

Sustainability Report

Part of Stora Enso's Annual Report 2017



Everything made with fossil-based materials today can be made from a tree tomorrow.

Part of the bioeconomy, Stora Enso is a leading provider of renewable solutions in packaging, biomaterials, wooden constructions, and paper globally. Our materials are renewable, reusable, and recyclable, and form the building blocks for a range of innovative solutions that can help replace products based on fossil fuels and other non-renewable materials. We employ some 26 000 people and our shares are listed on the Helsinki (STEAV, STERV) and Stockholm (STE A, STE R) stock exchanges.

Stora Enso's Annual Report 2017 consists of four reports: Progress Book, Sustainability Report, Financial Report, and Corporate Governance Report.



The Progress Book explains Stora Enso's strategy, how we create value, and how our work is progressing.



The Sustainability Report covers Stora Enso's social, environmental, and economic sustainability performance.



The Financial Report consists of the report of the Board of Directors and the financial statements, Stora Enso in capital markets, and our tax footprint.



The Corporate Governance Report covers Stora Enso's governance policy, practices, and actions as well as remuneration in 2017.



You can find the highlights of the year and the online Financial Report at storaenso.com/annualreport, where all reports can be downloaded.

- > Governance
- > Social agenda
- > Environmental agenda
- > Economic agenda
- > Data and assurance



Human rights are integrated into our sustainability agenda.

> Read more on page 9

Renewable materials help combat global warming.

> Read more on page 40

We drive change through responsible sourcing.

> Read more on page 60

Contents

- Governance** 3
 - Strategy, governance, and stakeholders 4
 - Our targets 8
 - Human rights 9
- Social agenda** 14
 - Employees and wider workforce 15
 - Community 20
 - Business ethics 25
- Environmental agenda** 29
 - Materials, water, and energy 30
 - Carbon dioxide 40
 - Forests, plantations, and land use 47
- Economic agenda** 55
 - Customers 56
 - Suppliers 60
 - Investors 64
 - External recognition 66
- Data and assurance** 67
 - Reporting scope 68
 - Data by production unit 69
 - Assurance report 72

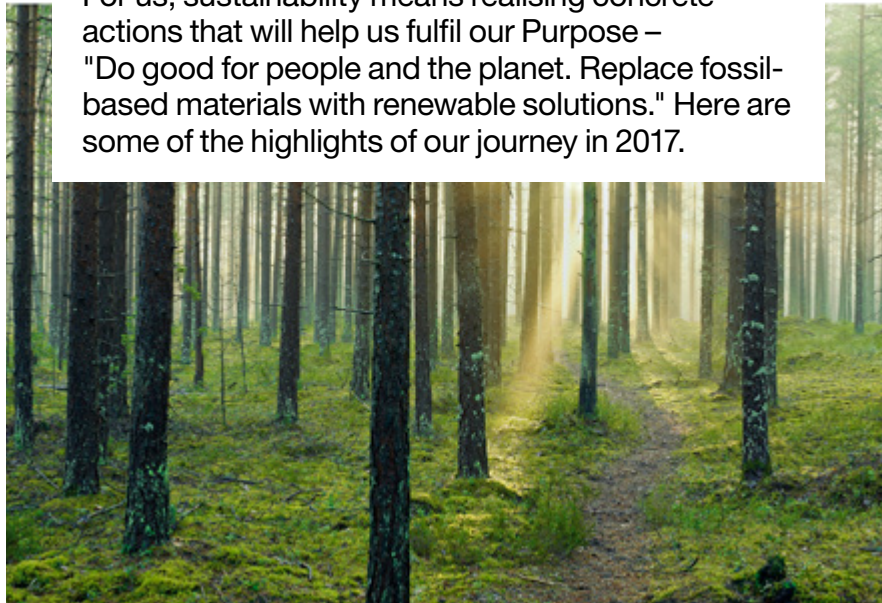
The report contents have been assured by an independent third-party assurance provider with a level of Limited Assurance. A level of Reasonable Assurance has been provided for our direct and indirect fossil CO₂ emissions.

The GRI index is available at storaenso.com/gri

- > Governance
- > Social agenda
- > Environmental agenda
- > Economic agenda
- > Data and assurance

Sustainability highlights 2017

For us, sustainability means realising concrete actions that will help us fulfil our Purpose – "Do good for people and the planet. Replace fossil-based materials with renewable solutions." Here are some of the highlights of our journey in 2017.



Sustainable profitable growth
Our transformation strategy continued to deliver with four consecutive quarters of sales growth.



New Safety Roadmap
In 2017, we started to implement a new Safety Roadmap to drive a step-change in performance.



Leadership performance
81% of our employees reported that their manager was able to create diverse teams.



Combatting global warming
We are the first forest products company, to set science-based greenhouse gas reduction targets in line with the 2°C limit set by the Paris Agreement.



Community investment
In 2017, we supported 403 projects around the world.



Ethical performance as a supplier
We received the highest recognition level, Gold, for sustainability management by Ecovadis Supplier Sustainability Ratings.

100% of the actions in our Human Rights Action plan were concluded.

Ensuring the sustainability of wood

92%

of the lands we own or manage were covered by forest certification schemes.

High standards for sourcing

95%

of our spending on goods, materials, and services was covered by our Supplier Code of Conduct.

Reusing waste

98%

The utilisation rate for our process residuals and waste was 98%.

> Governance

> Social agenda

> Environmental agenda

> Economic agenda

> Data and assurance



Governance

> Strategy, governance, and stakeholders 4

> Our targets 8

> Human rights 9

Strategy, governance, and stakeholders

Our sustainability strategy underpins the wider company strategy to replace fossil-based materials with renewable ones.



- Governance
 - Strategy, governance, and stakeholders
 - Our targets
 - Human rights
- Social agenda
- Environmental agenda
- Economic agenda
- Data and assurance

Stora Enso's Sustainability Agenda encompasses the social, environmental, and economic responsibility of our operations throughout the value chain. The agenda is based on the Triple Bottom Line framework widely used in corporate responsibility work. It addresses the ten sustainability topics identified as material to Stora Enso and our key stakeholders: Employees and wider workforce; Community; Business ethics; Materials, water, and energy; Carbon dioxide; Forests, plantations, and land use; Customers; Suppliers; and Investors. Respect for human rights is considered to be so integral to our long-term success that human rights topics are progressed as an overarching theme. We also periodically assess how well aligned the agenda is with the expectations and perceptions of our key stakeholders.

In line with our Sustainability Agenda, we have set ambitious targets and key performance indicators (KPIs) for our sustainability work. Progress is regularly monitored at group-level and via division-level business reviews. Consolidated results on our sustainability performance are reported annually in the Sustainability Report. Selected sustainability indicators are also reported quarterly in our Interim Reports.

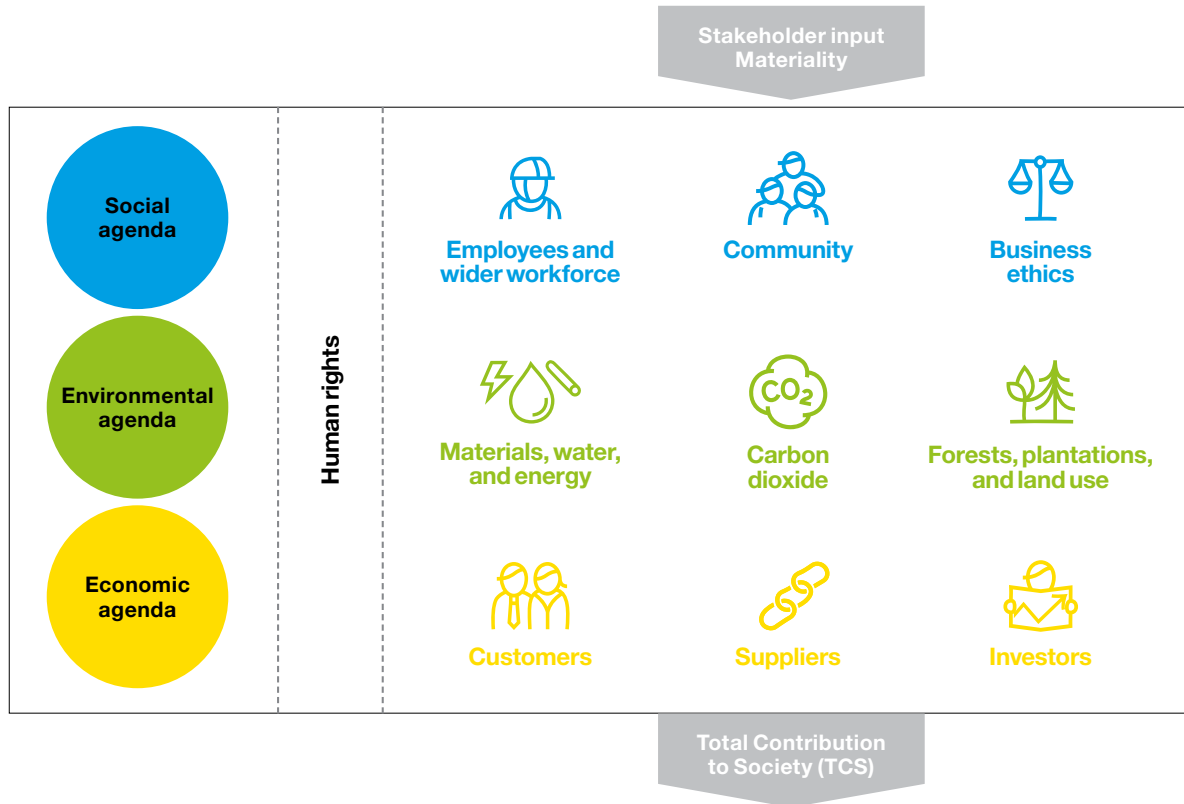
Sustainability embedded in strategy

Our Sustainability Policy describes our overall approach and governance model. At the same time, our Code of Conduct and other policies, guidelines, and statements on specific sustainability topics all further elaborate our approach, while also guiding our employees in their everyday work. These documents are available at storaenso.com/sustainability. Following a comprehensive review of the company's existing sustainability policies, guidelines, and statements in 2016, Stora Enso introduced a revised Sustainability Policy as well as revised policies and guidelines steering our environmental work in 2017. In 2018, we will focus on the alignment of social sustainability policies, guidelines, and statements.

Adopting the Sustainable Development Goals

Stora Enso acknowledges the importance of the United Nations' Sustainable Development Goals (SDGs) as part of a commonly agreed global ambition to end poverty, protect our planet, and ensure prosperity for all. Companies have a major contribution to make toward the SDGs by aligning their business models in a way that meets the needs of future generations. This can be done by integrating the SDGs that represent the most material risks and opportunities into our sustainability strategy and core business processes.

- > Governance
 - > Strategy, governance, and stakeholders
 - > Our targets
 - > Human rights
- > Social agenda
- > Environmental agenda
- > Economic agenda
- > Data and assurance



Our Sustainability Agenda is based on the classic Triple Bottom Line model. It addresses the ten sustainability topics identified as material to Stora Enso.

Our work to integrate the SDGs into our strategy continued in 2017. We engaged with our divisions and functions and our stakeholders with external expert support. In 2017, Stora Enso’s CEO and Group Leadership Team also engaged in this work. In 2018, we will conclude this process and set out a roadmap for the prioritised SDGs most relevant to Stora Enso. This will allow us to communicate and measure progress on our selected SDGs until 2030.

Our way of working is in line with the SDG Compass guide for companies, developed by the Global Reporting

Initiative (GRI), the UN Global Compact (UNGC), and the World Business Council for Sustainable Development (WBCSD). The SDG Compass introduces five steps for companies to maximise their contribution.

Sustainability governance

Sustainability is promoted by the Board of Directors, the CEO, and the Group Leadership Team (GLT). The CEO has the ultimate responsibility for the successful implementation of our sustainability strategy.

The Board of Directors’ Sustainability and Ethics Committee oversees the implementation of our sustainability strategy and the ethics and compliance strategy. The committee met four times in 2017 and it has reviewed the disclosures in this report. The main focus areas of the committee in 2017 are described in our [Corporate Governance Report](#).

At Stora Enso, sustainability work is led by the Executive Vice President, Sustainability, who reports directly to the CEO and is part of the Group Leadership Team. Everyday sustainability topics are managed by our group Sustainability team together with our Human Resources, Legal, Wood Supply, and Sourcing and Logistics functions, and our divisions (Consumer Board, Packaging Solutions, Biomaterials, Wood Products, and Paper). Each of our business divisions has its own Head of Sustainability, that reports directly to the Executive Vice President of the division. Other key functions, such as Wood Supply and Sourcing and Logistics, have sustainability organisations to support their management teams. The everyday implementation of Stora Enso’s Sustainability Agenda is the responsibility of line management supported by functional experts at all levels.

Stora Enso’s sustainability work is steered by our Sustainability Council, which includes members from our five divisions, our Sourcing and Logistics function, and subject matter experts from our group Sustainability team. Their work involves sharing good practices and identifying longer-term opportunities and challenges that may require a group-wide response. The Sustainability Council met eleven times during 2017. The GLT is periodically informed of sustainability developments, as is the Board of Directors when appropriate, through its Sustainability and Ethics Committee.

Sustainability is one of the performance metrics in the GLT members’ remuneration through Short Term Incentive programmes. Different members of the GLT can be assigned appropriate sustainability indicators. For more information on remuneration see our [Remuneration Statement](#).

Sustainability governance of joint operations

Our joint operations in Brazil (Veracel) and Uruguay (Montes del Plata) have their own sustainability teams and sustainability topics are regularly discussed by their boards, which include representatives from their parent companies. Sustainability is also regularly covered by Stora Enso’s joint operation steering committees for Veracel and Montes del Plata. In addition, Stora Enso is represented on the boards of the forestry companies Tornator and Bergvik Skog in Finland and Sweden respectively.

- Governance
 - **Strategy, governance, and stakeholders**
 - Our targets
 - Human rights
- Social agenda
- Environmental agenda
- Economic agenda
- Data and assurance



SDGs: The way forward for companies

In 2015, the United Nations defined 17 Sustainable Development Goals (SDGs) addressing key social and economic issues. The aim is to encourage key sectors of society, including businesses, to work towards these vital goals.

“It’s important for companies to actively shape their sustainability strategies to align with the SDG agenda – especially by finding ways to address their negative impacts,” says **Filippo Veglio**, Managing Director of Social Capital in the World Business Council for Sustainable Development (WBCSD).

➤ Read the full article at storaenso.com/sustainability

Stakeholder engagement

Open dialogue with our key stakeholders is crucial if we are to successfully identify stakeholder concerns, global trends and market expectations. Our stakeholder engagement work is based on both structured and ad hoc interaction, as well as surveys on topics such as customer and employee satisfaction and investor expectations. We also obtain important information through formal grievance channels. Engaging with stakeholders in social media has become increasingly important for us in understanding our stakeholders’ opinions and concerns locally around our units, as well as on divisional and group level. We actively monitor social media discussions and respond, where appropriate, to stakeholder queries in social channels.

Materiality review

In 2017, we carried out a focused materiality review with an external expert organisation, that consulted with 124 group-level stakeholders around the world in order to assess if our Sustainability Agenda and external communications are still focused on the right topics. The consulted stakeholders included campaigners (including NGOs), customers and corporate peers, experts, investors, partners and suppliers, and media.

In the materiality survey, stakeholders were asked to rank the aspects of Stora Enso’s Sustainability Agenda they consider to be most important, and to indicate if anything significant was missing. The most important sustainability topics for our stakeholders were sustainable forestry, human rights, global warming, business ethics, sustainable materials and responsible sourcing. Other elements in our existing Sustainability Agenda were also considered important. Although not fully comparable due to different terminology, the results are largely in line with our previous materiality survey carried out in 2014.

In addition to ranking the importance of different sustainability topics, the consultation identified opportunities to further clarify the links between topics within our Sustainability Agenda. The most important ones are:

- human rights and business ethics, and responsible sourcing
- sustainable forest management and our commitment to combat global warming
- bio-based materials and products, in terms of innovation, waste reduction and product safety
- community investment and a wider social responsibility context.

The consultation was an important exercise to gauge the perception of a number of group-level stakeholders regarding Stora Enso’s Sustainability Agenda and, to identify priority areas for further consideration. The results are used to address the challenges and opportunities in our sustainability work and will feed into our work on the UN Sustainable Development Goals. They also influenced the content balance of our 2017 sustainability reporting and guided the content design where necessary.

Collaboration with non-governmental organisations

Stora Enso actively cooperates with international and non-governmental organisations (NGOs) and industry associations. Through such cooperation, we are involved in developing industry practices related to combatting global warming, circular and bioeconomy, sustainable forestry, human rights, and business ethics, as well as the harmonisation of sustainability reporting and assurance thereof. Examples of our collaboration during 2017 can be found on page 7 and in the relevant sections of this report.

In 2017, Stora Enso actively participated in the World Business Council for Sustainable Development’s (WBCSD) Redefining Value (RV) Board. The RV Board is made-up of eight WBCSD member company executives, that provide strategic guidance for the RV programme, for instance on international reporting frameworks, materiality assessment standards, and data assurance methodologies. In 2017, Stora Enso’s work with RV included providing practical guidance on the integration of sustainability into Enterprise Risk Management and our approach to assurance. For more information about our risk management, see our Financial Report.

- **Governance**
 - **Strategy, governance, and stakeholders**
 - Our targets
 - Human rights
- Social agenda
- Environmental agenda
- Economic agenda
- Data and assurance

Creating value for society

As a renewable materials company, Stora Enso has a range of positive financial, social, and environmental impacts on society, such as direct and indirect employment, taxes and dividends, and products providing renewable alternatives to non-renewable materials. For more information about how we create value, see our [Progress Book](#). For details of Stora Enso's annual tax footprint in the countries we operate, see our [Financial Report](#).

Stora Enso continues to explore ways to define and report on the monetary value associated with the company's non-financial sustainability impacts and actions. In 2017, this work included cooperation with the KTH Royal Institute of Technology in Stockholm on an assignment known as Total Contribution to Society – a mapping and evaluation of approaches by leading corporations.

➤ [Read more about how we create value in our Progress Book](#)

How we create value as a renewable materials company**About this report**

This Sustainability Report is structured to reflect our Sustainability Agenda, with the agenda's ten elements addressed through a common four-tier framework:

Opportunities and challenges

These sections examine the external factors and global trends currently affecting the topics included in our Sustainability Agenda. Please note that our corporate risk management assessment appears in the [Financial Report](#).

Our policies

These sections set out the strategies and [policies](#) we use to address key opportunities and challenges.

How we work

These sections describe the processes, procedures, and systems we deploy to realise our strategies and policies.

Progress

These sections report on our performance during 2017.

External assurance

The report contents have been assured by an independent third-party provider with a level of Limited Assurance. Given our commitment to combat global warming, a level of Reasonable Assurance has been provided for our direct and indirect fossil CO₂ emissions. Stora Enso is one of the few companies in the world that assures its CO₂ reporting for stakeholders at Reasonable Level. We are looking into further developing the external assurance of our sustainability reporting over the coming years. For more information on assurance, see [page 68](#).








Particularly significant stakeholder groups for Stora Enso include:

- Consumers
- Customers
- Employees
- Forest owners
- Governments
- Investors
- Local communities
- Media
- NGOs
- Partners and suppliers
- Trade unions

In 2017, Stora Enso actively collaborated with a range of international organisations:

- BSR, pages [18](#) and [42](#)
- International Finance Corporation (IFC), page [13](#)
- International Labour Organisation (ILO), page [13](#)
- Science Based Targets initiative, page [40](#)
- The Prince of Wales's Corporate Leaders Group (CLG), page [31](#)
- Transparency International, page [26](#)
- UN Global Compact, page [68](#)
- We Mean Business Coalition, page [42](#)
- World Business Council for Sustainable Development (WBCSD), pages [6](#), [31](#), and [48](#)
- WWF, pages [48](#) and [51](#)

Our sustainability targets and key performance indicators (KPIs)

Key performance indicator (KPI)		2017	2016	Targets	Progress
	Human rights Implementation of Human Rights Action Plan ¹	88% of the actions completed ² and 100% concluded	86% of the actions completed and 96% concluded	To complete all remaining actions not involving regular review by the end of 2017.	Achieved
	Employees and wider workforce Lost-time accident (LTA) rate ³	5.3	4.4	4.0 by the end of 2017 In 2018, the TRI rate will be the new group-level KPI, which we will start reporting on in the Q1/2018.	Not achieved
	Leadership Index ⁴	81	80	80 by the end of 2018	Achieved
	Community Total community investment ⁵	Reporting to start for 2018	n/a	To establish a group-wide KPI during 2017.	Achieved
	Business ethics Code of Conduct Index ⁴	83	81	Positive trend	Achieved
	Materials, water, and energy Number of significant environmental incidents ⁶	10	n/a	Zero significant incidents ⁶	Not achieved
	Materials: Process residuals utilisation rate (%) ⁷	98%	98%	To establish a group-wide KPI during 2017.	Achieved
	Water: Total water withdrawal per saleable tonne of pulp, paper, and board (m ³ /tonne)	56	57	Decreasing trend	Achieved
	Water: Process water discharge per saleable tonne of pulp, paper, and board (m ³ /tonne)	26	27	Decreasing trend	Achieved
Energy: Reduction in electricity and heat consumption per saleable tonne of pulp, paper, and board (kWh/tonne)	-4.2%	-4.0% ⁸	-15% by the end of 2020 from a 2010 base-year	In progress	
	Carbon dioxide Reduction in CO ₂ emissions per saleable tonne of pulp, paper, and board (kg/tonne)	-40%	-40% ⁸	-35% by the end of 2025 from a 2006 base-year New Science Based Targets to reduce greenhouse gas (GHG) emissions from operations 31% per tonne of pulp, paper and board produced by 2030 from a 2010 base-year.	Achieved
	Fossil CO ₂ emissions per total energy consumed (kg of CO ₂ /MWh)	64	63	Will be reviewed by the end of 2017.	Achieved
	Forests, plantations, and land use % of the lands owned and managed by the company covered by forest certification schemes	92%	90%	96% by the end of 2017 The KPI will be redefined and a new target set during 2018.	Not achieved In progress
	Suppliers % of supplier spend covered by our Supplier Code of Conduct	95%	92%	95% of total supplier spend covered by the end of 2017. New target is planned to be communicated in the Interim Report for Q1/2018.	Achieved

¹ Stora Enso carried out a group-wide Human Rights Assessment during 2014. Action plans to address the findings were defined during the first half of 2015.

² Process for completion is in place for three group-level actions, but the completion is carried forward into 2018.

³ Number of lost-time accidents among our own employees per one million hours worked.

⁴ Measured in the annual employee survey.

⁵ Total community investments covering cash, employee voluntary working hours, and in-kind. A new KPI established in 2017.

