future companies that quickly comply with such developments would be ahead of the competition in the sector.
It is important that companies plan their activities also to manage risks concerning climate change, closely follow all national and international developments and quickly take action. Otherwise, with decrease of brand value we may encounter risks which are too hard to turn around like loss of market and financial losses.
Respect for climate change is also becoming a marketing tool. For this purpose activities in technical and marketing group also increase operational costs (RISK ID: ARRO1).
Both global and local economic instabilities may pave the way in a country for socio-economic conditions to make harsh swings. This, in turn is included among parameters that significantly impacts and steers preferences of consumers.

While high economic stability steers consumers to purchase products by considering other effects (environment related effects included) in addition to product's price, on the contrary economic instability may steer consumer to preferences that are based on price politics only.
This would cause companies sensitive to climate change and environment to slog in competition and not to allow that investments are oriented accordingly.
For this reason, "Time to Market" i.e, putting right product on market at the right time is of great importance.
In order to make this analysis, many various tools may be used. For instance, consumer surveys and consumer needs analyses are performed/caused to be performed, course of economy is followed, and business plans are issued accordingly. Operational costs are incurred for managing such risks (RISK ID : ARRO2).

**5.1g**

**Please explain why you do not consider your company to be exposed to risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure**

**5.1h**

**Please explain why you do not consider your company to be exposed to risks driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure**

**5.1i**

**Please explain why you do not consider your company to be exposed to risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure**

## Page: 6. Climate Change Opportunities

**6.1**

**Have you identified any climate change opportunities (current or future) that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply**

Opportunities driven by changes in regulation
Opportunities driven by changes in physical climate parameters
Opportunities driven by changes in other climate-related developments

**6.1a**

**Please describe your opportunities that are driven by changes in regulation**

| ID | Opportunity driver | Description | Potential impact | Timeframe | Direct/Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| AROR1 | Cap and trade schemes | GHG emissions emitted by energy consumption causes greenhouse gas which resulted in climate change. Energy is the most essential need for maintaining our lives. Depending on population increase, raising in energy consumption causes that world becoming unable to balance its precise balance with its own natural facilities. For this reason climate change is not only an environmental threat but also a social and economic threat. In the face of these global problems the need for business world to generate rational and innovative solutions is becoming evident gradually. Our working culture shaped by sense of responsibility is our most valuable legacy which led us to success from our foundation till today. For the purpose of constantly improving this legacy, Arçelik regards climate change as one of the main risks in terms of world's future and sustainability of the company and also regards being prepared for climate change process already as an opportunity. Turkey did not receive greenhouse gas emission reduction target under the Kyoto Protocol and did not participate in "cap and trade system". However in post-2012 period, it is expected that Turkey will receive an emission reduction target and may participate in carbon | Wider social benefits | 6-10 years | Direct | Likely | Medium-high |

| ID | Opportunity driver | Description | Potential impact | Timeframe | Direct/Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | | trade. Arçelik has started operations for voluntary carbon trade to quickly adapt to system the moment obligatory trade commences and to turn it to opportunity. Since 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 at home and abroad. As a start, we have developed a voluntary Carbon Trade Project, "Arçelik Energy Efficient Refrigerators Grouped Project". | | | | | |
| AROR2 | Voluntary agreements | As a start, we have developed a "Arçelik Energy Efficient Refrigerators Grouped Project". It is a voluntary Carbon Trade Project. "The Regulation on Waste Electric and Electronic Equipment (WEEE)" has published in 22 May 2012 by Ministry of Environment and Urban Planning. In this scope, voluntary operations are carried out for collection of CFC-11 and CFC-12 gases which were used in old refrigerators. Also, ODS disposal project which purposes disposal of these gases by heat treatment or other methodologies. | Wider social benefits | 1-5 years | Direct | Likely | Medium |
| AROR3 | Product efficiency regulations and standards | The GHG emissions emitted mostly product usage phase than production phase. For this reason, product efficiency in white goods and TVs is the most important element competition nowadays. In this matter regulations related to energy efficiency and labelling in particular come into prominence. On one hand, environmental impacts of our production processes are diminished, on the other hand we strive to develop most efficient and environmental-friendly products. Because of constant operation, refrigerator occupies the most important place among our products in terms of energy consumption. Since 1995, energy consumption of our refrigerators was reduced in the ratio of 72%, energy consumption of washing machine, dryer, TV, dishwasher, oven are reduced in the ratios of 65%, | New products/business services | Current | Direct | Very likely | Medium-high |

