

Welcome to your CDP Climate Change Questionnaire 2019

C0. Introduction

C0.1

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

Şişecam Group, the foundations of which were laid by Mustafa Kemal Atatürk in 1935 is an industrial group with the main activity fields of glass. Established by İŞBANK, Şişecam initially set out to meet the requirements of the country as regards to glass products; in the 1960's, turned its attention towards exports on the principle that "the whole world is our market". In the 1970's and 1980's the Group diversified its activities and expanded further in the global markets. Today, as a result of specialization and highly competitive operations, Şişecam Group took its place among the leading glass manufacturers in the world, in business lines covering all basic fields of glass such as float glass, tableware, glass packaging and glass fiber. Şişecam Group with a goal to become one of the top three companies in the global glass industry, ambitiously produces initiatives towards improvement in economic axis, or in other words, initiatives directed at enhancing productivity, efficiency and profitability. As one of the biggest companies working in a wide extent of production in Turkey and other countries, Şişecam Group has always considered the social and environmental awareness and performance as the other two key pillars of sustainable development beside economic performance. Compliance to social and environmental legislations and reduction of environmental impacts of the processes are always taken into account during the decision making step of investments. Environmental, social and economic impacts of the processes are evaluated and sustainable solutions are considered. This approach is considered as one of the pillars of Şişecam's strategic management and is integrated in every phase of its work processes. Şişecam actively pursues the UN Sustainable Development Goals (UN SDGs) especially Goal 5-6-7-8-9-12-13-15-17 and related principles are integrated into all the operations globally, taking into consideration the SDGs performance indicators. All studies are conducted with a focus on energy efficiency, renewable energy use, carbon emissions, waste recovery and are prioritized within the framework of our sustainability strategy. These targets are realized within an effective governance structure. In this respect, in Şişecam and its subsidiary companies, all environmental issues including compliance with the environmental legislation are handled within the framework of Şişecam's Environmental and Energy Policy, declared as: Şişecam, as an organization aware of its responsibility towards the protection of environment, believes in the need to maintain the world as a livable place for coming generations. This approach is considered as the corner stone of Şişecam's strategic management and is integrated in every phase of its processes. Our aim is to carry out all environmental protection activities in Şişecam within a framework of an Environmental Management System, by taking into account the sustainability principles and improving the system continuously with the support of all our employees and stakeholders. All Group companies' operations are in line with ISO 14001 Environmental Management System and ISO 50001 Energy Management System

principles. The Group consists of companies serving in diverse activity fields related to different types of glass:

Flat Glass: Carrying out the activities of Sisecam Group in the field of flat glass. Şişecam Flat Glass operates in the fields of architectural glass (flat glass, patterned glass, mirror, laminated glass and coated glass), automotive glass and glass for other vehicles, encapsulated glass, solar glass, home appliances glass.

Glassware: Carrying out the activities of Sisecam Group in the field of tableware, Paşabahçe Cam Sanayii ve Ticaret A.Ş. performs design, production, marketing and sale of table, kitchen articles, and souvenirs made of glass, which are needed by domestic and foreign markets. It carries on its activities in the design, production, marketing and sale as main business fields of glass household articles.

Glass Packaging: Carrying out the activities of Sisecam Group in the field of glass packaging, Şişecam Glass Packaging produces designed glass packaging of different colors and sizes for the food, beverage, alcoholic drinks, pharmaceutical and cosmetic sectors.

Chemicals: Carrying out the activities of producing soda derivatives and chromium chemicals, glass fiber, industrial raw materials, electricity, Vitamin K3 derivatives and sodium metabisulfite.

Besides its activities in Turkey, Şişecam became a global company with its facilities in Bulgaria, Russia, Georgia, Ukraine, Egypt, Bosnia, Germany, Slovakia, Hungary, Romania, India and Italy.

C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Row 1	January 1, 2018	December 31, 2018	Yes	1 year

C0.3

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

Bulgaria
Turkey

C0.4

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

TRY

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should

align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.

Financial control

C-CH0.7

(C-CH0.7) Which part of the chemicals value chain does your organization operate in?

Row 1

Bulk organic chemicals

Bulk inorganic chemicals

Soda Ash

Other chemicals

C1. Governance

C1.1

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

Yes

C1.1a

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

Position of individual(s)	Please explain
Other C-Suite Officer	"Chief Strategy Officer" is responsible for management of sustainability strategy. Chief focuses on climate change, sustainability strategy and sustainability projects, environmental management and quality management within Şişecam. That's why "Chief Strategy Officer" is selected as the responsible individual for climate-related issues.

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – all meetings	<p>Reviewing and guiding strategy</p> <p>Reviewing and guiding risk management policies</p> <p>Reviewing and guiding business plans</p> <p>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</p>	<p>Şişecam Group's Sustainability Committee works toward increasing communication between working groups and companies within the Group on matters of sustainability and enables the implementation of joint projects for cohesiveness and synergy. The main responsibilities of the Committee include, integrating sustainability principles into Şişecam's processes, determining and implementing operational improvement activities, preparing and circulating the Corporate Sustainability Strategy, and coordinating, directing and supervising the activities of sub-working groups within the Sustainability Committee. As matters arise, Sustainability Committee reports to the Board.</p>

C1.2

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

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Sustainability committee	Both assessing and managing climate-related risks and opportunities	Quarterly
Environment/ Sustainability manager	Managing climate-related risks and opportunities	As important matters arise
Other C-Suite Officer, please specify	Managing climate-related risks and opportunities	As important matters arise

C1.2a

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

Şişecam Group's Sustainability Committee works toward increasing communication between working groups and companies within the Group on matters of sustainability and enables the implementation of joint projects for cohesiveness and synergy. The Committee directly reports to the CEO. The main responsibilities of the Committee include, integrating sustainability principles into Şişecam's processes, determining and implementing operational improvement activities, preparing and circulating the Corporate Sustainability Strategy, and coordinating, directing and supervising the activities of sub-working groups within the Sustainability Committee. The working groups within the committee (Working Group on the Environment, Production Technologies and Energy, Occupational Health and Safety, Innovation Management & Digitalisation, Diversity and Inclusion, Corporate Social Responsibility) monitors and take necessary actions for climate - related issues.

Şişecam Group's Sustainability Directorate directly reports to Chief Strategy Officer. Sustainability Directorate focuses on coordinating the corporate sustainability activities by connecting teams responsible for production, communications, human resources, infrastructure, procurement and quality. At the same time, it monitors climate-related issues and implements innovative practices relating to corporate sustainability reporting, supply chain sustainability, sustainability training programs, measurement of sustainability efficiency, environment&quality management, etc.

