

C0. Introduction

C0.1

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

Smurfit Kappa Group plc ('SKG plc' or 'the Company') and its subsidiaries (together 'SKG' or 'the Group'), a FTSE 100 company, is one of the leading providers of paper-based packaging solutions in the world, with approximately 46,000 employees in 352 production sites across 35 countries and with revenue of products, with operations in Europe, Latin America, the United States and Canada. It manufactures, distributes and sells containerboard, corrugated containers and other paper-based packaging products such as solidboard, graphicboard and bag-in-box.

In Europe our business is highly integrated and includes a system of mills and plants that primarily produces a full line of containerboard that is converted into corrugated containers. In addition to other types of paper, such as solidboard and sack kraft paper, and paper-based packaging, such as solidboard packaging and folding cartons, this segment includes the Group's bag-in-box operations. The Group is the largest pan-regional producer of containerboard and corrugated containers in Latin America.

We use sustainability as a lens through which to focus our innovation, our strategy and our processes. The transparency and detail we offer our stakeholders is industry-leading.

With our pro-active team we relentlessly use our extensive experience and expertise, supported by our scale, to open up opportunities for our customers. We collaborate with forward thinking customers by sharing superior product knowledge, market understanding and insights in packaging trends to ensure business success in their markets. We have an unrivalled portfolio of paper-packaging solutions, which is constantly updated with our market-leading innovations. This is enhanced through the benefits of our integration, with optimal paper design, logistics, timeliness of service, and our packaging plants sourcing most of their raw materials from our own paper mills.

Our paper-based products improve the environmental footprint of our customers as their raw material is 100% renewable and the products itself are 100% recyclable.

What we do:

Paper - we manufacture a wide range of papers mainly used for packaging purposes. Our total global paper and board capacity is approximately 7 million tonnes per annum. Packaging - we design, manufacture and supply paper-based packaging to package, promote and protect our customers' products. We manufacture over 10.5 billion square metres of corrugated packaging and have key supply positions in solid board, folding carton and tube markets.

The Group operates in 23 countries in Europe and is the European leader in corrugated packaging, containerboard and solidboard with key positions in several other packaging and paper market segments. We also have three bag-in-box facilities, located in Argentina, Canada and Mexico, which are managed as part of our European bag-in-box operations. The Group operates in 12 countries in the Americas and is the largest pan-regional producer of containerboard and corrugated containers in Latin America.

In terms of world market positions, the Group is the one of the largest producer of corrugated packaging.

Given the high degree of integration between the mills and its conversion plants, particularly in terms of containerboard, the Group's end customers are primarily in the corrugated packaging market, which uses the packaging for product protection and product merchandising purposes. The Group's large manufacturing footprint provides it with a competitive advantage because the corrugated packaging market is a localised market and corrugated box plants need to be close to customers (generally 300 kilometres or less) due to the relatively high cost of transporting the product. Approximately 60% of the Group's corrugated customers are in the fast moving consumer goods ('FMCG') sector, comprising food, beverage, and household consumables, the remainder being split across a wide range of different industries.

In 2019, the Group's Europe and Americas regions accounted for approximately 75% and 25% of revenue respectively.

At the date of this report, the Group owns 34 mills (29 of which produce containerboard), 245 converting plants (most of which convert containerboard into corrugated boxes), 40 recovered fibre facilities and two wood procurement operations (which together provide raw material for our mills) and 34 other production facilities carrying on other related activities. In addition, the Group owns approximately 103,000 hectares of forest plantations in Latin America and manages relatively small forest holdings totalling approximately 600 hectares in France and Spain.

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
Reporting year	January 1 2019	December 31 2019	No	<Not Applicable>

### C0.3

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

Argentina  
Austria  
Belgium  
Brazil  
Canada  
Chile  
Colombia  
Costa Rica  
Czechia  
Denmark  
Dominican Republic  
Ecuador  
El Salvador  
France  
Germany  
Greece  
Ireland  
Italy  
Latvia  
Lithuania  
Mexico  
Netherlands  
Nicaragua  
Norway  
Poland  
Portugal  
Puerto Rico  
Russian Federation  
Slovakia  
Spain  
Sweden  
Switzerland  
United Kingdom of Great Britain and Northern Ireland  
United States of America

### C0.4

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

EUR

### C0.5

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

Financial control

### C-AC0.6/C-FB0.6/C-PF0.6

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**(C-AC0.6/C-FB0.6/C-PF0.6) Are emissions from agricultural/forestry, processing/manufacturing, distribution activities or emissions from the consumption of your products – whether in your direct operations or in other parts of your value chain – relevant to your current CDP climate change disclosure?**

	Relevance
Agriculture/Forestry	Both own land and elsewhere in the value chain [Agriculture/Forestry only]
Processing/Manufacturing	Both direct operations and elsewhere in the value chain [Processing/manufacturing/Distribution only]
Distribution	Both direct operations and elsewhere in the value chain [Processing/manufacturing/Distribution only]
Consumption	No

### C-AC0.6g/C-FB0.6g/C-PF0.6g

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**(C-AC0.6g/C-FB0.6g/C-PF0.6g) Why are emissions from the consumption of your products not relevant to your current CDP climate change disclosure?**

**Row 1**

**Primary reason**

Other, please specify (Not in the scope of my organisation )

**Please explain**

SKG produces packaging solutions to its customers in a business to business environment. Even though part of our services to customers is to help them reduce their product supply and value chain emissions, we can only base our information on assumptions on customer and consumer behaviour. In our services we do use computing tools that include latest available information on multiple factors in the supply chain and we are very much capable to estimate impacts of our products. Still, the decision taking power on our packaging services in the customer value chain is with the customer. A packaging product is not a service such as machinery where this type of data collection would be currently possible.

**C-AC0.7/C-FB0.7/C-PF0.7**

**(C-AC0.7/C-FB0.7/C-PF0.7) Which agricultural commodity(ies) that your organization produces and/or sources are the most significant to your business by revenue? Select up to five.**

**Agricultural commodity**

Timber

**% of revenue dependent on this agricultural commodity**

20-40%

**Produced or sourced**

Both

**Please explain**

SKG produces paper from virgin and recycled fibers. The virgin paper fibers cover +/- 25% of our raw material sourcing globally. Our forestry and plantations represent less than 0.5% of our assets.

**C1. Governance**

**C1.1**

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

Yes

**C1.1a**

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

Position of individual(s)	Please explain
Director on board	Smurfit Kappa board has an overall responsibility for ensuring the Group demonstrates leadership within the paper-based packaging sector, promoting an actionable sustainable development agenda. Climate change related decision making is part of this overall responsibility of steering of the Group strategy. The Group CEO reports to the board and its members on any climate change related issue and those are discussed in minimum three times a year. An example of the Board level decision made on climate change are the updated sustainability commitments that the Group introduced in 2018. One of the updated commitments was to align the SKG climate change target to the Paris Agreement for the EU to reduce CO2 emissions by 40% by 2030. More recently has the Board agreed that Smurfit Kappa will validate its climate change target by the SBT initiative. Also the Board has agreed that Smurfit Kappa supports the recommendations of the TCFD.
Chief Executive Officer (CEO)	1. The Group CEO is directly responsible for actions governing climate change. The Group CEO is also a director of the SKG Board. An example of the decisions made by the CEO on climate change is the introduction of the updated sustainability commitments in 2018 for the SKG Board to approve. One of the updated commitments was to align the SKG climate change target to the Paris Agreement for the EU to reduce CO2 emissions by 40% by 2030. More recently has the CEO decided that Smurfit Kappa will validate its climate change target by the SBT initiative. Also the CEO has decided that Smurfit Kappa supports the recommendations of the TCFD.
Board-level committee	The Board Sustainability Committee has the responsibility to drive and provide overall strategic guidance of the Smurfit Kappa Group Sustainability strategy. The Committee consists of three non-executive directors of the company. Part of their responsibility is to drive and provide overall strategic guidance on climate change related issues. The overall group sustainability strategy will focus on the three key pillars: People; Planet; and Business. Climate change related issues are part of Smurfit Kappa's sustainability strategy An example of the Board-level committee's decisions is to build a strategic work plan for the committee including climate change in 2019-2020. More recently has the Committee decided and proposed to the main Board that Smurfit Kappa will validate its climate change target by the SBT initiative. Also the Committee has decided and proposed to the main Board that Smurfit Kappa supports the recommendations of the TCFD
Chief Sustainability Officer (CSO)	The Chief Sustainability Officer is a member of the SK Group Executive Committee and responsible for Smurfit Kappa's overall sustainability strategy and its implementation. This includes climate change related issues.
Other, please specify (Executive Sustainability Committee)	The Executive Sustainability Committee consists of a number of Group Executive Committee members that have responsibilities that are directly connected to sustainability issues. Climate change related issues will be governed by some of the members as part of their direct operational responsibilities

**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	Scope of board-level oversight	Please explain
Scheduled – some meetings	<ul style="list-style-type: none"> <li>Reviewing and guiding strategy</li> <li>Reviewing and guiding major plans of action</li> <li>Reviewing and guiding risk management policies</li> <li>Reviewing and guiding annual budgets</li> <li>Reviewing and guiding business plans</li> <li>Monitoring implementation and performance of objectives</li> <li>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</li> </ul>	<Not Applicable>	Climate change related issues are part of many governance mechanisms. In Smurfit Kappa's case climate change related issues are focused on the reduction of fossil CO2 emissions. This can be achieved by using energy more efficiently, generating energy in a more efficient way and by investing in renewable energy. This is a strategic issue and part of operational review meetings, an element in certain major capital expenditure projects, an element in our overall corporate strategy and business plans of relevant units. It is also part of the CSR strategy and we have set a long term target related to climate change. When relevant it is part of acquisitions and divestitures. For the relevant managers it is also part of their performance objectives. The main Board of Smurfit Kappa Group receives three reports on climate-related issues, two interim reports at the end of Q2 and Q4 as well as the annual Sustainable Development Report.

**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)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Sustainability committee	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Chief Executive Officer (CEO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Sustainability committee	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Other C-Suite Officer, please specify	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly

**C1.2a**

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

Responsibility 1: Highest level: The SKG Board has a responsibility to oversee all Group activities. The Board has therefore been assigned to oversee all sustainability/climate change related issues. As a member of the board, the Group CEO reports to the board on the climate change related issue assessment and monitoring.

Responsibility 2: Board-level committee: During the year, we formed a Sustainability Committee of the Board, which has the responsibility to drive and provide overall strategic guidance of our sustainability strategy for the benefit of all our stakeholders. The sustainability strategy will focus on the three key pillars: People; Planet; and Business. Due to this role advising the Board, the Sustainability Committee of the Board is responsible for monitoring and assessing the climate related issues.

Responsibility 3: Executive committee level: In addition, the development and implementation of the Group's sustainability strategy, objectives and policies are managed by the Group Executive Committee led by the Group CEO. The Group Executive Committee prepares for the Sustainability Committee of the Board and is therefore assigned to assess and monitor climate change related issues.

Responsibility 4: C-suite level level: The Group has assigned the Group Vice President Development as a member of the Group Excom to function as Chief Sustainability Officer. In this role, the CSO is responsible for coordinating Group sustainability strategies, including assessing climate change, target setting and reporting against the targets publicly and to the Group CEO the Group Excom.