| ID | Opportunity driver | Description | Potential impact | Timeframe | Direct/Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | | 66%, 54%, 53%, 47% respectively. When energy reduction quantities since 1995 are considered, our LTP (Long Term Plan) and PRM (Product Road Map) systematic constitutes our main method in this subject. At least once a year, energy and 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 are put on the market. | | | | | |
| AROR4 | Product labeling regulations and standards | Nowadays, most effective 3 parameters in sales and marketing of white goods and TV are brand, price and energy labels. Following entry of energy label in 1995 for the first time in sector, particularly from beginning of 2000's, energy label started to be used extremely efficiently in competition. After 2014 it is envisaged that labelling will change for white goods. Arçelik deems it, as an opportunity to closely follow any and all kinds of regulation and standard oriented operations regarding labelling and making projects and investments accordingly. Further, consumer's environmental-friendly product purchasing criteria is very beneficial in terms of country environmental policy. If demand for environmental-friendly products increase, there is opportunity to provide major contribution to reduction of country GHG emissions. Our entire product range is based on the environmental-friendly products. Our basic white goods and TV's have energy labels, since 2002. During 10 years passed, product efficiency regulations and standards have been extremely effective. During the environment related weeks, such as Energy Efficiency Week, Environment Protection Week, Water Day etc., discount campaign is done for the energy efficient and environmental-friendly products to customer preference. | Wider social benefits | 1-5 years | Indirect (Client) | Likely | Medium |

**6.1b**

**Please describe (i) the potential financial implications of the opportunity; (ii) the methods you are using to manage this opportunity and (iii) the costs associated with these actions**

Arçelik regards climate change as one of the major risks in terms of world's future and sustainability, also deems it as an opportunity to be prepared for climate change and to be one step ahead from the competitors.
Turkey did not receive GHG emission mitigation target under the Kyoto Protocol and could not participate in "cap and trade system". However in post-2012 period, it is expected that Turkey will receive an emission reduction target and may participate in obligatory carbon trade (i).
Arçelik started carbon financing operations to take part in cap and trade system; such operations are coordinated by Finance Directorate, Technical Group, Energy and Environment Department and R&D in accordance with methods of carbon financing management criteria.
We have developed the "Arçelik Energy Efficient Refrigerators Grouped Project". The project aim is, manufacturing of the 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 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).Since Green Climate Fund steps, we constantly compile information about future carbon markets. We plan advanced level operations so that Arçelik will benefit to a maximum level from carbon trade both at home and abroad. (ii) (OPPORTUNITY ID: AROR1, AROR2)
"The Regulation on Waste Electric and Electronic Equipment (WEEE)" have published in 22 May 2012 by Ministry of Environment and Urban Planning. In this scope, voluntary operations are carried out for collection of CFC-11 and CFC-12 gases which were used in old refrigerators. Also, ODS disposal project which purposes disposal of these gases by heat treatment or other methodologies.(i). Arçelik take part in the working group which has been established by the Ministry of Environment and Urban Planning & UNIDO. The group is working on the technical specifications of determining, collecting and disposal of the ODS that are banned for usage.Refrigerants used in Arçelik refrigerators have varied for years. The main reason of these changes is GWP effects of the refrigerants. R12 (GWP=10600) that used many years in refrigerators, replaces with R134a (GWP=1300). Further, with R&D studies R134a replaces with R600a (GWP=8) which is a environmental-friendly gas. By the year of 2012, R600a have been used in 98% of products. Thanks to transition projects, GHG effect per refrigeratoris1 over 222 of 1995 GHG emissions. (ii) (OPPORTUNITY ID: AROR2).
The GHG emissions emitted mostly product usage phase than production phase. For this reason, product efficiency in white goods and TVs is a the most important element competition nowadays. In this matter regulations related to energy efficiency and labelling in particular come into prominence. Following entry into force of the energy labelling regulation in 1995, for the first time in sector, particularly from beginning of 2000's, energy label started to be used extremely efficiently in competition (i).
In Arçelik, energy efficiency divides into 2 parts, plant energy efficiency and product energy efficiency.
The energy efficiency in the plants are monitored and measured by Scada System. The total expenditure and investment of the energy efficiency projects is TL 2 million per year. In addition to this, operations are conducted for using "Best Available Technology (BAT)" in energy efficiency activities at production.The dying process of Dishwasher Plant is selected as BAT (Best Available Technique) by Ministry of Environment and Urban Planning
Some of the product energy efficiency studies can be found below :
• Refrigerator which consumes 10% less energy than A+++ energy class
• Washing machine which consumes 40% less energy than A+++ energy class
• Dishwasher which consumes 10% less energy than A+++ energy class
We have spared TL 18.125 million to R&D investment and spending to develop environmental-friendly products in 2011(ii and iii) (OPPORTUNITY ID:AROR3).
It is expected that energy labelling of the white goods will be changed, after 2014.Arçelik deems it as an opportunity to follow the regulations and standards, closely. . Further, consumer's environmental-friendly product purchasing criteria is very beneficial in terms of country environmental policy. If demand for environmental-

friendly products increase, there is an opportunity to provide major contribution to reduction of country GHG emissions (i).
For this reason, on one hand, environmental impacts of our production processes are diminished, on the other hand we strive to develop most efficient and environmental-friendly products.
Our LTP (Long Term Plan) and PRM (Product Road Map) systematic constitutes our main method in this subject. At least once a year, energy and 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 are put on the market.
Some of the examples of labelling:
• Grundig has become the first Turkish producer company to be awarded the "Eco Flower" approval with Arçelik's 40"/46" TVs.
• Electronic Plant decreases TV's standy by power consumption from 1 W to 0.5 W, according to T.C. Eco Design Regulation 1.5 year before from the mandatory date with approval of Ministry of Science, Industry and Technology.
• Beko buint-in ovens and built-in stoves have been entitled to "Energy Saving Trust" (EST) label which is given to energy efficient products by England's most prestigious certification body Enregy Saving Trust (EST).
Our entire product range is based on the environmental-friendly products. Our basic white goods and TV's have energy labels, since 2002. During 10 years passed, product efficiency regulations and standards have been extremely effective (ii). While new energy label directive enters into force in Europe, cost of R&D studies for energy efficient and environmentally friend products that satisfy needs of today and future incurred by the company amounts to TL 100 million per year(OPPORTUNITY ID: AROR3, AROR4) (iii).