C1.3

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

Yes

C1.3a

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

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Monetary reward

Activity incentivized

Efficiency project

Comment

Şişecam Corporate Rewarding Mechanism evaluates the successful projects that apply to have an award. Emissions reduction projects - Energy reduction projects and Efficiency projects are evaluated.

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	1	3	
Medium-term	3	5	
Long-term	5	20	

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	Communication and coordination activities are emphasized and technological facilities are used in the Group in order to manage risks which are identified, prioritized and monitored by action plans on the basis of risk appetite and in scope of enterprise risk management. The Group also used the reporting activities to ensure healthy monitoring of the process conducted in accordance with the legislation.

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

Operating in energy intensive sector, Şişecam Group operations are highly sensitive to all kinds of energy and environment related policies. For this reason, all risk and opportunity identification are assessed for both company and asset level as Şişecam Group. In addition, risks and opportunities are assessed according to certification systems (such as ISO 14001&50001) in each plant. Sustainability Directorate evaluate risks and opportunities in much more detailed way. In this respect, risk and opportunities affecting environment and quality related issues are considered for both new investments and existing plants. Identification and evaluation of risks and opportunities are applied by taking into account regulations, physical change, climate change, changes in market, strategic documents driven by legislations and international agreements.

In order to identify and assess climate-related risks communication and coordination activities are emphasized and technological facilities are used in the Group in order to manage risks which are identified, prioritized and monitored by action plans on the basis of risk appetite and in scope of enterprise risk management. The Group also used the reporting activities to ensure healthy monitoring of the process conducted in accordance with the legislation.

C2.2c

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Turkey's Energy Efficiency Law, Energy Strategy Plan and National Climate Change Action Plan guided the industry for the energy targets. In order to reduce energy consumption, efficiency projects are applied.
Emerging regulation	Relevant, always included	Şişecam follows up the project on Partnership for Market Readiness (PMR), governed by Ministry of Environment and Urbanism and attends workshops related to this project. The key objective of the project is to identify alternative "Market Based Instrument" to cope with climate change and to be implemented in Turkey.
Technology	Relevant, always included	In accordance with the developments in technology, in order to protect market share, Şişecam follows up the technology and invest in research and development.
Legal	Relevant, always included	Turkey's Energy Efficiency Law, Energy Strategy Plan and National Climate Change Action Plan guided the industry for the energy targets. In order to reduce energy consumption, efficiency projects are applied. Moreover, Şişecam follows up the revised National Energy Strategy Plan and related regulations.

Market	Relevant, always included	In order to protect market share, Şişecam follows up the technology and invest in research and development.
Reputation	Relevant, always included	Due to increased public concern both in Turkey and in rest of the world, climate change is an important issue in managing corporate reputation. Today, it is critical that companies safeguard their reputations through effective communications with all their stakeholders about their environmental performance on climate change issue. This risk may impact Şişecam's reputation also. Moreover, Şişecam focuses sustainability of the operations, development of climate friendly products and introduces online applications to the partners to ensure optimum selection of climate friendly products.
Acute physical	Relevant, sometimes included	Globally, much more extreme and variable weather conditions are expected in the future. Floods, sudden temperature rises and decreases forms a risk for our plants and our supply chain.
Chronic physical	Not evaluated	Longer-term shifts in climate patterns is unlikely to predict, due to this reason chronic physical conditions are not evaluated.
Upstream	Relevant, sometimes included	Shifts in upstream conditions are relevant to risk consideration. For instance, as the number of players are increasing in the sector, Şişecam searches for new international markets.
Downstream	Relevant, always included	Shifts in downstream conditions are relevant to risk consideration. However, at Şişecam the raw materials required for glass manufacturing are manufactured by the plants within Şişecam Chemicals Group.

C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

Communication and coordination activities are emphasized and technological facilities are used in the Group in order to manage risks which are identified, prioritized and monitored by action plans on the basis of risk appetite and in scope of enterprise risk management. The Group also used the reporting activities to ensure healthy monitoring of the process conducted in accordance with the legislation. Criteria for determining materiality/priorities includes current or possible regulatory requirements, energy efficiency and security, global and regional regulations, financial factors and public awareness. Şişecam Sustainability Directorate follows and evaluates the current and possible regulatory (climate change related) requirements and inform the related departments such as Production Units, Risk Management, Finance and Investor Relations Management about risks and opportunities on a regular basis. Moreover, risks are being assessed and applied according to environmental management and energy management certification systems (such as ISO 14001&50001) in each plant.

C2.3

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

Yes

C2.3a

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

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Enhanced emissions-reporting obligations

Type of financial impact

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

In accordance with decisions and negotiations regarding Paris Agreement, the Republic of Turkey and EU including Bulgaria presented their Nationally Determined Contribution (NDC) towards achieving the ultimate objective of the United Nations Framework Convention on Climate Change . Turkey committed up to 21 percent reduction in GHG emissions from the Business as Usual (BAU) level by 2030. The European Union and its 28 Member States including Bulgaria submitted a joint NDC which is at least 40% domestic reduction in GHG emissions by 2030 compared to 1990. Related Ministries are working on many strategies and action plans to combat climate change which will directly influence business sectors. However, it is still not clarified how the target will be distributed to different sectors. This may bring extra responsibilities for Şişecam.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The adaptation to Paris Agreement will result in substantial future capital costs, and regulated carbon quotas. If the sectors exceed their quotas related to targets, they should purchase extra allowance (such as EUA, carbon credits) which will directly result in increase of operational expenses.

Management method

Şişecam attends and takes an important role in workshops and meetings focused on adaptation to Paris Agreement. Şişecam implements actions related on energy efficiency projects that result in GHG emissions reduction. Şişecam follows up and contribute Glass Alliance Europe's studies on EU regulations which affect glass business. Glass Alliance Europe is an association which coordinates European glass industries' views on common environmental and regulatory challenges. Management actions related to this risk are being implemented. For example, regulatory assessment reports on climate change is prepared annually by Sustainability Directorate and shared with all members of Şişecam Group for their references and use while conducting their procurement and investment planning. Cost of management is calculated as the membership fees for Glass Alliance Europe.

Cost of management

65,000

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Increased pricing of GHG emissions

Type of financial impact

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

Ministry of Environment and Urbanism is working on many strategies and action plans to combat climate change, which will have a direct impact to business sectors. Şişecam attends and takes an important role in workshops and meetings focused on adaptation to climate change regulations for Turkey.

For Şişecam operations in Bulgaria (as an EU country) main risks are related to increase of carbon price and exclusion of glass sector from carbon leakage list.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Potential alternatives to govern the carbon mechanisms nationwide (for example carbon taxes, carbon-trading systems etc.) may be implemented. This may result in extra costs for Şişecam's operations in Turkey.

For Şişecam operations in Bulgaria (as an EU country) increase of carbon price and exclusion of glass sector from carbon leakage list may result in extra costs .