Responsibility 5: Management level: The Sustainability Working group consists of 11 individuals with different expertise areas in sustainability. This group is responsible for supporting Group operations in assessing and managing sustainability/climate change strategies, collecting and analysing data from the operations to the Group Excom and it is led by CSO. The members of this working group coordinate sustainability roles in operations who are responsible for local implementation.

**C1.3**

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

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

**C1.3a**

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction target	Success in achieving the Group's targets on sustainability/climate change related targets is part of the CEO's personal goal and annual KPIs that he reports to the Group Board. (Smurfit Kappa Annual Report 2019, p 70)
Chief Sustainability Officer (CSO)	Monetary reward	Emissions reduction target	Sustainability and climate change related targets are part of the personal KPI's measures for the CSO , as part of the annual bonus system.
Energy manager	Monetary reward	Energy reduction project	Sustainability and climate change related projects are part of the personal KPI measures for Energy managers, as part of the annual bonus system.

**C2. Risks and opportunities**

**C2.1**

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

Yes

**C2.1a**

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

	From (years)	To (years)	Comment
Short-term	0	3	Typical capex pay-back time in SK and short term time frame for climate change risks and opportunities.
Medium-term	3	10	Pay-back time for a strategic capex investment in SK, and medium-term for climate change risks and opportunities.
Long-term	10	30	This is linked to long-term investment time horizon. For example investment in paper manufacturing machinery is expected to be valid for next 30 years. It is the long-term time frame for climate change risks and opportunities.

**C2.1b**

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

SKG defines substantive impact as significant financial, strategic or reputational damage that forces us to change our business strategy significantly either locally or as a Group. This definition applies to both our direct operations and our supply chain. The Group's risk process is based upon a standardised approach to risk identification, assessment and review with a clear focus on mitigating factors and assignment of responsibility to risk owners. Each individual risk identified is assessed based upon potential impact and likelihood of occurrence criteria. The likelihood of occurrence categories are based upon the probability of the risk occurring using percentage thresholds from remote up to probable. The impact of risk on cost is measured based upon applicable percentage thresholds of the Group's pre-exceptional EBITDA which for 2019 was €1,650m and reputational impact is also considered.

**C2.2**

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

**Value chain stage(s) covered**

Direct operations

**Risk management process**

Integrated into multi-disciplinary company-wide risk management process

**Frequency of assessment**

More than once a year

**Time horizon(s) covered**

Short-term

Medium-term

**Description of process**

The company keeps a risk register in which it describes its principal risks. Climate change risks are part of the risk register. Every six months the risk register is updated. Considered are the immediate risks and medium to long term risks.

**Value chain stage(s) covered**

Upstream

**Risk management process**

A specific climate-related risk management process

**Frequency of assessment**

Annually

**Time horizon(s) covered**

Short-term

Medium-term

**Description of process**

Smurfit Kappa has a sustainable sourcing programme through which it audits its principal suppliers on a number of sustainability criteria. Climate change criteria are part of the audit programme. Evaluated is the climate change risk per supplier.

**Value chain stage(s) covered**

Upstream

Downstream

**Risk management process**

A specific climate-related risk management process

**Frequency of assessment**

Annually

**Time horizon(s) covered**

Short-term

**Description of process**

Smurfit Kappa performs together with many customers so-called Life Cycle Analyses for its products. In these LCAs we assess the life cycle impact of our own products and the impact of the customer's supply chain. Majority of these impacts measured are t climate change impacts.

C2.2a

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	The relevance of current regulations in our climate related risk assessment is considered high as they impact our operations directly and have an immediate effect. Current regulations set the playing field to our operations and have a cost impact. This type of regulations can be for example, regulations on energy costs or the EU BAT BREF. An example of SKG specific risk is the national interpretation of the EU BAT BREF in Spain that had an impact to an investment in a lime kiln at one of our paper mills. The investment was due at the time of the new BREF implementation and therefore we wanted to wait to ensure compliance. At the same time we were not certain of what level of investment it would mean and how a possible delay would affect our compliance.
Emerging regulation	Relevant, always included	The relevance of emerging regulations in our climate related risk assessment is considered high as they may impact our investments and the life-time of our assets which typically have been designed for long term use (up to 30 years). Emerging regulations can also impact the level playing field and may lead to unfair competitive advantage for companies that would not face such strict climate -positive regulations as our operations. This may lead to a strategic risk for the company and is therefore always considered when the business is growing. An example of an emerging regulation is the EU Green Deal and its translation into EU directives and EU Member States laws. There is a risk that the Directives governing this issue will not be translated equally into national laws and there is also the possibility that the U Directives will place the European industry paper & packaging industry at a disadvantage compared to non-EU competition. Also EU Directives may put the EU paper& packaging at a competitive disadvantage compared to other packaging materials such as plastic.
Technology	Relevant, always included	The relevance of technology in our climate related risk assessment is considered moderately important as in paper manufacturing and converting operations, the life-time of assets is of long term, often calculated up to 30 years. Changing regulations may lead to adjustments in technology and this may require significant or moderately significant investments. Such examples can be the energy efficiency of a paper machine, however, the efficiency is obviously part of the efficient use of the machinery and therefore part of financial planning all the time. An example of SKG specific risk in technology is the national interpretation of the EU BAT BREF in Spain that had an impact to an investment in a lime kiln in one of our paper mills. The investment was due at the time of the new BREF implementation and therefore we wanted to wait to ensure compliance. If we had invested before understanding the BREF, we may have lost compliance to the legislation by choosing an unsuitable technology.
Legal	Not relevant, explanation provided	The relevance of legal risks in our climate related risk assessment, are considered very low and not relevant. We do not foresee any climate change-related legal disputes such as customer, supplier or investor seeking for compensations for climate actions.
Market	Relevant, always included	Market related risks in our climate related risk assessment is considered high as we face a demanding customer base that reacts quickly to the market and may substitute to competitor products. A competitor may achieve a lower price because their product is not as sustainably produced as our products. They may not be subject to the same regulations or standards. This has the potential to be a substantive financial risk to the company.
Reputation	Relevant, always included	The relevance of reputation climate related risks in our risk assessment are always considered, as the reputation of a company of our size has an impact on both investments in the company as well as customer preference for their suppliers. We invest in sustainable business practices to enhance and protect our reputation.
Acute physical	Relevant, always included	The relevance of acute physical risks are measured as part of our local climate related risk assessment process. Our production sites have different climate-related risks that may occur and in each case the risk is separately considered. The most relevant acute risks are related to water availability for paper manufacturing, and are related to the local water source's vulnerability to climate change. In our risk assessment we evaluate individual sites based on their readiness to manage acute challenges and in climate change context these are mainly related to water shortages mainly in drought cases. At our Colombian and French forest plantations we also focus on the forest resilience to weather changes and more extreme weathers such as storms. In our raw material sourcing climate-related risks are managed through a sourcing system that doesn't only rely on one source and our fibre sourcing is based on both virgin and recycled fibres.
Chronic physical	Relevant, always included	The relevance of chronic physical climate change related risk is of high importance and part of each operational site's risk management plan. For example, looking into the TCFD definitions, changing weather patterns will impact the forest management with a long-term, chronic impact: storms (and flooding) may be sudden but their intensity is increasing with long-term and chronic impacts to forest management (a storm damage has an acute impact, but there will be a period after storm which makes the forests surrounding the damaged site more vulnerable for windfalls, forest diseases and insect invasion/damages) and therefore from forest management perspective, we consider these changes in weather patterns chronic and not acute. In our forest management operations in Europe, for example, an accelerated climate change driven storm damage readiness and resilience is now part of the forest management planning. Also, in our water risk assessments, we consider the impacts of flooding and drought to our sites. This belongs in our view to chronic physical risk category as we consider the likely repeating changes in weather patterns as chronic not acute.

C2.3

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

Yes

C2.3a

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

**Identifier**

Risk 1

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

Current regulation	Carbon pricing mechanisms
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**Primary potential financial impact**

Increased indirect (operating) costs

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

Smurfit Kappa has an integrated business model in which our production process covers the sourcing of raw materials, production of paper and boards and converting these to corrugated packaging solutions. Making paper is energy intensive and because of this, unevenly placed emission pricing can lead to unsustainable growth of our operating costs. These costs can either occur through carbon taxes or emissions trading schemes that take place in only some regions and have a potential for carbon leakage to regions with no such regulations. At Smurfit Kappa, our operations in Europe are subjects of stricter regulations and higher energy costs than our operations in the Americas. This impact is already visible for our German and Italian paper mills.

**Time horizon**

Medium-term

**Likelihood**

More likely than not

**Magnitude of impact**

Medium-low

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

40000000

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

We are already subjected to carbon taxes in countries such as Germany and Italy. The EU ETS has a defense mechanism in place for carbon leakage risk industries, such as the paper industry, too. We have estimated the potential impact of the EU ETS cost, in case the carbon leakage mechanism is undone with a current estimated of 25€/tonne of CO2 eq currently totalling around 40 million €.

**Cost of response to risk**

200000

**Description of response and explanation of cost calculation**

Smurfit Kappa manages the emission cost related risks in three ways: 1) Preparing for changes in the operational environment by investing in lower fossil CO2 emission technologies and driving resource efficiency (leading to reduced emissions) throughout its operations 2) Driving above mentioned changes through emission reduction target setting 3) Participating in trade association initiatives looking for shared industry targets in emission reductions, as well as initiatives vis-a-vis policy makers. We try to help them in understanding our industry so that the regulations support rather than establish bottlenecks for climate-positive development. We calculate the cost of responding to the risk by estimating the share of the membership fees in associations where we are a member and that work to influence policies, the time spent working in collaboration with these associations and the time spent with the relevant R&D projects. Technological mitigation is part of our business strategy and thus not included.

**Comment**

As the technological mitigation of this risk is included in our businesses plans, this management cost only includes an estimated cost of manpower and participation in industry association and R and D projects

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**Identifier**

Risk 2

**Where in the value chain does the risk driver occur?**

Upstream

**Risk type & Primary climate-related risk driver**

Market	Increased cost of raw materials
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**Primary potential financial impact**

Increased direct costs

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

For Smurfit Kappa this risk consists of disruptions in pulp wood and recovered paper markets as well as in long term disruptions in agricultural commodity markets (such as starch). The drivers of this risk are substituted markets for energy wood, and extreme weather conditions leading to droughts and storms. There are incentives to substitute wood production for energy markets that impact wood for pulp markets and lead to competition and increased costs. Extreme weather conditions can lead in shorter term to situations where availability of virgin fibres is disrupted typically by storms. This can lead to unbalanced markets, raw material quality issues and over and under supply of raw material. In the long term the weather conditions can lead to moving vegetation /forest zones and therefore changes in tree species and production patterns. Droughts can have an impact to the global starch markets and availability issues, increasing costs.

**Time horizon**

Medium-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium-low

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

0

**Potential financial impact figure – maximum (currency)**

15000000

**Explanation of financial impact figure**

Smurfit Kappa's fibrous raw material sourcing consists of 25% virgin fibres and 75% recycled fibres. Our annual sourcing cost for raw materials and consumables is € 3.0 bn. Assuming that due to climate change risks prices for 10% of our raw materials increase by 20% for a period of 3 months, the cost increase would be euro 15 million. In

this example it is assumed that sales prices cannot be changed,

**Cost of response to risk**

50000

**Description of response and explanation of cost calculation**

Smurfit Kappa manages this risk through being integrated backwards in its supply chain. Only 25% of our raw material is virgin fibres and 75% recycled fibres. This balances the raw material portfolio. Approximately 50% of our virgin wood requirements are supplied through our own plantations and forestry operations which gives us higher flexibility to adapt. We also manage 16 recovered paper depots in Europe and 22 in the Americas. Smurfit Kappa is also testing ways to utilise technologies that make it possible to convert starch from flour directly in paper machines. This technology enables us to use outdated flour in our production that can no longer be used for food purposes. The cost to respond to the risk is an estimate of how much we invest in technology R&D.