**6.1c**

**Please describe the opportunities that are driven by changes in physical climate parameters**

| ID | Opportunity driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| AROC1 | Change in mean (average) temperature | To transform weather temperature changes into opportunity, we adopted to go beyond the legal legislations and standards requirements, regarding efficiency. In this context, we produce our products with a standard production rules, in all countries. In the new investments we made abroad, we take our product and production technologies to that country and ensure that country also become aware about energy efficient products, therefore we seize the opportunity to contribute to reduction of country GHG emissions. As an example to this, recently investment was made in South Africa and our employees climbed to Kilimanjaro, the highest mountain in the African Continent, to attract attention to global warming. 85% of glaciers existing at the summit at 1912 are non-existent today, during the climb conducted from 17 to 25 September 2011, a team of 12 people comprised of Arçelik employees from Turkey, Russia, Germany, Romania and France | Wider social benefits | Current | Direct | Likely | Medium-high |

| ID | Opportunity driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | | participated. At the same time we contribute to development of countries where we invest. In the upcoming period we are going to do a project in South Africa, we commenced basic infrastructure operations to enter into voluntary carbon trade. We have developed the "Arçelik Energy Efficient Refrigerators Grouped Project". The project aim is, manufacturing of the energy efficient refrigerators by applying advanced technologies and selling them to Turkish customers. Since Green Climate Fund steps, we constantly compile information about future carbon markets. We plan advanced level operations so that Arçelik will benefit to a maximum level from carbon trade both at home and abroad. We aware that our environmental-friendly products and production activities are opportunities to increase our brand value and we perform our activities in accordance with this opportunity. We share such activities through our sustainability report 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 increase in comparison with those with low sustainability performance and such companies draw attention of investors. In this scope, all activities concerning environment including also activities performed in connection with climate change are deemed as an opportunity financially. | | | | | |

**6.1d**

**Please describe (i) the potential financial implications of the opportunity; (ii) the methods you are using to manage this opportunity and (iii) the costs associated with these actions**

To transform weather temperature changes into opportunity, we adopted to go beyond the legal legislations and standards requirements, regarding efficiency (i). In the new investments we made abroad, we take our product and production technologies to that country and ensure that country also become aware about energy efficient products, therefore we seize the opportunity to contribute to reduction of country GHG emissions. As an example to this, recently investment was made in South Africa and our employees climbed to Kilimanjaro, the highest mountain in the African Continent, to attract attention to global warming. 85% of glaciers existing at the summit at 1912 are non-existent today, during the climb conducted from 17 to 25 September 2011, a team of 12 people comprised of Arçelik employees from

Turkey, Russia, Germany, Romania and France participated. At the same time we contribute to development of countries where we invest.
We aware that our environmental-friendly product and production activities are opportunities to increase our brand value and we perform our activities in accordance with this opportunity. We share such activities through our sustainability report 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 increase in comparison with those with low sustainability performance and such companies draw attention of investors(ii). In this scope, all activities concerning environment including also activities performed in connection with climate change are deemed as an opportunity financially(i). (OPPORTUNITY ID: AROC1).

**6.1e**

**Please describe the opportunities that are driven by changes in other climate-related developments**

| ID | Opportunity driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| AROO1 | Changing consumer behaviour | When last 15 years are considered, it is seen that effect of environmental-friendly and energy efficient products on turnover within total constantly increased on an annual basis. Accordingly, it is seen that there is gradual tendency in consumers' changing buying behaviour towards energy efficient products and by increasing affordability of this products purchase of energy efficient products gained a positive acceleration. During the environment related weeks, such as Energy Efficiency Week, Environment Protection Week, Water Day etc., discount campaign is done for the energy efficient and environmental-friendly products to customer preference. In order to determine tendency of consumers, consumer surveys and consumer needs analyses are performed/caused to be performed, course of economy is followed, and business plans are issued accordingly. In addition to this we launched the "Market Transformation of Energy Efficient Products" project jointly with United Nations Development Program (UNDP), Global Environment Fund (GEF), Turkish White Good Manufacturers' Association (TÜRKBESD), Turkish Ministry of Industry and Commerce and General Directorate of Electrical Power Resources Survey and Development Administration. In 2011, we carried on with this project, which will last to the end of 2014. The goal of the project is to reduce the domestic consumption of electric energy, and therefore reduce the related greenhouse gas emissions, by speeding up the transformation to electrical home appliances | Wider social benefits | 1-5 years | Direct | Very likely | Medium-high |

| ID | Opportunity driver | Description | Potential impact | Timeframe | Direct/ Indirect | Likelihood | Magnitude of impact |
|---|---|---|---|---|---|---|---|
| | | consuming less energy. | | | | | |