Management method

For example, Şişecam follows up the project on Partnership for Market Readiness (PMR), governed by Turkish Ministry of Environment and Urbanism and attends workshops related to this project. The key objective of the project is to identify alternative "Market Based Instrument" to cope with climate change and to be implemented in Turkey. Besides, in order to manage this risk, Şişecam implements

actions related on energy efficiency projects that result in GHG emissions reduction. Management actions related to this risk are being implemented. Moreover, for Şişecam operations in Bulgaria, Şişecam follows up the upcoming EU regulations related climate change.

Cost of management

0

Comment

Şişecam, as one of the main players of the sector, attends the workshops organized by Ministry of Environment and Urbanism and gives great support by providing feedback and recommendations about emissions, quotas, carbon leakage threat and appropriate emission control systems in the sector. The aim of these workshops is to ensure multi-stakeholders engagement to provide the necessary inputs for improvement of Turkey's position in the international negotiations.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Mandates on and regulation of existing products and services

Type of financial impact

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

Regarding to regulations, Turkish energy policy has made impressive progress in the last years. Turkey attaches great importance to more efficient and rational functioning of the energy sector for promoting the competitiveness of the national economy. In order to reach these targets, Laws on Energy Efficiency introduces significant obligations and sets the rules for energy management in industry. According to the law, Şişecam plants has to manage comprehensive energy audits.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Turkey's Energy Efficiency Law, Energy Strategy Plan and National Climate Change Action Plan guided the industry for the energy targets. Şişecam Group is highly sensitive to all kinds of energy related policies and limitations. Limitations or taxes on fuel/energy usage will affect operations directly and will limit productivity. The magnitudes of these risks are still not clear.

Management method

For example, Sustainable Energy Monitoring System was established in the factories in Turkey in order monitor online energy consumption. The system is managed centrally at the Headquarter level, and it allows a comparative management and identification of potential improvement instantaneously. Energy efficiency projects are considered as one of the most important investment items. All Group factories benefiting from the system are also ISO 50001 certified. The Group's core principle is to select high efficient equipment as part of its sustainable investment strategy. Energy audits are another important tool for identifying energy saving opportunities. Management actions related to these risks are being implemented. Investments and costs for energy efficiency projects is integrated in the budget.

Cost of management

0

Comment

C2.4

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

Yes

C2.4a

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

Identifier

Opp1

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Type of financial impact

Increased revenue through demand for lower emissions products and services

Company-specific description

With regulations such as Energy Efficiency Law and Regulation on Energy Performance in Buildings in Turkey, energy efficiency in buildings are supported. Using value added energy efficient construction products became important by this way. All new buildings must meet minimum design requirements for energy efficiency and get Energy Performance Certificate. Existing buildings should get Energy Performance Certificate till 2020. This creates an opportunity for sales of Şişecam's energy efficient products. For Şişecam Flat Glass' architectural glass products Environmental Product Declaration (EPD)s in relation to the SDG 12 on Responsible Consumption and Production, and in accordance with the EN 15804 European norms, are prepared. These products provide the greatest contribution to forming sustainable green buildings. The EPDs were made available to stakeholders. Şişecam Flat Glass is the first company in the flat glass sector in Turkey receiving the EPD.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

This will create opportunities for the market growth of high performance, added value products. Increase in demand for Şişecam's energy efficient products such as low-e, tenteseol titanium, solar control and thermal insulation glass is expected.

Strategy to realize opportunity

Sisecam implements related activities studies and projects by: (a) Lobbying activities: In order to introduce the contribution of its products to energy saving and economy, Şişecam has been an active member of several associations such as Glass for Europe, Association of Turkish Building Material Producers (IMSAD) and Association of Thermal Insulation, Waterproofing, Sound Insulation and Fireproofing Material Producers, Suppliers and Applicators (IZODER). Group also takes part in several organizations. b) Collaboration with Policy Makers: As the most important sector representative, Şişecam collaborates with experts from Ministry of Environment and Urbanism, Ministry Of Science Industry and Technology and Ministry of Energy and Natural Resources. c) Research and development activities: Şişecam focuses on its research and development activities for developing new environment friendly high added value products. d) Commercials: Advertisement campaign of products which provided advanced level of isolation compared to standard double glasses is managed. Mentioned actions are implemented.

Cost to realize opportunity

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Shift in consumer preferences

Type of financial impact

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

Company-specific description

Voluntary regulation on 'Certification of sustainable sites with sustainable green buildings' is published by Ministry of Environment and Urbanism. The regulation aims to

set the principles and procedures related to evaluate and certify green buildings and green sites. This creates an opportunity for Şişecam's energy efficient products.

Time horizon

Short-term

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

With this regulation main concepts of green buildings such as energy efficiency, renewable energy, lighting, local material, ecolabels get more importance than before. This will directly influence the demand for high value added products like low e, solar control, thermal insulation and solar control glasses.

Strategy to realize opportunity

For example, Şişecam implements lobbying activities, seminars and trainings in order to emphasize the importance of design and glass selection in the construction sector. Moreover, Şişecam Flat Glas obtained Environmental Product Declarations (EPD) for its main products. Also, "Glass Solutions For Green Buildings Catalog- The Right Glass Solutions in Green Building" booklet informs business partners and enable the right choice of glass.
Mentioned actions are implemented.

Cost to realize opportunity

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Shift in consumer preferences

Type of financial impact

Increased revenue through demand for lower emissions products and services

Company-specific description

It has been observed that ratio of value added coated products on turnover increased regularly. Due to increasing awareness, Şişecam's customer profile has been changing. Customers also look for energy efficient products.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Şişecam Group is one of the promising companies that enable greenhouse gas emission reduction and energy saving by its main products. This awareness, is expected to increase the demand for Şişecam's energy efficient products such as low-e and solar control glass and provide R&D activities on this issue. Besides, consumption of glass containers and bottles due to its endless recycle capability compared to alternative packaging materials, is expected to increase.

Strategy to realize opportunity

Sisecam implements related activities, studies and projects with the aim of differentiating its products in the growing competitive environment, increasing the awareness towards its brands and widening their utilization. Şişecam completed its branding studies covering its current product range to be employed commonly in all

markets. In order to obtain consumer feedback, consumer surveys are performed, analysed and strategic plans are issued accordingly. For example, with its experienced team, Şişecam Flat Glass offers glass consultancy to project decision makers such as architects, facade consultants, investors and contractors on their projects and develops solution offers according to project requirements. For new products, R&D studies and marketing of products are going on. In order to show its awareness; Şişecam implements social responsibility projects such as Glass and Glass Again. Sustainability Report is an other example to respond accordingly. Sustainability reports are published for the operations in Turkey and abroad (Şişecam Group, Şişecam Flat Glass, Şişecam Automotive, Şişecam Glass Packaging, Paşabahçe and Soda Sanayii A.Ş.) Moreover, Şişecam takes part in Istanbul Stock Exchange Sustainability Index (BIST SI) which also evaluates climate change performance indicators in detail. Mentioned actions are implemented.