**Comment**

The overall cost of response is low as all of this is done in the normal course of business

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**Identifier**

Risk 3

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

Chronic physical	Changes in precipitation patterns and extreme variability in weather patterns
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**Primary potential financial impact**

Decreased revenues due to reduced demand for products and services

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

As a paper-based packaging producer, there is a public interest in how we source our wood raw material. Deforestation is a climate change driven and climate change causing phenomenon that has a negative impact on our products. We must constantly prove that our raw material is sourced sustainably. Smurfit Kappa has taken a leadership position in providing transparency to the fibrous raw materials and has developed a full chain of custody system throughout its operations to provide customer security on the origin of fibres. It is an opportunity, but also in Smurfit Kappa's scale a risk if the fibre origin cannot be proven to be sustainable.

**Time horizon**

Long-term

**Likelihood**

Exceptionally unlikely

**Magnitude of impact**

Medium-low

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

0

**Potential financial impact figure – maximum (currency)**

100000000

**Explanation of financial impact figure**

Financial impact of this reputational risk is assumed to be with our largest, most environmentally aware customers who require action from their suppliers to mitigate any deforestation risk from their supply chain. The reputational risk may lead customers to be forced by public opinion switching to substituting products or suppliers in their supply chains. The financial impact is an estimate of the cost of losing these businesses long-term in a worst case scenario. It is estimated that 10% of this business can be affected for maximum 6-12 months. The occurrence of this risk is considered extremely unlikely as our entire system is certified chain of custody

**Cost of response to risk**

300000

**Description of response and explanation of cost calculation**

The most efficient management method to mitigate deforestation risk in our supply-chain are certified chain of custody management systems at all of our operating facilities, sourcing of certified and non-controversial fibres and the ability to sell products as chain of custody certified. Smurfit Kappa has invested in certified chain of custody managements system covering all operations across our regions, as well as certified forest management at our forest holdings and plantations. These investments include certification costs, efficient IT systems to support processes as well as education of our personnel. Part of the process is to require certified timber, pulp and paper deliveries from our suppliers. Smurfit Kappa produces and purchases 99.7% of its fibres through certified chain of custody management systems, over 90% of its paper production is certified and 90.5% of its products were sold as chain of custody certified at the end of 2018. Another way to mitigate this risk is efficient use of fibres. With 75% of fibrous raw material coming from recycled paper sources, Smurfit Kappa has a balanced approach to sustainable use and sourcing of fibres. We invest annually some 300,000€ in our chain of custody system globally.

**Comment**

The management cost is estimated including personnel costs, management system and other certification costs and maintenance and establishment of supporting IT systems.

**(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?**

Please select

**Opportunity type**

Resilience

**Primary climate-related opportunity driver**

Other, please specify (Opening and keeping positions in tenders by large customers or potential customers who demand sustainable raw material)

**Primary potential financial impact**

Increased revenues resulting from increased demand for products and services

**Company-specific description**

Risk #3 also creates an opportunity for Smurfit Kappa. Due to multiple reasons, customers want to reduce their supply chain risk on deforestation through demanding sustainably sourced fibres. At Smurfit Kappa, we have invested in a full coverage certified chain of custody management systems. We offer industry leading coverage at our forestry and plantation level, with certified forest management resulting in a certified product offering. This investment is a key to efficiently communicate our commitment to halt deforestation in the impact area of our industry. We have extended our certification programme to cover all fibrous raw materials and all products, and at the end of 2018, we were the leading company offering certified products to our customers with 90.5% of our products sold as certified.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

0

**Potential financial impact figure – maximum (currency)**

90000000

**Explanation of financial impact figure**

The international large fast moving consumer goods customers, have created sourcing policies in which the forest certification scheme chain of custody certified products (FSC, PEFC, SFI) are a preferred choice over suppliers that deliver products through non-controversial sourcing policies only. Another opportunity is with smaller customers that work within environmentally friendly product niches where only certified sustainable packaging products are an option. Smurfit Kappa has decided to deliver to all customers, equally certified products and take a leadership position in this area. If we could increase our sales by 1% due to this opportunity our revenues would increase by euro 90,000,000

**Cost to realize opportunity**

300000

**Strategy to realize opportunity and explanation of cost calculation**

Smurfit Kappa has taken a leadership position in providing transparency to the fibrous raw materials and has developed a full chain of custody system throughout its operations to provide customer security on the origin of fibres. It is an opportunity, but also in Smurfit Kappa's scale a risk if the fibre origin cannot be proven to be sustainable. Smurfit Kappa has established a strategy which consists of the following elements: - certification of all of its own forestry operations and plantations against a forest management certification system (FSC and PEFC) - chain of custody certifying all of our operations as FSC, PEFC and/or SFI - prioritizing certified raw material purchases (wood, pulp, paper) with a target to purchase and produce over 90% of our paper as certified (2018/: 99.9%) - sell over 90% of our products as certified Since end of 2018 we have practically reached all of the above and the new target is to maintain the situation and establish an increasing trend in all of the remaining % of paper production and purchases as well as sales of products. We invest annually some 300,000€ in our chain of custody system globally.

**Comment**

The cost to realise this opportunity is the same as mitigating the risk #3: The cost is estimated including personnel costs, management system and other certification costs and maintenance and establishment of supporting IT systems.

**Identifier**

Opp2

**Where in the value chain does the opportunity occur?**

Downstream

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Primary potential financial impact**

Returns on investment in low-emission technology

**Company-specific description**

Smurfit Kappa offers paper-based packaging solutions and services to its customers. These products are renewable, recyclable and at the end of the product life cycle, if not recycled, the products are biodegradable. Through R and D we have an opportunity to substitute fossil raw material packaging solutions with principally carbon neutral products. Our products are being made from wood fibres and the carbon sequestered in the fibres remains in the products through their life cycle as a carbon storage. Over 50% of our fuels are by products from wood used for pulp making and therefore emissions are biogenic CO2 instead of fossil CO2. Due to its high recycling rates and efficient recycling systems, paper-based packaging doesn't enter water bodies, polluting one of our most important natural carbon management ecosystem. Smurfit Kappa approaches this demand from customers from a strategic perspective. The customers can rely on Smurfit Kappa for its reliable data and data driven innovation. We have invested in suite of tools that help our R and D teams to use data to develop packaging solutions that deliver reductions in the packaged product's supply chain and optimises packaging. Our CO2 emission reductions are directly impacting the customer product footprint and the customers can follow their packaging CO2 reductions through individual score cards.

**Time horizon**

Medium-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

0

**Potential financial impact figure – maximum (currency)**

90000000

**Explanation of financial impact figure**

There is a potential to move 5-10% of our international environmentally aware customers to paper-based packaging substituting non-renewable-based packaging solutions such as plastics. If we are able increase revenue by 1% the effect would be euro 90,000,000 in additional revenue

**Cost to realize opportunity**

4500000

**Strategy to realize opportunity and explanation of cost calculation**

Finding substituting packaging solutions for example to plastics through R and D and understanding our markets and our and our customers' supply chains. We invest some 7M€ annually in R&D of which we estimate to direct 50% to product design and research and data delivering to this opportunity. This equals with 4,5M€

**Comment**

Smurfit Kappa invests €7m annually in R and D. Only part of that is spent on the objective as stated above.

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**Identifier**

Opp3

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Energy source

**Primary climate-related opportunity driver**

Use of lower-emission sources of energy

**Primary potential financial impact**

Reduced direct costs

**Company-specific description**

As a paper manufacturing company, Smurfit Kappa can efficiently utilise all of its wood-based raw material. Where the wood sourced for pulp is not suitable for pulp making, the residues such as bark, black liquor etc. can be utilised as biofuel. We also receive biogas from our water treatment processes that can be used as a fuel in energy production. As paper making is energy intensive, it is our strategy to reduce emissions constantly and move away from fossil energy sources where we can. Ultimately, this is a cost driven strategy as we expect higher cost for our fossil energy usage as the regulations tighten around emissions.

**Time horizon**

Long-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium-low

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

0

**Potential financial impact figure – maximum (currency)**

25000000

**Explanation of financial impact figure**

Avoided cost from carbon taxes and other regulations, revenue from sold emission trading certificates, and avoided cost through becoming more energy efficient. If through these measures we could save 5% of our expenses for energy we would save euro 25 million per year.

**Cost to realize opportunity**

33200000

**Strategy to realize opportunity and explanation of cost calculation**

As in the case of risk #1, Smurfit Kappa has a three pronged approach to this opportunity: 1) Preparing for changes in the operational environment by investing in lower fossil CO2 emission technologies and driving resource efficiency (leading to reduced emissions) throughout its operations - Estimated investments 33 M€ 2) Driving above mentioned changes through emission reduction target setting 3) Participating in trade association initiatives looking for shared industry targets in emission reductions, as well as initiatives vis-a-vis policy makers. We try to help them in understanding our industry so that the regulations support rather than establish bottlenecks for climate-positive development. - Estimated investment 200,000€

**Comment**

If 5% of our annual investments in 2019 would have been directed towards this issue the investment would have been approximately euro 33 million.

**C3. Business Strategy**

**C3.1**

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

Yes

**C3.1a**

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

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

**C3.1b**

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

Climate-related scenarios and models applied	Details
IEA 450 IEA Sustainable development scenario	<p>Smurfit Kappa has a Climate Change strategy that is based on the ambitions of the Paris Agreement and the EU net-zero policy and aims at limiting the temperature rise below 2 degrees. The Paris Agreement is in line with the IEA SDS that looks into halting Climate Change from the UN SDG perspective. In Smurfit Kappa's scenario analysis we investigated our existing business environment against the EU net-zero Climate policy environment. Some 75% of our business is within the EU and therefore its Climate policy plays a role in our business environment and thus our Climate Change policy. In our scenario assessment, we implement the EU net-zero target in our complete global business. As an energy-intensive business, we have taken the Climate Change mitigation activities to apply to us to full, and therefore follow the EU -40% target by 2030. As a starting point, we have taken our current CO2 emissions as the base situation. We have assumed different business scenarios including no-growth in our production volumes to certain expected growth of volumes annually. Our reference scenarios are aligned with the IEA SDS with an outcome of less than 2 degrees temperature increase by 2050. We have set our boundaries to our own operations and we apply the EU -40% target horizon by 2030. We have estimated that our paper manufacturing represents and continues to represent over 80% of our energy needs. We have a relatively integrated energy model at our paper mills, where we produce the energy to supply to our needs mainly by ourselves or by direct partners who only supply to us. We have set the scope of our main actions to the energy production at our paper mills because we can directly influence our decisions at our own combined heat and power plants. Our other sites, representing less than 20% of our energy needs are mainly using electricity from the grid. In the EU we believe that their energy supply will shift to zero carbon as the EU policies move on. Our Climate scenario assessment has impacted our strategy in three areas of investment: - Investing in efficient energy production - Investing in efficient energy use in our processes - Investing in low carbon or renewable fuels in energy production We have also invested in recording of our progress and converting this information into individual customer data. As part of our strategy we follow the EU target setting and our objective is to reduce 40% of our fossil CO2 emissions by 2030 in line with the EU net-zero policy. We are investigating the -50% scenario as well. As a case study example of our investments, in 2020 we finalised the installation of a new combined heat and power plant at our Nettingsdorf paper mill in Austria. This investment follows our strategy to invest in efficient energy production as well as shift to renewable fuels. The mill will be shifting to biomass as its main energy source. This investment significantly supports our objective of -40% CO2 emission reduction by 2030 and we will be reporting its success in the coming years.</p>