**6.1f**

**Please describe (i) the potential financial implications of the opportunity; (ii) the methods you are using to manage this opportunity; (iii) the costs associated with these actions**

When last 15 years are considered, it is seen that effect of environmentally friendly and energy efficient products on turnover within total constantly increased on an annual basis. Accordingly, it is seen that there is gradual tendency in consumers' changing buying behaviour towards energy efficient products and by increasing affordability of this products purchase of energy efficient products gained a positive acceleration (i).
During the environment related weeks, such as Energy Efficiency Week, Environment Protection Week, Water Day etc., discount campaign is done for the energy efficient and environmental-friendly products to customer preference. In order to determine tendency of consumers, consumer surveys and consumer needs analyses are performed/caused to be performed, course of economy is followed, and business plans are issued accordingly (ii) (OPPORTUNITY ID: AROO1).

**6.1g**

**Please explain why you do not consider your company to be exposed to opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure**

**6.1h**

**Please explain why you do not consider your company to be exposed to opportunities driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure**

6.1i

Please explain why you do not consider your company to be exposed to opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

# Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading [Investor]

## Page: 7. Emissions Methodology

**7.1**

**Please provide your base year and base year emissions (Scopes 1 and 2)**

| Base year | Scope 1 Base year emissions (metric tonnes CO2e) | Scope 2 Base year emissions (metric tonnes CO2e) |
|---|---|---|
| Fri 01 Jan 2010 - Fri 31 Dec 2010 | 77038 | 80687 |

**7.2**

**Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions**

| Please select the published methodologies that you use |
|---|
| ISO 14064-1 |

**7.2a**

**If you have selected "Other", please provide details below**

**7.3**

**Please give the source for the global warming potentials you have used**

| Gas | Reference |
|---|---|
| CO2 | IPCC Third Assessment Report (TAR - 100 year) |
| CH4 | IPCC Third Assessment Report (TAR - 100 year) |
| Other: R12 | IPCC Third Assessment Report (TAR - 100 year) |
| Other: R22 | IPCC Third Assessment Report (TAR - 100 year) |
| Other: For other Coolants; (gas mixtures included) | IPCC Third Assessment Report (TAR - 100 year) |

**7.4**

**Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data**

| Fuel/Material/Energy | Emission Factor | Unit | Reference |
|---|---|---|---|
| Diesel/Gas oil | 74.10 | Other: ton/TJ | 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 |
| Diesel/Gas oil | 74.10 | Other: ton/TJ | 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 |

| Fuel/Material/Energy | Emission Factor | Unit | Reference |
|---|---|---|---|
| | | | emissions factors and uncertainty ranges, Table 3.2.2: Road transport N2O and CH4 default emissions factors and uncertainty ranges |
| Distillate fuel oil No 4 | 77.40 | Other: ton/TJ | 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 |
| Liquefied petroleum gas (LPG) | 63.10 | Other: ton/TJ | 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 |
| Liquefied petroleum gas (LPG) | 63.10 | Other: ton/TJ | 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 |
| Natural gas | 56.10 | Other: ton/TJ | 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 |
| Electricity | 0.5341 | Other: kg CO2e/kw h | An average emission factor w as calculated for Turkey grid circuit (grid emission factor). For electricity emission factors, TEİAŞ(Turkish Electricity Distrubition Company) data and IPCC Guidelines for national GHG inventories chapter 2: Stationary combustions – Volume 2: Energy Intergovernmental Panel on Climate Change 2006, Table 1.2: Default net calorific values w ere used. |
| Motor gasoline | 69.30 | Other: ton/TJ | 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 |
| Other: industrial oil | 73.30 | Other: ton/TJ | 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 |
| Petroleum coke | 97.50 | Other: ton/TJ | 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 |
| Refinery gas | 57.60 | Other: ton/TJ | 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 |

| Fuel/Material/Energy | Emission Factor | Unit | Reference |
|---|---|---|---|
| Brown coal | 97.50 | Other: ton/TJ | 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 |

## Page: 8. Emissions Data - (1 Jan 2011 - 31 Dec 2011)

**8.1**

**Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory**

Financial control

**8.2**

**Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e**

84254

**8.3**

**Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e**

88895

**8.4**

**Are there are any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions which are not included in your disclosure?**