Cost to realize opportunity

Comment

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

	Impact	Description
Products and services	Impacted	With regulations such as Energy Efficiency Law and Regulation on Energy Performance in Buildings in Turkey, energy efficiency in buildings are supported. Using value added energy efficient construction products became important by this way. All new buildings must meet minimum design requirements for energy efficiency and get Energy Performance Certificate. Existing buildings should get Energy Performance Certificate till 2020. This creates an opportunity for sales of Şişecam's energy efficient products. This will result in medium impact for products and services.
Supply chain and/or value chain	Impacted	In accordance with decisions regarding Paris Agreement, the Republic of Turkey presented its Intended Nationally Determined Contribution (INDC) towards achieving the ultimate objective of the United Nations Framework Convention on Climate Change , whereby Turkey is committed up to 21 percent reduction in GHG emissions from the Business as Usual (BAU) level by 2030. Ministry of Environment and Urbanism is working on many strategies and action plans to combat climate change which will directly influence business sectors. However, it is still not clarified

		how the target will be distributed to different sectors. This will bring extra responsibilities for our supply chain, mainly energy supply. This may result in increase of energy costs, that will have a high impact on business.
Adaptation and mitigation activities	Impacted	In accordance with decisions regarding Paris Agreement, the Republic of Turkey presented its Nationally Determined Contribution (NDC) towards achieving the ultimate objective of the United Nations Framework Convention on Climate Change , whereby Turkey is committed up to 21 percent reduction in GHG emissions from the Business as Usual (BAU) level by 2030. Ministry of Environment and Urbanism is working on many strategies and action plans to combat climate change which will directly influence business sectors. However, it is still not clarified how the target will be distributed to different sectors. This will bring extra responsibilities for Şişecam. This may result in high impact for adaptation and mitigation activities.
Investment in R&D	Impacted for some suppliers, facilities, or product lines	Regulation on 'Certification of sustainable sites with sustainable green buildings' is published by Ministry of Environment and Urbanism. The regulation aims to set the principles and procedures related to evaluate and certify green buildings and green sites. This creates an opportunity for Şişecam's energy efficient products. Investment in research and development for energy efficient products became a major issue. This may result in medium impact for Research and Development investments.
Operations	Impacted for some suppliers, facilities, or product lines	Reduction in greenhouse gas emissions and thus reduction in energy consumption became a major issue in operations. This may result in high impact for operations.
Other, please specify	Impacted	Şişecam customers are impacted. Regulation on 'Certification of sustainable sites with sustainable green buildings' is published by Ministry of Environment and Urbanism. The regulation aims to set the principles and procedures related to evaluate and certify green buildings and green sites. This creates an opportunity for Şişecam's energy efficient products.

C2.6

(C2.6) Describe where and how the identified risks and opportunities have been factored into your financial planning process.

	Relevance	Description
Revenues	Impacted	Ministry of Environment and Urbanism is working on many strategies and action plans to combat climate change, which will have a direct impact to business sectors. Şişecam attends and takes an important role in workshops and meetings focused on

		<p>adaptation to climate change regulations for Turkey. Potential alternatives to govern the carbon mechanisms nationwide (for example carbon taxes, carbon-trading systems etc.) may be implemented. This may result in extra operation costs for Şişecam.</p> <p>In accordance with decisions 1/CP.19 and 1/CP.20, the Republic of Turkey and EU including Bulgaria presented their Nationally Determined Contribution (NDC) towards achieving the ultimate objective of the United Nations Framework Convention on Climate Change which is set out in its Article 2 and clarifying information. Turkey committed up to 21 percent reduction in GHG emissions from the Business as Usual (BAU) level by 2030. The European Union and its 28 Member States including Bulgaria submitted a joint NDC which is at least 40% domestic reduction in GHG emissions by 2030 compared to 1990. Related Ministries are working on many strategies and action plans to combat climate change which will directly influence business sectors. However, it is still not clarified how the target will be distributed to different sectors. This may bring extra responsibilities for Şişecam.</p>
Operating costs	Impacted	<p>Ministry of Environment and Urbanism is working on many strategies and action plans to combat climate change, which will have a direct impact to business sectors. Şişecam attends and takes an important role in workshops and meetings focused on adaptation to climate change regulations for Turkey. Potential alternatives to govern the carbon mechanisms nationwide (for example carbon taxes, carbon-trading systems etc.) may be implemented. This may result in extra operation costs for Şişecam.</p> <p>In accordance with decisions regarding Paris Agreement, the Republic of Turkey and EU including Bulgaria presented their Nationally Determined Contribution (NDC) towards achieving the ultimate objective of the United Nations Framework Convention on Climate Change. Turkey committed up to 21 percent reduction in GHG emissions from the Business as Usual (BAU) level by 2030. The European Union and its 28 Member States including Bulgaria submitted a joint NDC which is at least 40% domestic reduction in GHG emissions by 2030 compared to 1990. Related Ministries are working on many strategies and action plans to combat climate change which will directly influence business sectors. However, it is still not clarified how the target will be distributed to different sectors.</p>

		This may bring extra responsibilities for Şişecam.
Capital expenditures / capital allocation	Impacted for some suppliers, facilities, or product lines	Ministry of Environment and Urbanism is working on many strategies and action plans to combat climate change, which will have a direct impact to business sectors. Şişecam attends and takes an important role in workshops and meetings focused on adaptation to climate change regulations for Turkey. Potential alternatives to govern the carbon mechanisms nationwide (for example carbon taxes, carbon-trading systems etc.) may be implemented. This may result in extra operation costs for Şişecam.
Acquisitions and divestments	Not yet impacted	
Access to capital	Not yet impacted	
Assets	Not yet impacted	
Liabilities	Not impacted	
Other		

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?

No, but we anticipate doing so in the next two years

C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b

(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.

In development, we plan to complete it within the next 2 years

C3.1c

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

1) How the business strategy has been influenced: Operating in line with the principle that its energy and environmental performance is one of the core components of its sustainable success, Şişecam actively pursues the UN Sustainable Development Goals (UN SDGs) especially Goal 5-6-7-8-9-10-12-13-15-17 and integrates the related principles into all the operations globally, taking into consideration the SDGs performance indicators. All studies are conducted with a focus on energy efficiency, renewable energy use, carbon emissions and waste recovery and are prioritized within the framework of our sustainability strategy. These targets are realized within an effective governance structure. As an energy intensive production group, Şişecam responds to climate change issues by continuously improving and minimizing energy consumption and implementation of renewable energy solutions as part of its corporate strategy. Reduction in carbon emissions in consequence of reduction in energy consumption will continue to dominate the agenda of Şişecam in the near future, inspiring new project developments. In addition to the routine procedure, with the energy and carbon management approach, short, mid and long-term energy & climate related measures, climate change risks and opportunities are continued to be integrated into Group activities.