**C3.1d**

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

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Our customers are looking for packaging solutions that have a low carbon footprint and that also help to reduce the carbon footprint of their own supply chains. This is the strategic opportunity and also risk. If we can deliver low carbon packaging solutions, customers will like our products. In case our packaging solutions are high carbon they won't. Our product strategy is to design tailor made packaging solutions for our customers that have the lowest carbon footprint for the required packaging and we have a strategy to jointly with the customer understand how and where our packaging solution fits into the customer's supply chain. Once we have a good understanding we have a strategy to jointly with the customer develop a packaging solution that decreases the carbon footprint of the customer's packaged product. This process is focused to include climate change mitigation activities. The time horizon of these projects is continuous. Every day we start projects like this and we will continue with this without an end date. The most substantial strategic decision influenced by the climate risks and opportunities is to focus our R&D and innovation efforts on developing and designing products that can be converted into tailor made customer solutions that decrease the carbon footprint of our customer's supply chain.
Supply chain and/or value chain	Yes	Since 2010 we have a strategic sustainable sourcing programme. In that programme we audit our main suppliers also on their carbon footprint, contribution to mitigate climate change and their resilience to climate related risks. This is a continuous programme meant to create strategic insight for us whether in our supply chain there is climate related strategic risks and opportunities. A substantial strategic decision was to investigate how we can apply one of our raw materials (starch) in a different manner. If we succeed we will be able to gain in energy efficiency leading to mitigation of climate change.
Investment in R&D	Yes	Climate-related risks and opportunities have influenced our R&D investment strategy. Our strategy is focused on developing paper that is lighter and stronger at the same time. Customers favour packaging solutions from us that have a lower carbon footprint. This opportunity will mitigate climate change as lighter paper requires less raw material which is energy efficient in the production process compared to heavier paper with the same strength characteristics. The most substantial strategic decision in this area to date has been influenced by climate related risk and opportunities is the focus in R&D on developing lighter papers with no loss in strength characteristics. The time horizon is until 2030.
Operations	Yes	Carbon pricing systems are on the rise and could result in increased operational costs for Smurfit Kappa. Our paper mills have carbon emissions of approximately 2,7 million tonnes and a rise of €10 in the price of carbon would potentially increase our operational cost by €27 million. This has led to a strategy by our Board to decrease our carbon emissions by 40% by 2030 compared to 2005. To date our reduction has been 32.9%. We will achieve this reduction by investing in efficient energy generation, investing in efficient energy use and investing in renewable energy. The most substantial strategic decision in this area to date is our €134 million investment in a recovery boiler in our kraftliner mill in Austria that will reduce our global paper mills' fossil CO2 emissions by 1.5%. We will continue to invest in the generation of renewable energy where that is economically feasible. We are also purchasing 100% renewable electricity in a number of the countries where we operate and we will continue on this path. The time horizon is 2030 which is the year that we need to have reached our CO2 emissions reduction target.

**C3.1e**

**(C3.1e) Describe where and how climate-related risks and opportunities have influenced your financial planning.**

	Financial planning elements that have been influenced	Description of influence
Row 1	Capital expenditures Capital allocation	For a number of years Smurfit Kappa takes the price of carbon as part of its capital investment approval process. This price aims to steer investments to low or zero carbon technologies and capital investments for renewable energy throughout our entire network of manufacturing locations. We use the current market price for carbon as the base scenario and also do sensitivity analysis on the price of carbon to understand the influence of higher carbon prices on the return of the capital project. This enables management to assess the difference between different options and to choose the most efficient ones in order to achieve our strategic goal to reduce carbon emissions by 40% by 2030 compared to 2005. The price of carbon is regularly reviewed and updated. The time horizon is until 2030 reflecting the year in which we need to reach our target. Taking the price of carbon into account we have invested in a new recovery boiler in our kraftliner mill in Austria that started operating in June 2020. This project will reduce our global paper mill system fossil CO2 emissions by 1.5% per year or 40,000 tonnes of CO2 per year and the kraftliner mill's emissions by approximately two third.. As a direct result of this implemented internal price on carbon we have approved a project of installing solar panels in our factories in Spain that will reduce our demand for purchased energy by 30% in the next 5 years. In our capital allocation plan we take into account which investments will be needed to realise our strategic goal to decrease our fossil CO2 emissions by 40% by 2030 compared to 2005. When we set the target of 40% we made a gap analysis of what was needed to come from the level of emissions in 2018 (when we reached our earlier target of reducing 25%) and what was needed to reach the 40% reduction level. We used different scenarios, no growth and growth scenarios and we made an estimation of the capital projects that we needed to realise the target. The time horizon was 12 years at the time.

**C3.1f**

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

N/A

**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

**Year target was set**

2018

**Target coverage**

Business division

**Scope(s) (or Scope 3 category)**

Scope 1+2 (location-based)

**Intensity metric**

Metric tons CO2e per metric ton of product

**Base year**

2005

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

0.5345

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

89

**Target year**

2030

**Targeted reduction from base year (%)**

40

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

0.3207

**% change anticipated in absolute Scope 1+2 emissions**

-41.3

**% change anticipated in absolute Scope 3 emissions**

0

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

0.3588

**% of target achieved [auto-calculated]**

82.1796071094481

**Target status in reporting year**

Underway

**Is this a science-based target?**

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

**Please explain (including target coverage)**

This target covers 89% of our 2005 emissions under Scope 1 and 2, covering our paper manufacturing operations in all geographies and represents the relative emissions from paper making. The corrugating and converting operations have been excluded due to their relative small impact. We report against our fiscal year reporting which is also the calendar year and the base year data is also based on a full calendar year data. This target has been reported in CDP 2018 CC4.1b and we had an improvement against the reporting year 2018 (29.0%) and in current reporting year, 2019 we reached 32.9%. The Intensity figure in base year has been adjusted in 2019 compared to 2018 from 0.513 to 0.5345 in 2019 due to the inclusion of Parengo mill figures, which has been acquired in 2018 and is therefore for the first year reported in 2019. Only paper production is taken into account given its relative fuel use compared to our converting operations (90% and 10% respectively), and hence its contribution to our total fossil CO2 emissions. The difference in percentages (81% emissions in scope and 90% relative fuel consumption) is due to the fact that our paper mill network is highly self sufficient and has a lower usage of electricity from the grid compared to the converting operations, which are higher in using scope 2 energy. At our paper mills, when producing our own heat and power, we can reach over 90% efficiency of the fuel energy value compared to the electricity produced to the grid (30-60% efficiency). We have significantly invested in best practice in paper mills and the Combined Heat and Power plants built on our sites are highly relevant for the emission reductions we have achieved since 2010. We have included scopes 1 and 2 in our climate change targets due to the fact that we can influence these ourselves through the choices we make in our energy production and purchase. In the case of grid factors we follow the national trends and include them in our calculations with the most current grid factors available.

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**C4.2**

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

Target(s) to increase low-carbon energy consumption or production

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**C4.2a**

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

**Target reference number**

Low 1

**Year target was set**

2013

**Target coverage**

Business activity

**Target type: absolute or intensity**

Absolute

**Target type: energy carrier**

All energy carriers

**Target type: activity**

Production

**Target type: energy source**

Renewable energy source(s) only

**Metric (target numerator if reporting an intensity target)**

Percentage

**Target denominator (intensity targets only)**

<Not Applicable>

**Base year**

2005

**Figure or percentage in base year**

37.4

**Target year**

2020

**Figure or percentage in target year**

50

**Figure or percentage in reporting year**

51.4

**% of target achieved [auto-calculated]**

111.111111111111

**Target status in reporting year**

Achieved

**Is this target part of an emissions target?**

Yes, this is part of our overall CO2 reduction target. Smurfit Kappa has set itself a three-pronged approach to reduce its CO2 emissions: - Investing in efficient energy generation - Investing in efficient energy use - Investing in fossil CO2 reductions This target represents the pillar of investing in fossil CO2 reductions

**Is this target part of an overarching initiative?**

No, it's not part of an overarching initiative

**Please explain (including target coverage)**

This target covers our own energy production at our paper mills globally. Smurfit Kappa is an integrated company producing paper-based packaging solutions to its customers. Our manufacturing scope is from the production of raw material (forest plantations in Colombia), sourcing virgin and recycled fibres, manufacturing paper and ultimately converting paper to packaging solutions. Paper-making is energy intensive and in many cases it makes sense for us to generate our own energy for the processes. We have an opportunity to manage the fuels to an extent and renewable fuels as well as low-carbon options can be a choice, especially at our virgin paper mills where we use the side streams from our pulp production (such as black liquor) to produce energy. As an example of this approach, our paper mill in Pitea, Sweden, is effectively fully run by renewable energy.

**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	27	344000
To be implemented*	7	25000
Implementation commenced*	6	73000
Implemented*	3	7000
Not to be implemented	3	32000

C4.3b

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

**Initiative category & Initiative type**

Energy efficiency in production processes	Process optimization
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**Estimated annual CO2e savings (metric tonnes CO2e)**  
2400

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

**Voluntary/Mandatory**  
Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**  
1500000

**Investment required (unit currency – as specified in C0.4)**  
3000000

**Payback period**  
4-10 years

**Estimated lifetime of the initiative**  
16-20 years

**Comment**  
Installation of a shoe press in a paper machine leads to higher dryness of the paper before the drying section. Therefore less steam per ton of paper is needed in the dryer, which partly means higher production (at higher grammages) of energy savings per ton at lower grammages

**Initiative category & Initiative type**

Energy efficiency in production processes	Waste heat recovery
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**Estimated annual CO2e savings (metric tonnes CO2e)**  
1500

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

**Voluntary/Mandatory**  
Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**  
220000

**Investment required (unit currency – as specified in C0.4)**  
1400000

**Payback period**  
4-10 years

**Estimated lifetime of the initiative**  
16-20 years

**Comment**  
Heat recovery from the exhaust air replaces fresh steam usage in the paper machine and therefore less fossil fuel usage in the mill. Because the steam generates electricity in a steam turbine more electricity needs to be imported from the grid, which means more scope 2 emissions

**Initiative category & Initiative type**

Energy efficiency in production processes	Waste heat recovery
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**Estimated annual CO2e savings (metric tonnes CO2e)**  
2900

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

**Voluntary/Mandatory**  
Voluntary

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

770000

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

1900000

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

16-20 years

**Comment**

Heat recovery from the exhaust air replaces fresh steam usage in the paper machine and therefore less fossil fuel usage in the mill. Because the steam generates electricity in a steam turbine more electricity needs to be imported from the grid, which means more scope 2 emissions