Yes

**8.4a**

**Please complete the table**

| Source | Scope | Explain why the source is excluded |
|---|---|---|
| Personnel services, food and beverage vending machines, soft drinks cabinets, water dispensers, product logistics activities, emissions from equipment that doesn't belong to ARÇELİK in the field of bank branches campus, emissions from waste recycling and disposal | Scope 1 | Since these are not under financial and administrative control of Arçelik, they are excluded. |
| Cafeteria, canteen services, bank branches and cleaning contractor services | Scope 1 | They are subcontractor services and they are excluded since they are out of our financial and administrative control. |
| CO2 and CH4 emission emitted by the waste water treatment plant | Scope 1 | During treatment at wastewater treatment plants, greenhouse gas emissions occur as a result of bacteria activities. As CO2 and CH4 emission created during biological treatment is not set forth at "IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5: Waste, Chapter 6: Wastewater Treatment and Discharge" it is not included in calculations. |
| Some chemical groups used (adhesives, aerosols, oils,paraffin waxes, solvents, solvent based paints, chemicals used for test purposes, polyurethane (PU), EPS etc.) are at a negligible level | Scope 1 | These chemicals were calculated and determined that they cause greenhouse gas emission at a negligible level; for this reason they are not included in greenhouse gas inventory. |
| Greenhouse gas from bottled-gas is at a negligible level | Scope 1 | In all campuses except Çayırova campus, since the greenhouse gas from bottled-gas consumed in 2011 has very low impact on total greenhouse gas, it has been neglected. (The consumption of Çayırova Campus has been included in greenhouse gas calculations due to being higher than other campuses). |
| Gases used for controlling gas and smoke detectors | Scope 1 | Greenhouse gases from gases used for the Gas and smoke detector control (avg. 1lt.) has been neglected due to having a very low effect in total greenhouse gas. |
| Greenhouse gas emission from punto welding oil combustion | Scope 1 | In the plants, the total greenhouse gas emission from punto welding oil combustion has been neglected due to having a very low effect in Arçelik total greenhouse gas emission (0.00026 %). |
| Acetylene cylinder used in welding shop in Beylikdüzü | Scope 1 | Since the greenhouse gas effect from the 1 acetylene cylinder used in welding shop in Beylikdüzü is very low (0.15 ton eCO2, 0.00009 %), it has been neglected. |
| Propane gas is at a negligible level | Scope | In 2011, approximately 25 kg propane gas is used in Beylikdüzü, 20 kg is used in |

| Source | Scope | Explain why the source is excluded |
|---|---|---|
| | 1 | Eskisehir, since the greenhouse gas effect was very low (0.00008 %), it has been neglected |

**8.5**

**Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations**

| Scope 1 emissions: Uncertainty range | Scope 1 emissions: Main sources of uncertainty | Scope 1 emissions: Please expand on the uncertainty in your data | Scope 2 emissions: Uncertainty range | Scope 2 emissions: Main sources of uncertainty | Scope 2 emissions: Please expand on the uncertainty in your data |
|---|---|---|---|---|---|
| More than 2% but less than or equal to 5% | Data Gaps<br>Assumptions<br>Extrapolation<br>Metering/ Measurement Constraints<br>Data Management | Arising from fuel consumptions; - The uncertainty values on relevant counters, - In the scope of IPCC 2006 Tier 1 approach, the standard deviation has been calculated by using the top, bottom, and default values based on the standard value of the emission factors for fuels. - Any possible incorrect entries and possible deviations from incorrect data entry regarding to consumption have been taken into account. Caused by refrigerant leaks; - Deviation values for weighing devices , - Any possible incorrect entries and possible deviations from incorrect data entry regarding to cooling device inventories and refrigerant leaks have been taken into account. Caused by personnel with fuel right; -Maximum uncertainty values defined in measurement tools standard for OPET's flow meters, - In the scope of IPCC 2006 Tier 1 approach, the standard deviation has been calculated by | More than 2% but less than or equal to 5% | Data Gaps<br>Assumptions<br>Extrapolation<br>Metering/ Measurement Constraints<br>Data Management | -Deviation values of the relevant counters - The standard deviation of the fuels used in electricity generation specified in TEİAŞ 2011 reports has been calculated in the scope of IPCC 2006 Tier 1 approach by using the top, bottom, and default values based on the standard value of the emission factors -The deviations that may occur in the calorific values of the fuels used for electricity generation specified in TEİAŞ reports have been taken into account. |

| Scope 1 emissions: Uncertainty range | Scope 1 emissions: Main sources of uncertainty | Scope 1 emissions: Please expand on the uncertainty in your data | Scope 2 emissions: Uncertainty range | Scope 2 emissions: Main sources of uncertainty | Scope 2 emissions: Please expand on the uncertainty in your data |
|---|---|---|---|---|---|
| | | using the top, bottom, and default values based on the standard value of the emission factors given for fuels. | | | |

**8.6**

**Please indicate the verification/assurance status that applies to your Scope 1 emissions**

Third party verification or assurance complete

**8.6a**

**Please indicate the proportion of your Scope 1 emissions that are verified/assured**

More than 90% but less than or equal to 100%

**8.6b**

**Please provide further details of the verification/assurance undertaken, and attach the relevant statements**

| Type of verification or assurance | Relevant standard | Attach the document |
|---|---|---|
| Reasonable assurance | ISO14064-3 | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared |

| Type of verification or assurance | Relevant standard | Attach the document |
|---|---|---|
| | | Documents/Attachments/Investor-8.6b-C3-RelevantStatement/ISO 14064 2011 Belgesi.pdf |

8.6c

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

| Regulation | % of emissions covered by the system | Compliance period | Evidence of submission |
|---|---|---|---|

**8.7**

**Please indicate the verification/assurance status that applies to your Scope 2 emissions**

Third party verification or assurance complete

**8.7a**

**Please indicate the proportion of your Scope 2 emissions that are verified/assured**

More than 90% but less than or equal to 100%

**8.7b**

**Please provide further details of the verification/assurance undertaken, and attach the relevant statements**

| Type of verification or assurance | Relevant standard | Attach the document |
|---|---|---|
| Reasonable assurance | ISO14064-3 | https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/Investor-8.7b-C3-RelevantStatement/ISO_14064_2011_Belgesi.pdf |

**8.8**

**Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?**

No

**8.8a**

**Please provide the emissions in metric tonnes CO2**

**Further Information**

See; BSI Verification Opinion Statement (No:573568) is attached.