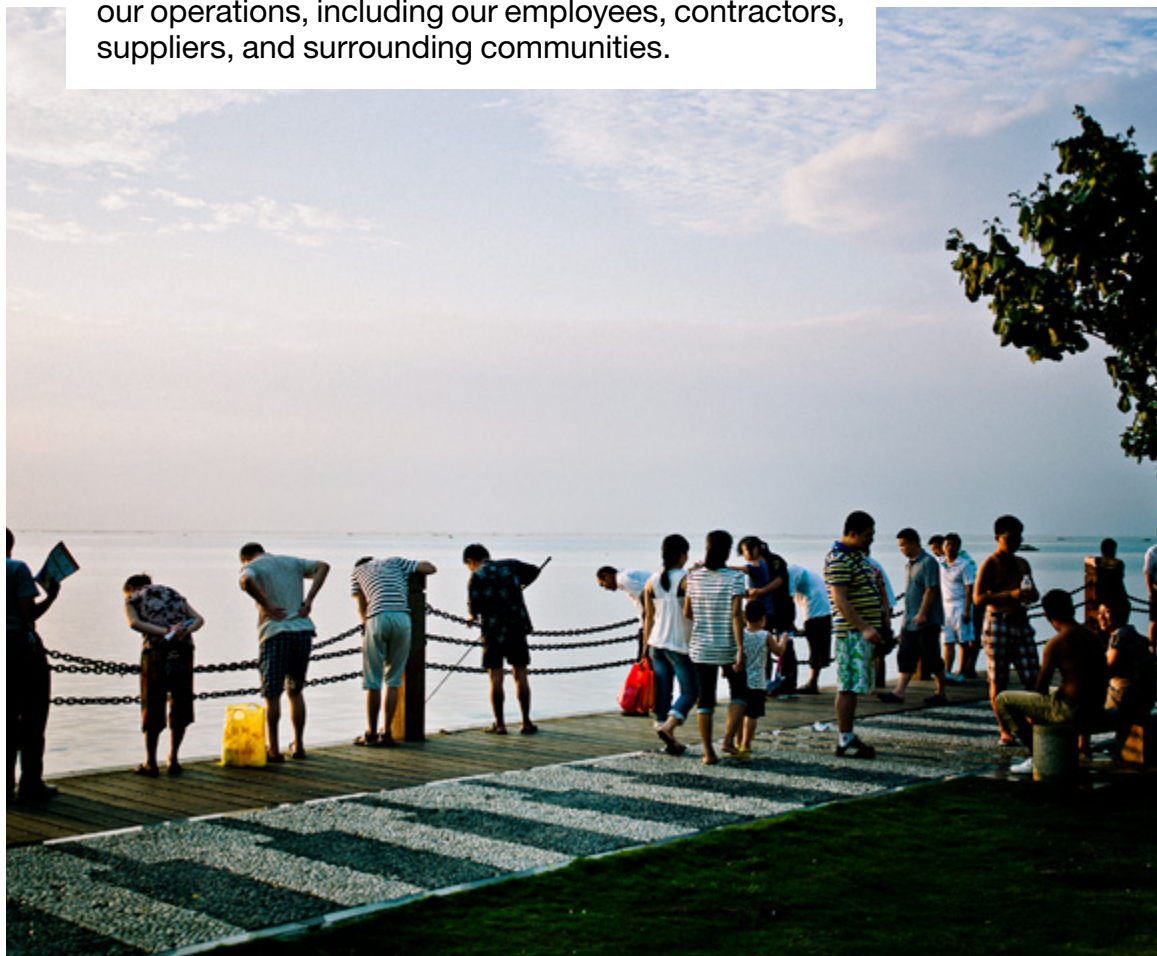
⁶ Environmental incidents involving a non-compliance with local environmental legislation or permits. For more details, see page 39.

⁷ Utilisation rate for process residuals excluding, for example, tall oil, turpentine, and wood chips. 2017 and 2016 figures not fully comparable due to data scope changes.

⁸ Historical figures recalculated due to accuracy improvements.

Human rights

Our commitment to respect human rights covers all our operations, including our employees, contractors, suppliers, and surrounding communities.



- > Governance
 - > Strategy, governance, and stakeholders
 - > Our targets
 - > **Human rights**
- > Social agenda
- > Environmental agenda
- > Economic agenda
- > Data and assurance

Opportunities and challenges



Operating in high-risk markets

When it comes to human rights, Stora Enso's operations cover challenging markets such as China, Laos, and Brazil. Many of the human rights challenges we face are deeply rooted in local society, and can only be effectively addressed through a long-term commitment and close cooperation with global and local stakeholders.

The UN Guiding Principles on Business and Human Rights emphasise that companies have an ongoing responsibility to respect human rights, even where government actions and regulatory frameworks are inadequate. Compliance with the UN Guiding Principles on Business and Human Rights requires companies to conduct human rights due diligence procedures to identify, assess, and address the human rights risks and impacts of their operations, products, and services.

Our policies



Implementing international human rights standards

In addition to our commitment to the UN Guiding Principles on Business and Human Rights, our Sustainability Agenda is aligned with the ten principles of the UN Global Compact, including its principles on human rights. Stora Enso also respects and follows the legal reporting requirements of the [UK Modern Slavery Act](#).

Relevant Stora Enso policies and statements on human rights include our:

- Code of Conduct, expressing our respect for international human and labour rights.
- Supplier Code of Conduct, imposing strict contractual requirements regarding human rights on our suppliers.
- Human Rights Statement, expressing our respect for international human rights instruments including:
 - » The UN International Bill of Human Rights
 - » The core labour rights conventions of the International Labour Organisation (ILO)
 - » ILO Convention no. 169 on the Rights of Indigenous Peoples, including the principle of Free, Prior, and Informed Consent and Participation
 - » The OECD's Guidelines for Multinational Enterprises
 - » The Children's Rights and Business Principles developed by UNICEF, the UN Global Compact, and Save the Children

- Governance
 - Strategy, governance, and stakeholders
 - Our targets
 - Human rights
- Social agenda
- Environmental agenda
- Economic agenda
- Data and assurance

How we work



On-going human rights due diligence

Human rights risks are required to be taken into account throughout our operations, including investment decisions related to mergers, acquisitions, and divestments. Our investment guidelines stipulate that environmental and social risks and impacts, including those related to human rights, must be duly identified, assessed, and addressed prior to any investments in projects with business-critical risks. Business ethics risks and specific investment compliance with our Code of Conduct and Business Practice Policy are also assessed. On-going human rights due diligence continues with Environmental and Social Impact Assessments (ESIAs), and the periodic monitoring of compliance with Stora Enso's

In 2017, all the actions in the Human Rights Action Plan were brought to an appropriate conclusion.



A local grievance channel serves communities in Guangxi, China. Anyone can call an anonymous hotline number, write to us, visit us, or talk to our field personnel.

group-wide Minimum Human Resources requirements – Labour Conditions, and Supplier Code of Conduct. Our human rights strategy and due diligence programme, which are currently under development, will define additional elements in accordance with the UN Guiding Principles.

In 2017, Stora Enso conducted human rights training and divisional sustainability expert capacity building. This was part of the process of identifying Stora Enso's priority human rights issues and the development of a human rights strategy. The strategy will be further refined during 2018.

Environmental and social impact assessments

Significant new investments can entail local environmental and social impacts affecting human rights. To map and mitigate these impacts, we conduct ESIAs for all new projects that could directly or indirectly cause significant adverse effects in local communities. Such projects include board, pulp, paper, or sawmills built on greenfield sites, industrial scale plantation projects, and any large-scale expansions of existing facilities.

One important element of any ESIA involves assessing the operational context from a social impact perspective, including human rights, and establishing dialogues with local residents, members of local organisations, experts, researchers, and other stakeholders. This is done through interviews, meetings, workshops, and public hearings. The results of ESIAs give us valuable information on how local communities may be affected by changes in their socio-economic situation and any impacts on cultural heritage, while also setting out implications for community health, safety, and security.

Human Rights Assessment and Action Plan

Stora Enso conducted a comprehensive group-wide Human Rights Assessment in 2014, consisting of separate assessments for 93 operational entities in 22 countries. The assessment included all of our production, wood supply, and forestry operations, joint operations in Brazil and Uruguay, and our equity-accounted minority investment in Pakistan that was divested in 2017.

As part of this process, Stora Enso and the Danish Institute for Human Rights (DIHR) developed a customised Human Rights Compliance Assessment tool that covers 43 human rights issues. The resulting [Human Rights Assessment report](#), consolidated by DIHR was published in February 2015.

A Human Rights Action Plan was developed during 2015, based on the findings and recommendations of the assessment report. The implementation of the action plan commenced in Q3/2015 and all actions were progressed to an appropriate conclusion by the end of 2017.

The Action Plan included specific measures to:

- monitor compliance with labour rights and the working conditions of third-party on-site employees.
- promote diversity and inclusion among Stora Enso's workforce.
- improve overtime practices and entry-level wages at certain units.
- develop guidance and procedures for the protection of employee privacy.
- ensure opportunities for supporting and facilitating collective bargaining.
- improve occupational health and safety practices at certain units.
- strengthen grievance mechanisms.
- improve environmental and social impact assessment procedures.
- enhance policies and procedures for security management.
- continue to implement our Supplier Code of Conduct.
- ensure that human rights impacts are duly considered and addressed through responsible supply chain management.

Grievance and remediation mechanisms

In accordance with the UN Guiding Principles on Business and Human Rights and our own Human Rights Statement, Stora Enso is committed to remedy any situation where our activities have caused or contributed to adverse human rights impacts. In circumstances where human rights violations are committed by third parties with links to Stora Enso through our operations, products or services, we strive to use our influence together with relevant stakeholders to ensure that those impacts are remedied.

A third-party-administered grievance channel is available to all our employees. The channel enables them to report instances where their rights may have been infringed, or where they have observed violations of Stora Enso's Code of Conduct.

Progress on the implementation of preventive and remediation actions 31 Dec 2017

	Completed ¹	On track	Not on track	Regular Closed ²	Regular review ³
Implementation progress, % of all the actions	88%	0%	0%	9%	3%

¹ Process for completion is in place for three group-level actions, but the completion is carried forward into 2018.

² Issues that were identified in the Human Rights assessments but were closed following reassessment of their validity in specific local contexts.

³ Longer-term actions without a targeted end-date that require continuous review.

- **Governance**
 - Strategy, governance, and stakeholders
 - Our targets
 - **Human rights**
- Social agenda
- Environmental agenda
- Economic agenda
- Data and assurance

We have also established local grievance channels for communities and other external stakeholders associated with our plantations and mill in Guangxi, China. We encourage anyone with concerns to call an anonymous hotline number, write to us, visit us, or talk to our field personnel. Stora Enso's employees are trained to distribute information about our operations in local villages, and to duly process any grievances, even in villages not engaged in any kind of business relationship with the company.

Similar local grievance channels exist for our project in Laos, and our joint operations Veracel in Brazil and Montes del Plata in Uruguay.

In 2017, we initiated a process to map all of our existing community grievance mechanisms to ensure alignment with the UN Guiding Principles effectiveness criteria. Similarly, in 2017 we undertook a process to map the existing security arrangements in all our operating units, as the first step to identify, assess and address any human rights risks or impacts.

For more information on the group's formal grievance mechanism, which is also open to external stakeholders in countries where the law allows, see page 27.

Communicating our performance

During 2017, details of our progress on implementing our Human Rights Action Plan were published in our quarterly Interim Reports, which also covered other human rights related topics, such as supply chain management.

Stora Enso is also following the legal requirements of the UK Modern Slavery Act to enhance our transparency and reporting regarding modern slavery. This act requires organisations conducting business activities in the UK and with a global turnover of greater than 36 million British pounds to publish annual Slavery and Human Trafficking Reports. The report must set out what the organisation does to ensure that slavery and human trafficking do not take place in any part of their own business or their supply chains. Stora Enso's first report was published in 2017 at storaenso.com/sustainability.

Progress



Human Rights Action Plan finalised

In 2017, our focus was on finalising the implementation of the Human Rights Action Plan that resulted from our group-wide Human Rights Assessment conducted in 2014 and a related report published in 2015. During the year, an internal assurance process was carried out to ensure that actions are adequately concluded and evidence documented.



In Brazil, Veracel's community engagement focuses on land use, and local social and economic development.

By the end of 2017, a total of 88% (86% at the end of 2016) of the preventive and remediation actions were completed and 100% of the actions were brought to an appropriate conclusion. 9% of the actions were closed and 3% were identified as actions requiring continuous review. Actions were

based on the UN Guiding Principles on Business and Human Rights and criteria created in collaboration with the DIHR. As all actions were progressed to an appropriate conclusion during 2017, the reporting on the Human Rights Action Plan progress will stop.

➤ Governance

➤ Strategy, governance, and stakeholders

➤ Our targets

➤ Human rights

➤ Social agenda

➤ Environmental agenda

➤ Economic agenda

➤ Data and assurance

Certain country-specific actions that have been of special interest to our stakeholders in 2017 are described below.

Guangxi, China

Stora Enso's operations in Guangxi consist of tree plantations in various parts of the province and a consumer board mill in the Tieshangang industrial zone, about 40 km from Beihai city. Stora Enso owns 83% of the operations, the International Finance Corporation owns 5%, and the remainder is owned by two state-owned organisations: Guangxi Forestry Group Co Ltd and the Beihai Forestry Investment and Development Company.

During 2017, our human rights work in Guangxi focused on training staff in human rights and progressing the remaining actions of our Human Rights Action Plan to a conclusion.

Key actions:

- Human rights training for key employees, including those working with sourcing, legal issues, human resources and sustainability, as well as for external security service providers.
- Continuing to develop a Transportation Impact Management Plan including safety guidelines reviewed together with contractors, with a special focus on road safety in local villages.
- Implementing and compliance monitoring of our Supplier Code of Conduct and Responsible Sourcing Programme. For more information about responsible sourcing, see pages 60–63.

As the Beihai Mill continued to ramp-up in 2017, we drew on our ongoing work and started to develop a comprehensive human rights due diligence programme, which covers both our forestry and manufacturing operations, in accordance with the requirements of the UN Guiding Principles. The pilot human rights work began with security service providers for Stora Enso in Guangxi, and will continue in 2018.

When required, adequate consultation with community stakeholders, including Free, Prior and Informed Consent (FPIC), continues to be a key element in our human rights due diligence and forestry operations in Guangxi. Our forestry employees work in dialogue with the communities neighbouring tree plantations to maintain good community relations, and to understand and address the potential social impacts of our operations. Our work to further improve our local community consultation processes continued in 2017.

During the year, we also continued to focus on sustainable land management in Guangxi. For more details, see page 53.



Veracel, Brazil

Veracel, our 50/50 joint operation with the Brazilian company Fibria, manages a pulp mill, eucalyptus plantations and related logistics in southern Bahia State. Veracel's active community engagement focuses on land use, and local social and economic development.

During 2017, Veracel focused on progressing the remaining actions of our Human Rights Action Plan to a conclusion.

Key actions:

- Continuing to implement the Sustainable Settlements Initiative for disputes related to land and landless movements, and indigenous people's rights. Read more on page 23.
- Continuing to implement Veracel's supplier code of conduct and associated training, audits and follow-up procedures.

Additional human rights training is provided annually to employees working as guards for Veracel's security service provider.

Veracel has been criticised in the past for issues related to landless people's social movements and the rights of indigenous peoples. In 2017, Veracel continued its dialogue with the landless movements and the Bahia State government to address issues of land distribution in Bahia. Veracel's ongoing implementation of the Sustainable Settlements Initiative in response to this issue continued in 2017. For more information about landless people's social movements in Bahia and Veracel's community engagement, see pages 22–23. Veracel maintains good relations with local indigenous villages, and

Partnering with ILO in Pakistan

Since 2015, Stora Enso has worked with the International Labour Organisation (ILO) in Pakistan, where we previously had a minority holding in Bulleh Shah Packaging (BSP). The ILO has mapped BSP's supply chains and raised awareness of child labour and decent working conditions.

"Working with companies gives the ILO new tools and leverage to reach out to society," says **Ingrid Christensen**, the ILO's Country Director for Pakistan.

➤ Read the full article at storaenso.com/sustainability

also supports programmes designed to strengthen the cultural identity of the 29 Pataxó and three Tupinambá communities. Local indigenous communities are calling for the expansion of the Barra Velha Indian Reserve. The extension would include hundreds of land properties, including 3 219 hectares of land acquired by Veracel before the indigenous peoples first made claim to the land. At the end of 2017, this case was still being processed by the regional federal court. Veracel remains committed to fully comply with the court's eventual decision.

Pakistan

In September, Stora Enso completed the divestment of its 35% minority holding in the equity accounted investment Bulleh Shah Packaging (Private) Ltd. (BSP) in Pakistan to the main owner Packages Ltd. Due to a changing business environment in Pakistan, the BSP asset with its product mix and related future outlook, was a non-strategic fit in our consumer board roadmap.

Until the divestment, Stora Enso's focus in Pakistan was on implementing Stora Enso's Human Rights Action Plan, including actions to systematically address child labour in supply chains; the implementation of BSP's Supplier Sustainability Requirements; training employees on ethics; and ensuring adequate contractor wages and working conditions. The Human Rights Action Plan in Pakistan was progressed to an appropriate conclusion in 2017.

To ensure a responsible exit from Pakistan, an external expert organisation provided additional advice on human rights issues at Stora Enso's request.

➤ Governance

➤ Strategy, governance, and stakeholders

➤ Our targets

➤ Human rights

➤ Social agenda

➤ Environmental agenda

➤ Economic agenda

➤ Data and assurance

Stora Enso will continue its Public Private Partnership with the International Labour Organisation (ILO) until the end of 2018.

The partnership was signed in 2015 for a two-year duration. In 2017, it was extended until the end of 2018. During the partnership, Stora Enso and ILO have conducted research into the promotion of decent work and elimination of child labour in BSP's supply chains; trained suppliers and personnel on decent work, child labour and other fundamental rights at work; organised community awareness-raising sessions on these rights together with the local government; arranged for a review of BSP policies by ILO with a focus on the prevention and elimination of child labour; co-hosted a Child Labour Platform meeting to start scaling up the good practices from the partnership through cross sectoral collaboration; and conducted a session at the Annual Child Labour Platform meeting with a focus on the lessons learned from the partnership.

After the divestment of BSP, Stora Enso continued to support its share of the two programmes it has been funding in Pakistan.

Stora Enso supports six schools in cooperation with the Pakistani non-governmental organisation Idara-e-Taleem-o-Aagahi. Since 2015, these schools have provided education for children previously identified as child workers in BSP's supply chain. The schools have the capacity to educate up to 640 children. The contract for the school programme, together with Stora Enso's funding, will remain in place until 2023.

Stora Enso has commissioned a mobile medical health care clinic, created together with the Yunus Center of the Asian Institute of Technology, in order to provide basic health services to local communities. Stora Enso's support for the mobile medical clinic continued until the end of 2017. The clinic has been transferred to BSP to be operated by a local medical facility based in Lahore.

Laos

Stora Enso has continued to develop trial plantations in the Saravane and Savannakhet provinces of southern Laos in areas totalling 3 731 hectares (3 900 in 2016), of which 2 988 (2 995) are planted with eucalyptus. Stora Enso Laos has 125

employees (130). During 2017, our human rights work in Laos focused on progressing the remaining actions of our Human Rights Action Plan to an appropriate conclusion.

Key actions:

- An Environmental and Social Management and Monitoring Plan was launched and implemented. The Plan is based on the previous ESIA, which was largely carried out by the International Union for Conservation (IUCN), the Swedish University of Agriculture (SLU), and the United Nations Development Programme (UNDP). Environmental and social monitoring was adapted to meet the criteria of the Forest Stewardship Council¹ (FSC®) and ISO 14001 certifications.
- Extensive training of employees to ensure correct implementation and social monitoring from a human rights perspective, including training on safety.
- Mapping supply chains and assessing supplier compliance with Stora Enso's Supplier Code of Conduct.
- Implementing an improved community grievance mechanism, created in cooperation with the International Finance Corporation (IFC). The improved grievance mechanism was communicated to the communities neighbouring our operations.
- Measures to enhance stakeholder engagement and communications to ensure that Free, Prior, and Informed Consent (FPIC) procedures are duly followed in Stora Enso's land use and land leasing when applicable. In 2017, Stora Enso focused on gender issues and land leasing procedures to further strengthen community consultation.

Stora Enso's tree plantations in Laos are located in the vicinity of villages that are culturally and ethnically diverse. This makes it essential for us to engage in community dialogues in a culturally appropriate way, based on informed consultation and participation, and obtain their consent for our projects. In 2017, we completed a project with IFC and an NGO specialised in enhancing local leadership development, Village Focus International, to train Stora Enso employees on stakeholder engagement and community consultation, particularly considering the interests of women and vulnerable groups.

In 2017, Stora Enso and Village Focus International jointly launched a set of community consultation tools. The aim is to empower the communities to gain a deeper understanding of our agroforestry model, its benefits and impacts on their villages, and to enable the entire community to participate in decision-making in relation to Stora Enso's activities.



In 2017, we focused on gender issues and land leasing procedures to strengthen community consultation in Laos.

¹ Stora Enso Communications' FSC® trademark license number is FSC-N001919.

> Governance

> **Social agenda**

> Environmental agenda

> Economic agenda

> Data and assurance



Social agenda

> Employees and wider workforce 15

> Community 20

> Business ethics 25

- Governance
- **Social agenda**
 - **Employees and wider workforce**
 - Community
 - Business ethics
- Environmental agenda
- Economic agenda
- Data and assurance

Employees and wider workforce

We strive to provide a safe and rewarding workplace for our employees, and aspire to be an attractive employer.



Opportunities and challenges



Change through people

Stora Enso's transition into the renewable materials growth company requires nurturing the competencies and skills needed to meet future demands. Our operations are based in various locations with different challenges and opportunities. For example, some locations might have a shortage of skilled workers, whereas others may be preparing for a generational change in their workforce. Managing our opportunities and challenges responsibly, together with issues such as health and safety, requires systematic workforce planning and leadership.

Our policies



Driving performance and culture

Stora Enso's People Strategy guides our efforts to create engagement and motivation among our employees, and to build a capable organisation that can help us realise our business strategy. Key areas in the People Strategy include: leadership development, performance management, workforce planning, talent management and employer branding. Read more about People and Leadership in our [Progress Book](#).

Our Occupational Health and Safety (OHS) function works to realise Stora Enso's Health and Safety Policy and our OHS Mode of Operation. These policies define how we manage OHS topics in practice and integrate them into annual planning and reporting.

Other key policies applied in our people and safety management include our:

- Code of Conduct
- Supplier Code of Conduct
- Minimum Human Resources Requirements – Labour Conditions
- Diversity Policy.

How we work



Everybody home safe, every day

Stora Enso's main occupational health and safety goal is to be an accident-free workplace. Encouraging a company-wide safety culture means that everyone is responsible for making every workday healthy and safe – from our top management and throughout the company.

Safety management at Stora Enso is based on international standards such as OHSAS 18001, but our processes go

- Governance
- **Social agenda**
- **Employees and wider workforce**
- Community
- Business ethics
- Environmental agenda
- Economic agenda
- Data and assurance

beyond these requirements. Responsibility for implementing each tool and programme in our units lies with line management, supported by local staff and OHS professionals.

Local OHS committees and working groups at our units provide forums for raising safety-related topics and suggestions. Our country-level OHS networks in Finland, Sweden, Germany, and China also share good practices and organise training to enhance our safety procedures and competencies. On group level, OHS was moved from HR into the Sustainability function in 2017. As a result, OHS governance was reviewed, which led to the establishment of two new cross-company teams to better align and anchor key actions on safety:

- The Safety Steering Group is made up of divisional operations managers and other senior managers from relevant units. It directs strategic long-term planning at group level, steers the implementation of our Safety Roadmap, and oversees the work of the Safety Management Team.
- The Safety Management Team includes group and divisional safety representatives and some mill safety managers. It develops and aligns group-wide safety programmes endorsed by the Safety Steering Group, and where necessary, the Group Leadership Team and the Sustainability and Ethics Committee of the Board of the Directors.

Our units report monthly on safety performance data, including incident rates, absenteeism statistics, and safety observations. Stora Enso also monitors the number of accidents among on-site and forestry contractors.

Promoting contractor safety

Stora Enso's approach to safety extends to contractors, suppliers, and on-site visitors. We encourage everyone to give feedback and provide ideas on how to further improve safety. We also cooperate closely with our joint operations.

A company-wide safety culture means that everyone is responsible for making every workday safe.



The best kind of workplace safety goes home with you

In Sweden, Nymölla paper mill's manager **Michael Lindemann** has found new ways to improve safety at the mill – but a strong safety culture requires continuous work. At Stora Enso, safety starts at the top, but it is also everyone's personal responsibility to work safely.

"If you can have one day without accidents, you can have two, and four, and a hundred," Michael says. "It is my responsibility as a leader to make sure people adopt new routines."