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

Method	Comment
Compliance with regulatory requirements/standards	As an organisation, we want to always comply with laws and regulations. We are a member of national and regional industry associations through which we are able to stay fully up to date with future developments in regulatory requirements. These are included in our CAPEX consideration and we invest in technology that is best practice in as far in the future as we can realistically see.
Employee engagement	We have an internal competition for the best ideas in the area of sustainability, Smurfit Kappa Sustainability Awards. Energy savings and lower CO2 emissions is part of the criteria for ideas to be accepted as entrant in this competition. These Awards have four categories: supply chain, process, product and social. The first three categories typically include entries with positive climate change effects.
Dedicated budget for energy efficiency	We do not have pre set budgets for energy efficiency. However we do approve every year substantial investment amounts focusing on energy efficiency. Reduction in energy costs is one of the key focus areas in our successful cost take out programme.
Internal finance mechanisms	Potential investments are assessed using financial return methods and also having regard to the 'competitiveness/attractiveness opportunity the outcomes present for us in our interface with environmentally committed customers
Internal price on carbon	Part of the investment consideration is the current and expected future cost of CO2 per ton. There is an internal price of carbon used in the assessment of potential investment projects

**C-AC4.4/C-FB4.4/C-PF4.4****(C-AC4.4/C-FB4.4/C-PF4.4) Do you implement agriculture or forest management practices on your own land with a climate change mitigation and/or adaption benefit?**

Yes

**C-AC4.4a/C-FB4.4a/C-PF4.4a****(C-AC4.4a/C-FB4.4a/C-PF4.4a) Specify the agricultural or forest management practice(s) implemented on your own land with climate change mitigation and/or adaptation benefits and provide a corresponding emissions figure, if known.****Management practice reference number**

MP1

**Management practice**

Biodiversity considerations

**Description of management practice**

Sustainable forest management according to FSC. PEFC or SFI

**Primary climate change-related benefit**

Increasing resilience to climate change (adaptation)

**Estimated CO2e savings (metric tons CO2e)**

10000000

**Please explain**

Potential carbon sequestration impact in a year

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

Yes

**C4.5a**

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

**Level of aggregation**

Group of products

**Description of product/Group of products**

Packaging solutions and services

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

Avoided emissions

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

Other, please specify (We have developed a set of tools that calculate the avoided emissions from packaging and supply chain logistics relying on the data we have collected and verified in our sustainability assurance process.)

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

35

**% of total portfolio value**

<Not Applicable>

**Asset classes/ product types**

<Not Applicable>

**Comment**

According to a survey conducted by INCPEN, packaging products typically are responsible for only a small part of the carbon footprint of the packaged product value chain. However, research suggests that our product, if properly designed and applied, can decrease the total carbon impact of the product value chain by considerably more than the impact of the packaging itself. We offer to our customers a service to design packaging solutions that help them to lower or avoid emissions in their packaged product supply chain. We have developed a set of tools that help to compute this information and measure change year by year. The tools allow us to measure the CO2 footprint of the product as well as emissions related to transport and logistics. We call these tools Innootools and measure and report the use of these tools publicly. The reason why we can't report exact avoided emissions is that we don't have that data as it belongs to the customer. In addition, we offer our customers a holistic approach to sustainable packaging solutions in which the whole product packaging concept is assessed. Through this approach we can offer resource efficient packaging solutions in which each element of the packaging concept is optimised, including primary and secondary packaging, logistics and warehousing requirements. Our ambition is to offer solutions that help our customers reduce waste and wasted material through the supply chain through avoiding over and under packaging.

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**C5. Emissions methodology**

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**C5.1**

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

### **Scope 1**

#### **Base year start**

January 1 2005

#### **Base year end**

December 31 2005

#### **Base year emissions (metric tons CO2e)**

3615000

#### **Comment**

As the GHG protocol recommends structural changes in the organisation trigger recalculation of base year emissions. SK has recalculated in it's base year emissions in 2019 after the acquisition of 1 paper mill inThe Netherlands in 2018, which is for the first time included in 2019.

### **Scope 2 (location-based)**

#### **Base year start**

January 1 2005

#### **Base year end**

December 31 2005

#### **Base year emissions (metric tons CO2e)**

971100

#### **Comment**

As the GHG protocol recommends structural changes in the organisation trigger recalculation of base year emissions. SK has recalculated in it's base year emissions in 2019 after the acquisition of 1 paper mill inThe Netherlands in 2018, which is for the first time included in 2019.

### **Scope 2 (market-based)**

#### **Base year start**

January 1 2005

#### **Base year end**

December 31 2005

#### **Base year emissions (metric tons CO2e)**

971100

#### **Comment**

As the GHG protocol recommends structural changes in the organisation trigger recalculation of base year emissions. SK has recalculated in it's base year emissions in 2019 after the acquisition of 1 paper mill inThe Netherlands in 2018, which is for the first time included in 2019.

## **C5.2**

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

European Union Emission Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for installations

IEA CO2 Emissions from Fuel Combustion

IPCC Guidelines for National Greenhouse Gas Inventories, 2006

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

Other, please specify (GRI Guidelines G4)

## **C5.2a**

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### **(C5.2a) Provide details of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.**

All scope 1 and scope 2 calculations are made according to GRI guidelines G4. The fuel that is used by outsourced CHP installations that are located on SKG premises to produce steam and electricity which then is delivered to our mills is included in Scope 1 emissions. Indirect emissions for electricity are calculated using the CO2 per kWh emission factor per country provided by the International Energy Agency Data Services. GHG Protocol - Indirect CO2 emissions from purchased electricity, heat or steam 2.0 March 2008 GHG Protocol - GHG emissions from stationary combustion 3.1 March 2008 Other: Allocation of emissions from CHP for electricity is calculated with a reference boiler of 90% efficiency.

These calculations and data are verified as part of SK sustainable development report limited assurance process.

## **C6. Emissions data**

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### **C6.1**

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**(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)**

2513000

**Start date**

<Not Applicable>

**End date**

<Not Applicable>

**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 are reporting a Scope 2, market-based figure

**Comment**

In case an operation buys electricity from suppliers who gives Full Disclosure (giving the Guarantees of Origin (green) or Certificates of Origin or certified delivered energy mix) on the type of the fuels used for the generation of this electricity, the CO2 emissions of this electricity are based on the CO2 emission factors of these fuels. In case an operation participates in a electricity generation facility off site (p.a. off shore wind mill) the electricity and corresponding CO2 emission factor of this facility are taken into account in the indirect emissions calculation. In all other cases the CO2 emission factor of the national grid from the International Energy Agency Database is taken. The latest known factor from this database is at the beginning of the (internal) reporting period for SK 3 years old. Same principle is used to calculate the base year figures.

**C6.3**

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

**Reporting year**

**Scope 2, location-based**

863600

**Scope 2, market-based (if applicable)**

809900

**Start date**

<Not Applicable>

**End date**

<Not Applicable>

**Comment**

Starting in 2019 all our operations in Austria and Colombia are buying non-fossil based electricity from suppliers who give Full Disclosure and therefore scope 2 emissions of the operations in these countries are 0.

**C6.4**

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

No

**C6.5**

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

## Purchased goods and services

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO<sub>2</sub>e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

According to our assessment, the scope 1 and 2 emissions from our paper manufacturing are by far the most relevant emission category for us. After these, the second most material emission group are the scope 1 and 2 emissions from our converting and corrugating operations. The third most relevant, even though not material, emission group are the scope 3 emissions of transport of our raw materials and products.

## Capital goods

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO<sub>2</sub>e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

According to our assessment, the scope 1 and 2 emissions from our paper manufacturing are by far the most relevant emission category for us. After these, the second most material emission group are the scope 1 and 2 emissions from our converting and corrugating operations. The third most relevant, even though not material, emission group are the scope 3 emissions of transport of our raw materials and products.

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

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO<sub>2</sub>e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

According to our assessment, the scope 1 and 2 emissions from our paper manufacturing are by far the most relevant emission category for us. After these, the second most material emission group are the scope 1 and 2 emissions from our converting and corrugating operations. The third most relevant, even though not material, emission group are the scope 3 emissions of transport of our raw materials and products.

## Upstream transportation and distribution

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

485375

### Emissions calculation methodology

Approximation on the basis of assumptions / data are partly for Europe only. Calculated is the emission for transport of our main raw materials to our mills and converting plants. The CO<sub>2</sub> emission factors by transport mode are extracted from the GLEC reference model. We have estimated the CO<sub>2</sub> emissions for the Americas operations by applying the same CO<sub>2</sub> intensity factor for transport used in Europe per unit of product and the resulting figure multiplied by 1.5 to take the longer distances products are transported in the Americas into consideration. For Europe, we calculate a figure of 353000 tonnes. For the Americas the volume is 25% of the European volume multiplied by 1.5 and resulting to 132,375 tonnes CO<sub>2</sub>e.

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

0

### Please explain

According to our assessment, the scope 1 and 2 emissions from our paper manufacturing are by far the most relevant emission category for us. After these, the second most material emission group are the scope 1 and 2 emissions from our converting and corrugating operations. The third most relevant, even though not material, emission group are the scope 3 emissions of transport of our raw materials and products.

## Waste generated in operations

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

We use any waste that can be efficiently combusted for heat and electricity in our own energy production and report these as part of our scope 1 emissions. The rest of the waste streams are either recycled in different operations outside our organisation or sent to landfill.

## Business travel

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

20000

### Emissions calculation methodology

Approximation based of assumptions

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

0

### Please explain

We estimate that travel is done by a relatively small group of our 46,000 employees. Besides the operational and Group management teams, predominantly sales, technical and purchasing managers travel for business reasons. Based on two trips per month and an emission of 200kg per trip (which assumes a mix of air, car and train travel) the total emission is approximaely 20,000 tonnes representing less than 1% of our scope 1 CO2 emissions.

## Employee commuting

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

27000

### Emissions calculation methodology

Approximation based on assumptions

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

0

### Please explain

Assuming that half of our employees (out of the 46,000 for the total Group) come to work by car and commute an average distance home-site of maximum 20km, and that they use a car with an average CO2 emission of 150g/km, the annual CO2 emission would be 27,000 tonnes. This represents approximately 1% of our scope 1 emissions.

## Upstream leased assets

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

According to our assessment, the scope 1 and 2 emissions from our paper manufacturing are by far the most relevant emission category for us. After these, the second most material emission group are the scope 1 and 2 emissions from our converting and corrugating operations. The third most relevant, even though not material, emission group are the scope 3 emissions of transport of our raw materials and products.

## Downstream transportation and distribution

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

105000

### Emissions calculation methodology

Approximation on the basis of assumptions / data are partly for Europe only. Calculated is the emission for transport of our main raw materials to our mills and converting plants. The CO2 emission factors by transport mode are extracted from the GLEC reference model. We have estimated the CO2 emissions for the Americas operations by applying the same CO2 intensity factor for transport used in Europe per unit of product and the resulting figure multiplied by 1.5 to take the longer distances products are transported in the Americas into consideration. For Europe, we calculate a figure of 95,000 tonnes. For the Americas the volume is 25% of the European volume multiplied by 1.5 and resulting to 23,750 tonnes CO2E.

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

0

### Please explain

According to our assessment, the scope 1 and 2 emissions from our paper manufacturing are by far the most relevant emission category for us. After these, the second most material emission group are the scope 1 and 2 emissions from our converting and corrugating operations. The third most relevant, even though not material, emission group are the scope 3 emissions of transport of our raw materials and products.