**Attachments**

https://www.cdproject.net/sites/2013/15/21115/Investor CDP 2013/Shared Documents/Attachments/InvestorCDP2013/8.EmissionsData(1Jan2011-31Dec2011)/ISO_14064_2011_Belgesi.pdf

## Page: 9. Scope 1 Emissions Breakdown - (1 Jan 2011 - 31 Dec 2011)

**9.1**

**Do you have Scope 1 emissions sources in more than one country?**

Yes

**9.1a**

**Please complete the table below**

| Country/Region | Scope 1 metric tonnes CO2e |
|---|---|
| Romania | 10105 |
| Russia | 8307 |
| China | 431 |

**9.2**

**Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)**

By facility

**9.2a**

**Please break down your total gross global Scope 1 emissions by business division**

| Business division | Scope 1 emissions (metric tonnes CO2e) |
|---|---|

**9.2b**

**Please break down your total gross global Scope 1 emissions by facility**

| Facility | Scope 1 emissions (metric tonnes CO2e) | Latitude | Longitude |
|---|---|---|---|
| Arctic | 10105 | 44.717633 | 25.318465 |
| Beko LLC | 8307 | 55.80186 | 37.798119 |
| Beko China | 431 | 39.859155 | 116.591034 |

**9.2c**

**Please break down your total gross global Scope 1 emissions by GHG type**

| GHG type | Scope 1 emissions (metric tonnes CO2e) |
|---|---|
| | |

**9.2d**

**Please break down your total gross global Scope 1 emissions by activity**

| Activity | Scope 1 emissions (metric tonnes CO2e) |
|---|---|
| | |

**9.2e**

**Please break down your total gross global Scope 1 emissions by legal structure**

| Legal structure | Scope 1 emissions (metric tonnes CO2e) |
|---|---|

## Page: 10. Scope 2 Emissions Breakdown - (1 Jan 2011 - 31 Dec 2011)

**10.1**

**Do you have Scope 2 emissions sources in more than one country?**

Yes

**10.1a**

**Please complete the table below**

| Country/Region | Scope 2 metric tonnes CO2e | Purchased and consumed electricity, heat, steam or cooling (MWh) | Purchased and consumed low carbon electricity, heat, steam or cooling (MWh) |
|---|---|---|---|
| Romania | 16888 | 31533 | 0 |
| Russia | 14542 | 27152 | 0 |
| China | 2035 | 3798 | 0 |

**10.2**

**Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)**

By facility

**10.2a**

Please break down your total gross global Scope 2 emissions by business division

| Business division | Scope 2 emissions (metric tonnes CO2e) |
|---|---|

10.2b

**Please break down your total gross global Scope 2 emissions by facility**

| Facility | Scope 2 emissions (metric tonnes CO2e) |
|---|---|
| Arctic | 16888 |
| Beko LLC | 14542 |
| Beko China | 2035 |

10.2c

Please break down your total gross global Scope 2 emissions by activity

| Activity | Scope 2 emissions (metric tonnes CO2e) |
|---|---|

10.2d

Please break down your total gross global Scope 2 emissions by legal structure

| Legal structure | Scope 2 emissions (metric tonnes CO2e) |
|---|---|

## Page: 11. Energy

### 11.1

**What percentage of your total operational spend in the reporting year was on energy?**

More than 0% but less than or equal to 5%

### 11.2

**Please state how much fuel, electricity, heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year**

| Energy type | MWh |
|---|---|
| Fuel | 372325 |
| Electricity | 166437 |
| Heat | 0 |
| Steam | 0 |
| Cooling | 0 |

### 11.3

**Please complete the table by breaking down the total "Fuel" figure entered above by fuel type**

| Fuels | MWh |
|---|---|
| Diesel/Gas oil | 4200 |
| Distillate fuel oil No 4 | 14730 |
| Liquefied petroleum gas (LPG) | 13167 |
| Natural gas | 336201 |
| Motor gasoline | 4027 |