➤ [Read the full article at storaenso.com/sustainability](http://storaenso.com/sustainability)

Leadership in focus

Leadership is a top priority for Stora Enso, as we believe it is the strongest driver behind company performance, wellbeing, and culture. We measure our progress in this area by using an overall Leadership Index that measures employees' perceptions of their managers. Read more about People and Leadership in our [Progress Book](#).

Improving the performance and engagement of our employees is another priority for us. We set targets for both our business and our people, provide continuous feedback and follow up on targets and expectations during annual employee performance appraisals.

We annually review our organisational capabilities, talent pool, and succession plans for key positions. This ensures we continuously develop a capable organisation, with the right structure, competencies, and people in place to successfully deliver on our business strategy.

Diversity

We believe that diversity is key to driving innovation and strengthening our competitiveness. When we refer to diversity, we mean various aspects of diversity including gender, age, skills, educational level, culture, and personality. When it comes to gender diversity, our aim is to achieve a

gender balance of 70% male and 30% female among senior managers by the end of 2018. At the end of 2017, the ratio was 79% (79%) male and 21% (21%) female. The gender distribution in the Group Leadership Team has improved from four female members out of 13 in 2016, to five out of 12 in 2017. When asked about diversity in the annual employee survey, 81% (78%) of our employees reported that their management was able to create diverse teams. Our objective was that 80% should respond positively.

Hiring locally

It is important that our new operations have managers and employees that are well-grounded in local cultures. While there is often an initial need for expatriate employees, local hiring is usually initiated as early as possible, bringing economic benefits to the local community.

As an example, at the end of 2017, 80% of our employees in Guangxi, China, were local (77% at the end of 2016), while local management teams included 19 managers of Chinese origin (14 in 2016) and 8 expatriates (12 in 2016).

Fair working conditions

We care for all our employees and are committed to fully respecting human rights throughout our operations.

- Governance
- Social agenda
 - Employees and wider workforce
 - Community
 - Business ethics
- Environmental agenda
- Economic agenda
- Data and assurance

We believe that diversity is key to driving innovation and strengthening our competitiveness.

All Stora Enso units are expected to work systematically to ensure that employees are treated with respect and fairness. All Stora Enso units should additionally comply with a set of minimum requirements for labour conditions in order to create an environment where workers are both willing and able to perform their tasks. These requirements address areas such as working hours, basic worker rights, working conditions, and non-discrimination. The vast majority of our production units are in compliance with these requirements, according to a self-

assessment conducted during 2017. Units with improvement needs have action plans in place to become fully compliant with the requirements.

Progress

Enhancing safety and leadership performance

From January 2017, Stora Enso has applied Occupational Health and Safety Administration (OHS/A) definitions in the reporting of total recordable incident (TRI) and lost-time accident (LTA) rates to better align with international standards and to allow for future benchmarking with peers and companies in other sectors. Due to this change, 2017 safety data is not fully comparable with historical data.

In our safety work, the LTA rate was our priority key performance indicator (KPI) in 2017. Stora Enso's short-term milestone for the LTA rate was 4.0 by the end of 2017. The target was not achieved as the group-wide LTA rate increased to 5.3 in 2017 (4.4 in 2016). In 2017, our TRI rate decreased

to 7.7 (11.7). In 2018, the TRI rate will be the new group-level safety KPI, which we will start reporting on in the first quarter of 2018.

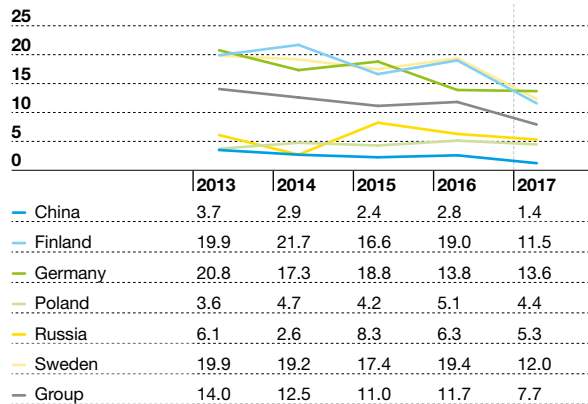
In March 2017, an employee working at the Wood Products unit in Murów, Poland, was performing a visual analysis of a machine when it inadvertently activated and resulted in him tragically losing his life. A root cause analysis was conducted, and corrective actions have been implemented. To prevent similar accidents from occurring in the future, our group-level practices and requirements, including de-energising practices, are being reviewed and revised.

With regard to occupational health, Stora Enso measures illness-related absenteeism with a focus on encouraging units to invest in proactive health management. In 2017, illness-related absenteeism amounted to 3.1% (2.9%) of total theoretical working hours.

By the end of the year, 82 Stora Enso units had appointed joint safety committees (73), covering 90% (77%) of our total workforce. The average number of safety observations reported per employee was 9.0 (8.9).

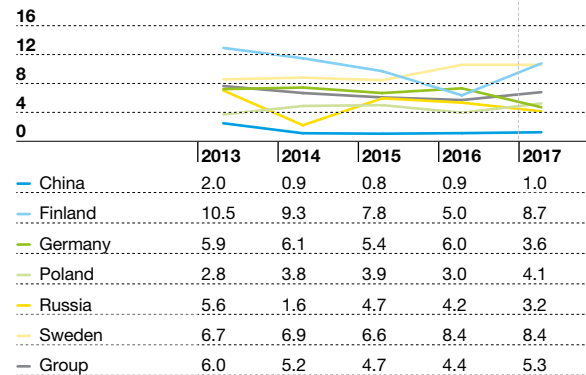
Total recordable incident rates (TRI)^{1,2}

Number of incidents among our own employees per one million hours worked



Lost-time accident rates (LTA)^{1,2}

Number of lost-time accidents among our own employees per one million hours worked



¹ For Stora Enso employees, excluding joint operations.

² As of January 2017 Stora Enso applies new Occupational Safety and Health Administration (OSHA) definitions in the reporting of TRI and LTA rates to better align with international standards. Due to this change, the 2017 figures are not fully comparable with historical figures.



At Stora Enso, we believe that leadership is the strongest driver behind company performance, wellbeing, and culture.

- Governance
- **Social agenda**
- **Employees and wider workforce**
- Community
- Business ethics
- Environmental agenda
- Economic agenda
- Data and assurance

Other focus areas in our OHS management work during 2017:

- The group OHS function was moved from HR into the Sustainability function.
- The Safety Management Team and Safety Steering Group were set up to better govern the topic.
- Management approved a Safety Roadmap until the end of 2019. The roadmap drives step by step improvements in performance, focusing on enhancing governance and ways of working, control and compliance with standards, and building on leadership and best practices.
- Roll-out of the new group OHS reporting tool in order to further improve data reliability.
- Implementation of better monitoring and reporting on process safety incidents.

Contractor accidents

Stora Enso’s reporting of accidents involving contractors has been developed in recent years. From early 2017, contractor accidents have been reported in separate categories for on-site accidents and logistics incidents, to allow better comparability with statistics from other companies.

Leadership and performance management

Stora Enso’s key performance indicator (KPI) for leadership, the Leadership Index, measures employees’ perceptions of their managers. The index is calculated based on our annual employee survey. Our target was to achieve an index of 80/100 by 2018. This target was reached ahead of schedule in 2016, with a Leadership Index of 80, and it further improved to 81 in 2017. The response rate to our employee survey remained high at 91% (90%).

During 2017, we continued to further develop our leaders in all parts of the organisation, through our own management training programme “Lead Through People”. A part of this programme addresses practical ways to improve the company’s safety culture, and approximately 450 managers participated during the year. To further develop sales leadership capabilities, we launched a new programme in 2017 specifically addressing this area, involving approximately 250 managers during the year. Read more in our *Progress Book*.

We promote employee performance management by setting clear expectations with team and individual goals and development objectives, providing regular coaching and feedback, and ensuring employees understand the wider context of how they contribute to the success of the company. All Stora Enso employees should be involved in at least one formal performance review meeting with their manager each year. In 2017, 91% of our employee survey respondents stated

that they had taken part in a performance review during the past 12 months (90%).

Providing living wages and monitoring working hours

Every other year, the global non-profit organisation BSR supports us in defining and calculating living wages in relevant locations. In 2017, we reviewed the current situations in Brazil, China, Russia, Laos, and Uruguay. The results of this study indicate that overall, Stora Enso pays minimum/entry level wages above the living wages defined by BSR.

At Stora Enso, all units are expected to comply with our Minimum Human Resources Requirements - Labour Conditions that set the requirements for working hours, basic worker rights, working conditions, and non-discrimination.

In late 2017, Stora Enso’s Internal Audit discovered working hour recording errors in Stora Enso’s China Packaging operations. Employees had been paid for overtime hours as bonus, not on a monthly payroll. This practice aimed at hiding overtime hours exceeding customer requirements and possibly the standards set by Chinese law. We are investigating the case thoroughly in cooperation with an external lawfirm. We have also made detailed action plans to correct the errors immediately as well as long-term actions to ensure future full compliance with applicable overtime requirements.

Our lowest wages compared to local minimum wages¹

Ratio of our lowest wage to the local minimum wage

	2017	2016
Brazil ²	1.1	1.1
China ³	1.3	1.4
Estonia	1.0	1.1
Laos	1.3	1.1
Latvia	1.2	1.2
Poland	1.0	1.0
Russia	1.0	1.0
Uruguay ⁴	1.1	1.1

¹ In material locations of operations, compared to minimum wage levels set at national, state, or provincial level as applicable. The ratio shows how many times larger our lowest wage is compared to the local minimum wage.

² Including employees of our 50%-owned joint operation Veracel.

³ Due to variations in regional minimum wages the ratio is calculated as a weighted average for Stora Enso’s units in China. The weighting is based on the units’ total number of employees.

⁴ Including employees of our 50%-owned joint operation Montes del Plata.



Flying robot to the rescue!

Stora Enso is testing how drones can make woodyard inventories safer by reducing the need for people to walk around woodyards, where injuries and accidents may occur. We are also piloting a flying firefighter robot at Imatra Mills in Finland.

“Drones can help our first response team to better locate any problems, give us information about relevant weather conditions, and help us react faster,” explains Imatra Mills’ Fire Safety Manager **Mikko Parikka**.

➤ Read the full article at storaenso.com/sustainability

- Governance
- **Social agenda**
- **Employees and wider workforce**
- Community
- Business ethics
- Environmental agenda
- Economic agenda
- Data and assurance

Share of female employees at Stora Enso

	2017	2016
Total number of employees at year-end ¹	24 960	24 723
Share of women among all employees (%)	26%	26%
Share of women among senior managers (%)	21%	21%
Women in the Group Leadership Team	5 out of 12	4 out of 13
Women on the Board of Directors	3 out of 9	2 out of 8

¹ Excluding employees of our 50%-owned joint operations Montes del Plata and Veracel.



Our approach to safety extends to contractors, suppliers, and on-site visitors.

Employee distribution by gender and employee turnover¹

	China ⁴		Finland		Germany		Poland		Russia		Sweden		Group total
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	
Employees by gender	48%	52%	20%	80%	21%	79%	18%	82%	23%	77%	20%	80%	
Employee turnover	46%	49%	4%	5%	4%	5%	4%	4%	11%	6%	6%	6%	15%
Number of hires ²	1 200	1 440	70	220	30	40	20	70	20	60	90	250	3 920
Number of leavings ³	1 150	1 310	60	230	10	40	20	70	30	50	70	250	3 680

¹ Figures for the six largest countries in terms of the total number of employees.

² Hires: numbers of permanent employees joining the company. Excluding hires due to acquisitions. Rounded to the nearest 10.

³ Leavings: numbers of permanent employees leaving voluntarily or due to restructuring, retirement, or death. Excluding leavings due to divestments. Rounded to the nearest 10.

⁴ The employee turnover in China mainly comes from Stora Enso China Packaging units.

Compensation and equal opportunity¹

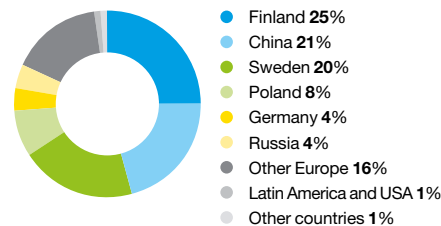
	Ratio of highest individual salary to median salary ²		Female employees' remuneration as a proportion of male employees ³	
	2017	2016	2017	2016
China	63	57	100%	100%
Finland	14	12	97%	97%
Germany	5	6	97%	96%
Poland	18	21	n/a	n/a
Russia	27	27	n/a	n/a
Sweden	28	27	100%	100%

¹ Figures for the six largest countries in terms of the total number of employees.

² The ratio shows how many times larger the highest individual salary is compared to the median salary.

³ Calculated using weighted averages based on gender comparisons within each country's employee categories as applicable. Figures in Finland and Sweden are based on evaluations covering approximately 30% (Finland) and 75% (Sweden) of the total workforce.

Employee distribution by country¹



¹ Excluding employees of our 50%-owned joint operations Montes del Plata and Veracel.

Employee distribution by age and region

	China	Finland	Germany	Poland	Russia	Sweden	Group by age
Up to 30	47%	10%	14%	19%	17%	12%	21%
31–50	51%	51%	42%	55%	71%	43%	51%
51 and over	2%	39%	44%	26%	12%	45%	28%

¹ Figures for the six largest countries in terms of the total number of employees.

- [> Governance](#)
- [> Social agenda](#)
 - [> Employees and wider workforce](#)
 - [> Community](#)
 - [> Business ethics](#)
- [> Environmental agenda](#)
- [> Economic agenda](#)
- [> Data and assurance](#)

Community

Communities living near our mills and forestry operations form one of Stora Enso's most important stakeholder groups. We aim to contribute to the vitality and resilience of these communities.



Opportunities and challenges



Partnering with local communities

Global companies can make a positive contribution in local communities through active corporate citizenship. Such voluntary investments can benefit both communities and the company over the long-term.

Stora Enso's operations are heavily dependent on local communities for a motivated and competitive workforce, as well as sourcing of our most important raw material, wood. Therefore, the communities we influence must be resilient and able to thrive economically, socially, and environmentally in the long-term.

Stora Enso's operations also generate emissions and our tree plantations influence local land use that may adversely impact communities associated with these operations. Our socio-environmental impacts must be managed responsibly, in order to minimise negative impacts, maximise our positive influence, maintain cooperative community relations, and ensure our long-term license to operate.

Our policies



A comprehensive approach to community work

The policies that guide Stora Enso's community relations include our:

- Sponsorship and Donations Policy
- Community Investment Guidelines
- Code of Conduct
- Business Practice Policy
- Guidelines for Social Responsibility
- Human Rights Statement
- Tax Policy.

Our joint operations have each developed formal procedures for their respective community work to reflect Stora Enso's requirements.

How we work



Managing our local impact

In many locations, Stora Enso is a major employer, tax-payer, and partner for local entrepreneurs, which positively impacts the local economy. In addition to implementing mandatory and regulated contributions to communities, we apply precautionary management actions to mitigate and remedy potential adverse environmental

- Governance
- **Social agenda**
- Employees and wider workforce
- **Community**
- Business ethics
- Environmental agenda
- Economic agenda
- Data and assurance

and social impacts on neighbouring communities. These include:

- Environmental and social impact assessments (ESIAs) conducted for all new projects that could cause significant adverse effects in local communities. For more information, see page 10.
- Due diligence assessments, which are invariably realised as part of Stora Enso’s acquisition and investment processes prior to any critical decision. These assessments cover relevant factors related to environmental, social, and business practices. They play an important role in building our understanding of local operating environments, while also helping us to build constructive relationships with stakeholders such as governments, business partners, local communities, and NGOs. Any subsequent investment decision must consider our ability to mitigate and manage any identified adverse impacts.
- Third-party certified Environmental management systems at our production units, applying international standards such as ISO 14001, OHSAS 18001 and ISO 50001 for our production units.
- Third-party forest management certification for our own forestry operations and suppliers, such as the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC).
- When necessary, restructuring processes and closure of operations realised in cooperation with the authorities to support the communities through related changes, and to create opportunities for new business initiatives.

Community investment

Building on the local community work Stora Enso has carried out over many years, we implemented a new group-wide framework for our community investment work in 2017.

Stora Enso defines community investment as the voluntary donation of cash, working hours, and in-kind for non-profit purposes or non-profit community organisations following the LBG framework, a globally recognised framework for measuring corporate community investment. For Stora Enso, community investments are strategic, proactive, and local, where the community is the main beneficiary – but where we recognise that the company also benefits over the long-term.

In 2017, Stora Enso took the first steps to systematically monitor and measure its input to community investment globally. We also established for the first time a key performance indicator (KPI) to measure our total community investment covering three inputs: cash, working hours, and in-kind.

Progress

Measuring our community investment

As a global company with a strong local presence, particularly through wood procurement, we are committed to numerous community investment activities. In 2017, the total number of Stora Enso’s community investment projects was 403, including those facilitated by our joint operations Veracel in Brazil and Montes del Plata in Uruguay. The focus areas of our community investment projects are education, economic

development, and social welfare. Based on the first year of reporting, the total contribution of these activities consists of our input in cash (68% of total contribution), volunteered working time (20%), and in-kind (12%).

Local community activities

During 2017, we engaged with the communities around our operations in various ways, including investments in agroforestry programmes, socio-economic development and capacity building projects.

Europe

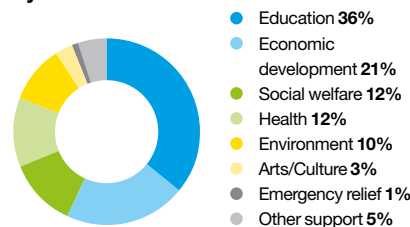
In Europe, Stora Enso’s community investment particularly focuses on enhancing the attractiveness of communities near our sites for our existing and potential future employees. To support the potential local workforce, we participated in programmes that promote education and youth training, and provide internship and research opportunities. We also strive to promote diversity in our local workforce by participating in programmes that facilitate the employment of disabled people and refugees.

To support the everyday vitality of communities, we also financially support local associations, including sports clubs and cultural activities.

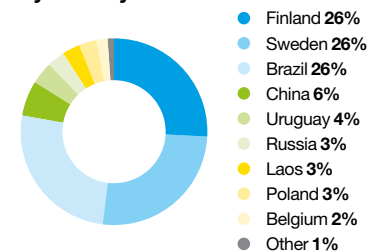
Total community investment by contribution type¹



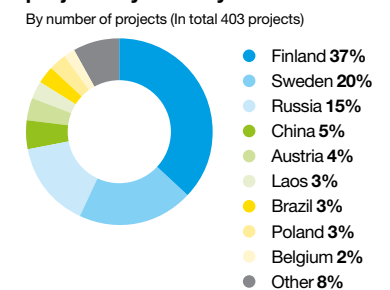
Total community investment by area¹



Total community investment by country¹



Community investment projects by country²



¹ Total community investment includes cash, voluntary working hours and in-kind as defined in the LBG framework. Includes 50% of joint operations Veracel in Brazil and Montes del Plata in Uruguay.

² Including joint operations Veracel in Brazil and Montes del Plata in Uruguay.

- Governance
- **Social agenda**
- Employees and wider workforce
- **Community**
- Business ethics
- Environmental agenda
- Economic agenda
- Data and assurance



To save a horseshoe crab from plastic

Ocean waste coming in with the tide is affecting wildlife and local livelihoods near Stora Enso's Beihai Mill in Southern China. A community project run by Stora Enso and the Guangxi Biodiversity Research and Conservation Association (BRC) is tackling the problem with beach cleaning and awareness building events.

"We've already seen how volunteers have gone from not knowing much about the topic to taking action proactively. And we've only just begun!" says **Hongxu Zhao**, BRC's Project Communication Officer.

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Guangxi, China

Stora Enso leases 82 591 hectares of land in Guangxi, China, where engagement with local communities is a key element of our everyday operations. Stora Enso's field staff and social engagement officers speak regularly with local people impacted by our plantations and mill, and along our transportation routes, to inform them about Stora Enso's operations and to enable them to express their concerns and contribute ideas. Our aim is to understand social risks in advance, so we can properly mitigate and remedy them.

During 2017, we continued socio-economic profiling of local villages in order to better understand and address ethnic structures, opportunities for development, and other characteristics that can help us maximise the positive impacts of our operations, and mitigate any negative impacts. During the year, we also advanced Free, Prior, and Informed Consent (FPIC) processes in land leasing where applicable. For more information, see page 12.

Employees at our Beihai Mill are volunteering with the Guangxi Biodiversity Research and Conservation Association (BRC) to clean up the coastline in Beihai by collecting plastic waste. The goal is also to inspire locals to care for their natural environment over the long-term through various awareness-raising initiatives.

Our forestry operations in Guangxi run community projects to address the challenges in rural villages near our plantations. During 2017, Stora Enso supported nine community projects focusing for instance on improving sanitation and the availability of clean drinking water.

Veracel, Brazil

Veracel owns 213 500 hectares and leases 12 500 hectares of land in Bahia, Brazil. Supporting income generation and employment for local communities are the top priorities of Veracel's sustainability agenda. Since 2012, Veracel has been involved in the Pact for the Development of the Discovery Coast. Under this agreement, the government has committed to reimburse Veracel ICMS tax credits paid by the company, in return for the company's investments in local development programmes. The pact's projects contribute to the sustainable development of family farming by forming associations for small producers and indigenous communities. During 2017, the pact supported two projects related to cassava production.

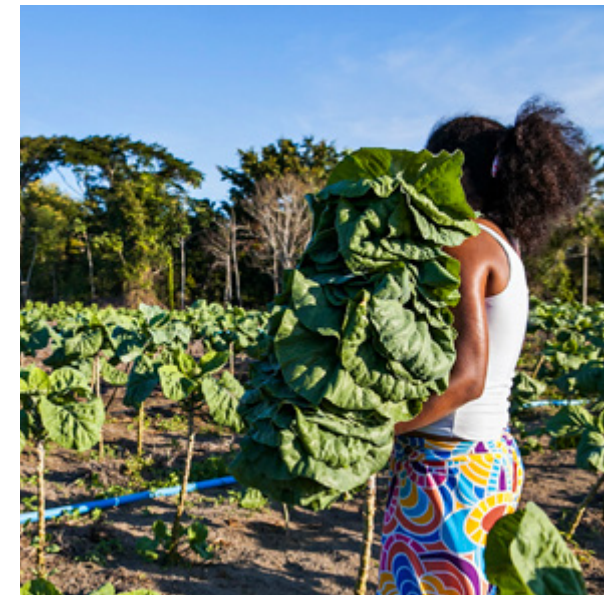
Supporting multiple land uses

Veracel is also supporting local livelihoods by making some of its land available to family farmers, and by providing training

and technical support. The Agrovida farming programme aims to produce food for the local community and to trade surplus production in regional markets. The Roça do Povo project supports local families cultivating cassava and other crops. By the end of 2017, the Agrovida initiative involved 153 (150 in 2016) farmers cultivating 208 (208) hectares, while the Roça do Povo scheme assisted 82 (79) farmers cultivating 80 (80) hectares.

Veracel also enables local beekeepers to keep their hives on the company's land, and provides training in beekeeping. In 2017, a total of 155 (136 in 2016) honey producers, mostly working through local cooperatives, benefitted from this support, producing approximately 99 (87) tonnes of honey during the year.

In 2017, Veracel also continued to support local fishing communities working at Veracel's ports of Belmonte, Santa Cruz Cabrália, and Santo Antônio. The cooperation includes support for studying the dynamics and development opportunities for local fishing, and providing infrastructure for its commercialisation.



Veracel supports family farming and local producers through several initiatives.