2) Examples for influence on business strategy - Integration of carbon and energy management facts into corporate strategy - Monitoring and verification of Greenhouse Gas Emissions - Implementation of the online energy management software for the monitoring of energy performance of production plants in the Group - Waste heat recovery installations that converts the released thermal energy to electrical energy - Preliminary and comprehensive energy audits by a certified consultant for all Şişecam companies - Usage of energy efficient equipment (electric motors, pumps, fans and other production and auxiliary equipment) - Adaptation of ISO 14001 Environmental Management System and ISO 50001 Energy Management System to all Şişecam Companies - Integration of Environmental and Energy Policy centrally and evaluation of the Policy - Sustainability reports for the operations (national and international) of Şişecam Group, Şişecam Flat Glass, Şişecam Automotive, Şişecam Glass Packaging, Paşabahçe and Soda Sanayii A.Ş. - Şişecam Sustainability Committee working on prioritizing and realizing sustainability related issues - Environmental Data Management Software for the operations in Turkey - Trainings focused on gender and climate change - Articles on climate change in Şişecam Magazine - News on climate change on digital screens

3) What aspects of climate change have influenced the strategy: Şişecam's climate change approach is based on corporate-national-global energy demand, energy security issues and related energy and climate change regulations. Strategy is based on tangible energy consumption and carbon reduction level.

4) The most important components of the short term strategy that have been influenced by climate change: Short-term measures into business strategy: (1-5 years) Energy efficiency projects or investments that have relatively short payback period are defined as high priority projects.

5) The most important components of the long-term strategy that have been influenced by climate change: Long term measures into business strategy: (+10 years) Production of high value added, energy and environmental friendly products and optimum usage of renewable energy are in the scope of the Şişecam Group's common production strategy.

6) How this is gaining the company strategic advantage over competitors: Strategic advantage and substantial business decision: An increase is

expected in demand for Şişecam's existing climate and energy friendly products such as low-e and solar control glass. As a result; a significant market growth is expected. Şişecam's R&D activities are focused on developing new energy efficient and environmental friendly high value added products.

C3.1g

(C3.1g) Why does your organization not use climate-related scenario analysis to inform your business strategy?

C4. Targets and performance

C4.1

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

Intensity target

C4.1b

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

Target reference number

Int 1

Scope

Scope 1+2 (location-based)

% emissions in Scope

55

Targeted % reduction from base year

5

Metric

Metric tons CO2e per metric ton of product

Base year

2017

Start year

2018

Normalized base year emissions covered by target (metric tons CO2e)

0.67

Target year

2022

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

% of target achieved

10

Target status

Underway

Please explain

Target is to reduce GHG emission intensity of glass production by 5% from 2017 baseline till 2022

% change anticipated in absolute Scope 1+2 emissions

5

% change anticipated in absolute Scope 3 emissions

0

C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

Target

Energy productivity

KPI – Metric numerator

Energy consumption

KPI – Metric denominator (intensity targets only)

Gross melted glass production

Base year

2017

Start year

2018

Target year

2022

KPI in baseline year

8

KPI in target year

7.8

% achieved in reporting year

10

Target Status

Underway

Please explain

Target is to reduce annual energy consumption intensity by 2% till 2022 for glass production facilities (GJ/ton melted glass)

Part of emissions target

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	7	58,685
Implementation commenced*	0	0
Implemented*	0	0
Not to be implemented	0	0

C4.3b

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

Initiative type

Energy efficiency: Processes

Description of initiative

Machine replacement

Estimated annual CO2e savings (metric tonnes CO2e)

2,289

Scope

Scope 1

Voluntary/Mandatory

Voluntary

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

1,405,860

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

276,930

Payback period

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

Energy efficiency projects (replacing heat exchanger, use of steam trap, use of waste condensate) in Mersin Soda Plant

Initiative type

Energy efficiency: Processes

Description of initiative

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

33,121

Scope

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

27,606,833

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

180,821,223

Payback period

1-3 years

Estimated lifetime of the initiative

>30 years

Comment

Energy efficiency projects (compressed air saving, automated interior lighting in Trakya Trakya Plant -waste heat recovery, solar power plant, led lighting in Trakya Mersin Plant-waste heat recovery, reuse of blowdowns in Trakya Yenişehir Plant - exchange in fans, savings with compressors, reduce the engine speed, exchange in heaters, use of lighting sensors in Trakya Polatlı Plant - Electricity Generation from Waste Heat recovery system in Trakya Bulgaria Plant)

Initiative type

Energy efficiency: Processes

Description of initiative

Machine replacement

Estimated annual CO2e savings (metric tonnes CO2e)

4,758

Scope

Scope 1

Voluntary/Mandatory

Voluntary

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

2,457,210

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

111,000

Payback period

4 - 10 years

Estimated lifetime of the initiative

>30 years

Comment

Energy efficiency projects (exchange in burners, improvement in hot water boiler and burner in Trakya Polatlı Plant - natural gas consumption optimization in Trakya Yenişehir Plant - hot water production with waste heat recovery, reduce of fuel consumption in furnace in Trakya Bulgaria Plant)

Initiative type

Energy efficiency: Processes

Description of initiative

Estimated annual CO2e savings (metric tonnes CO2e)

288

Scope

Scope 1

Voluntary/Mandatory

Voluntary

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

148,813

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

0

Payback period

<1 year

Estimated lifetime of the initiative

6-10 years

Comment

Decreasing of annealing furnace natural gas consumption in Anadolu Cam Mersin Plant

Initiative type

Energy efficiency: Processes

Description of initiative

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

10,632

Scope

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

8,874,928

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

5,156,100

Payback period

4 - 10 years

Estimated lifetime of the initiative

11-15 years

Comment

Energy efficiency projects (compressor, compressed air dryer, cooling system in Anadolu Cam Mersin Plant - cooling system modification, adjustment in air pressure and vacuum, optimisation of cooling fan in Anadolu Cam Yenişehir Plant - compressor and driers in Anadolu Cam Eskişehir Plant)

Initiative type

Energy efficiency: Processes

Description of initiative

Cooling technology

Estimated annual CO2e savings (metric tonnes CO2e)

6,690

Scope

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

5,023,083

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

660,340

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

Energy efficiency projects (adjustments in cooling in Paşabahçe Bulgaria Plant- pressurized air savings in Paşabahçe Kırklareli Plant - electricity savings in Denizli Cam