**11.4**

**Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor**

| Basis for applying a low carbon emission factor | MWh associated with low carbon electricity, heat, steam or cooling | Comments |
|---|---|---|
| Grid connected low carbon electricity generation owned by company, no instruments created | 44221.58 | The electricity consumed at Arçelik is the electricity supplied from outside as well as the electricity produced in cogeneration. Electricity producers can not give any information about the emission factor of electricity they supply. That's why Arçelik greenhouse gas emissions report team found a way to calculate a general emission factor for Turkish Electricity Grid. The calculation based on TEIAS data and IPCC emission factors. The calculation is verified by an independent GHG verification body. According to that calculation, emission factor for grid electricity of Turkey in 2011 was 0.534 kgCO2e/kwh. Arçelik produces its own energy by trigeneration units in two of its plants (Both of them have 6.3 MW Wartsila Engines). In these units, natural gas and fuel-oil are used for electricity and heat generation. Heat is used for heating purposes and for cooling purposes (by absorption units). The emission factor of electricity produced in trigeneration units for 2011 is calculated as 0.496 kgCO2e/kwh (Using IPCC emission factors). Produced electricity by these units have lower emission factor than grid emission factor. Arçelik produced 44221.579 Mwh in 2011 by using its trigeneration units. This means that 1680 tonnes of CO2e have been saved in 2011. In addition to this, Arçelik Headquarter has purchased its electricity from renewable energy supplier, since 2012. Thus 2780 ton eCO2 have been reduced. Cooking Appliances Plant and Electronics Plant will purchase its electricity from renewable energy supplier. Thus 27800 ton eCO2 will be reduced. There are 3 time zones for electricity prices. This is a result of unbalanced usage of electricity by consumers. To tolerate unbalancing, electricity producers have to invest on higher capacity electricity stations. This results into inefficiency. Generation plants of Arçelik produce electricity in a harmony with electricity producers. We produce electricity where demand of all consumers is high and use grid energy where demand of all consumers is low. So we help to balance the consumption. |

## Page: 12. Emissions Performance

**12.1**

**How do your absolute emissions (Scope 1 and 2 combined) for the reporting year compare to the previous year?**

Increased

**12.1a**

**Please complete the table**

| Reason | Emissions value (percentage) | Direction of change | Comment |
|---|---|---|---|
| Emissions reduction activities | 7.03 | Decrease | Thanks to realized energy efficiency projects in the plants in 2011, 7.03% of GHG emissions have been decreased according to 2010 emissions. |
| Divestment | | | |
| Acquisitions | | | |
| Mergers | | | |
| Change in output | | | |
| Change in methodology | | | |
| Change in boundary | | | |
| Change in physical operating conditions | | | |
| Unidentified | | | |
| Other | 9.78 | Increase | Because of increase in production quantities at all Plants in 2011 in comparison with 2010, quantity of greenhouse gas emissions also 9.78% increased. |

**12.2**

**Please describe your gross combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue**

| Intensity figure | Metric numerator | Metric denominator | % change from previous year | Direction of change from previous year | Reason for change |
|---|---|---|---|---|---|
| 0.000020613 | metric tonnes CO2e | unit total revenue | 42 | Decrease | Despite the fact that production quantities increased in 2011 in proportion to 2010, greenhouse gas emissions per turnover decreased by 42%. Major reasons of this decrease are energy consumption reduction operations performed at Plants and energy efficiency projects. |

**12.3**

**Please describe your gross combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per full time equivalent (FTE) employee**

| Intensity figure | Metric numerator | Metric denominator | % change from previous year | Direction of change from previous year | Reason for change |
|---|---|---|---|---|---|
| 7.88474499 | metric tonnes CO2e | FTE employee | 8.1 | Decrease | Despite the fact that number of employees increased in 2011 in proportion to 2010, greenhouse gas emission per employee decreased by 8.1%. Major reasons of this reduction are training-awareness activities and projects materialized at Plants. |

**12.4**

**Please provide an additional intensity (normalized) metric that is appropriate to your business operations**

| Intensity figure | Metric numerator | Metric denominator | % change from previous year | Direction of change from previous year | Reason for change |
|---|---|---|---|---|---|

| Intensity figure | Metric numerator | Metric denominator | % change from previous year | Direction of change from previous year | Reason for change |
|---|---|---|---|---|---|
| 3.827506 | metric tonnes CO2e | unit hour worked | 7.7 | Decrease | Despite the fact that number of employees, production quantities and unit hour worked are increased, in 2011 in comparison with 2010, quantity of greenhouse gas emissions decreased because of reduction are training-awareness activities and projects materialized at Plants. |

## Page: 13. Emissions Trading

**13.1**

**Do you participate in any emissions trading schemes?**

Yes

**13.1a**

**Please complete the following table for each of the emission trading schemes in which you participate**

| Scheme name | Period for which data is supplied | Allowances allocated | Allowances purchased | Verified emissions in metric tonnes CO2e | Details of ownership |
|---|---|---|---|---|---|
| Other: Voluntary Emission Reduction Scheme | Sun 01 Jan 2012 - Sat 31 Dec 2022 | 0 | 0 | 0 | Facilities we own and operate |

**13.1b**

**What is your strategy for complying with the schemes in which you participate or anticipate participating?**

We commenced basic infrastructure operations to enter voluntary carbon trade in future period. Since Green Climate Fund steps in 2012 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 at home and abroad.
As a start in line with this strategy, we have developed a "Arçelik Energy Efficient Refrigerators Grouped Project". It is a voluntary emission reduction Project, because there is not any regulatory emisssion trading scheme in Turkey and so that there are no allowances allocated or purchased in 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 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). The validation process continues and it is now in Internal Technical Review step.