- > Governance
- > **Social agenda**
- > Employees and wider workforce
- > **Community**
- > Business ethics
- > Environmental agenda
- > Economic agenda
- > Data and assurance



Making money from honey

At a time when bee populations worldwide are in serious decline, millions of bees are using eucalyptus plantations as a source of nectar around Stora Enso’s joint operation Veracel in Brazil. Local beekeepers are turning it into exportable honey. “Veracel’s support has been crucial in forming cooperatives and making our operations more professional,” says **Matthew Martinez Valverde**, a beekeeper from Eunápolis.

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In 2017, work continued on a related Sustainable Settlement Initiative launched in 2012 to provide farm land and technical and educational support to help hundreds of local families improve their incomes. This initiative is facilitated by the Government of the State of Bahia through the Secretariat of Rural Development (SDR), and conducted in cooperation with the landless people’s social movements and INCRA. Through this initiative, the social movements have pledged to leave areas occupied since July 2011, while Veracel has agreed not to seek to repossess areas occupied before that date. The initiative relates to a total area of approximately 16 500 hectares of Veracel’s lands designated for the settlements to be purchased from the company by INCRA. In addition to advancing this process during 2017, Veracel also provided socio-economic support for the landless people’s social movements, including support for agricultural activities and literacy enhancement.

At the end of 2017, additional areas of Veracel’s productive land totalling 3 043 hectares (3 499 hectares at the end of 2016) were occupied by landless groups not involved in the Sustainable Settlement Initiative. During the year, Veracel continued to seek repossession of these areas through legal processes, and the company resumed forest management activities on a total total of 456 hectares (1 962 hectares in 2016). Stora Enso also reports on this additional occupied area in the group’s [Interim Reports](#).

Montes del Plata, Uruguay

[Montes del Plata](#), our 50/50 joint operation owned together with the Chilean company Arauco, runs a pulp mill at Punta Pereira in Colonia, in southwestern Uruguay, together with associated eucalyptus plantations mainly located in central and north-western parts of the country. Montes del Plata owns 190 000 hectares of land and leases 56 500 hectares of land.

Enhancing livelihoods

Montes del Plata seeks to create positive impacts in local communities near the mill by fostering employment opportunities, maximising local hiring, participating in mentoring programmes, and by promoting local education and an entrepreneurial spirit among young people.

During 2017, Montes del Plata also continued to work on the Alianzas programme that provides additional income for local farmers by enabling them to use their land to produce timber as well as agricultural crops. At the end of the year, 374 (339 in 2016) farmers with lands totalling 56 500 (55 000) hectares, of which 45 000 (44 000) are planted with eucalyptus, participated in the programme.

Investing in local social welfare and causes

To strengthen the labour market in neighbouring communities, Veracel is cooperating with several NGOs to prepare young people for the labour market. In 2017, such cooperation covered training on coastal and marine environments together with the NGO Instituto Mae Terra. During the year, the company also cooperated with the National Business Apprenticeship Service (SENAC) and the municipality of Eunápolis to help 28 people graduate with a degree in administration.

During 2013–2015 Stora Enso and Veracel successfully cooperated with the NGO Childhood Brasil to combat child

abuse and exploitation in the municipalities of Porto Seguro, Santa Cruz de Cabralia, and Eunápolis in South Bahia. The cooperation included formulating, implementing, and strengthening public policies related to child exploitation, and providing training for professionals. In 2017, Stora Enso, Veracel, and Childhood Brasil signed a one-year continuation of the contract.

For information on Veracel’s engagement with indigenous communities, see page [12](#).

Continuous dialogue with the landless people’s movement

Dialogue with landless people is important for Veracel, particularly as certain groups have occupied some of the company’s land since 2008. During 2017, Veracel continued to engage in dialogue with the Government of the State of Bahia, the National Institute of Colonisation and Agrarian Reform (INCRA), and the representatives of six officially recognised landless people’s social movements:

- The Movement of Landless Workers (MST)
- The Federation of Agricultural Workers (Fetag)
- The Movement for the Struggle for Land (MLT)
- The Peasant Resistance Movement (MRC)
- The Front of Free Workers (FTL)
- The Association Unidos Venceremos (Aprunve).

Stora Enso’s operations are heavily dependent on local communities for a motivated and competitive workforce.

- Governance
- **Social agenda**
- Employees and wider workforce
- **Community**
- Business ethics
- Environmental agenda
- Economic agenda
- Data and assurance



In Uruguay, Montes del Plata seeks to create positive impacts on local communities by maximising local hiring, participating in mentoring programmes, and by promoting local education.

Alianzas also promotes the diverse use of Montes del Plata's lands, for purposes such as cattle grazing and honey production. By the end of the year, 183 farmers were keeping cattle on Montes del Plata's lands, varying from over 20 000 up to 60 000 heads of cattle during the year, while 39 farmers produced honey in approximately 6 500 beehives, of which 2 000 are currently organic-certified. The diverse use of land improves local livelihoods, reduces forest fire risks, and helps to build stronger relationships with the community.

Montes del Plata aims for the local community to become better acquainted with its operations. Stakeholder engagement work in 2017 included several educational visits

to the mill, Montes del Plata's tree nursery, the main port, and the company-owned Bioparque M' Bopicuá environmental centre. The environmental centre, which received over 2 100 visitors during the year, promotes education as well as enables visitors to experience native wildlife at first hand and to learn how ecosystems function.

Mitigating negative impacts from logistics

The company has a long-term strategy for the sustainable transportation of wood, including annual action plans involving truck drivers, transport companies, and local communities. Montes del Plata's wood supply is operated by some 700

truck drivers from 16 different transportation companies. Montes del Plata carefully trains all drivers before they start working for the company. Quarterly workshops on safety and social responsibility are organised for the truck drivers and regular meetings are held with the owners of the transportation companies to follow up on safety indicators.

Montes del Plata, together with its contractors and their truck drivers, works to raise awareness of traffic safety issues in the locations most severely affected by the company's traffic. In 2017, this work included cooperation with 13 schools on local road safety development projects.

Laos

Stora Enso's plantations in Laos have been established in a way that enables local farmers to grow rice and cash crops between the trees. Before establishing plantations, Stora Enso makes the land safe by removing unexploded bomblets. The bombs were dropped over Laos during the Vietnam War.

In Laos, we have also established a village development fund to share benefits among local villagers, and to further support local development and livelihoods. Most of the funding allocated during 2017 was directed to infrastructure projects such as electricity and water supply connections, road upgrading, and purchases of livestock to enhance food security. These projects have been designed together with the villagers according to their needs and requirements. All the projects are also approved by the local authorities. For more information about our human rights work in Laos, see page 13.

Bulleh Shah Packaging, Pakistan

In September 2017, Stora Enso completed the divestment of its 35% holding in the equity-accounted investment Bulleh Shah Packaging. For more information on Stora Enso's continuing efforts to support human rights and community work in Pakistan, see pages 12–13.

In many locations, Stora Enso is a major employer, tax-payer, and partner for local entrepreneurs.

[> Governance](#)[> Social agenda](#)[> Employees and wider workforce](#)[> Community](#)[> **Business ethics**](#)[> Environmental agenda](#)[> Economic agenda](#)[> Data and assurance](#)

Business ethics

For Stora Enso, business ethics means more than complying with regulations. Promoting an ethical company culture helps us enhance our reputation and succeed in business as a reliable partner.



Opportunities and challenges



Broad ethical approach beyond compliance

Compliance with laws and regulations is always the highest priority for us. However, as a value-driven organisation we believe that adopting a wider ethical approach is also crucially important.

Stora Enso operates in locations including high-risk markets that offer good business opportunities, but may also entail exposure to serious risks relating to topics such as corruption and fraud. Joint venture agreements may also involve risks related to competition law. The UK Bribery Act and the US Foreign Corrupt Practices Act are examples of effective legislation that governments and authorities have introduced to combat corruption. These laws place high demands on company controlling mechanisms, but they also help to build accountability and trust among employees, partners, and other stakeholders.

In today's increasingly digital and information-intensive business environment, cybersecurity and privacy issues are a key concern for organisations. Stora Enso takes measures designed to ensure the privacy of our customers, suppliers, employees, and other stakeholders, and works actively to mitigate risks and prevent all forms of fraud. New legislation such as the EU Data Protection Regulation additionally sets requirements concerning the processing of personal data, with heavy fines imposed for infringements.

Our policies



Comprehensive approach to ethics and compliance

The Stora Enso Code of Conduct is a single set of values defined for all our employees, to provide guidance on our approach to ethical business practices, environmental values, and human and labour rights. These same values are applied wherever we operate.

Other policies relevant to ethics and compliance include our:

- Business Practice Policy
- Data Privacy Policy
- Supplier Code of Conduct.

How we work



Combating misconduct on all fronts

Stora Enso's Ethics and Compliance function is a sub-function operating under our Legal team, headed by our General Counsel, who reports directly to the CEO. Our Ethics and Compliance Management Committee (formerly known

- [> Governance](#)
- [> Social agenda](#)
 - [> Employees and wider workforce](#)
 - [> Community](#)
 - [> Business ethics](#)
- [> Environmental agenda](#)
- [> Economic agenda](#)
- [> Data and assurance](#)



as the Ethics and Compliance Board), a governance body appointed by the CEO, monitors Stora Enso's legal compliance and ethical business conduct by following up on our Ethics and Compliance Action List. The Committee met four times during 2017.

Stora Enso's ethics and compliance strategy forms the basis for annual action plans. The strategy has five focus areas:

- Top level commitment
- Improved communication and training
- Intensified efforts in countries with heightened concerns
- Developing our grievance channels
- Ethics and compliance as a competitive edge.

Stora Enso is represented in Transparency International's Steering Committee for Business Principles for Countering Bribery, where we actively participate in the network's efforts to combat corruption globally and nationally.

Top level commitment

In our efforts to make Stora Enso a more value-driven organisation, we highlight the significance of top level commitment to business ethics. All managers in key positions are required to participate in training and make a personal commitment to our Code of Conduct and our Business Practice Policy, and

What if a competitor suggests price fixing?

Business ethics and fair play on global markets is about making the right choices every day. Competition law protects businesses and consumers against anti-competitive behaviour, eventually resulting in wider choice for consumers.

"We believe that promoting a wider ethical approach also helps us enhance our good reputation and succeed in business as a reliable partner," says **Pontus Selderman**, Ethics and Compliance Lead Counsel at Stora Enso.

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to provide related information for employees within their respective organisations.

In line with workshops organised for employees in managerial positions in recent years, a dedicated ethics workshop was arranged with the Stora Enso Board of Directors during 2017. The workshop provided training and promoted discussions on ethical issues.

Training for all employees

Our communication strategy for ethics and compliance aims to ensure that Stora Enso's employees and business partners all understand what ethical behaviour is, and how they should respond to any ethical dilemmas that arise.

Our employees receive Code of Conduct training, either through an e-learning tool, or through face-to-face training provided for those who do not have direct access to computers. We aim to ensure that our new employees receive such training within their first month of employment. In addition, an in-depth e-learning course on anti-trust and anti-corruption is mandatory for all members of our Group Leadership Team, for divisional and mill management teams, and for employees dealing with competitor contacts, purchasing, marketing, and sales. This course has been run since 2013.

To protect personal data throughout our operations and ensure that we comply with all applicable laws, the Stora Enso

Data Privacy Policy was launched in April 2016. The policy aims to protect the company against risks related to breaches of data privacy, to let our employees know how Stora Enso collects and uses their personal data, and to ensure that the privacy rights of our employees, business partners, and other stakeholders are protected. The Data Privacy Policy and related practical guidance have been rolled out through an e-learning and every white-collar employee is required to complete the training. By the end of 2017, 10 069 employees had been trained.

Anti-corruption and bribery

Stora Enso is committed to conducting its business free from any form of corruption. It is also our policy to use our best endeavours to ensure that external business partners acting on our behalf are aware of and share our commitment to conducting business ethically. We have a zero tolerance towards all forms of corruption and bribery, and our Code of Conduct and Business Practice Policy provide guidance on how to conduct business in a fair, ethical, and legal manner. All suspicions of corruption or bribery of any kind are thoroughly investigated and reported by our Ethics and Compliance team and Internal Audit organisation.

In 2017, the Stora Enso Group Leadership Team decided that members of leadership or management teams or employees in a position that could influence sourcing decisions shall not accept any gifts, hospitality, expenses or any other positive special treatment from suppliers.

Intensified efforts in risk areas

Operating in high-risk markets and entering into joint ventures can entail exposure to serious risks. Our risk assessment procedures on compliance cover all our units. The most significant compliance risks in our global operations relate to anti-trust and corruption.

Stora Enso has a zero tolerance towards all forms of corruption and bribery.

- Governance
- **Social agenda**
- Employees and wider workforce
- Community
- **Business ethics**
- Environmental agenda
- Economic agenda
- Data and assurance

The management and employees of our totally or jointly owned operations in Brazil, Russia, and China receive extensive face-to-face training on our Business Practice Policy. Employees in our joint operations in Brazil and Uruguay additionally receive training on their operation’s respective Codes of Conduct and Business Practice Principles. Training sessions cover topics such as human rights, environmental impacts, safety, and ethical practices. Anti-trust guidelines designed for our joint ventures are implemented with the help of related training in Uruguay, Brazil, and China.

During 2017, our Ethics and Compliance team continued its series of trainings in the USA and the high-risk Russian market. These trainings were held to meet with local employees and managers face-to-face, to gain a better understanding of local ethical dilemmas, and to train local personnel on key topics.

Formal grievance mechanisms

Our employees are encouraged to report any suspected cases of misconduct or unethical behaviour to their supervisor, or to our Human Resources or Legal functions. Employees may also report their concerns in confidentiality to the Head of Internal Audit. Our Supplier Code of Conduct also obliges our suppliers to report any non-compliance with the Code to Stora Enso’s Head of Internal Audit.

Stora Enso uses an additional external service through which our employees globally, and in certain locations also external stakeholders, can anonymously report potential non-compliance cases by phone, mail, or online. This service is available 24/7.

All potential non-compliance cases are duly investigated. The consequent findings are recorded and reviewed by the heads of our Internal Audit, and Ethics and Compliance functions, and reported both to our Ethics and Compliance Management Committee, and to our Board of Directors’ Financial and Audit Committee. Proven cases of non-compliance can lead to disciplinary or legal action.

Our joint operations Veracel and Montes del Plata each have their own local grievance channels.

In 2017, a total of 61 reports received through Stora Enso’s various grievance channels were identified as potential non-compliance cases (58 in 2016). Proven misconduct leading to disciplinary actions, legal actions, and/or process improvements was identified in 14 (18) of the completed investigations, while 22 (5) further complaints were found to be valid without involving misconduct. None of the proven misconduct cases were related to child labour, forced labour, or discrimination.



We comply with all applicable local, national and international laws, regulations, and voluntary commitments wherever we do business.

- Governance
- **Social agenda**
 - Employees and wider workforce
 - Community
 - **Business ethics**
- Environmental agenda
- Economic agenda
- Data and assurance

Progress



Comprehensive training and monitoring

We have developed an index that enables us to monitor and evaluate our employee perceptions of our work on topics covered by our Code of Conduct. The index is based on employee responses to related questions in our annual employee survey. In 2017, this index improved to 83 (81 in 2016). Our goal is to maintain this positive trend. By the end of 2017, 18 001 Stora Enso employees had received training on our Code of Conduct.

Following the establishment of the Division Compliance Forums and the Group Function Compliance Forum in recent years, a separate China Compliance Forum was established during 2017. These forums bring together the heads of

key functions and divisions to assess risks and monitor compliance.

Our Ethics and Compliance Self-Assessment Tool (T. E. S. T.), introduced in 2015, was run once in 2017. This tool has been designed to give our divisions and functions a better overview of the progress their units are making on implementing our policies and compliance measures, while also identifying possible gaps and risks related to compliance. The results were addressed through the compliance forums, with action plans subsequently developed, implemented, and monitored as necessary.

Ethics and compliance in the spotlight

Our internal communications concept “Ethical Spotlight of the month” has continued to be used throughout the company. Every other month, a specific topic related to ethics and

compliance is presented to help managers to communicate and discuss ethical topics with their teams, with the help of related material and communications kits.

The Ethics Ambassadors network established in 2016 has continued its work in voluntarily supporting our Ethics and Compliance function by promoting and implementing ethical values in their own locations. The first workshop with some of the Ethics Ambassadors was held during 2017 to share good practices and better understand the different ethical dilemmas our employees face in their operations around the world.

Compliance rules can be complicated, and ensuring that each and every employee knows the company’s purpose, values, goals, and policies can be challenging. In 2017, the Do What’s Right mobile application was re-designed to provide our employees with improved access to all relevant compliance policies whenever and wherever needed. The app now allows employees to report suspected violations – making it even easier for our employees to react when faced with potential misconduct issues.

Enhanced compliance control processes

Ensuring effective compliance control is an essential part of our business. Stora Enso is committed to fully comply with applicable competition law. To avoid the risk of employee conflicts of interest, several enhancements were made to internal processes and tools, such as the use of the Customer Relationship Management tool and the Sourcing tracker during 2017. In addition, clearer instructions were developed and implemented during the year.



Our Ethics Ambassadors promote ethical values in their own units.

Breakdown of potential non-compliance cases

	2017	2016
Anti-trust	8	2
Conflict of interest	6	7
Corruption	14	20
Fraud	4	5
General human resources	16	13
Health and safety	2	0
Miscellaneous	11	11
Total	61	58

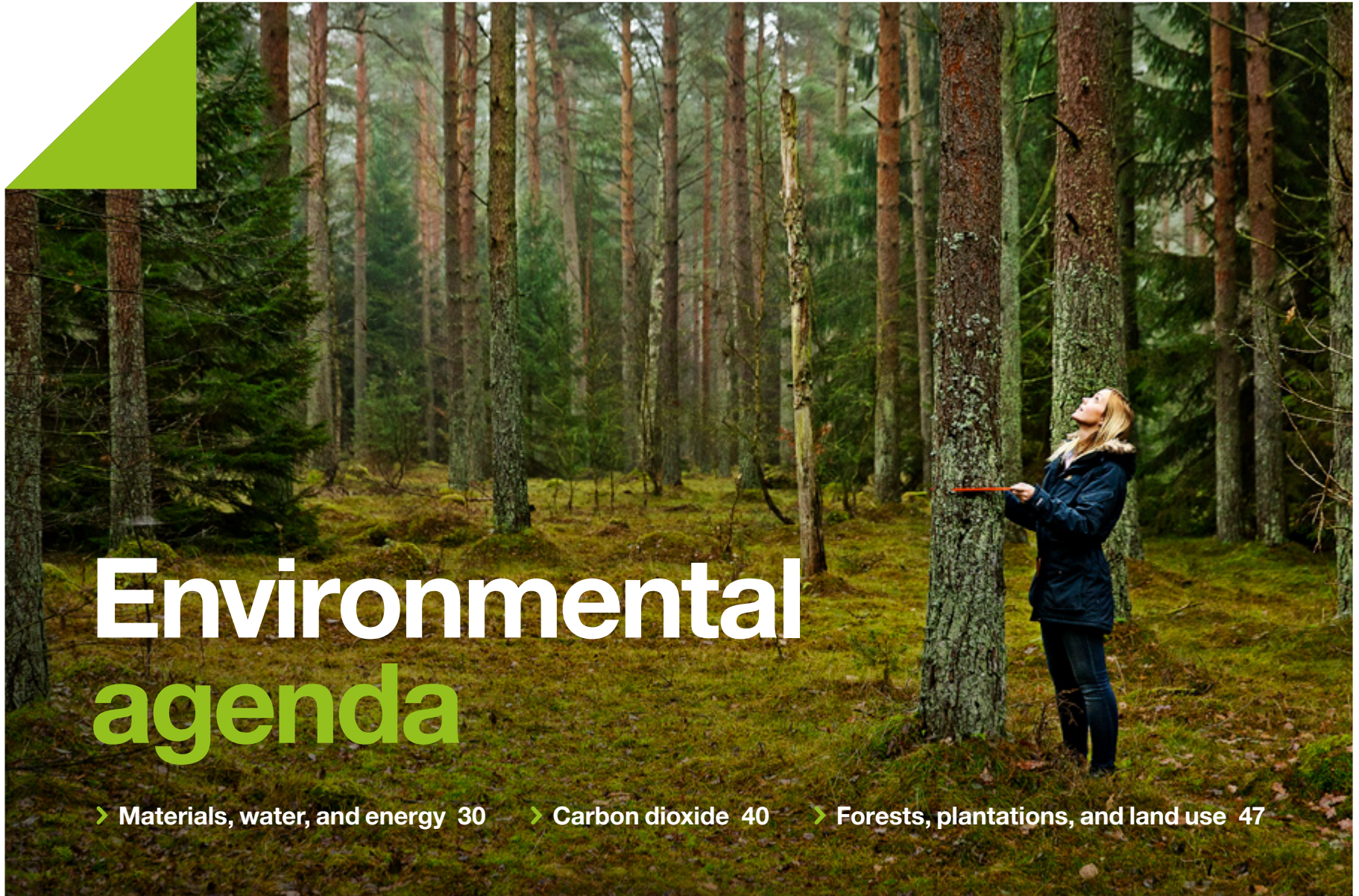
> Governance

> Social agenda

> **Environmental agenda**

> Economic agenda

> Data and assurance



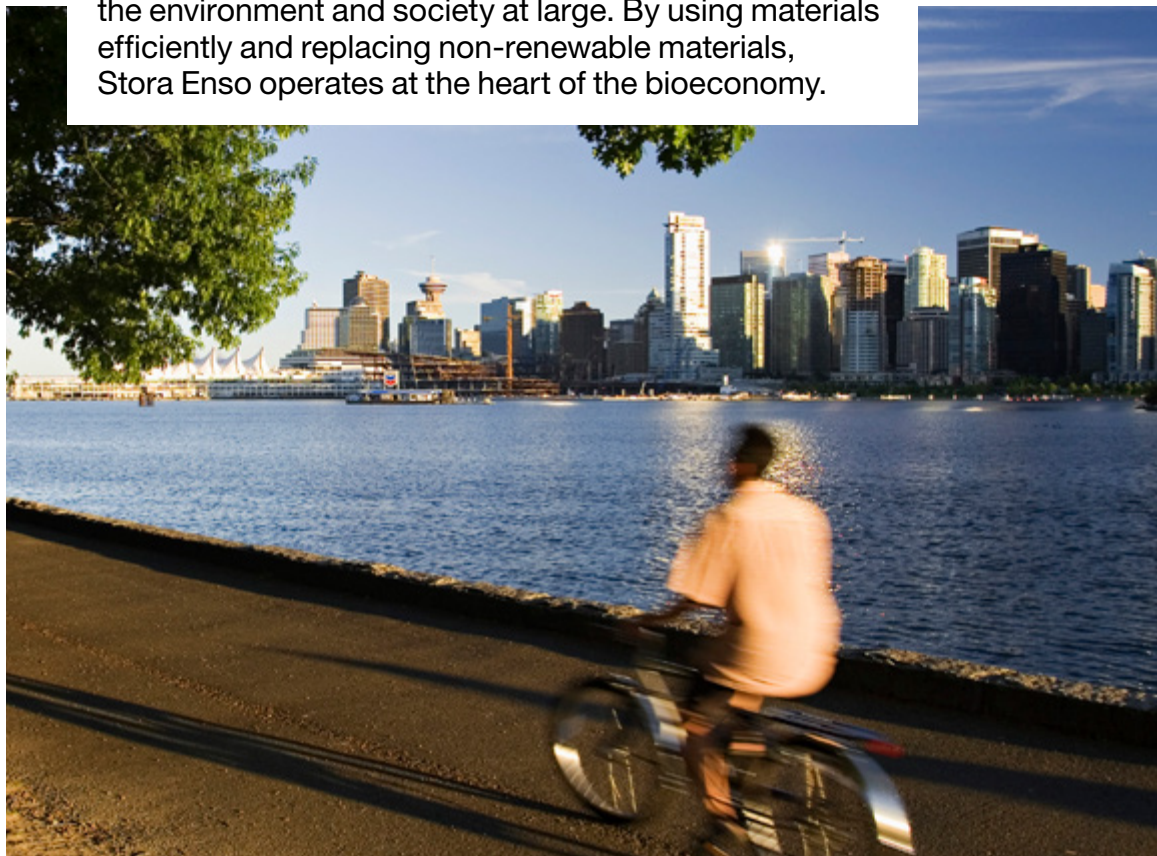
Environmental agenda

> Materials, water, and energy 30 > Carbon dioxide 40 > Forests, plantations, and land use 47

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
 - [> Materials, water, and energy](#)
 - [> Carbon dioxide](#)
 - [> Forests, plantations, and land use](#)
- [> Economic agenda](#)
- [> Data and assurance](#)

Materials, water, and energy

Resource efficiency benefits our business, but also the environment and society at large. By using materials efficiently and replacing non-renewable materials, Stora Enso operates at the heart of the bioeconomy.