- pressurized air savings in Paşabahçe Eskişehir Plant)

Initiative type

Energy efficiency: Processes

Description of initiative

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

906

Scope

Scope 1

Voluntary/Mandatory

Voluntary

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

476,000

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

241,000

Payback period

<1 year

Estimated lifetime of the initiative

6-10 years

Comment

Energy efficiency projects (natural gas savings in Paşabahçe Eskişehir Plant and Denizli Cam)

C4.3c

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

Method	Comment
Dedicated budget for energy efficiency	Şişecam being a highly energy intensive manufacturing company, but in the same time recognizes that sustainable energy solutions (energy efficiency, renewable energy, alternative energy mix) are key for sustainability, several actions are taken corporately to respond and adopt to the increasingly competitive global business environment. Şişecam's cost of energy is between 20-25% of the total operational cost. To minimize the risks related to volatility of energy prices, access

	<p>of quality and continuous energy, Şişecam proactively identifies and implements energy efficiency, renewable energy and innovative energy mix solutions. To ensure timely monitoring of the production energy efficiency, on-line electricity, natural gas etc. consumptions are monitored. Additionally, 6 MWh solar panel installation has been completed in 2017. Furthermore, annually corporate energy consumption targets are identified and periodically monitored and reported to senior management. As per the Energy Efficiency Law (no 5627), Şişecam ensures that each factory has its own energy manager who is responsible for monitoring and reporting the energy efficiency performance of the factories.</p>
<p>Compliance with regulatory requirements/standards</p>	<p>Turkish Energy Efficiency Law (no 5627) and Regulation on “Improving Energy Efficiency on Energy Usage, aim to improve industrial energy efficiency and provide energy savings in the production processes. Therefore, energy intensive sectors face with strict constraints. In accordance with decisions regarding Paris Agreement, the Republic of Turkey presented its Nationally Determined Contribution (NDC) towards achieving the ultimate objective of the United Nations Framework Convention on Climate Change , whereby Turkey is committed up to 21 percent reduction in GHG emissions from the Business as Usual (BAU) level by 2030. Ministry of Environment and Urbanism is working on many strategies and action plans to combat climate change that will directly influence business sectors. However, it is still not clarified how the target will be distributed to different sectors. It is for sure that restrictions on greenhouse gas emissions will be applied. The Partnership for Market Readiness (PMR) Project governed by Ministry of Environment and Urbanism aims to identify potential alternatives to govern the carbon mechanisms nationwide (for example carbon taxes, carbon-trading systems etc.). To this end, the Ministry of Environment and Urbanism makes extra effort to engage private sectors in the preparations. Şişecam is actively involved in these preparations and provided the necessary technical inputs.</p>

C4.5

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

No

C5. Emissions methodology

C5.1

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

Scope 1

Base year start

January 1, 2018

Base year end

December 31, 2018

Base year emissions (metric tons CO2e)

4,150,991

Comment

Scope 2 (location-based)

Base year start

January 1, 2018

Base year end

December 31, 2018

Base year emissions (metric tons CO2e)

516,377

Comment

Scope 2 (market-based)

Base year start

January 1, 2018

Base year end

December 31, 2018

Base year emissions (metric tons CO2e)

0

Comment

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.

ISO 14064-1

C6. Emissions data

C6.1

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

Reporting year

Gross global Scope 1 emissions (metric tons CO₂e)

4,150,991

Start date

January 1, 2018

End date

December 31, 2018

Comment

Past year 1

Gross global Scope 1 emissions (metric tons CO₂e)

4,236,195

Start date

January 1, 2017

End date

December 31, 2017

Comment

C6.2

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

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

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

Comment

C6.3

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

Reporting year

Scope 2, location-based

516,377

Start date

January 1, 2018

End date

December 31, 2018

Comment

Past year 1

Scope 2, location-based

521,717

Start date

January 1, 2017

End date

December 31, 2017

Comment

C6.4

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

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source

Headquarter buildings

Relevance of Scope 1 emissions from this source

Emissions are relevant and calculated, but not disclosed

Relevance of location-based Scope 2 emissions from this source

Emissions are relevant and calculated, but not disclosed

Relevance of market-based Scope 2 emissions from this source (if applicable)

No emissions from this source

Explain why this source is excluded

Emissions from operational buildings are calculated however they are relatively small when compared to the emissions of the plants.

C6.5

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

Purchased goods and services

Evaluation status

Relevant, not yet calculated

Explanation

Capital goods

Evaluation status

Not relevant, explanation provided

Explanation

Not considered as a relevant category in terms of emissions due to its negligible proportion among Şişecam activities.

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

Evaluation status

Not relevant, explanation provided

Explanation

All the fuel and energy related activities were reported under Scope 1 and Scope 2.

Upstream transportation and distribution

Evaluation status

Relevant, not yet calculated

Explanation

Waste generated in operations

Evaluation status

Not evaluated

Explanation

Business travel

Evaluation status

Relevant, not yet calculated

Explanation

Employee commuting

Evaluation status

Relevant, not yet calculated

Explanation

Upstream leased assets

Evaluation status

Relevant, not yet calculated

Explanation

Downstream transportation and distribution

Evaluation status

Relevant, not yet calculated

Explanation

Processing of sold products

Evaluation status

Not relevant, explanation provided

Explanation

The vast majority of Şişecam products are ready to be consumed or distributed. Only a part of glass products (mostly flat glass and a few part of container glass) are processed. However, reliable figures are difficult to obtain due to wide range of large and small workshops

Use of sold products

Evaluation status

Not relevant, explanation provided

Explanation

Glass which is the main field of Şişecam Group is one of the most sustainable products. Formed and finished glass products are ready to use and do not directly emit or cause any greenhouse gas emissions

End of life treatment of sold products

Evaluation status

Not evaluated

Explanation

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Explanation

Not considered as a relevant category in terms of emissions due to its negligible proportion among Şişecam activities.

Franchises

Evaluation status

Not evaluated

Explanation

Investments

Evaluation status

Not relevant, explanation provided

Explanation

All the investments are operationally controlled by Şişecam itself and defined in organizational boundaries. Therefore; scope 1 and scope 2 emissions of all the active (operational) Şişecam investments are reported under Scope 1 and Scope 2.

Other (upstream)

Evaluation status

Explanation

Other (downstream)

Evaluation status

Explanation

C6.7

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

No

C6.10

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

Intensity figure

0.00044

Metric numerator (Gross global combined Scope 1 and 2 emissions)

4,150,991

Metric denominator

unit total revenue

Metric denominator: Unit total

10,631,000,000

Scope 2 figure used

Location-based

% change from previous year

26

Direction of change

Decreased

Reason for change

Decrease of intensity figure is a result of increase in total revenue compared to 2017 and emission reduction activities performed in 2018.