**13.2**

**Has your company originated any project-based carbon credits or purchased any within the reporting period?**

No

**13.2a**

**Please complete the table**

| Credit origination or credit purchase | Project type | Project identification | Verified to which standard | Number of credits (metric tonnes of CO2e) | Number of credits (metric tonnes CO2e): Risk adjusted volume | Credits retired | Purpose, e.g. compliance |
|---|---|---|---|---|---|---|---|

## Page: 14. Scope 3 Emissions

**14.1**

**Please account for your organization's Scope 3 emissions, disclosing and explaining any exclusions**

| Sources of Scope 3 emissions | Evaluation status | metric tonnes CO2e | Methodology | Percentage of emissions calculated using primary data | Explanation |
|---|---|---|---|---|---|
| Purchased goods and services | Relevant, not yet calculated | | | | |
| Capital goods | Relevant, not yet calculated | | | | |
| Fuel-and-energy-related activities (not included in Scope 1 or 2) | Not relevant, explanation provided | | | | All Scope 1 ve 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 | Relevant, not yet calculated | | | | |
| Waste generated in operations | Relevant, not yet calculated | | | | |
| Business travel | Relevant, not yet calculated | | | | |
| Employee commuting | Relevant, not yet calculated | | | | |
| Upstream leased assets | Not relevant, explanation provided | | | | We have no leased assests for storing supplied materials from suppliers. |
| Investments | Relevant, not yet calculated | | | | |
| Dow nstream transportation and distribution | Relevant, calculated | 32713 | 2006 IPPC Guidelines for National Greenhouse Gas Inventories - Tier 1 method. The emission factors are taken from Table 3.2.1 and Table 3.2.2 of 2006 IPPC Guidelines for National Greenhouse Gas Inventories. | 100% | The sources of greenhouse gas emissions from upstream transportation and distrubution are road, off-, air, railw ays and w ater-borne navigation activities. In our calculation w e only used all of road transportation data (home and abroad) and calculated Scope 3 emissions sourced from road transportation according to 2006 IPPC Guidelines for National Greenhouse Gas Inventories - Tier 1 method. The emission factors are taken from Table 3.2.1 and |

| Sources of Scope 3 emissions | Evaluation status | metric tonnes CO2e | Methodology | Percentage of emissions calculated using primary data | Explanation |
|---|---|---|---|---|---|
| | | | | | Table 3.2.2 of 2006 IPPC Guidelines for National Greenhouse Gas Inventories. |
| Processing of sold products | Relevant, not yet calculated | | | | |
| Use of sold products | Relevant, not yet calculated | | | | |
| End of life treatment of sold products | Relevant, not yet calculated | | | | |
| Downstream leased assets | Relevant, not yet calculated | | | | |
| Franchises | Relevant, not yet calculated | | | | |
| Other (upstream) | | | | | |
| Other (downstream) | | | | | |

**14.2**

**Please indicate the verification/assurance status that applies to your Scope 3 emissions**

No third party verification or assurance

**14.2a**

**Please indicate the proportion of your Scope 3 emissions that are verified/assured**

14.2b

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

| Type of verification or assurance | Relevant standard | Attach the document |
|---|---|---|
| | | |

**14.3**

**Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?**

Yes

**14.3a**

**Please complete the table**

| Sources of Scope 3 emissions | Reason for change | Emissions value (percentage) | Direction of change | Comment |
|---|---|---|---|---|
| Upstream transportation & distribution | Emissions reduction activities | 43.37 | Decrease | The environmental-friendly supply chain applications that we realized in the reporting period and their results are as follows: "Dynamic Routing" application which was realized in 2010, was utilized more effectively and efficiently in 2011. In 2010, we started "Dealer Shared |

| Sources of Scope 3 emissions | Reason for change | Emissions value (percentage) | Direction of change | Comment |
|---|---|---|---|---|
| | | | | Warehouse" practices in Adana and Antalya. This practice will also be expanded to Ankara in 2011 and to Izmir, Kayseri and Istanbul Asian Side in 2012. By consolidating dealer warehouses, one step in the process of product delivery to customer is eliminated hence reducing carbon emissions. |

**14.4**

**Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)**

No, we do not engage

**14.4a**

**Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success**

**14.4b**

**To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent**

| Number of suppliers | % of total spend | Comment |
|---|---|---|

**14.4c**

If you have data on your suppliers' GHG emissions and climate change strategies, please explain how you make use of that data

| How you make use of the data | Please give details |
|---|---|

**14.4d**

**Please explain why not and any plans you have to develop an engagement strategy in the future**

We have started to calculate one of our TV model in accordance with "PAS 2050: Specification for the assessment of the life cycle greenhouse gas emissions of goods and services" Standard. Arçelik Product Carbon Footprint Inventory Supplier Questionnaire has been prepared to collect data and calculate carbon footprint of the suppliers of the selected TV model. The calculation is under process.But, the calculation is not possible because of some missing calculation tools, such as raw material extraction emission factors etc. In addition to this, suppliers could not provide this data because of some missing records.

## Module: Sign Off

## Page: Sign Off

**Please enter the name of the individual that has signed off (approved) the response and their job title**

Dr. Fatih Kemal EBİÇLİOĞLU, CFO ARÇELİK A.Ş.