Opportunities and challenges



Reduced waste, maximum value

Global megatrends such as global warming, population growth, eco-awareness, and urbanisation are affecting consumer and corporate decision-making around the world. At Stora Enso, we are proactively responding to these trends by developing products and solutions based on materials that are both renewable and recyclable.

Materials

As a renewable materials company, Stora Enso operates at the heart of the bioeconomy and contributes to a circular economy. In a circular economy, waste is minimised as materials are reused and recycled to maximise environmental and financial added value. The European Commission (EC) has adopted several legislative proposals on waste reduction within its Circular Economy Package, as well as an action plan aiming to optimise product life cycles through recycling and reuse. The objectives of these ambitions provide business opportunities for Stora Enso.

Water

Water plays a central role in Stora Enso's production, heating, cooling, and cleaning processes, and in generating renewable electricity from the hydropower we purchase. Our forests and plantations also need rainwater. While water is relatively abundant in most of our production unit locations, global water scarcity may still impact our operations through our supply chains, and as controls on pollution, recycling, and water pricing are tightened. At the same time, such developments give us opportunities to reduce costs by using water more efficiently.

Energy

The EU's 2020 Climate and Energy Package, 2030 Climate and Energy Framework (currently under revision), and 2050 Low-Carbon Economy Roadmap outline the way forward for industrial energy. Forthcoming revisions may include changes in the Emissions Trading System (for more information, see page 40) and tougher requirements on industrial energy efficiency.

A high proportion of biomass is used in the internal energy production of most of our mills. This renewable energy is generated from by-products and residuals from our own production processes, harvesting residues, recovered wood, and wastes.

The EU's Renewable Energy Directive sets member states a binding collective target to derive 20% of their final energy

- Governance
- Social agenda
- Environmental agenda
 - Materials, water, and energy
 - Carbon dioxide
 - Forests, plantations, and land use
- Economic agenda
- Data and assurance

consumption from renewable sources by 2020. With its high proportion of biomass-based energy, the forest industry can help the EU achieve this target.

Our policies

Guidance throughout the supply chain

Stora Enso's policies relevant to our use of materials, water, and energy include our:

- Code of Conduct, guiding us on issues related to resource use.
- Supplier Code of Conduct, Practical Instructions for Stora Enso's Suppliers, Purchasers' Instructions, Sourcing Policy, and Sourcing Guidelines: a guiding framework for the responsible sourcing of materials and energy.
- Policy on Wood and Fibre Sourcing, and Land Management, our commitment to the responsible integration of forestry, land use, sourcing, and water stewardship into our sustainable forest management and land use practices.
- Policy on Energy and Carbon, a revised policy stating our ambitions in combatting global warming.
- Environmental Guidelines, a comprehensive overview of our policy objectives and how we work to achieve them.

How we work

External initiatives guiding our work

The environmental work at our mills, including water and energy management and resource efficiency, is supported by third-party-certified environmental management systems. All our board, pulp, and paper mills are certified to the ISO 14001 environmental management system standard, along with all but four of our sawmills and corrugated packaging mills. By the end of 2017, 40 of our production units were certified to the ISO 50001 energy efficiency management system standard

In a circular economy, waste is minimised as materials are reused and recycled to maximise environmental and financial added value.



(32 in 2016). These units corresponded to 91% of our total energy consumption in 2017 (92%). For unit-specific information on certificates, see page 69.

The emissions generated by each of our mills are regulated by the relevant authorities, with limits set through environmental permit processes that consider local environmental conditions, stakeholders, and legislation. Compliance with these permits is monitored by the relevant environmental authorities and by the mill in question. Non-compliances and incidents are reported by mills to group management on a quarterly basis. Significant incidents are reported immediately. For details of all significant incidents and violations of environmental permits occurring in 2017, see page 39.

Environmental improvements at our production units are driven by regional conditions. The EU's Best Available Techniques (BAT) Reference Documents have limits for effluents and emissions to air, and the BAT conclusions for pulp and paper, as well as medium and large combustion plants apply to all board, pulp, paper, and sawmills in Europe. The related investment needs are proactively planned as part of group investment processes. These investments fit into the company's normal capital expenditure framework and policy.

Contributing to the bioeconomy

Stora Enso works proactively to support the transition towards a global bioeconomy. In 2017, our resource efficiency work was featured in two important documents highlighting the role of the bioeconomy as a solution to global warming: WBCSD's CEO Guide to the Circular Economy, and the

High in energy, low in carbon

80% of Stora Enso's carbon dioxide emissions is fossil-free. Some of our mills run on 100% renewable energy, while some buy 100% renewable electricity, and we are fully self-sufficient in terms of heat generation.

"All of these factors have helped Stora Enso to reduce its direct and indirect fossil CO₂ emissions by 40% since 2006," says **Johan Holm**, Head of Environmental Policies and Programmes.

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Corporate Leaders Group report on resource productivity. In 2017, we also joined WBCSD's new circular economy initiative – Factor10 – as one of the founding members.

A new biocomposite granule production is scheduled to begin at our Hylte Mill in Sweden in 2018. These granules will consist of both wood fibres and synthetic polymers, significantly reducing the amount of fossil-based raw materials in future plastic products.

Virgin fibre and Paper for Recycling

Wood and fibre are the main raw materials in Stora Enso's production processes. Materials made with virgin fibre are used for products with special safety requirements such as food packaging and pharmaceuticals. For more information about our wood procurement, see page 48.

Virgin fibre is also needed in the paper recycling process. After about seven recycling rounds, paper fibres become too short to be reused but can then be burned for bioenergy, prompting the need for new virgin fibre. Stora Enso also uses paper for recycling (PfR) wherever it makes good sense environmentally and economically. Seven of Stora Enso's mills currently use PfR. Recycled newspapers and magazines are used to produce certain paper grades at Langerbrugge Mill in Belgium (where they account for 100% of sourced fibre), Sachsen Mill (100%) and Maxau Mill (approximately 75%) in Germany, Dawang Mill in China (95%), and Hylte Mill in Sweden (50%). Recovered board is used to make specific containerboard grades at Ostrołęka Mill in Poland (85% of fibre sourced for containerboard production) and at Varkaus Mill in Finland.

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
 - [> Materials, water, and energy](#)
 - [> Carbon dioxide](#)
 - [> Forests, plantations, and land use](#)
- [> Economic agenda](#)
- [> Data and assurance](#)



91% of our total energy consumption is covered by the ISO 50001 energy efficiency management system.

Through cooperation with local authorities and waste management companies, and our own collection facilities, we secure a sufficient supply of PfR from industrial and commercial sources such as printers and retailers, as well as from households. In Poland, we own and manage a network of 21 depots where PfR is collected and baled for transportation to our Ostrołęka Mill.

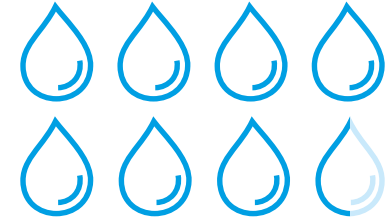
According to The Confederation of European Paper Industries (CEPI), Europe's overall PfR collection rate has been high for many years (72.5% in 2016). This is a noteworthy achievement as not all paper can currently be recycled, such as tissue paper. While overall collection rates within the EU are relatively high, certain Central and Southern European countries still have potential to grow. Focusing on countries with collection rates below 60%, Stora Enso and the paper industry are actively supporting best practices while these countries establish sustainable collection systems.

Optimising residuals and waste

Stora Enso's production processes generate various residuals and wastes, including ash, sawdust, bark, and wastewater treatment sludge. Many of these materials are used in our internal bioenergy generation and pulp production, or supplied to partners to be used in agriculture, brick manufacturing, or road construction, for instance. We are constantly innovating to improve resource efficiency and make profitable use of materials that would otherwise end up as waste.

We ensure that hazardous waste is safely processed at suitable facilities or incinerators, and we report on hazardous waste disposal in accordance with the relevant regulations. Our mills' third-party-certified ISO 14001 systems form part of the on-site management procedures for handling chemicals and waste. Expertise and best practices related to optimising material flows are shared within the company by expert networks focusing on environment, materials, PfR, chemical safety, and product safety.

Stora Enso's water withdrawal and consumption



Almost **96%** of the water we withdraw is recycled back to the local environment after being carefully purified.



Some **4%** of the water we withdraw is consumed in our production.

Responsible water use

Production at Stora Enso's mills requires large amounts of water. However, only around 4% is consumed in our production processes while almost 96% is returned to the local environment. Process water is purified by our treatment plants and then discharged, whereas cooling and other non-process water can be safely released without treatment.

Stora Enso uses high-performing wastewater treatment systems to ensure that discharged water is ecologically safe and meets all regulatory requirements. Water is recycled within our mills whenever possible to reduce the need for water intake. Optimising our water use also reduces the need for water pumping and heating, which creates energy savings and makes the purification of the remaining wastewater more efficient. We are also experimenting with refining wastewater residues into products. For example, our Skoghall Mill in Sweden is working together with the University of Karlstad to use wastewater residues to create bio-based products such as bioplastics.

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
 - [> Materials, water, and energy](#)
 - [> Carbon dioxide](#)
 - [> Forests, plantations, and land use](#)
- [> Economic agenda](#)
- [> Data and assurance](#)

As a public commitment to water resource management and the development of sustainable water strategies, Stora Enso signed the United Nations Global Compact's CEO Water Mandate in 2009. We have also used the Global Water Tool devised by WBCSD to assess related risks at our production units, and we actively follow the latest water footprint methodology developed by researchers and standardisation bodies.

We constantly innovate to make use of materials that would otherwise end up as waste.

Water use and water stress are key aspects when considering new operations or projects. In 2017, we further strengthened the role of water stewardship in our group-level investment guidelines.

Long-term energy supply contracts

Board, pulp, and paper production processes are the most energy intensive phases in Stora Enso's value chain, which makes it essential for our mills to have access to a reliable energy supply at a reasonable cost. Stora Enso's energy supply is managed under long-term contracts, direct market access through energy exchanges, efficient combined heat and power production, and shareholdings in power generation companies such as Pohjolan Voima Oy and Teollisuuden Voima Oy in Finland. For more information on these partnerships, see our Financial Report (Note 14).

Stora Enso is committed to continuous improvements in energy efficiency and energy self-sufficiency. We always assess the opportunities to use biomass fuels or other low-carbon options in connection with energy investments.



Wood and fibre are the main raw materials in our production processes. Materials made with virgin fibre are used for products with special safety requirements such as food packaging and pharmaceuticals.



"Water can only be loaned – nothing is for free"

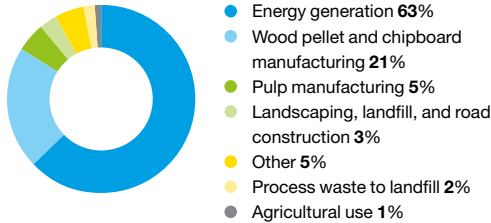
In Sweden, water has always played a central role at Stora Enso's 100-year-old Skoghall Mill, where all the water released from the mill back into the local environment is ecologically safe and meets all regulatory requirements.

"We have started to replace fresh water with filtrated water in one of our board machines, and can now also recover fibre from water so that it can be used as raw material for new board," **Klas Norborg**, Development Engineer at Skoghall Mill explains.

[▶ Read the full article at \[storaenso.com/sustainability\]\(http://storaenso.com/sustainability\)](#)

- Governance
- Social agenda
- **Environmental agenda**
 - **Materials, water, and energy**
 - Carbon dioxide
 - Forests, plantations, and land use
- Economic agenda
- Data and assurance

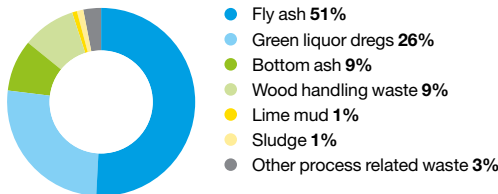
Utilisation of process waste and residual materials^{1,2}



¹ Covers all Stora Enso production units, as dry tonnes. Excluding joint operations.
² Definition changed for 2017 reporting to exclude, for example, wood chips, tall oil, and turpentine.

Process waste to landfill¹

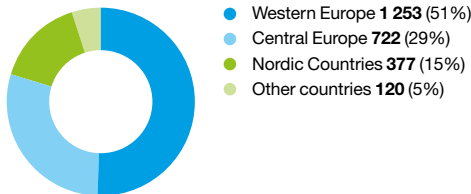
68 758 tonnes



¹ Covers all Stora Enso production units. Excluding joint operations. In addition to process waste to landfill, Stora Enso's production units created a total of 1 844 tonnes of non-process waste, and 80 106 tonnes of process waste was sent to on-site storage facilities.

Paper for recycling: procurement by origin

Thousand tonnes¹



¹ Total amounts of Paper for Recycling (recycled paper and board) procured within these regions for delivery to our mills.



What are the safest ways to use chemicals?

Stora Enso uses chemicals to strengthen paper, enhance product brightness, and extract cellulose from wood fibre, but we also make bio-based chemicals from pulp production sidestreams.

Chemical safety has always been an important part of our sustainability work, but over the past decade our customers and employees have taken even more interest in the issue.

➤ Read the full article at storaenso.com/sustainability

Structured approach to energy management

Stora Enso's Energy Services team is responsible for procuring energy and managing the implementation of our energy efficiency strategy. This work involves the hedging of energy prices, managing the sales of emission rights, consulting the mills on a wide range of energy topics, trading in green certificates, monitoring our carbon dioxide allowance balance, and following energy legislation.

The biomass used for energy within Stora Enso is mainly purchased by our Wood Supply organisation, whereas each mill is individually responsible for the procurement of most other fuels. Mills are also responsible for optimising their energy efficiency using internal tools and certified environmental and energy management systems, with support from our energy efficiency teams.

Nine Stora Enso's board and paper mills in Europe, and five of our Nordic sawmills, monitor energy efficiency online in real time. All Stora Enso's board, pulp, and paper mills are part of an energy efficiency best practice network.

Progress

Materials

Stora Enso's utilisation rate for process residuals and waste across the group includes internal and external uses (98% in 2017 compared to 98% in 2016). In 2017, we reviewed this key performance indicator (KPI) that will drive innovation by further enhancing our performance in material utilisation, while finding new ways to reduce waste to landfill. Through identifying company projects that could support this KPI, we formed a baseline in 2017 for both performance and initiatives to be developed in our operational efficiency work in 2018.

In 2017, Stora Enso's revenues derived from residuals and by-products, including tall oil, amounted to EUR 78 million (EUR 70 million in 2016). During 2017, Stora Enso's production units generated a total of 3 858 tonnes of hazardous waste, slightly up from 3 489 tonnes in 2016. This waste includes oils, solvents, paints, laboratory chemicals, and batteries. In addition, 16 276 tonnes of sludge classified as hazardous waste was generated at the disused Falun copper mine in Sweden (23 247 tonnes). Stora Enso used 2.5 million tonnes of paper for recycling (PfR) in 2017 (2.4¹ million tonnes), making us one of the largest PfR consumers in Europe. The PfR utilisation rate in our paper and board production was 26% (26%¹).

Chemical safety management

During 2017, Stora Enso established group-wide Chemicals Management Instructions, which outline the minimum requirements for all our units globally, including occupational health and safety, and environmental safety. During the year, we identified the properties for chemicals that need restricted use or should be replaced. To further improve chemical safety, we have implemented new routines that help us share lessons learned between all divisions.

Water

We continued to identify mill-specific water-related challenges and opportunities in 2017. The work focused on assessing water-saving opportunities at Skutskär and Skoghall mills in Sweden, and resulted in systematic water use mapping, and calculating water-related costs that are to be applied

¹ Restated due to definition change from dried to delivered tonnes.

- Governance
- Social agenda
- **Environmental agenda**
 - **Materials, water, and energy**
 - Carbon dioxide
 - Forests, plantations, and land use
- Economic agenda
- Data and assurance

when building business cases on water savings. The work will continue at other mills in 2018 as part of our new approach to water and energy stewardship using new KPIs.

During 2017, we introduced a new "total water withdrawal per saleable tonne" key performance indicator (KPI) at our board, pulp and paper mills. The objective is to drive a decreasing trend from our 2016 baseline of 57 cubic meters per saleable tonne. In 2017, the performance was 56. We also continued to monitor our normalised process water discharges. In 2017, we discharged 26 cubic meters per saleable tonne (27 in 2016).

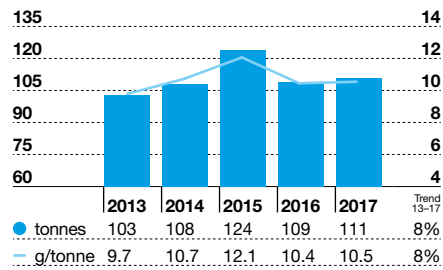
Stora Enso's EUR 13 million investment to reduce wastewater effluents at Veitsiluoto Mill was completed in 2017. The investment will reduce chemical and energy use in pulp production and wastewater management, create cost savings, and improve pulp quality.

We use high-performing wastewater treatment systems to ensure that discharged water is ecologically safe.

Water withdrawal and consumption^{1 2}	2013	2014	2015	2016	2017	Trend 13-17
Total water withdrawal (million m³)						
Process water	287	287	306	297	291	1%
Cooling water (net)	333	323	283	301	304	-9%
Total	620	610	589	598	595	-4%
m³/tonne						
	59	61	58	57	56	-5%
Process water withdrawal efficiency						
m³/tonne						
	27	29	30	28	28	3%
Total water consumption						
million m³						
	26	25	23	23	25	-4%
m³/tonne						
	2.4	2.5	2.2	2.2	2.3	-4%
Process water discharges						
million m³						
	272	266	272	280	272	0%
m³/tonne						
	26	27	27	27	26	0%

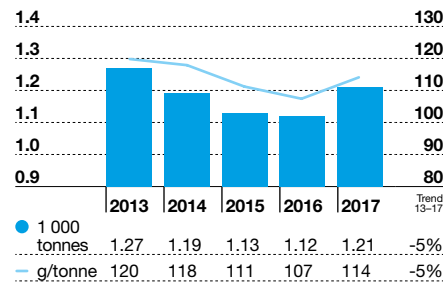
¹ Figures from pulp, paper, and board production units. Normalised figures are reported per unit of sales production.
² Historical figures recalculated due to changes in baseline following divestments or accuracy improvements.

Phosphorus^{1 2}



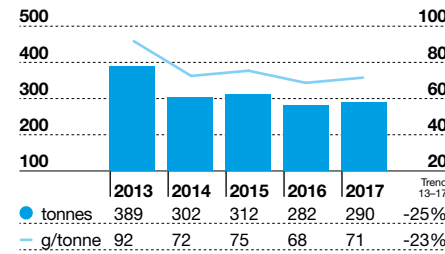
¹ Figures from pulp, paper, and board production units. Excluding joint operations. Normalised figures are reported per unit of sales production.
² Historical figures recalculated due to accuracy improvements.

Nitrogen^{1 2}



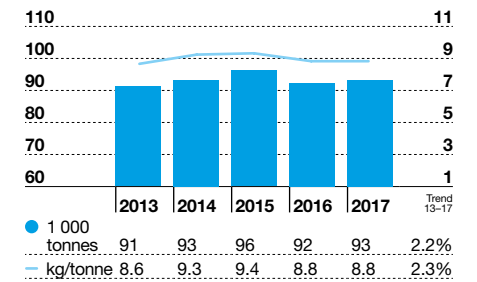
¹ Figures from pulp, paper, and board production units. Excluding joint operations. Normalised figures are reported per unit of sales production.
² Historical figures recalculated due to accuracy improvements.

Absorbable organic halogen compounds (AOX)^{1 2}



¹ Figures from bleached chemical pulp production units only. Excluding joint operations. Normalised figures are reported per unit of bleached chemical pulp production.
² Historical figures recalculated due to accuracy improvements and a previous calculation error.

Chemical oxygen demand (COD)¹



¹ Figures from pulp, paper, and board production units. Excluding joint operations. Normalised figures are reported per unit of sales production.

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
 - [> Materials, water, and energy](#)
 - [> Carbon dioxide](#)
 - [> Forests, plantations, and land use](#)
- [> Economic agenda](#)
- [> Data and assurance](#)



We are constantly looking for ways to improve our environmental performance. We are investing EUR 16 million in total to improve the environmental performance of our pulp mill in Skutskär, Sweden, by reducing sulphur emissions.

The share of biomass in our internal energy production was 82%.

Local water initiatives

Stora Enso actively supports and participates in international and local initiatives related to water, both in our operations and in the surrounding communities. For example, in 2017, Stora Enso's Beihai Mill in China worked with an environmental organisation known as the Guangxi Biodiversity Research and Conservation Association (BRC) and local stakeholders to clean up a stretch of the Beibu Gulf coastline in the South China Sea, and to educate residents about environmental protection.

Energy

Our group-wide target is to reduce specific electricity and heat consumption per tonne of pulp, paper, and board production by 15% by 2020, compared with the baseline year of 2010. In 2017, this indicator was 4.2% lower than the 2010 benchmark level (4.0% in 2016). Stora Enso's KPI on carbon intensity focuses on fossil CO₂ emissions in relation to total energy consumption. For more information, see page 41.

In 2017, our total energy self-sufficiency rate¹ was 63% (63%). The share of biomass in internal energy production was 82% (82%).

In 2017, our electricity self-sufficiency level¹ was 43% (43%). Some 86% (89%) of our purchased electricity¹ was generated from low-fossil carbon sources, including nuclear and renewable energy. Existing contracts and our internal electricity generation capacity are estimated to cover around 80% of our needs for the next five years (81% in 2016). Energy accounted for 10% of Stora Enso's variable costs in 2017 (10% in 2016).

In line with Stora Enso's policy to give preference to energy from low-fossil carbon sources, our sawmills in Austria, Germany, Poland, and the Czech Republic began purchasing 100% renewable electricity at the beginning of 2017.

Energy efficiency high on the agenda

Stora Enso continued to enhance energy efficiency throughout the group's operations in 2017. Eight sawmills received ISO 50001

¹ Electricity from Pohjolan Voima Oy (PVO), where Stora Enso is a minority shareholder, is considered purchased electricity in the energy consumption figures.

- Governance
- Social agenda
- Environmental agenda
 - Materials, water, and energy
 - Carbon dioxide
 - Forests, plantations, and land use
- Economic agenda
- Data and assurance

energy management certification during the year: Varkaus LVL unit in Finland, Planá Sawmill in Czech Republic, Launkalne Sawmill in Latvia, Brand Sawmill in Austria, Impilahti and Nebolchi sawmills in Russia, and Ala and Gruvön sawmills in Sweden.

We are committed to the voluntary Energy Intensive Industries Agreement managed by Finnish Forest Industries (FFI), which aims at a national 4% energy use reduction among its signatories over the period 2017–2020, and a 3.5% reduction (cumulative, in MWh) during 2021–2025. Stora Enso is represented in FFI's Energy Efficiency Committee, established in 2017. The committee plans, executes, and monitors new energy saving projects, as well as cooperates with the Finnish Ministry of Economic Affairs and Employment.