C7. Emissions breakdowns

C7.1

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

Yes

C7.1a

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

Greenhouse gas	Scope 1 emissions (metric tons of CO ₂ e)	GWP Reference
CO ₂	4,150,991	IPCC Fourth Assessment Report (AR4 - 50 year)

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO ₂ e)
Turkey	3,848,854
Bulgaria	302,137

C7.3

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

By business division

C7.3a

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

Business division	Scope 1 emissions (metric ton CO ₂ e)
Glass production	2,095,382
Chemicals	1,966,842
Other	88,767

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

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

	Gross Scope 1 emissions, metric tons CO2e	Comment
Chemicals production activities	1,966,842	

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Turkey	464,394	0	1,088,528	0
Bulgaria	51,983	0	112,177	0

C7.6

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

By business division

C7.6a

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

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Glass production	480,866	0
Chemicals production	11,483	0
Other	24,028	0

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Chemicals production activities	11,483	0	

C-CH7.8

(C-CH7.8) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology
---------------------	--	---------------------------------

C-CH7.8a

(C-CH7.8a) Disclose sales of products that are greenhouse gases.

	Sales, metric tons	Comment
Carbon dioxide (CO2)	0	
Methane (CH4)	0	
Nitrous oxide (N2O)	0	
Hydrofluorocarbons (HFC)	0	
Perfluorocarbons (PFC)	0	
Sulphur hexafluoride (SF6)	0	
Nitrogen trifluoride (NF3)	0	

C7.9

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

Decreased

C7.9a

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

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable				

energy consumption				
Other emissions reduction activities	58,793	Decreased	1.24	Due to other emissions reduction activities 58793 ton CO2 is reduced. In 2017 total emissions was 4757911 . Emissions reduction activities resulted in %1,24 reduction in CO2 emissions. (58793/4757911 *100)
Divestment				
Acquisitions				
Mergers				
Change in output	36,365	Decreased	0.76	Due to decrease in output there was an decrease of 36365 ton CO2. In 2017 total emissions was 4757911 .Decrease in output resulted in %0.76 decrease in CO2 emissions . (36365/4757911*100)
Change in methodology				
Change in boundary				
Change in physical operating conditions				
Unidentified				
Other				

C7.9b

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

Location-based

C8. Energy

C8.1

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

More than 20% but less than or equal to 25%

C8.2

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

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	14,142,606	14,142,606
Consumption of purchased or acquired electricity		0	1,192,544	1,192,544
Consumption of self-generated non-fuel renewable energy		8,160		8,160
Total energy consumption		8,160	15,335,150	15,343,310

C-CH8.2a

(C-CH8.2a) Report your organization's energy consumption totals (excluding feedstocks) for chemical production activities in MWh.

	Heating value	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	
Consumption of purchased or acquired electricity		
Consumption of self-generated non-fuel renewable energy		
Total energy consumption		

C8.2b

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

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	Yes
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

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

Fuels (excluding feedstocks)

Natural Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

11,244,779

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

8,112,370

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

3,132,409

Comment

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

4,961

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

4,961

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

8,276

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

8,276

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Acetylene

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

666

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

666

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Anthracite Coal

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

2,879,420

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

2,879,420

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

Fuels (excluding feedstocks)

Other, please specify
other fuel used in process

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

4,503

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

4,503

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Comment

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Acetylene

Emission factor

0.074

Unit

metric tons CO₂e per GJ

Emission factor source

IPCC Guidelines

Comment

Anthracite Coal

Emission factor

0.0983

Unit

metric tons CO₂e per GJ

Emission factor source

IPCC Guidelines

Comment

Liquefied Petroleum Gas (LPG)

Emission factor

0.0631

Unit

metric tons CO₂e per GJ

Emission factor source

IPCC Guidelines

Comment

Motor Gasoline

Emission factor

0.0741

Unit

metric tons CO2e per GJ

Emission factor source

IPCC Guidelines

Comment

Natural Gas

Emission factor

0.0561

Unit

metric tons CO2e per GJ

Emission factor source

IPCC Guidelines

Comment

Other

Emission factor

Unit

Emission factor source

Comment

C8.2e

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity				

Heat				
Steam				
Cooling				

C-CH8.2e

(C-CH8.2e) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity		
Heat		
Steam		
Cooling		

C8.2f

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

Basis for applying a low-carbon emission factor

No purchases or generation of low-carbon electricity, heat, steam or cooling accounted with a low-carbon emission factor

Low-carbon technology type

Region of consumption of low-carbon electricity, heat, steam or cooling

MWh consumed associated with low-carbon electricity, heat, steam or cooling

Emission factor (in units of metric tons CO₂e per MWh)

Comment

C-CH8.3

(C-CH8.3) Disclose details on your organization's consumption of feedstocks for chemical production activities.

C-CH8.3a

(C-CH8.3a) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

	Percentage of total chemical feedstock (%)
Oil	
Natural Gas	
Coal	
Biomass	
Waste	
Fossil fuel (where coal, gas, oil cannot be distinguished)	
Unknown source or unable to disaggregate	

C9. Additional metrics

C9.1

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

C-CH9.3a

(C-CH9.3a) Provide details on your organization's chemical products.

C-CH9.6

(C-CH9.6) Disclose your organization's low-carbon investments for chemical production activities.

C10. Verification

C10.1

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

Verification/assurance status

Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	No third-party verification or assurance
Scope 3	No emissions data provided

C10.1a

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

Scope

Scope 1

Verification or assurance cycle in place

Annual process


Status in the current reporting year


Complete

Type of verification or assurance

Reasonable assurance

Attach the statement

 Bulgaria_flatglass_verificationGD CO2-2018.pdf

 Bulgaria_pasabahce_verification_2018.pdf

Page/ section reference

Bulgaria_CO2 verification report

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

99

C10.2

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

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

C11. Carbon pricing

C11.1

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

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

EU ETS

C11.1b

(C11.1b) Complete the following table for each of the emissions trading systems in which you participate.

EU ETS

% of Scope 1 emissions covered by the ETS

7

Period start date

January 1, 2018

Period end date

December 31, 2018

Allowances allocated

303,367

Allowances purchased

219,817

Verified emissions in metric tons CO₂e

350,177

Details of ownership

Facilities we own and operate

Comment

Şişecam's operations in Bulgaria has been participating in EU-ETS. Under the 'cap and trade' principle, a certain number of allowances (EUA) have been allocated, since 2007.