## Processing of sold products

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

This process is not under our control.

## Use of sold products

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

According to our assessment, the scope 1 and 2 emissions from our paper manufacturing are by far the most relevant emission category for us. After these, the second most material emission group are the scope 1 and 2 emissions from our converting and corrugating operations. The third most relevant, even though not material, emission group are the scope 3 emissions of transport of our raw materials and products. We also have no access to this information.

## End of life treatment of sold products

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Smurfit Kappa is an integrated paper-based packaging company with operations from raw material sourcing to packaging production. Old corrugated cardboard (packaging material delivered to our customers) is valuable raw material in our value chain. 75% of our raw material is recovered paper and paper-based packaging. This is why we participate in the end of life treatment of our products and emissions from this are part of our scope 1 and 2 emission reporting.

## Downstream leased assets

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

According to our assessment, the scope 1 and 2 emissions from our paper manufacturing are by far the most relevant emission category for us. After these, the second most material emission group are the scope 1 and 2 emissions from our converting and corrugating operations. The third most relevant, even though not material, emission group are the scope 3 emissions of transport of our raw materials and products.

## Franchises

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

We don't have franchises

## Investments

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

According to our assessment, the scope 1 and 2 emissions from our paper manufacturing are by far the most relevant emission category for us. After these, the second most material emission group are the scope 1 and 2 emissions from our converting and corrugating operations. The third most relevant, even though not material, emission group are the scope 3 emissions of transport of our raw materials and products.

## Other (upstream)

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

According to our assessment, the scope 1 and 2 emissions from our paper manufacturing are by far the most relevant emission category for us. After these, the second most material emission group are the scope 1 and 2 emissions from our converting and corrugating operations. The third most relevant, even though not material, emission group are the scope 3 emissions of transport of our raw materials and products.

## Other (downstream)

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

According to our assessment, the scope 1 and 2 emissions from our paper manufacturing are by far the most relevant emission category for us. After these, the second most material emission group are the scope 1 and 2 emissions from our converting and corrugating operations. The third most relevant, even though not material, emission group are the scope 3 emissions of transport of our raw materials and products.

C-AC6.6/C-FB6.6/C-PF6.6

---

(C-AC6.6/C-FB6.6/C-PF6.6) Can you break down your Scope 3 emissions by relevant business activity area?

Partially

C-AC6.6a/C-FB6.6a/C-PF6.6a

---

(C-AC6.6a/C-FB6.6a/C-PF6.6a) Disclose your Scope 3 emissions for each of your relevant business activity areas.

**Activity**

Processing/Manufacturing

**Scope 3 category**

Processing of sold products

**Emissions (metric tons CO2e)**

353000

**Please explain**

This activity cover the transport of wood, recovered paper and market pulp used at our own mills. We also take into account the emissions from the transport of intermediate products such as reels of paper, corrugated board sheets and solid board sheets from the paper mills to the converting plants. The scope of these emissions currently cover Europe only.

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**Activity**

Distribution

**Scope 3 category**

Downstream transportation and distribution

**Emissions (metric tons CO2e)**

105000

**Please explain**

This activity covers the transport of finished products to our customers. The scope of these emissions currently cover Europe only.

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C-AC6.8/C-FB6.8/C-PF6.8

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(C-AC6.8/C-FB6.8/C-PF6.8) Is biogenic carbon pertaining to your direct operations relevant to your current CDP climate change disclosure?

No

C-AC6.9/C-FB6.9/C-PF6.9

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(C-AC6.9/C-FB6.9/C-PF6.9) Do you collect or calculate greenhouse gas emissions for each commodity reported as significant to your business in C-AC0.7/FB0.7/PF0.7?

**Agricultural commodities**

Timber

**Do you collect or calculate GHG emissions for this commodity?**

No

**Please explain**

Smurfit Kappa harvests timber from its own forests and plantations for its own use at its paper manufacturing operations. Smurfit Kappa doesn't sell timber as a commodity to other parties.

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C6.10

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(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**

0.000367

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

3321000

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

9048000000

**Scope 2 figure used**

Location-based

**% change from previous year**

4.4

**Direction of change**

Increased

**Reason for change**

A new paper mill using grid energy was added to the Group in 2018 and included to the environmental reporting in 2019.

---

**Intensity figure**

71.8

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

3321000

**Metric denominator**

full time equivalent (FTE) employee

**Metric denominator: Unit total**

46237

**Scope 2 figure used**

Location-based

**% change from previous year**

1.9

**Direction of change**

Increased

**Reason for change**

A new paper mill using grid energy was added to the Group in 2018 and included to the environmental reporting in 2019.

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## C7. Emissions breakdowns

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### C7.1

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

No

### C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
Argentina	43000
Austria	58000
Belgium	8000
Canada	0
Chile	2000
Colombia	550000
Czechia	24000
Denmark	5000
Dominican Republic	2000
France	195000
Germany	589000
Ireland	5000
Italy	104000
Latvia	0
Lithuania	1000
Mexico	174000
Netherlands	265000
Norway	0
Poland	9000
Portugal	2000
Russian Federation	13000
Slovakia	3000
Spain	132000
Sweden	17000
Switzerland	1000
United Kingdom of Great Britain and Northern Ireland	198000
United States of America	105000
Costa Rica	2000
Ecuador	0
Brazil	4000
Nicaragua	0
El Salvador	3000
Greece	1000

**C7.3**

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

By business division

By facility

**C7.3a**

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

Business division	Scope 1 emissions (metric ton CO2e)
1. Paper mills virgin	569000
2. Paper mills recycled	1498000
3. Specialty mills recycled	90000
4. Wood supplier	9000
5. Integrated	324000
6. Corrugated converter	11000
7. Converter Board	3000
8. Recycling	8000
9. Bag in Box	0
10. Sack converter	0

**C7.3b**

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

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Nettingsdorf Papierfabrik, Austria	58000	48.181125	14.249285
Navarra (Sangüesa), Spain	13000	42.590889	-1.283158
Facture, France	41000	44.6311	-0.974436
Kraftliner Piteå, Sweden	13000	66.316543	21.445956
Nervion mill, Spain	8000	43.184818	-2.668412
Morava Paper, Czech Republic	18000	49.851673	17.843626
Zülpich, Papier, Germany	226000	50.705679	6.65234
Mengibar CB, Spain	86000	37.979251	-3.795819
Alfa D'Avignon, France	19000	43.963531	4.852524
Rethel mill, France	15000	49.507679	4.362829
Saillat, France	76000	45.872618	0.811303
Ania Paper, Italy	75000	44.042181	10.497455
Roermond Papier, The Netherlands	150000	51.20562	6.001539
SSK, UK	72000	50.20562	-1.865079
Townsend Hook, UK	94000	51.32802	0.44909
Wrexen mill, Germany	82000	51.50818	8.97742
Hoya Papier, Germany	145000	52.80978	9.15601
Herzberger Board, Germany	90000	51.66144	10.36266
Cali mill, Colombia	437000	3.56319	-76.47999
Bernal mill, Argentina	22000	-37.707029	-58.28076
Coronel Suarez mill, Argentina	15000	-37.4557	-61.91026
Barranquilla mill, Colombia	37000	10.9989	-71.78364
Barbosa mill, Colombia	50000	6.439	-75.333
Cerro Gordo mill, Mexico	77000	19.53735	-99.05917
Los Reyes mill, Mexico	41000	19.52942	-99.19792
Monterrey mill, Mexico	14000	25.68049	-100.29669
Forney mill, USA	90000	32.73897	-96.44169
Bento mill, Brazil	0	-29.165477	-51.479456
Pirapetinga mill, Brazil	3000	-21.653106	-42.347766
Uberaba mill, Brazil	0	-19.717963	-47.979861
All other (> 300)	356000		
Parencio, The Netherlands	89000	51.9703	5.7253

**C-AC7.4/C-FB7.4/C-PF7.4**

**(C-AC7.4/C-FB7.4/C-PF7.4) Do you include emissions pertaining to your business activity(ies) in your direct operations as part of your global gross Scope 1 figure?**

Yes

**C-AC7.4a/C-FB7.4a/C-PF7.4a**

**(C-AC7.4a/C-FB7.4a/C-PF7.4a) Select the form(s) in which you are reporting your agricultural/forestry emissions.**

Emissions disaggregated by category (advised by the GHG Protocol)

**C-AC7.4b/C-FB7.4b/C-PF7.4b**

(C-AC7.4b/C-FB7.4b/C-PF7.4b) Report the Scope 1 emissions pertaining to your business activity(ies) and explain any exclusions. If applicable, disaggregate your agricultural/forestry by GHG emissions category.

**Activity**

Agriculture/Forestry

**Emissions category**

Mechanical

**Emissions (metric tons CO2e)**

6000

**Methodology**

Other, please specify (CO2 emissions from fuel usage of the SK machinery is calculated with the default values of the 2006 IPPC guidelines.)

**Please explain**

CO2 emissions from fuel usage of the SK machinery is calculated with the default values of the 2006 IPPC guidelines.

**Activity**

Processing/Manufacturing

**Emissions category**

Total

**Emissions (metric tons CO2e)**

2531000

**Methodology**

Other, please specify (If no fuel analysis at the mill exists the IPPC factor is used)

**Please explain**

To calculate our CO2 emissions, we collect the data on fuels used, the fuel analyses and if not existing, use the IPPC factors to calculate the scope 1 emissions from all our operations.

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Argentina	23000	23000	61300	0
Austria	19100	0	126700	126700
Belgium	4000	4000	23100	0
Canada	100	100	400	0
Chile	1600	1600	3600	0
Colombia	34600	0	157100	157100
Czechia	17200	17200	32500	0
Denmark	2500	2500	12300	0
Dominican Republic	4000	4000	6700	0
France	12800	12800	244900	0
Germany	99700	99700	223200	0
Ireland	6100	6100	14700	0
Italy	58800	58800	178000	0
Latvia	0	0	0	0
Lithuania	300	300	2200	0
Mexico	156000	156000	336000	0
Netherlands	235200	235200	506700	0
Norway	100	100	14700	0
Poland	16300	16300	22700	0
Portugal	900	900	3200	0
Russian Federation	7100	7100	19800	0
Slovakia	900	900	5600	0
Spain	51500	51500	209600	0
Sweden	3500	3500	286600	0
Switzerland	100	100	4700	0
United Kingdom of Great Britain and Northern Ireland	24800	24800	87600	0
Costa Rica	0	0	4000	0
Ecuador	200	200	800	0
United States of America	62800	62800	145000	0
Brazil	15600	15600	129700	0
Nicaragua	0	0	0	0
El Salvador	2300	2300	8600	0
Greece	2300	2300	4400	0

## C7.6

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

- By business division
- By facility

## C7.6a

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

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
1. Paper mills virgin	86100	42100
2. Paper mills recycled	471600	469000
3. Specialty mills recycled	7100	7100
4. Wood supplier	7100	0
5. Integrated	208400	208400
6. Corrugated converter	23800	23800
7. Converter Board	12000	11900
8. Recycling	2400	2400
9. Bag in Box	44900	44200
10. Sack converter	900	900