We also participate in national groups that share industry best practices on energy efficiency in Finland, and promote energy efficiency at our most energy intensive mills.

We actively seek ways to optimise fuel use and increase the share of biomass in our energy production. In 2017, our Honkalahti Sawmill in Finland started-up a new biomass boiler and is now fossil-fuel free.

Stora Enso's energy efficiency fund

Another fundamental part of our work is a central energy efficiency investment fund. In 2017, this fund amounted to EUR 10 million (EUR 15 million in 2016) and was earmarked to be used in our mills' energy efficiency work. It supported 28 (52) projects during the year, including: increasing fibre sludge purchases for bioenergy from nearby companies at

Sachsen Mill; and allowing Stora Enso land to be used for wind turbine construction near our Langerbrugge Mill in Belgium, to provide the mill with an opportunity to purchase fossil-free energy. When fully implemented, the projects financed in 2017 are estimated to generate annual energy savings of at least 247 GWh (53 GWh electricity and 194 GWh heat). These figures are equivalent to 0.4% of our annual electricity consumption and 0.7% of our annual heat consumption. These projects will eliminate over 24 000 tonnes of annual fossil CO₂ emissions.



In 2017, Stora Enso's revenues derived from residuals and by-products, including tall oil, amounted to EUR 78 million.

Emissions to air

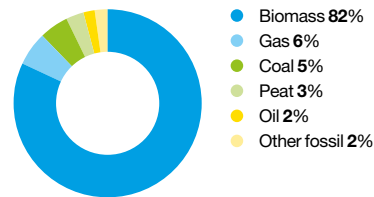
Our atmospheric emissions mainly result from the combustion of fuels used to generate energy. These emissions include carbon dioxide (CO₂), sulphur dioxide (SO₂), nitrogen oxides (NO_x), and fine particles. When not properly controlled, CO₂ contributes to global warming while SO₂ and NO_x emissions affect air quality and cause acid rain and soil acidification.

We work to reduce our air emissions by using more renewable energy, improving our energy efficiency, and using advanced technologies, such as scrubbers and boiler process control systems. Stora Enso has made two major related investments in Sweden. At Skutskär Mill, a weak gas system has been installed to reduce sulphur emissions from liquor towers and process equipment. At Skoghall Mill, a new chemical plant will have a more closed process with enhanced chemical production monitoring, reducing the already low air emissions of SO₂ and CO₂, and improving safety and the working environment at the mill.

At Imatra Mills, Stora Enso is investing EUR 14 million to replace and modernise its odorous gas treatment system. The boiler, taken into use in 2017, will reduce Imatra Mills' NO_x and SO₂ emissions and improve air quality in the surrounding residential areas. The investment will be completed in 2018.

In 2017, Stora Enso's group-wide SO₂ emissions amounted to 3 000 tonnes (3 600 tonnes in 2016), NO_x emissions totalled 10 900 tonnes (10 800 tonnes), and emissions of fine particles amounted to 2 200 tonnes (1 900 tonnes).

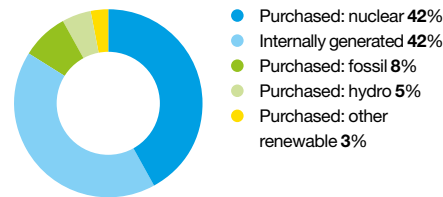
Fuels¹



Our total annual fuel consumption was 150 857 terajoules (TJ) in 2017 (152 097 TJ in 2016). 1 TJ = 10¹² joules

¹ Figures cover pulp, paper, and board production units. Excluding joint operations.

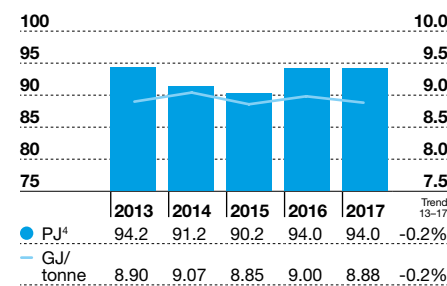
Electricity¹



During 2017, we generated and purchased 12.8 terawatt hours (TWh) of electricity and consumed 12.4 TWh (12.6 and 12.2 during 2016). 0.4 TWh was sold (0.4). TWh (terawatt hour) = 10⁹ kilowatt hours.

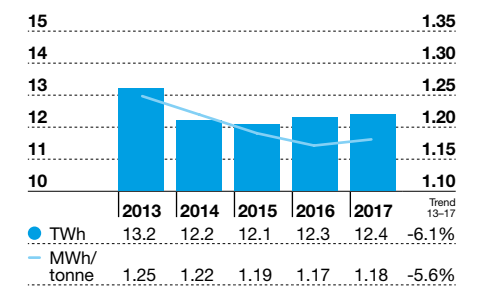
¹ Figures cover pulp, paper, and board production units. Excluding joint operations.

Heat consumption^{1 2 3}



¹ Figures cover pulp, paper, and board production units. Excluding joint operations. Normalised figures are reported per unit of sales production.
² Excluding heat used for electricity generation.
³ Historical figures recalculated due to accuracy improvements.
⁴ 1 PJ = 10¹⁵ joules.

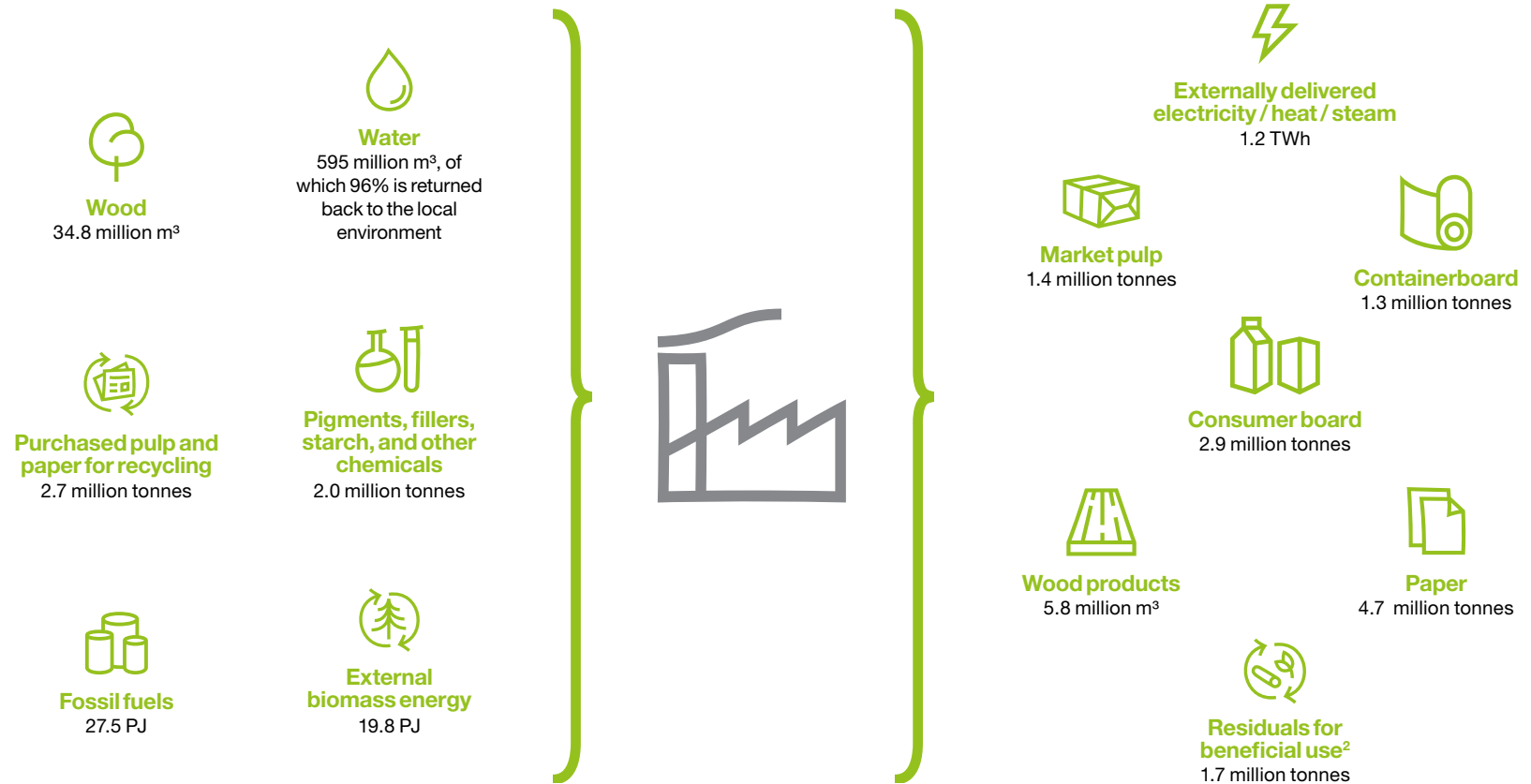
Electricity consumption^{1 2}



¹ Figures cover pulp, paper, and board production units. Excluding joint operations. Normalised figures are reported per unit of sales production.
² Historical figures recalculated due to accuracy improvements.

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
 - [> Materials, water, and energy](#)
 - [> Carbon dioxide](#)
 - [> Forests, plantations, and land use](#)
- [> Economic agenda](#)
- [> Data and assurance](#)

Material use and production in 2017¹



¹ Covers all Stora Enso production units. Excluding joint operations.

² Residuals and waste utilised by external stakeholders. Definition changed for 2017 reporting to exclude for example wood chips, tall oil and turpentine

The illustration shows the key materials used in our processes, together with our production figures for 2017 as reported in our environmental reporting system. For a comprehensive illustration on how we create value see our [Progress Book](#).

Environmental incidents in 2017

During 2017, Stora Enso improved its group-wide reporting and management processes for environmental incidents at our production units. The list below gives details of environmental incidents involving a non-compliance with the local environmental legislation or permit.

Unit	Incident	Corrective actions
Heinola Fluting Mill	The mill's monthly limit for effluent containing phosphorus was slightly exceeded in March due to the release of larger loads into the wastewater treatment plant.	Precipitation chemicals were deployed at the flotation basin of the wastewater treatment plant, and the level of phosphorus returned to below-limit levels in a few days. Levels are now measured more frequently to ensure a quicker reaction in the future.
	A wastewater leakage was found at the bio-sludge treatment plant reactor in May. A seam in the bottom plates had corroded and started to leak.	The reactor was emptied and the leaking seam was repaired. The authorities were informed and the corrective actions approved.
	In April, about 2 m ³ of nitric acid (60% concentration) leaked over an 82 hour period from a pipe connected to the Kymenvirta river via the clean water channel. The leakage was caused by a faulty valve switch that did not close properly. When reaching the river, the acid concentration was quickly diluted, making the environmental impact of the discharge minor.	The faulty valve was changed. The piping was rerouted to direct any future leaks into the wastewater treatment process. A revision of the mill's risk assessment and mitigation was done and an action plan put in place to reduce risks. The authorities were informed and the proposed actions approved.
	Up to 1 200 m ³ of untreated process water was discharged to the Kymijoki river on 22 April due to a control failure. The total chemical oxygen demand (COD) discharge to the river was up to 34 tonnes in one day, exceeding the daily permit limit of 15 tonnes. However, the mill's monthly COD permit limit was not exceeded for April as a whole.	Maintenance routines were improved, including operator training, the more frequent control of surface measurement switches, and the improved marking of valves.
Hylte Mill	The mill's monthly dioxin and furan emission limits for Boiler 4 were exceeded in September.	The mixture of fuels was changed in 2017. Boiler temperatures will be increased in 2018 by installing new valves at the maintenance stop. Monitoring the boiler will continue in 2018.
Oulu Mill	10 m ³ of black liquor leaked from the pulp mill into local waterways in August when sewer pumping was not turned on while draining an evaporation plant. The leakage did not have any significant effect on the water area and no immediate impact to the local fish stock was observed.	Potential impacts from the leak have been monitored. The mill's pumping capacities have been assessed, and the alarm system has been updated so that it will sound until the recovery pump is turned on. Mill personnel have received training and revised instructions for pumping.
Sunila Mill	The dust emission permit limit was exceeded at one recovery boiler in December.	Work is ongoing to clarify the need for environmental investments to reduce dust emissions from the recovery boilers.
Varkaus laminated veneer lumber (LVL) plant	The mill's monthly limit for Total Organic Carbon (Volatile Organic Compounds, gaseous) was exceeded in its first operating year.	An investment study of air emissions from the drying process has been completed. Together with the authorities, the mill is selecting the most suitable technology.
Wood Supply Sweden	During a pre-commercial, manual thinning in June, a nature reserve was accidentally damaged when the operators did not notice the border to the reserve. The County Administrative Board notified the local police department.	A review of current forest management practices has been initiated. More detailed procedures for field visits and the marking of borders will be completed during 2018.
Ždírec Sawmill	The mill's limit for noise was slightly exceeded at two locations in September.	The case and possible noise reduction measures are being discussed with the local environmental authority.

- Governance
- Social agenda
- **Environmental agenda**
 - **Materials, water, and energy**
 - Carbon dioxide
 - Forests, plantations, and land use
- Economic agenda
- Data and assurance

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
 - [> Materials, water, and energy](#)
 - [> Carbon dioxide](#)
 - [> Forests, plantations, and land use](#)
- [> Economic agenda](#)
- [> Data and assurance](#)

Carbon dioxide

As a leading renewable materials company with access to carbon neutral biomass, we are in a unique position to combat global warming.



Opportunities and challenges



Contributing to a low-carbon economy

The use of renewable materials enables us to contribute towards a low-carbon economy. Trees in sustainably managed forests absorb carbon dioxide (CO₂) from the atmosphere and together with wood-based products act as carbon storage. Our products help our customers and society at large to reduce CO₂ emissions by providing low-carbon alternatives to solutions based on fossil fuels and other non-renewable materials.

The first truly global climate agreement was approved at the Paris Climate Conference (COP21) in 2015 and entered into force in November 2016. Ahead of COP21, Stora Enso signed a pledge to combat global warming with science-based reduction targets for greenhouse gas (GHG) emissions. In December 2017, as the first forest products company, the Science Based Targets initiative approved our ambitious targets to address significant emissions along our value chain. The targets were announced in early January 2018 and are in line with the 2°C limit set for global warming by the Paris Agreement.

The Science Based Targets initiative is a collaboration between CDP, World Resources Institute (WRI), the World Wide Fund for Nature (WWF), and the United Nations Global Compact (UNGC). It is also one of the commitments of the We Mean Business Coalition to drive ambitious corporate climate actions.

The EU's Emissions Trading System (ETS) is the largest mandatory international system for trading greenhouse gas emission allowances, and a major element of the EU's efforts to combat global warming. The ETS grants "carbon leakage" status to industries where it is considered that costs related to climate policies might cause businesses to transfer production to countries with less demanding requirements to reduce greenhouse gas emissions. The forest industry currently has carbon leakage status for the period 2015–2019. Plans for the period beyond 2020 are under consideration within the EU.

Our policies



Comprehensive carbon strategy

As stated in our carbon strategy, it is our firm intention to drive down our fossil fuel use, so that we get as close to zero as possible within a decade using technically and commercially feasible means. Relevant policies guiding and steering our efforts to combat global warming include our:

➤ Governance

➤ Social agenda

➤ Environmental agenda

➤ Materials, water, and energy

➤ Carbon dioxide

➤ Forests, plantations, and land use

➤ Economic agenda

➤ Data and assurance

- Policy for Energy and Carbon
- Environmental Guidelines, a more comprehensive overview of our policy objectives and how we work to achieve them.
- Supplier Code of Conduct and Practical Guide for Suppliers, guiding us on how CO₂ emissions can be reduced in our supply chain.

How we work



Focusing on carbon intensity

For over a decade we have been actively reducing the energy intensity of our operations – and in many places also our dependency on fossil fuels. In 2016, we began to measure our progress based on fossil CO₂ emissions (kg) from all our operations per total energy consumed (MWh) as a new key performance indicator (KPI). The KPI measures our decarbonisation progress in a transparent way. For related data, see page 44.

Improving our energy efficiency

Greenhouse gases emitted by our operations include carbon dioxide, methane and nitrous oxide – with carbon dioxide being by far the most significant. The most effective ways to reduce our direct fossil CO₂ emissions are to further improve our energy efficiency, and to continue to increase the use of biomass fuels. Significant investments in recent years, particularly in multi-fuel boilers, have successfully generated significant reductions in our fossil CO₂ intensity.

Management systems supporting our work

A proactive approach to decreasing our dependency on fossil fuels and reducing our direct and indirect fossil CO₂ emissions creates new business opportunities and helps us manage our costs and risks. Stora Enso evaluates risks and opportunities related to global warming through the annual Enterprise Risk Management (ERM) process, which forms an integral part of

Stora Enso is the first forest products company to set ambitious science-based reduction targets for greenhouse gas emissions.

the group's management approach (for more details see our Financial Report). We routinely calculate the financial impacts of potential cost increases in relation to emission allowances, including the impacts of possible increases in energy prices. Our production units systematically work to meet their environmental regulatory requirements and to improve their energy efficiency. Their work is supported by international third-party-certified systems such as the environmental management standard ISO 14001 and the energy management standard ISO 50001. For unit-specific information on certification, see page 69.

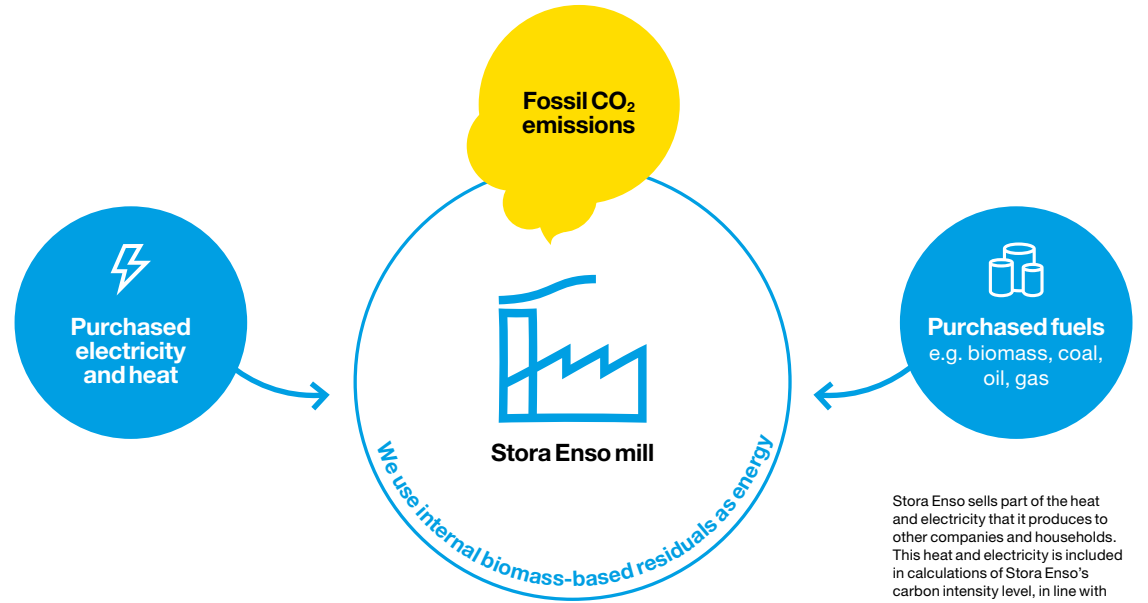
Detailed carbon reporting

We publicly report on our greenhouse gas emissions in three categories:

- Fossil CO₂ emissions from operations we directly own or control, including on-site energy generation facilities and our own processes, power boilers, lime kilns and on-site vehicles (scope 1).
- Fossil CO₂ emissions related to the electricity and heat we purchase externally for use in our operations (scope 2).
- Estimated fossil CO₂ emissions from other indirect sources along our value chain (scope 3).

The carbon intensity of Stora Enso's operations

Our related KPI measures fossil CO₂ emissions in relation to total energy consumption (kg of CO₂ per MWh). In 2017, our carbon intensity level was 64 kg/MWh.



Stora Enso sells part of the heat and electricity that it produces to other companies and households. This heat and electricity is included in calculations of Stora Enso's carbon intensity level, in line with the Greenhouse Gas Protocol.

[> Governance](#)[> Social agenda](#)[> Environmental agenda](#)[> Materials, water, and energy](#)[> Carbon dioxide](#)[> Forests, plantations, and land use](#)[> Economic agenda](#)[> Data and assurance](#)

All our units report quarterly on carbon emissions for scopes 1 and 2. A group-level estimate for scope 3 emissions is updated biannually. Our carbon footprint accounting is based on guidelines provided by the Greenhouse Gas Protocol of the World Resource Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). In 2017, we continued to have the reporting of our direct and indirect fossil CO₂ emissions (scopes 1 and 2) externally assured to a Reasonable Level – as one of the few companies in the world to do so. For more details, see page 68.

The CO₂ factors we use for calculating the emissions for purchased electricity (scope 2) largely follow the market-based methodology, which means that almost all our units apply the more accurate CO₂ factors provided by their energy suppliers, instead of average location-based factors for the countries of operation.

Partnerships to combat global warming

Ahead of COP21 in 2015, Stora Enso joined the We Mean Business coalition. The coalition brings together non-profit organisations, businesses, and investors who recognise that transitioning to a low-carbon economy is the only way to secure sustainable economic growth.

In 2017, Stora Enso, BSR and CDP hosted a workshop at Stora Enso's Sickla Innovation Centre focusing on emission reductions through value chain partnerships. The event gathered attendees from a range of companies to discuss science-based emission targets, opportunities for collaboration, and the benefits of bold climate targets in achieving scalable action.

Progress



Setting ambitious science-based emission reduction targets

In January 2018, Stora Enso announced a new and ambitious set of science-based reduction targets for greenhouse gas (GHG) emissions. We are committed to reducing GHG emissions from our operations by 31% per tonne of pulp, paper and board produced by 2030 from a 2010 baseline, in line with the 2°C limit set for global warming by the Paris Agreement. We will report on our progress in our [Sustainability Report](#).

Since 2007, our target has been to reduce our fossil CO₂ emissions per saleable tonne of board, pulp, and paper by 35% from 2006 levels by the end of 2025.

In 2017, our fossil CO₂ emissions per saleable tonne of board, pulp, and paper were 40% lower than the 2006 benchmark level (40% lower in 2016). In absolute terms, our



We are working to reduce fossil carbon dioxide emissions within our operations, by improving energy efficiency, and by increasing the share of biomass in our internal energy generation.

- Governance
- Social agenda
- **Environmental agenda**
 - Materials, water, and energy
 - **Carbon dioxide**
 - Forests, plantations, and land use
- Economic agenda
- Data and assurance



Wooden buildings – heroes in combatting global warming

Wooden building elements are renewable and easy to assemble on-site, and they can store carbon for decades. Designers and city planners around the world are showing greater interest in multi-storey wooden buildings.

“The carbon footprint of lightweight concrete, for example, is almost three times bigger than that of dry timber. The more we can increase the use of wood as a building material around the world, the better,” says **Jari Suominen**, who leads Stora Enso’s Wood Products division.

➤ Read the full article at storaenso.com/sustainability



Pellets are made from sawmill by-products and provide a cost-effective and renewable biomass for energy.

direct and indirect fossil CO₂ emissions were 52% lower than in 2006. Direct fossil CO₂ emissions per unit of sales production were 20% lower than in 2006. The fossil CO₂ emissions resulting from the generation of purchased electricity and heat during 2017 were 62% lower than in 2006 per unit of sales production. This means we have already reached our 2025 target, although the group’s CO₂ intensity has been adversely affected by the coal-based energy consumption at our Beihai Mill in China.

The total direct and indirect fossil CO₂ emissions from Stora Enso’s board, pulp, and paper mills amounted to 3.04 million tonnes in 2017 (2.98 million tonnes in 2016).