C11.1d

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

Şişecam's operations in Bulgaria has been participating in EU-ETS. Under the 'cap and trade' principle, a certain number of allowances (EUA) have been allocated, since 2007. Beginning from 2008, the balance of the emission-permit level has being followed continuously by Şişecam finance and environmental experts and we have been kept in touch with consultant agencies to evaluate the most suitable trading options/risks for us and to fulfill the obligations from the Directive 2003/87/EC of The European Parliament and of The Council and the Kyoto Protocol. For the new period; financial evaluations for trading options will be continued in collaboration with carbon trade agencies.

C11.2

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

No

C11.3

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

No, but we anticipate doing so in the next two years

C12. Engagement

C12.1

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

Yes, our suppliers

Yes, other partners in the value chain

C12.1a

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

C12.1c

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

(i) Methods: Şişecam Group's engagement strategy is based on data and information sharing. Sisecam provides requested information regarding to Group's climate change strategy and energy saving activities through CDP Supply Chain Program, Questionnaires of Specific Customers, Sustainability Reports and IFC/EBRD Reports (ii) Strategy: Group is prioritizing the

engagement activities based on customer demands. Measures: Şişecam commits to supply the required information, as reliable and accurate.

C12.3

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

- Direct engagement with policy makers
- Trade associations

C12.3a

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

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Energy efficiency	Support with minor exceptions	Glass is 100% infinitely recyclable in closed loop system, each time a bottle or jar is properly collected and recycled and made into new containers, energy and raw materials are saved and less CO2 is emitted. In general terms, using 10 % recycled glass usage results in an energy saving of 2 - 3 % in the melting process and each tonne of cullet used saves CO2 emissions emitted for every tons of glass produced from carbonated virgin raw materials (soda ash, limestone and dolomite). Şişecam encourages and sponsors the “curb-side collection” of glass containers and recycle them. Şişecam has been collaborating with Ministry of Environment and Urbanism, local municipalities and recyclers for collecting and recycling glass containers.	Şişecam encourages and sponsors the “curb-side collection” of glass containers and recycle them. Şişecam has been collaborating with Ministry of Environment and Urbanism, local municipalities and recyclers for collecting and recycling glass containers. “The Glass and Glass Again” Project launched by Şişecam aims to create awareness about recycling glass packaging and ensuring high recycling rates. Şişecam supports separate collection of glass packaging and the increase of glass cullet ratio in glass container productions. Şişecam Çevre Sistemleri A.Ş. continues efforts to bolster the glass-recycling infrastructure in Turkey. In this context, the installation of glass recycling facilities of the companies that provided financial support and expertise services was completed in 2018. Şişecam Çevre Sistemleri A.Ş. also launched a QR-code label application to keep inventory

			of glass recycling bins and track them via a system.
Cap and trade	Support with major exceptions	In accordance with decisions regarding Paris Agreement, the Republic of Turkey presented its Intended Nationally Determined Contribution (INDC) towards achieving the ultimate objective of the United Nations Framework Convention on Climate Change , whereby Turkey is committed up to 21 percent reduction in GHG emissions from the Business as Usual (BAU) level by 2030. Ministry of Environment and Urbanism is working on many strategies and action plans to combat climate change, which will have a direct impact to business sectors. Şişecam attends and takes an important role in workshops and meetings focused on adaptation to Paris Agreement. Şişecam follows up the project on Partnership for Market Readiness (PMR), governed by Ministry of Environment and Urbanism and attends workshops related to this project. The key objective of the project is to identify alternative “Market Based Instrument” to cope with climate change and to be implemented in Turkey.	Şişecam, as one of the main players of the sector, attends the workshops organized by Ministry of Environment and Urbanism and gives great support by providing feedback and recommendations about emissions, quotas and appropriate emission control systems in the sector. The aim of these workshops is to ensure multi-stakeholders engagement to provide the necessary inputs for the, improvement of Turkey’s position in the international negotiations and evaluation of Paris Agreement.

C12.3b

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

Yes

C12.3c

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

Trade association

Istanbul Chamber of Industry

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The main objective of İstanbul Chamber of Industry (ICI) is to fulfil the existing and future needs of the Turkish industry through information, training and consulting services, to improve the international competitiveness of our industry and country and to contribute to the development of the country as a whole. In this respect; ICI is involved in the climate change issue as "Turkish Industry Representative" and it intends to follow global and national regulations on climate change, provide recommendations on draft regulation, train and support the Turkish Industry and contribute national strategies in the industrial perspective. ICI considers environment and energy related issues in a separate department. Commissions perform their studies with the coordination of this department.

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

Şişecam has been an active member of ICI Environmental Management and Policies Commission, in order to: -define realistic targets and strategies for the industry in accordance with Turkey's special conditions on Kyoto Protocol, Paris Agreement and global competition conditions -Deliver sectoral opinions on Turkey's National Strategy and Regulations -introduce the contribution of energy efficient products, -provide sectoral opinions and data regarding regulations

Trade association

Glass Alliance Europe, Glass for Europe, APFE

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Glass Alliance Europe's work focuses on EU environment policy, marked in recent years by the EU's Climate Change Policy. The primary mission of Glass Alliance Europe is to enhance the exchange of information between its members and to coordinate views on common environmental and regulatory challenges, which affect the glass sector. To fulfil this mission, Glass Alliance Europe issues reports, statements and press releases from the European glass industries on different topics.

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

As a member of these trade associations, Şişecam follows the EU Regulations and related applications related to climate change closely. In this way, Şişecam has the opportunity to transfer EU glass market's experience into national implementations. Also, President of Şişecam Flat Glass is a Board Member of Glass for Europe.

C12.3f

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

Operating in line with the principle that its energy and environmental performance is one of the core components of its sustainable success, Şişecam actively pursues the UN Sustainable Development Goals (UN SDGs) especially Goal 5-6-7-8-9-12-13-15-17 and integrates its principles into all the operations globally, taking into consideration the SDGs performance indicators. All studies are conducted with a focus on energy efficiency, renewable energy use, carbon emissions and waste recovery and are prioritized within the framework of our sustainability strategy. These targets are realized within an effective governance structure. All Group companies' operations are in line with ISO 14001 Environmental Management System and ISO 50001 Energy Management System principles, in all operational countries. In this respect, the Group monitors its energy consumption level and environmental aspects of its activities periodically and determine action plans to get the solutions for the related problems if there is any.

C12.4

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


Publication


In other regulatory filings

Status

Complete

Attach the document

 Bulgaria_flatglass_verificationGD CO2-2018.pdf

 Bulgaria_pasabahce_verification_2018.pdf

Page/Section reference

page 10

Content elements

Emissions figures

Comment


Publication

In voluntary sustainability report

Status

Complete

Attach the document

 sisecam_eng.pdf

Page/Section reference

page 11-17 and page 34-39

Content elements

- Governance
- Strategy
- Emissions figures
- Emission targets

Comment

C14. Signoff

C-FI

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

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Özlem Vergon	Other C-Suite Officer

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.