## C7.6b

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

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Nettingsdorfer Papierfabrik, Austria	18200	0
Navarra, Spain	21900	21900
Facture, France	1300	1300
KraftlinerPitea, Sweden	3100	3100
Nervion mill, Spain	15900	15900
Morava Paper, Czech Republic	10900	10900
Zülpich Papier, Germany	11500	11500
Mengibar CB, Spain	0	0
Alfa D'Avignon, France	1400	1400
Rethel mill, France	1200	1200
Ania Paper, Italy	0	0
Roermond Papier, The Netherlands	24000	24000
SSK, UK	400	400
Townsend Hook, UK	3200	3200
Wrexen mill, Germany	13200	13200
Hoya Papier, Germany	19000	19000
Herzberger Board, Germany	7100	7100
Cali mill, Colombia	25800	0
Bernal mill, Argentina	12100	12100
Coronel Suarez mill, Argentina	5400	5400
Barranquilla mill, Colombia	600	0
Barbosa mill, Colombia	2000	0
Cerro Gordo mill, Mexico	73800	73800
Los Reyes mill, Mexico	31400	31400
Monterrey mill, Mexico	9000	9000
Forney mill, USA	48000	48000
Bento mill, Brazil	2300	2300
Pirapetinga mill, Brazil	7200	7200
Uberaba mill, Brazil	4100	4100
All other (>300)	291700	291700
Saillat, France	3500	3500
Parencio, The Netherlands	187200	187200

## 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?**

Increased

## 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	69	Decreased	2.18	Scope 2 emissions in 2018 for Austria and Colombia were resp. 21.7 and 30.3 kton. In 2019 all electricity imported is from renewable sources so decrease is 21.7+30.3=52kton. Biofuel ratio excl. Parengo increased in 2019 with 0.7%, which results in 0,7% reduction of fossil scope 1 emissions or $0.7/100 \times 3140 = 23$ kton. Total decrease due to renewables is 75 kton or $57/3140 \times 100 = 2.38\%$
Other emissions reduction activities	13	Decreased	0.4	Emission reduction due to projects in C4.3b are 7 kton. Heat recovery in Townsend Hook mill and Saillat mill were installed in 2018 and gave a decrease of 4 and 2 kton respectively in 2019 because running for a complete year. So total reduction due to projects is $7+2+4 = 13$ kton, resulting in a reduction of $13/3140 \times 100 = 0.40\%$ compared to 2018
Divestment	0	No change	0	No divestments in 2019
Acquisitions	276	Increased	8.8	Total fossil fuel emissions from the Parengo mill, acquired in 2018 and in 2019 for the first year reported are 276 kton of which 89 kton are scope 1 and 187 scope 2. Total CO2 emission of SK in 2018 are 3140 kton, which results in an increase of absolute emissions due to this acquirement of $279/3140 \times 100 = 8.80\%$
Mergers	0	No change	0	No mergers in 2019
Change in output	59	Increased	1.87	Total SK change in output between was 918 kton of which 579 caused by Parengo acquirement, resulting in a net change of $918-579 = 339$ kton. Total production in 2018 was 18213 kton and total CO2 emission of SK in 2018 was 3140 kton, resulting in a relative emission of $3140/18213 = 0.172$ kton CO2 per kton production. The production increase increases the absolute emission by $339 \times 0.172 = 59$ kton and an increase of $59/3140 \times 100 = 1.87\%$
Change in methodology	59	Decreased	1.86	Average SK grid emission factor in 2018 was 0.277 kton per GWh imported and in 2019 excl. Austria and Colombia (calculated in renewables change) was 0.252. Eelectricity imported in 2018 is 2356 GWh. Change in scope 2 emissions due to the grid factor change is a decrease of $(0.277 - 0.252) \times 2356 = 59$ kton or $59/3140 \times 100 = 1.86\%$
Change in boundary	0	No change	0	No boundary changes in 2019
Change in physical operating conditions	0	No change	0	No changes due to weather conditions
Unidentified	4	Increased	0.13	Total absolute emission change in 2019 compared to 2018 is 183 kton increase. Total emission changes of all described in this question is $-69-13+276+59-59-10 = 179$ kton. 4kton can't be explained, which are small projects, changes in grammages, etc. This gives an increase of $4/3140 = 0.13\%$
Other	10	Decreased	0.33	Total electricity generated by CHP decreased by 64GWh. With a fuel usage of 5 GJ/MWh (general figure) this gives $64 \times 5 = 320$ GJ of fuel less. Total scope 1 emission in 2018 were 2488 kton and total fuel usage of 77036 TJ. The reduction of CHP generation decreases the fossil CO2 emissions by $320/77036 \times 2488 = 10$ kton or $10/3140 \times 100 = 0.33\%$

## 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?

Market-based

## C8. Energy

### C8.1

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

More than 5% but less than or equal to 10%

### C8.2

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

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

### C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	10310772	11315320	21626092
Consumption of purchased or acquired electricity	<Not Applicable>	1663215	1451819	3115034
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	4039	<Not Applicable>	4039
Total energy consumption	<Not Applicable>	11978025	12767140	24745165

**C8.2b**

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

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

**C8.2c**

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

**Fuels (excluding feedstocks)**

Brown Coal Briquettes (BKB)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

399122

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

399122

**Emission factor**

99.89

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

If no fuel analysis at the mill exists the IPCC factor is used

**Fuels (excluding feedstocks)**

Bituminous Coal

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

960562

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

85645

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

874917

**Emission factor**

94.59

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

If no fuel analysis at the mill exists the IPCC factor is used

---

**Fuels (excluding feedstocks)**

Fuel Oil Number 5

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

109870

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

13036

**MWh fuel consumed for self-generation of steam**

41966

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

54867

**Emission factor**

77.58

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

If no fuel analysis at the mill exists the IPCC factor is used

---

**Fuels (excluding feedstocks)**

Fuel Oil Number 1

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

185279

**MWh fuel consumed for self-generation of electricity**

2511

**MWh fuel consumed for self-generation of heat**

142508

**MWh fuel consumed for self-generation of steam**

23123

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

17090

**Emission factor**

74.19

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

If no fuel analysis at the mill exists the IPCC factor is used

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**Fuels (excluding feedstocks)**

Liquefied Petroleum Gas (LPG)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

146273

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

96884

**MWh fuel consumed for self-generation of steam**

49389

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

0

**Emission factor**

63.1

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

If no fuel analysis at the mill exists the IPCC factor is used

---

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

9636017

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

533278

**MWh fuel consumed for self-generation of steam**

3441137

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

5661601

**Emission factor**

56.12

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

If no fuel analysis at the mill exists the IPCC factor is used

---

**Fuels (excluding feedstocks)**

Waste Plastics

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

76418

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

7475

---

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

68943

**Emission factor**

73.51

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

Waste plastics is the amount of plastics (non-fossil part) in the rejects from recycled paper If no fuel analysis at the mill exists the IPCC factor is used

---

**Fuels (excluding feedstocks)**

Biogas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

241989

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

1126

**MWh fuel consumed for self-generation of steam**

152429

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

88434

**Emission factor**

75.8

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

If no fuel analysis at the mill exists the IPCC factor is used

---

**Fuels (excluding feedstocks)**

Black Liquor

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

6842187

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

6842187

**Emission factor**

105.23

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

If no fuel analysis at the mill exists the IPCC factor is used

---

**Fuels (excluding feedstocks)**

Other, please specify (Methanol)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

29222

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

29222

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

0

**Emission factor**

69.8

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

If no fuel analysis at the mill exists the IPCC factor is used

---

**Fuels (excluding feedstocks)**

Biodiesel

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

167424

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

155682

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

11742

**Emission factor**

146.87

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

If no fuel analysis at the mill exists the IPCC factor is used

---

**Fuels (excluding feedstocks)**

Pitch

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

41819

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

39982

**MWh fuel consumed for self-generation of steam**

0

---

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

1837

**Emission factor**

77.59

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

If no fuel analysis at the mill exists the IPCC factor is used

---

**Fuels (excluding feedstocks)**

Waste Paper and Card

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

55747

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

55747

**Emission factor**

126.78

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

Waste paper and card is the amount of fibers in the rejects of recycled paper If no fuel analysis at the mill exists the IPCC factor is used

---

**Fuels (excluding feedstocks)**

Wood Waste

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

3160188

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

153124

**MWh fuel consumed for self-generation of steam**

764772

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

2242293

**Emission factor**

111.1

**Unit**

kg CO2 per GJ

**Emissions factor source**

Fuel analysis entities or 2006 IPCC Guidelines for National Greenhouse Gas.

**Comment**

Wood waste is bark from paper logs and external biomass bought If no fuel analysis at the mill exists the IPCC factor is used

---

C8.2d

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	2393424	1984122	1141124	945979
Heat	979939	979939	194232	194232
Steam	12063839	11900361	5751732	5673930
Cooling	0	0	0	0

C8.2e

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

**Sourcing method**

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

**Low-carbon technology type**

Solar

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

Austria

**MWh consumed accounted for at a zero emission factor**

1686

**Comment**

Total electricity purchased in austria is 126742 MWh. According to the TÜV certificate on the origin of this electricity production 1.33% of this total is from solar energy

**Sourcing method**

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

**Low-carbon technology type**

Wind

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

Austria

**MWh consumed accounted for at a zero emission factor**

13422

**Comment**

Total electricity purchased in austria is 126742 MWh. According to the TÜV certificate on the origin of this electricity production 10.59 % of this total is from wind energy

**Sourcing method**

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

**Low-carbon technology type**

Biomass

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

Austria

**MWh consumed accounted for at a zero emission factor**

3409

**Comment**

Total electricity purchased in austria is 126742 MWh. According to the TÜV certificate on the origin of this electricity production 2.69% of this total is from biomass

**Sourcing method**

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

**Low-carbon technology type**

Low-carbon energy mix

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

Austria

**MWh consumed accounted for at a zero emission factor**

1242

**Comment**

Total electricity purchased in austria is 126742 MWh. According to the TÜV certificate on the origin of this electricity production 0.98% of this total is from other renewable energy (mix of biogas, landfill gas and geothermal).

**Sourcing method**

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

**Low-carbon technology type**

Hydropower

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

Austria

**MWh consumed accounted for at a zero emission factor**

106983

**Comment**

Total electricity purchased in Austria is 126742 MWh. According to the TÜV certificate on the origin of this electricity production 84.41% of this total is from hydro energy

**Sourcing method**

Unbundled energy attribute certificates, International REC Standard (I-RECs)

**Low-carbon technology type**

Hydropower

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

Colombia

**MWh consumed accounted for at a zero emission factor**

157089

**Comment**

All operations in Colombia received from the electricity supplier an overview of IREC's that all electricity in 2019 is generated from hydro power stations, which means that the total Purchased and consumed electricity data from Colombia (see 7.5) is equal to the amount in this question

## C9. Additional metrics

### C9.1

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

Energy usage

**Metric value**

11.89

**Metric numerator**

GJ of primary energy used in paper and board

**Metric denominator (intensity metric only)**

Total net saleable paper production

**% change from previous year**

2.42

**Direction of change**

Decreased

**Please explain**

This value is the total primary energy usage per ton of paper produced for the paper and board mills. Total Primary energy is total fuel used for paper production, the electricity generated with water turbines and the imported electricity from the grid which is calculated with a general efficiency of 40%. Total fuels used for paper making is 71420 TJ, Hydro energy is 15 TJ and electricity imported is 1919 GWh which is calculated to primary energy 17275 TJ = 1919 (GWh) x 3,6 (TJ/GWh) /0,4 (40% efficiency power stations).