Thirteen of Stora Enso’s mills use production process residuals to create and provide renewable energy to local district heating systems (approximately 80%) and industrial partners (approximately 20%). In most cases the heat supplied from our production units directly reduces the use of oil and other fossil fuels in these localities. In 2017, a total of 3.3 PJ of heat was sold to these district heating systems (3.7 PJ in 2016). Using this amount of renewable energy instead of, for example, light fuel oil for heating resulted in estimated emission reductions amounting to 0.25 million tonnes of CO₂ (0.28 million tonnes).

We strive to increase the share of biomass in our internal energy generation. At Veitsiluoto Mill in Finland, for example, direct CO₂ emissions decreased by 22% or 47 000 tonnes in 2017 compared to 2016, largely due to the increased use of biomass.

At Ostrołęka Mill in Poland, the increased use of biomass in the mill’s boiler in 2017 helped to reduce the mill’s direct fossil CO₂ emissions by 9% compared to 2016, corresponding to approximately 31 000 tonnes of CO₂.

In line with Stora Enso’s policy to give preference to energy from low-fossil carbon sources, our sawmills in Austria, Germany, Poland, and the Czech Republic began purchasing 100% renewable electricity at the beginning of 2017.

Investigating non-fossil fuel alternatives for Beihai Mill

At our Beihai Mill in Guangxi province, China, coal is currently the only feasible energy source for an industrial project of this scale in the region, as there are inadequate sustainable supply chains for non-fossil fuels in southern China at present. We have continued to investigate long-term options to gradually move away from coal to biomass and other non-fossil fuels. The power boiler at Beihai Mill is technically able to use a variety of fuel mixes, and in 2017 we have used modest amounts of wastewater sludge, forest residuals and

other side streams from our production processes to power the mill. The medium-term objective is to annually replace 10 000 tonnes of coal with these steps. For more information about our coal sourcing, see page 63.

Carbon neutral emissions

Carbon neutral CO₂ emissions are fossil-free emissions generated during the combustion of biomass-based fuels sourced from sustainably managed forests¹. These emissions are carbon neutral as the forests are regenerated and the new generation of trees absorb CO₂ while growing. When forests

Products made from renewable materials help combat global warming.

¹ Recommendations on Biomass Carbon Neutrality, WBCSD 2015.

- Governance
- Social agenda
- **Environmental agenda**
 - Materials, water, and energy
 - **Carbon dioxide**
 - Forests, plantations, and land use
- Economic agenda
- Data and assurance



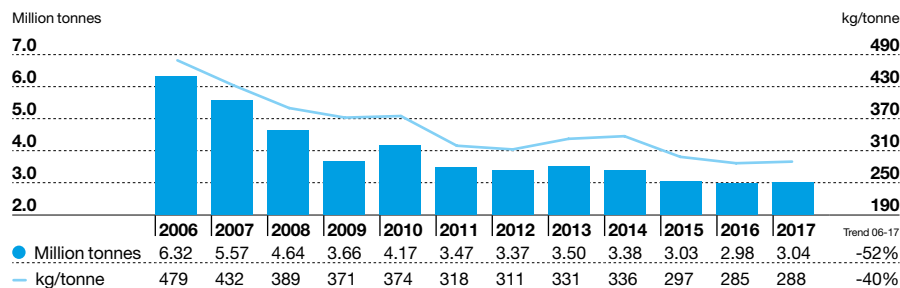
are sustainably managed, this cycle can continue indefinitely. Stora Enso's operations utilise renewable biomass-based fuels to a large extent, which means that the proportion of carbon neutral CO₂ emissions in our total emissions is high. In 2017, 80% (80%) of the total CO₂ emissions from our own operations were carbon neutral.

Our carbon footprint

Direct emissions from our operations account for 22% (23% in 2016) of our carbon footprint, while emissions related to the electricity and heat we purchase for use in our operations account for 11% (9%) of our total carbon emissions. According to our estimates, the majority of the emissions in our carbon footprint – 67% (68%) – are generated elsewhere along the value chain: in the sourcing and manufacturing of our raw materials and services (42% of the total scope 3 emissions); in the further processing of our products by customers (33%); and in the transportation of raw materials to our mills and our final products to our customers (25%). To identify potential for further reducing our emissions in scopes 1, 2, and 3, we strengthened our internal steering processes in accordance with the actions agreed in our science-based targets during 2017. We also continued to implement methodologies for calculating the quantities of carbon sequestered in forests and plantations owned and managed by Stora Enso and our associate companies. We continued our work with external experts to identify a credible methodology to calculate the positive substitution effect our renewable products have when compared to fossil-CO₂-intensive alternatives.

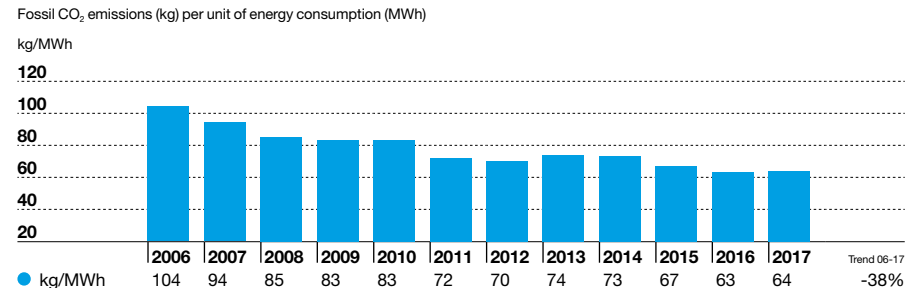
Stora Enso's operations utilise renewable biomass-based fuels to a large extent, which means that the proportion of carbon neutral CO₂ emissions in our total emissions is high. In 2017, 80% of the total CO₂ emissions from our own operations were carbon neutral.

Fossil CO₂ emissions in relation to production^{1 2}



¹ Covering direct and indirect fossil CO₂ emissions (scope 1 and 2) from pulp, paper, and board production units. Excluding joint operations. Normalised figures are reported per unit of sales production.
² Historical figures recalculated due to accuracy improvements.

Fossil CO₂ emissions in relation to our energy consumption^{1 2}



¹ Covering direct and indirect fossil CO₂ emissions (scope 1 and 2) from all production units. Excluding joint operations.
² Historical figures recalculated due to accuracy improvements.

- Governance
- Social agenda
- **Environmental agenda**
 - Materials, water, and energy
 - **Carbon dioxide**
 - Forests, plantations, and land use
- Economic agenda
- Data and assurance

Value chain emissions

The CO₂ emissions generated during the transportation of our raw materials and products, which are the most significant environmental impacts associated with our logistical operations, are mainly produced by external logistics service providers. Transportation accounts for 25% of our scope 3 CO₂ emissions.

As an example of our ambition to reduce CO₂ in our value chain, we request our wood transport suppliers in Sweden to report the proportion of renewable fuels they use. Our objective in 2017 was to increase the proportion of renewable fuels to 30%, and at the end of the year this share in our Swedish wood transportation amounted to approximately 31%.

Transportation by sea accounts for approximately 90% of all our product transportation by weight and distance, while road and rail transportation account for 8% and 2% respectively.

Our commitment to science-based targets includes engagement targets for scope 3. To reduce emissions in the value chain, Stora Enso commits to having 70% of its non-fiber raw material suppliers and downstream transportation suppliers in terms of spend set their own greenhouse gas (GHG) reduction targets by 2025, towards the aim that they adopt science-based GHG reduction targets by 2030. In addition, the company will educate 100% of customer-facing staff on the advantages of setting science-based targets by 2020.



Choose the climate, choose renewable materials

Did you know that products made from renewable materials are a part of the solution to global warming? Watch our video to find out how carbon absorbed from the atmosphere stays in the fibres of trees when they are made into products – even through recycling. The carbon dioxide released while making wood-based products will be absorbed by new generations of trees.

➤ Watch the film at storaenso.com/sustainability

Stora Enso's carbon footprint 2013–2017^{1,2}

	Fossil CO ₂ equivalent (million tonnes) ³					Trend 13–17
	2013	2014	2015	2016	2017	
Scope 1: Direct emissions from our operations.	2.47	2.39	2.24	2.40	2.33	-6%
Scope 2: Emissions related to purchased energy consumed in our operations. ⁴	1.50	1.45	1.23	1.02	1.14	-24%
Scope 3: Emissions from other sources along our value chain.	7.22	6.83	6.92	7.06	7.11	-2%
Total	11.19	10.67	10.39	10.48	10.58	-5%

¹ Covers all Stora Enso production units. Excluding joint operations.

² Historical figures recalculated due to accuracy improvements.

³ CO₂ equivalent also includes other greenhouse gases in addition to CO₂.

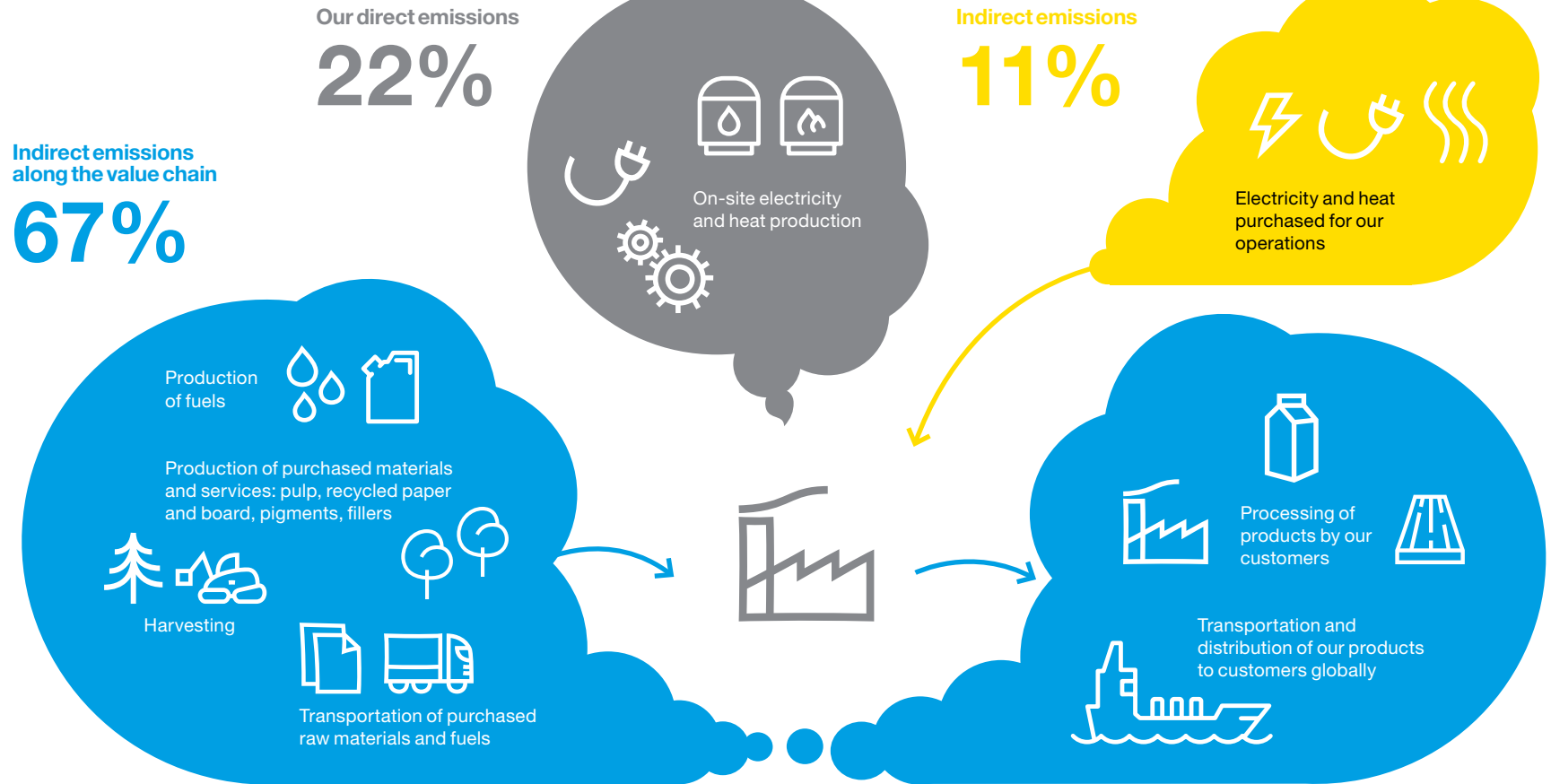
⁴ The CO₂ factors we use for purchased energy (scope 2) largely follow the market-based methodology, which means that almost all our units apply CO₂ factors provided by their energy suppliers, instead of average location-based factors for the location of operation. When applying average location-based factors, our scope 2 emissions for 2017 were 1.36 million tonnes of CO₂ equivalents.



We believe that combatting global warming involves the use of renewable materials, resource and energy efficient production, and sustainable forest management.

- > Governance
- > Social agenda
- > **Environmental agenda**
 - > Materials, water, and energy
 - > **Carbon dioxide**
 - > Forests, plantations, and land use
- > Economic agenda
- > Data and assurance

Stora Enso's carbon footprint¹



● Scope 1: Direct emissions from our operations. ● Scope 2: Emissions related to purchased energy consumed in our operations. ● Scope 3: Emissions from other sources along our value chain.

¹ Covers all Stora Enso production units, a total of 10.58 million tonnes of fossil CO₂ equivalent (10.48 million tonnes in 2016). Excluding joint operations. CO₂ equivalents also include other greenhouse gases in addition to CO₂.

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
 - [> Materials, water, and energy](#)
 - [> Carbon dioxide](#)
 - [> Forests, plantations, and land use](#)
- [> Economic agenda](#)
- [> Data and assurance](#)

Forests, plantations, and land use

Sustainable forest management safeguards forest health and productivity, helps combat global warming, and protects biodiversity – whilst securing the long-term availability of our renewable resources.



Opportunities and challenges



The role of forests in a changing world

Forests and plantations are an increasingly important part of a wider global sustainable development agenda, particularly in relation to combatting global warming. As a renewable natural resource, wood represents a favourable alternative to fossil-based materials. Trees absorb carbon dioxide (CO₂) from the atmosphere, and together with wood-based products act as carbon storage. Sustainable forest management ensures that new generations of trees replace those that are logged. The growing trees absorb more carbon from the atmosphere than is released, increasing the role of forests as carbon storage.

The role of Land Use, Land Use Change and Forestry (LULUCF) in combating global warming has been broadly recognised, but the ways to include it in regulation have been subject to intense debate. Within the EU, the role of forests in achieving European climate objectives are elaborated in the proposals for LULUCF and Renewable Energy Directives, for example, which aim to influence the development of a sustainable forest-based bioeconomy. For Stora Enso, it is essential that any EU policy fully utilises the potential of sustainable renewable materials and supports Europe's transition towards a bio-based circular economy.

Global warming entails physical challenges and opportunities in relation to forests and plantations, due to changing patterns of temperature, wind, and rainfall, which can all be expected to impact our operational environment. Well-managed forests can make entire ecosystems more resilient to negative impacts, and even benefit from the positive effects.

Global challenges such as population growth, increasing demand for agricultural land, and the widening gap between the supply and demand for wood, all require us to use natural resources even more efficiently, and to produce more raw materials from less land. Because the need to conserve our remaining natural ecosystems is also increasing, we must find new ways to integrate competing land uses. Simultaneously, the trend for more forest-owners to be based in cities away from their landholdings brings new challenges in relation to wood procurement, as forest-owners have less connection to the day-to-day operations.

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
 - [> Materials, water, and energy](#)
 - [> Carbon dioxide](#)
 - [> Forests, plantations, and land use](#)
- [> Economic agenda](#)
- [> Data and assurance](#)

Our policies**Committed to sustainable wood and fibre sourcing**

Stora Enso's policy on Wood and Fibre Sourcing, and Land Management covers the entire cycle of forest and tree plantation management. The policy requires sustainable forest management, through responsible sourcing and land use, to safeguard the health and ecological functions of ecosystems and to help conserve biodiversity, soil and water resources. In order to achieve this, we maintain an open dialogue with our stakeholders.



Other relevant policies that promote sustainable forestry include our:

- Environmental Guidelines, a more comprehensive overview of our policy objectives and how we work to achieve them.
- Code of Conduct.
- Supplier Code of Conduct.

How we work**Ensuring the sustainability of fibre**

Stora Enso's approach to responsible forest and tree plantation management takes into account



the economic, social, and environmental aspects of sustainability. Compliance with national legislation and regulatory obligations is only the starting point for our work; we actively support and implement voluntary forest conservation and restoration measures on lands owned, leased, and managed by Stora Enso, and in other areas where we purchase wood.

Stora Enso continued its cooperation with WWF in several countries and platforms in 2017, including the New Generation Plantations (NGP) platform, which focuses on the institutional and technological aspects of responsible plantation management. Stora Enso is also cooperating with WWF Finland to promote the conservation and sustainable use of forests. This work includes promoting alternative harvesting practices among private forest-owners.

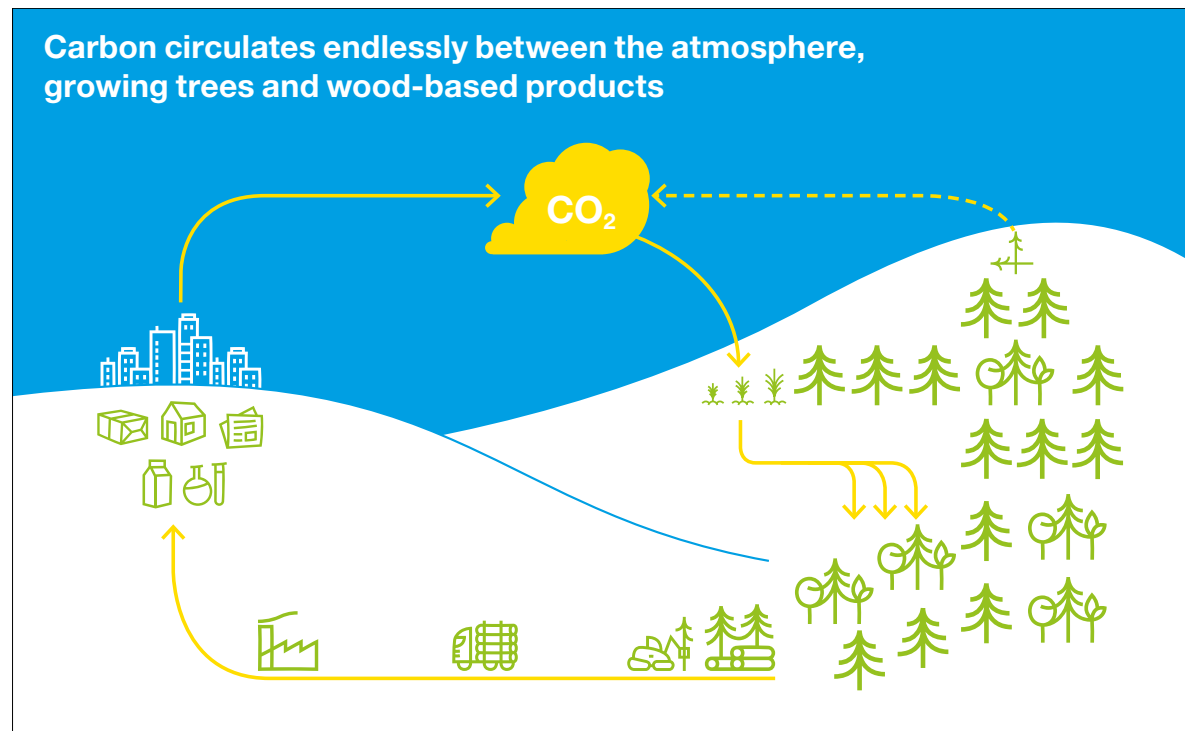
We are active members of numerous local and global forestry associations, networks, and programmes. Stora Enso has been a member of the Forest Solutions Group (FSG) of the World Business Council for Sustainable Development since the late 1990s. In 2017, we actively supported a strategic review to redefine FSG's role as the global engagement platform on sustainable forestry and forest products. We also continued to support and participate in The Forests Dialogue (TFD), which is a platform for multi-stakeholder discussion and collaboration on the most pressing local and global issues facing forests and people.

Strengthening and developing our operations

To cover all aspects of sustainability in our forest and plantation operations, we apply the same comprehensive wood procurement process in all regions in which we operate. In 2017, we reorganised our Wood Supply organisation to utilise our expertise more efficiently and to increase synergies. The Wood Supply organisation consists of regional wood supply units that secure wood sourcing for Stora Enso mills.

Our wood procurement process covers the entire management cycle in forests and plantations, including:

- Forest and plantation planning
- Silvicultural operations (everyday forest and plantation management)
- Wood harvesting
- Regeneration of forests and plantations
- Monitoring of each part of the process, for example through audits and self-assessments.



Forests have a central role in carbon cycle. Young forests absorb carbon when they grow and old forests release it as they decay. Carbon is stored in forest products until they decay or are burned at the end of their life when the carbon dioxide is released back into the atmosphere. Growing forest reabsorb carbon from the air.

In 2017, the total amount of wood (including roundwood, wood chips, and sawdust) delivered to our mills was 37.5 million m³ (solid under bark) (37.6 million m³ in 2016).

- Governance
- Social agenda
- **Environmental agenda**
 - Materials, water, and energy
 - Carbon dioxide
 - **Forests, plantations, and land use**
- Economic agenda
- Data and assurance

Trees absorb carbon dioxide from the atmosphere as they grow.

Long-term forestry planning

As trees take many years or decades to mature, long-term forestry planning is essential. Such planning involves ecological landscape plans and biodiversity assessments to identify, conserve, and restore vital ecosystems and ecological features. In 2017, 88% (90%) of Stora Enso's wood came from managed semi-natural forests in Europe where most forests are privately owned. Forest planning involves finding ways to optimise wood production and conservation. We work together with forest-owners to identify sensitive forest areas in need of protection. Our experts are trained to identify such areas and we regularly consult the authorities on these matters.

In 2017, 12% of Stora Enso's wood came from tree plantations (10%). When establishing new plantations, we use internationally approved principles such as the Food and Agriculture Organisation's (FAO) Voluntary Guidelines on Planted Forests, and we also certify our commercial plantations to ensure all aspects of sustainability are duly taken into consideration. Stora Enso never establishes plantations in natural forests, protected areas, or water sensitive locations. We only use land with low biodiversity value, such as former pasturelands. Stora Enso's employees and forestry contractors are given on-the-job training in ecological management, and we regularly monitor the impacts of our operations on biodiversity, soil, and water resources.

As we recognise that our plantations are an integral part of local land use, we evaluate and define sustainable land use practices specifically for each location. After determining the scope of expected impacts and possible remedies, we decide on whether or not to proceed with a proposed project. Stora Enso subsequently remains in constant dialogue with stakeholders, and strives to make sure that land contracts are legitimate and fair.



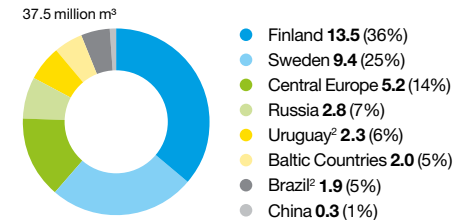
Approximately half of Veracel's 213 500 hectares of land in Brazil is dedicated to rainforest preservation.

Protecting biodiversity with sustainable harvesting

Stora Enso closely monitors the management of the forests and plantations from which it sources wood. Wood harvesting is planned to suit the particular characteristics of each harvesting site, making use of appropriate harvesting methods and technologies. Wood harvesting volumes are aligned with the long-term carrying capacity of the particular forests and plantations.

All roundwood, chips, sawdust, and externally purchased pulp supplied to our mills come from sustainable sources. We use a range of tools to ensure this, and to guarantee the sustainability of each part of the forest management cycle. These tools include forest certification and third-party traceability systems such as the Forest Stewardship

Wood procurement by region¹



¹ Total amounts of wood (roundwood, chips, and sawdust) procured within these regions for delivery to our mills (million m³, solid under bark).
² Figures for Brazil and Uruguay include 50% of the wood procurement of our joint operations Veracel and Montes del Plata.