**Description**

Waste

**Metric value**

68.6

**Metric numerator**

specific kg waste sent to landfill from P&amp;B mills

**Metric denominator (intensity metric only)**

specific kg waste sent to landfill from P&amp;B mills

**% change from previous year**

3.2

**Direction of change**

Decreased

**Please explain**

The figure has practically remained at the same level. We have started to realise investments towards our landfill reduction target at our Cali mill in Colombia which started to show results at the end of 2019.

## C10. Verification

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### C10.1

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

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

### C10.1a

---

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

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

Smurfit\_Kappa\_Sustainable\_Development\_Report\_2019.pdf

**Page/ section reference**

Page 100

**Relevant standard**

ISAE3000

**Proportion of reported emissions verified (%)**

100

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### C10.1b

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

**Scope 2 approach**

Scope 2 location-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

Smurfit\_Kappa\_Sustainable\_Development\_Report\_2019 (8).pdf

**Page/ section reference**

Page 100

**Relevant standard**

ISAE3000

**Proportion of reported emissions verified (%)**

100

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**Scope 2 approach**

Scope 2 market-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

Smurfit\_Kappa\_Sustainable\_Development\_Report\_2019 (8).pdf

**Page/ section reference**

Page 100

**Relevant standard**

ISAE3000

**Proportion of reported emissions verified (%)**

100

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## C10.1c

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

**Scope 3 category**

Scope 3 (upstream & downstream)

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

Smurfit\_Kappa\_Sustainable\_Development\_Report\_2019 (8).pdf

**Page/section reference**

**Relevant standard**

Please select

**Proportion of reported emissions verified (%)**

---

## C10.2

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

Yes

## C10.2a

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C4. Targets and performance	Year on year change in emissions (Scope 1 and 2)	ISAE3000	Our complete sustainability report is verified through assurance process in line with GRI G4 standard. This covers all material metrics, data and other reporting.
C9. Additional metrics	Progress against emissions reduction target	ISAE3000	Our complete sustainability report is verified through assurance process in line with GRI G4 standard. This covers all material metrics, data and other reporting.

## 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 schemes you are regulated by.

EU ETS

**% of Scope 1 emissions covered by the ETS**

54.7

**% of Scope 2 emissions covered by the ETS**

0

**Period start date**

January 1 2019

**Period end date**

December 31 2019

**Allowances allocated**

1623565

**Allowances purchased**

0

**Verified Scope 1 emissions in metric tons CO2e**

1374312

**Verified Scope 2 emissions in metric tons CO2e**

0

**Details of ownership**

Facilities we own and operate

**Comment**

### C11.1d

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

Strategy is to reduce emissions by investing in GHG emissions reducing equipment such as biomass boilers. We also focus on actions that make our operations more energy efficient both in terms of usage and own generation

### C11.2

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

No

### C11.3

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

Yes

### C11.3a

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

**Objective for implementing an internal carbon price**

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

**GHG Scope**

Scope 1  
Scope 2

**Application**

Facilities: Every investment proposal in which the use of energy is relevant, the price of CO2 is taken into account. The internal price is based upon a mix of the current market price for carbon in Europe and a forecasted price of CO2 over the lifetime of the investment.

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

25

**Variance of price(s) used**

The price is used for investments for facilities, which are effected by the EU ETS. In countries where no carbon pricing regulations are present, no carbon price is used.

**Type of internal carbon price**

Shadow price

**Impact & implication**

Due to the increased price of EU allowances and expected further increasement the effect of carbon savings in energy projects has/will have a much higher impact on the decision making of investment proposals.

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### C12. Engagement

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### C12.1

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

Yes, our suppliers  
Yes, our customers

### C12.1a

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

**Type of engagement**

Engagement & incentivization (changing supplier behavior)

**Details of engagement**

Other, please specify (As part of our sustainable sourcing programme, we meet suppliers during physical audits and at our sites. During these meetings also climate change related policies and actions are discussed and suppliers are engaged and incentivised to take part)

**% of suppliers by number**

5

**% total procurement spend (direct and indirect)**

5

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

20

**Rationale for the coverage of your engagement**

Our sustainable sourcing programme is risk-based. We select the suppliers we annually meet based on our risk assessments and audit them on site. The 5% coverage of the selected suppliers is based on the results of our risk assessment, the sourcing category and the fact that the suppliers have been audited on site. Our audit system counts each supplier site as a unique supplier entity and in many cases we source from the same supplier from multiple sites which impacts the %. Our audit system focuses in the following supplier categories: Key Raw Materials, Goods and Services and Commodities. The supplier audits are looking into the areas of Quality, Hygiene and Safety, Business Continuity, Continual Support, Service and Technical Support and Environment and Sustainable Development. These have an impact to Product Safety, Driving Efficiency and Operational Continuity which all are areas also delivering to mitigating climate change.

**Impact of engagement, including measures of success**

We require our Key Raw Materials, Goods and Services, and Commodities to be managed and supplied to us sustainably. Since launching our sustainable sourcing programme in 2010, we have been auditing all our suppliers at least once to ensure they meet our standards. Audits result in a rating against the seven areas of our programme: Quality, Hygiene and Safety, Business Continuity, Continual Support, Service and Technical Support and Environment and Sustainable Development. If the result is below satisfactory (scoring less than 40%) an improvement programme is devised. Our risk mapping shows that 81% of our suppliers audited in 2019 carry moderate to low risk. Those suppliers reaudited, have all improved their scoring in our system.

**Comment**

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**C12.1b**

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

**Type of engagement**

Collaboration & innovation

**Details of engagement**

Other, please specify (We offer to our customers packaging solutions that help them reduce CO2 emissions in their supply chains.)

**% of customers by number**

35

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

0

**Portfolio coverage (total or outstanding)**

<Not Applicable>

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

We have estimated that our Pan European and Pan American customers make about 35% of our customer base in number of customers. These customers have active sustainability and CO2 reduction programmes and we specifically target our services to these customer groups.

**Impact of engagement, including measures of success**

We have developed a suite of packaging service design tools that calculate the CO2 impact of different packaging options in different supply chain scenarios. This enables us to offer our customers the most optimised solutions in their supply chains. To be able to measure success, we calculate the number of times these tools have been used in daily average each year. In 2019 these tools were used

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**C-AC12.2/C-FB12.2/C-PF12.2**

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**(C-AC12.2/C-FB12.2/C-PF12.2) Do you encourage your suppliers to undertake any agricultural or forest management practices with climate change mitigation and/or adaptation benefits?**

Yes

**C-AC12.2a/C-FB12.2a/C-PF12.2a**

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(C-AC12.2a/C-FB12.2a/C-PF12.2a) Specify which agricultural or forest management practices with climate change mitigation and/or adaptation benefits you encourage your suppliers to undertake and describe your role in the implementation of each practice.

**Management practice reference number**

MP1

**Management practice**

Biodiversity considerations

**Description of management practice**

Forest management certification

**Your role in the implementation**

Procurement

**Explanation of how you encourage implementation**

Smurfit Kappa has forestry and fibre sourcing policy demanding for certified forest management by FSC, PEFC or SFI

**Climate change related benefit**

Increasing resilience to climate change (adaptation)

**Comment**

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C-AC12.2b/C-FB12.2b/C-PF12.2b

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(C-AC12.2b/C-FB12.2b/C-PF12.2b) Do you collect information from your suppliers about the outcomes of any implemented agricultural/forest management practices you have encouraged?

Yes

C12.3

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(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?

Trade associations

C12.3b

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

Yes

C12.3c

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

**Trade association**

Confederation of European Paper Industries

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

Any emission trading system should create a level playing field to all industry actors and prevent carbon leakage to countries and regions where regulations are not relevant. Wood raw material should be treated through an added value approach and without unnecessary substitutes that disrupt markets leading to valuable raw material bust for energy where the added value products offer a longer carbon storage option.

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

Through active participation in the committees and working groups in CEPI. CEPI has an ongoing discussion with the EU Commission on multiple Climate Change related issues. We focus on data driven and fact based debate and presentation of our positions as an industry as a whole. Smurfit Kappa is supportive of the CEPI positions and is preparing them in collaboration with CEPI.

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C12.3f

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

The Sustainability Working Group (see C1.2 Sustainability Committee) coordinates the strategy implementation as well as activities to influence policy.

C12.4

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

**Publication**

In voluntary sustainability report

**Status**

Complete

**Attach the document**

Smurfit\_Kappa\_Sustainable\_Development\_Report\_2019 (8).pdf

**Page/Section reference**

**Content elements**

Governance  
Strategy  
Risks & opportunities  
Emissions figures  
Emission targets  
Other metrics

**Comment**

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**C13. Other land management impacts**

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**C-AC13.1/C-FB13.1/C-PF13.1**

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**(C-AC13.1/C-FB13.1/C-PF13.1) Do you know if any of the management practices implemented on your own land disclosed in C-AC4.4a/C-FB4.4a/C-PF4.4a have other impacts besides climate change mitigation/adaptation?**

Yes

**C-AC13.1a/C-FB13.1a/C-PF13.1a**

---

**(C-AC13.1a/C-FB13.1a/C-PF13.1a) Provide details on those management practices that have other impacts besides climate change mitigation/adaptation and on your management response.**

**Management practice reference number**

MP1

**Overall effect**

Positive

**Which of the following has been impacted?**

Biodiversity  
Soil  
Water

**Description of impact**

Sustainable forest management is designed to set minimum criteria for biodiversity, soil and water protection among other ecosystem services through responsible forest and plantation management having a landscape-level impact. Certified sustainable forest management has improved the state of commercial forests and plantations according to multiple studies. The primary positive impact covers our forestry operations and sourcing. However, our complete value chain benefits from this due to certified chain of custody management systems.

**Have you implemented any response(s) to these impacts?**

Yes

**Description of the response(s)**

Our approach to mitigate possible negative impacts and manage these responses is certified sustainable forest management by FSC, PEFC or SFI.

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**C-AC13.2/C-FB13.2/C-PF13.2**

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**(C-AC13.2/C-FB13.2/C-PF13.2) Do you know if any of the management practices mentioned in C-AC12.2a/C-FB12.2a/C-PF12.2a that were implemented by your suppliers have other impacts besides climate change mitigation/adaptation?**

Yes

**C-AC13.2a/C-FB13.2a/C-PF13.2a**

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(C-AC13.2a/C-FB13.2a/C-PF13.2a) Provide details of those management practices implemented by your suppliers that have other impacts besides climate change mitigation/adaptation.

**Management practice reference number**

MP1

**Overall effect**

Positive

**Which of the following has been impacted?**

Biodiversity

Soil

Water

**Description of impacts**

Sustainable forest management is designed to set minimum criteria for biodiversity, soil and water protection among other ecosystem services through responsible forest and plantation management having a landscape-level impact. Certified sustainable forest management has improved the state of commercial forests and plantations according to multiple studies. The primary positive impact covers sourcing. However, our complete value chain benefits from this due to certified chain of custody management systems.

**Have any response to these impacts been implemented?**

Yes

**Description of the response(s)**

Our approach to mitigate possible negative impacts and manage these responses is to require certified sustainable forest management by FSC, PEFC or SFI from our suppliers and delivery of wood, pulp and paper through certified chains of custody.

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C15. Signoff

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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.

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C15.1

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

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