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
 - [> Materials, water, and energy](#)
 - [> Carbon dioxide](#)
 - [> Forests, plantations, and land use](#)
- [> Economic agenda](#)
- [> Data and assurance](#)



Jaguar caught on camera!

The rare sighting of a jaguar in 2017 is proof that Veracel's efforts in rainforest restoration are paying off: if jaguars can survive, their smaller prey species must also be faring well. It also tells us how tree plantations may affect biodiversity.

"Tree plantations resemble natural forests more than many other land uses, attracting small vertebrates like birds – and eventually large predators such as jaguars," says **Elson Fernandes de Lima**, Project Manager at Casa da Floresta, an organisation that helps Veracel to monitor rainforest restoration and biodiversity.

[> Read the full article at \[storaenso.com/sustainability\]\(http://storaenso.com/sustainability\)](#)

impacts on biodiversity, soil, and water resources. We regularly audit our suppliers and work together with respected local institutions to ensure everything is done according to the standards set by certification schemes and our own policies.

In Guangxi, China, an exceptional cooperation lasting seven years came to an end in 2017 as the non-governmental organisation Fauna & Flora International finalised an extensive biodiversity monitoring project together with Stora Enso. During the seven-year project, we have monitored both migratory and resident birds at eucalyptus plantations as well as in the non-eucalyptus woodlands. The long monitoring period that has involved the entire life cycle of a eucalyptus plantation, enabled us to follow the various impacts on biodiversity and improve the sustainability of our plantation operations.

Tree breeding

Stora Enso is continuously working towards the long-term goal of improving the productivity and quality of the eucalyptus trees grown in our plantations, so as to sustainably enhance wood production per unit of land. Tree breeding primarily targets increased biomass production (i.e. volume and density)

Council's (FSC) Chain of Custody/Controlled Wood scheme, the Chain of Custody/Due Diligence System of the Programme for the Endorsement of Forest Certification (PEFC), and the ISO 14001 environmental management standard. In addition, our Supplier Code of Conduct complements these tools by imposing strict contractual requirements on our suppliers. We actively work with our stakeholders to promote sustainable forest management and the wider use of certification systems. As certification programmes cover all three aspects of sustainability, they are an important indicator of responsible forestry. For this reason, we follow our progress with a key performance indicator measuring the proportion of land owned and managed by Stora Enso that is covered by forest certification schemes.

In Sweden, for instance, almost five hundred harvesting operators, contractors, and forestry experts were trained during the year, with a focus on forest wetlands and water streams. The training was organised together with the Swedish Forest Agency.

Regenerating forests and tree plantations

We always ensure that the forests and plantations we harvest wood from are duly regenerated. This is often done through active planting or sowing, although in many areas active

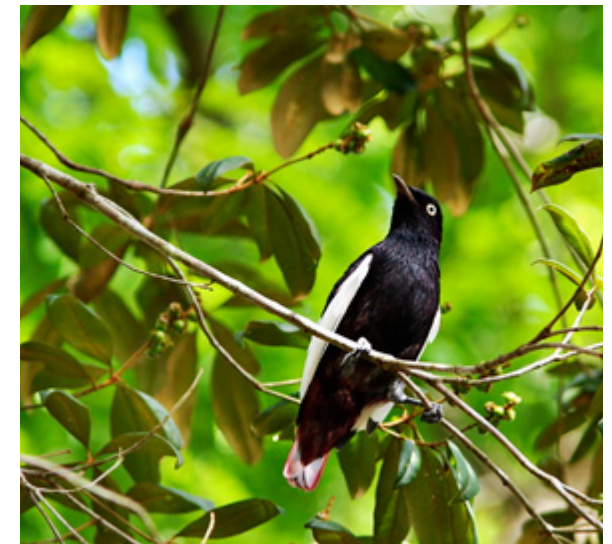
regeneration is complemented by natural seed dispersal from nearby forests, by leaving seed trees standing in the harvesting area or by coppicing. Whatever the methods used, we always ensure the forest will regenerate.

In Brazil, our joint operation Veracel goes beyond regeneration by conserving and restoring areas of natural Atlantic Rainforest. Approximately half of Veracel's 213 500 hectares of land is dedicated to rainforest preservation. Where natural regeneration is not possible, areas are carefully planted. Veracel aims to restore approximately 400 hectares of rainforest habitat every year through local partnerships. A total of 6 495 hectares of forest have been restored between 1994 and the end of 2017. This work is part of a regional restoration programme that helps to connect the remaining areas of valuable natural habitat with forest corridors, enabling wildlife to move more freely from one area to another.

The Veracel Station visitor centre, established in an area of preserved rainforest habitat, conducts research, conserves native and endangered ecosystems, and raises environmental awareness among visitors.

Detailed monitoring

We closely monitor the sustainability of our operations throughout the forest management cycle, focusing on their



Veracel's pulp mill and its eucalyptus plantations are located in an area that is becoming a popular destination for birdwatchers.

[> Governance](#)[> Social agenda](#)[> Environmental agenda](#)[> Materials, water, and energy](#)[> Carbon dioxide](#)[> Forests, plantations, and land use](#)[> Economic agenda](#)[> Data and assurance](#)

and cellulose yield. Other targets may include improved rooting or resistance to frost, drought, pests, or diseases, depending on local conditions and the species in question. We test and apply modern scientific tools for tree improvement and the management of genetic diversity. This may involve selecting “elite trees”, or conducting marker-assisted breeding and genetic engineering.

Our genetic engineering activities are in the research and development phase. As with traditional clone improvements, it will take many years to develop genetically engineered clones. We continued the process to establish field trials in areas totalling less than 30 hectares in Brazil. These trials will fully comply with the relevant national regulations. Stora Enso will not carry out any trials considered by the authorities to

be unsafe or otherwise not permitted. Currently we have no plans to plant genetically engineered trees in any of our commercial plantations.

Progress**Steady advances on certification**

Globally, Stora Enso owns or leases lands with a total area of 972 600 hectares. We follow our progress on responsible forestry with a key performance indicator (KPI) that measures the percentage of these lands covered by certification systems. Our target was to reach 96% coverage by the end of 2017. The KPI will be redefined and a new target set to reflect this during 2018.



Regeneration of forests and tree plantations is often done through active planting or sowing.

**Is there life at tree plantations?**

Stora Enso and the non-profit organisation Fauna & Flora International concluded an extensive seven-year biodiversity monitoring project in Beihai, China’s Guangxi province, in 2017. The project also informed local residents and Stora Enso’s employees about the importance of nature conservation.

“Understanding and protecting the biodiversity of our plantations is crucial for our business,” says **Ian Blanden**, Stora Enso’s General Manager for Forestry Operations in Beihai.

[▶ Read the full article at \[storaenso.com/sustainability\]\(http://storaenso.com/sustainability\)](#)

[> Governance](#)[> Social agenda](#)[> Environmental agenda](#)[> Materials, water, and energy](#)[> Carbon dioxide](#)[> **Forests, plantations, and land use**](#)[> Economic agenda](#)[> Data and assurance](#)

In 2017, coverage amounted to 92% (90% in 2016). The share of certified wood in our total wood supply was 85% (83%).

In Russia, we continued to work with WWF Russia during 2017 to expand Stora Enso's FSC certification groups and to make certification more accessible and cost-efficient for small and medium-sized companies. In 2017, two new logging companies joined FSC certification groups managed by Stora Enso in Russia. This increased the total area covered by group certifications to 1 336 000 hectares (940 000 hectares in 2016). During the year, we provided training to all members of Stora Enso's FSC certification groups in Russia. Stora Enso's Russian subsidiary companies have been FSC-certified since 2006, and are included in the total certified area. Stora Enso also continued to actively promote economically viable and ecologically responsible forestry across Russia during 2017 through cooperation with the Boreal Forest Platform (BFP), which is a stakeholder forum organised by WWF Russia.

We always ensure that forests and tree plantations are duly regenerated.



In addition to their economic value, forests also have important recreational and ecological value, for example related to fishing, hunting, and picking wild berries.



As trees take many years to mature, long-term forestry planning is essential. Such planning involves ecological landscape plans and biodiversity assessments to identify, conserve, and restore vital ecosystems.

- Governance
- Social agenda
- **Environmental agenda**
 - Materials, water, and energy
 - Carbon dioxide
 - **Forests, plantations, and land use**
- Economic agenda
- Data and assurance

Since 2011, Veracel has promoted group certification among its tree farmers in Brazil. In 2014, Aspex, an association representing certified tree farms, took over the management of the certification process, using certificates granted by both FSC and Cerflor (PEFC). By the end of 2017, dual forest certificates had been obtained by 74 farmers (71 at the end of 2016) for areas totalling 37 831 hectares (37 876), of which 15 895 hectares (16 147) are planted with eucalyptus.

In 2017, our trial tree plantations in Laos received FSC Forest Management and Chain of Custody certificates, making them one of the first FSC-certified tree plantations in the country.

A proactive approach to land use

Stora Enso recognises that the areas where we operate are of value to different stakeholders. We have therefore adopted an integrated approach to land use around our plantations, for example by applying locally developed agroforestry models. We have duly developed innovative land use models in Laos, Uruguay, and Brazil to benefit local farmers and communities as well the company. For details of these integrated land use practices, see pages 22–24.

NGOs campaigning to protect Northern forests

In 2017, sustainable forestry in the Northern hemisphere became a major stakeholder interest, with environmental NGOs including Greenpeace widely calling for forests to be better protected.

In Finland, NGOs were concerned about harvesting volumes and the harvesting activities of the state-owned enterprise Metsähallitus in Kainuu, Northeast Finland, where NGOs called for more forests to be protected. During the year, Stora Enso communicated its position of not receiving any roundwood from the disputed areas in Kainuu until the situation has been resolved through dialogue. In Russia, Greenpeace called on companies with wood supply chains in the Arkhangelsk region, including Stora Enso, to enhance forest protection. During the year, Stora Enso was in continuous dialogue with its suppliers

sourcing wood from this region, and with Greenpeace Russia. In Sweden, NGOs expressed concern over Swedish forestry practices and governance, and Stora Enso's wood procurement areas in Northwestern Sweden, particularly around Lake Messlingen. Stora Enso communicated its position of not having any ongoing harvesting operations in the area. We will make a new assessment of practices in the area in 2018, and will not perform any forestry operations there until the assessment is complete.

In our stakeholder communications during the year, we stressed our commitment to forest certification, wood traceability, and open stakeholder dialogues, and that we always ensure that all the wood we use comes from sustainably managed sources. We believe that the most sustainable way to protect Intact Forest Landscapes and other High Conservation Values is through the national and regional multi-stakeholder processes that have developed these concepts. During the year, Stora Enso engaged in continuous dialogues with NGOs and other stakeholders and we also encouraged our business partners and NGOs to participate in such engagement.

Managing land contracts in Guangxi, China

Stora Enso leases a total of 82 591 hectares of land in four regions of Guangxi, of which 29 581 hectares (30 500 hectares in 2016), corresponding to 36% (37%) of the total area, is social land leased from village collectives, individual households, and local forest farms. In many cases, these social lands had already been sub-leased, sometimes repeatedly, resulting in chains of sub-leases. Often the original owners did not benefit from increased land rental prices because of these chains.

Stora Enso has been reviewing and correcting land lease contracts in Guangxi since 2009, when irregularities in the contract chains were first discovered. By the end of 2017, 66% of the contracts were found to be free from contractual defects (66% by the end of 2016) corresponding to 16 267 hectares (16 480) of social land. In irreconcilable cases, we terminate leases in a responsible manner, considering all potential impacts. When contracts have no defects, this means that the ownership of land is clear or resolved, and that contracting procedures have proven to be legal, authentic and valid.

As announced on 19 January 2017, Stora Enso is reconsidering its plans to build a chemical pulp mill in Beihai, and to decrease the area of its leased forestland in the Guangxi region. As part of this process, Stora Enso aims to only lease land that is free of contractual defects. Stora Enso has moved from contract correction to normal contract management and will consequently stop reporting on the contract correction progress.



Bug life on dead wood

Decaying wood provides habitats for many insects, which in turn provide food for larger animals and birds. It also ensures that nutrients are recycled in forest ecosystems and become available again to future generations of growing trees.

"Decaying wood has been identified as one of the key factors affecting forest biodiversity, and safeguarding it is high on Stora Enso's agenda," says **Pekka Kallio-Mannila**, Head of Sustainability at Stora Enso's Wood Supply Finland.

➤ Read the full article at storaenso.com/sustainability

In 2017, the share of certified wood in our total wood supply was 85%.

- Governance
- Social agenda
- **Environmental agenda**
 - Materials, water, and energy
 - Carbon dioxide
 - **Forests, plantations, and land use**
- Economic agenda
- Data and assurance

Forests, plantations, and lands owned by Stora Enso¹ as of 31 December 2017

Unit	Area	Certification coverage	Details of local landscapes and protected areas
Montes del Plata plantations and lands, Uruguay (joint operation with Arauco)	190 279 ha, of which 101 823 ha planted	PEFC and FSC for 190 279 ha	Mainly pasturelands and agricultural fields. Remnants of native ecosystems, such as grasslands and riparian forests, are protected within the company's lands.
Veracel plantations and lands, Bahia, Brazil (joint operation with Fibria)	213 594 ha, of which 75 386 ha planted for pulp production	CERFLOR (PEFC) for 185 796 ha; FSC for 185 796 ha	Dominated by pasturelands cleared from Atlantic rainforest between the 1950s and 1980s. 112 746 ha of Veracel's lands are protected, including a 6 063 ha Private Natural Heritage Reserve. These protected areas mostly consist of native forest remnants at different stages of regeneration.
Plantations and lands, Rio Grande do Sul, Brazil	43 412 ha, of which 20 743 ha planted		Mainly pasturelands and agricultural fields. 14 000 ha of the total area is protected, including native grasslands, riparian forests, and other habitats.
Wood Supply, Estonia	137 ha, of which 124 ha planted		No protected areas within this area.

¹ Including operations where Stora Enso's shareholding is at least 50% and size of the area exceeds 100 hectares. In addition to the forest and plantation areas listed above, Stora Enso owns: 49% of Bergvik Skog, which owns 2.3 million hectares of land in Sweden and 0.1 million hectares in Latvia; and 41% of Tornator, which owns 0.6 million hectares of forestland in Finland, 60 000 hectares in Estonia, and 12 000 hectares in Romania.

Forests and plantations leased, and managed by Stora Enso¹ as of 31 December 2017

Unit	Area	Certification coverage	Details of local landscapes and protected areas
Wood Supply, Russia	369 422 ha	FSC group certificate	In Russia, protected areas are generally excluded from lease agreements. Areas amounting to 2 266 ha are protected as natural monuments including genetic pine reserves and watercourses.
Plantations and lands, Guangxi, China	82 591 ha, of which 76 936 ha planted	Chinese Forest Certification Council certificate (PEFC) for 82 591 ha; FSC for 82 591 ha	Mosaic landscape including agricultural crop fields, forest plantations, and settlements. No native ecosystems are found in the leased lands. Areas totalling around 1 300 ha are protected (including 184 ha of public benefit forest), consisting of steep slopes, buffer zones, and other important areas for watershed protection.
Montes del Plata	56 649 ha, of which 44 864 ha planted	PEFC and FSC for 51 846 ha	Mainly pasturelands and agricultural fields. Protected and sensitive areas are excluded from lease agreements.
Veracel	12 633 ha, of which 4 870 ha planted	FSC for 12 209 ha; PEFC for 12 209 ha	5 404 ha of leased lands are protected, mostly consisting of native forest remnants at different stages of regeneration.
Trial plantations, Laos	3 731 ha, of which 2 988 ha planted	FSC for 2 988 ha	The plantations are located within a mosaic of intensive shifting cultivation lands and traditionally protected remnants of native forests. One plantation area is located close to a National Biodiversity Conservation Area. The majority of the total area is covered by agroforestry production schemes.

¹ Including operations where Stora Enso's shareholding is at least 50% and size of the area exceeds 100 hectares.

> Governance

> Social agenda

> Environmental agenda

> **Economic agenda**

> Data and assurance



Economic agenda

> Customers 56

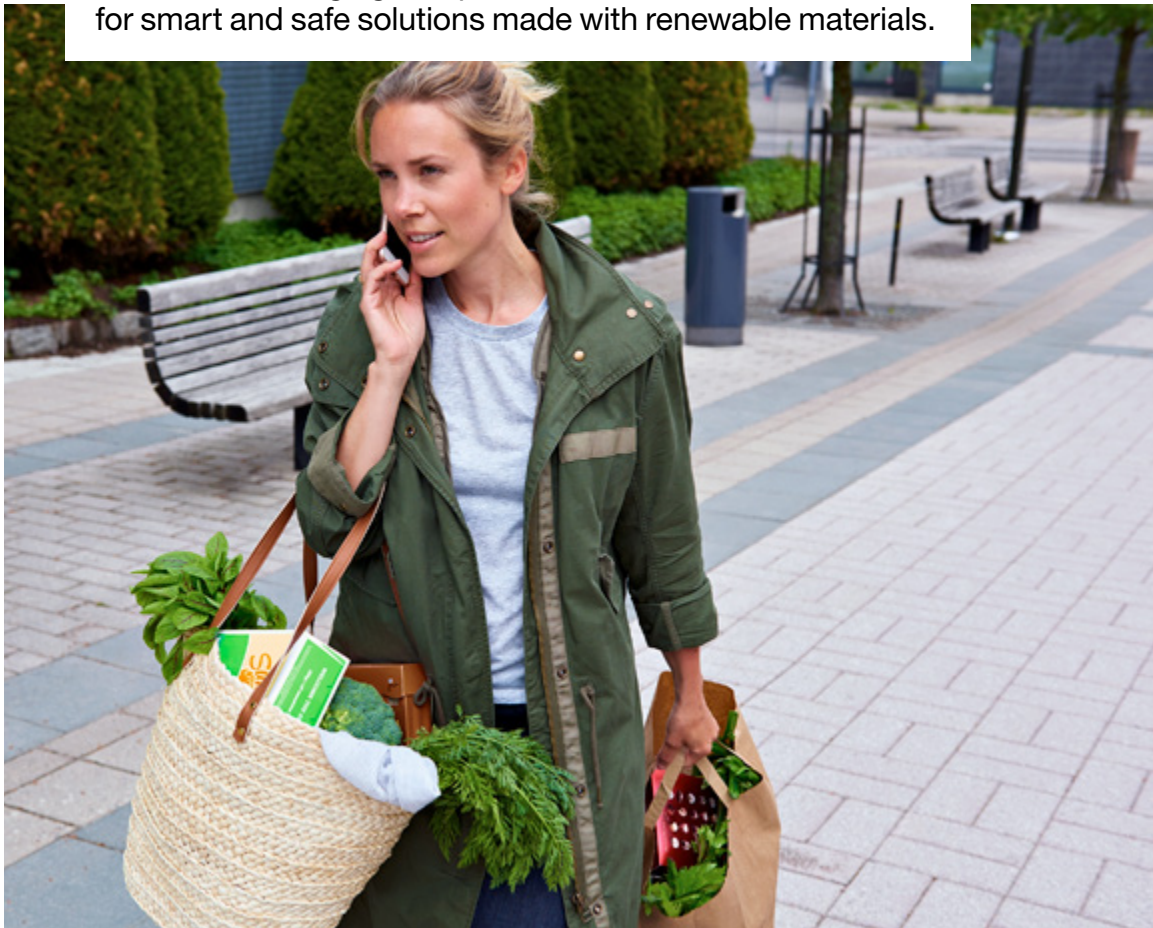
> Suppliers 60

> Investors 64

- Governance
- Social agenda
- Environmental agenda
- **Economic agenda**
 - **Customers**
 - Suppliers
 - Investors
- Data and assurance

Customers

Growing consumer awareness of sustainability around the world is encouraging companies and brand owners to look for smart and safe solutions made with renewable materials.



Opportunities and challenges



Responding to a global demand for sustainability

In many countries around the world, the middle class is growing at a pace greater than the global population on average, which is leading to an increased demand for lifestyles that can seriously burden the planet. At the same time, consumer awareness of limited natural resources, the environmental impacts of products, and social responsibility is growing, creating pressure for brand owners to pay more attention to product and supply chain responsibility. Combined with policies, regulations and economic incentives, these megatrends are also driving our customers to use renewable raw materials and to increase the recycling of products and materials.

In the long-term, we believe the world is looking to replace fossil-based materials with renewable alternatives. Stora Enso's various wood and fibre-based products, including bio-based chemicals and biocomposites, are well-positioned to respond to these demands.

Our policies



A single set of values

The Stora Enso Code of Conduct constitutes a single set of values, expectations, and ambitions related to our global approach to ethical business practices, environmental values, and human and labour rights. These values are applied wherever we operate, and in all dealings with customers.

How we work



Renewable alternatives for multiple sectors

At Stora Enso, we are strengthening our expertise in renewable materials and products with high sustainability performance to meet the needs of our current and future customers. Our business is organised into five divisions, each with their own focus areas and products that cater to a broad range of customers. Our product portfolio includes various boards for packaging and printing, several pulp grades, wood and fibre-based products for construction, energy pellets, paper products made from virgin and recycled fibre, and lignin, which can be used to replace fossil-based phenols, for instance. Our products are made from wood, a renewable and recyclable raw material. Stora Enso promotes and participates in successful recycling schemes, particularly for paper and board. We also

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
- [> **Economic agenda**](#)
 - [> **Customers**](#)
 - [> Suppliers](#)
 - [> Investors](#)
- [> Data and assurance](#)

sell and reuse a variety of valuable by-products and residuals from our production processes. For more information, see page 32.

We actively work together with our customers to improve material efficiency, and decrease the environmental impact of our products and the related production processes. We also systematically measure customer satisfaction.

We foresee many possibilities for bio-based chemicals, bio-barriers, lignin, and biocomposites to meet industry and consumer demands for more sustainable solutions that can replace fossil-based alternatives.

Prioritising product safety

Stora Enso's products covered by specific safety regulations and demands include food contact materials, materials for toys, packaging for pharmaceuticals, and construction materials. Our in-house product safety and quality control systems cover product development, raw material sourcing, and the manufacturing and delivery of products. In 2017, product safety work in the Consumer Board division focused on compliance with the revised food contact standards in China. We also oblige our suppliers to comply with our product safety requirements.



Our Wood Products division offers its customers sustainable materials and solutions that enable buildings to obtain environmental and energy efficiency certification.



Reuse, recycle, renew: making the most out of a tree

Stora Enso's renewable products contribute to the bioeconomy – and their recyclability makes them part of the circular economy. Both of these economy models reject the traditional “take-make-dispose” model, and instead focus on using resources as efficiently as possible.

“Over the past 50 years Stora Enso has doubled the number of cartons that can be produced from the same amount of wood,” says **Ola Svending**, Sustainability Director at Stora Enso's Consumer Board division.

[Read the full article at **storaenso.com/sustainability**](https://storaenso.com/sustainability)

- Governance
- Social agenda
- Environmental agenda
- **Economic agenda**
 - **Customers**
 - Suppliers
 - Investors
- Data and assurance

Our units producing sensitive packaging materials follow Good Manufacturing Practice, a set of widely recognised guidelines incorporated into EU regulations. All our Consumer Board mills and most of our Packaging Solutions mills are additionally certified according to recognised hygiene management standards. Food safety compliance for essential raw materials is also verified with our suppliers prior to any purchasing decision. We additionally provide our customers with information on product hygiene and safety aspects through compliance declarations.

We follow legislation designed to protect our employees' health, public health, and the environment, including the EU's REACH, Biocidal Products, as well as Classification, Labelling, and Packaging regulations, in addition to relevant food contact legislation and demands concerning food safety. When producing food contact materials, we only use chemicals that have been specifically approved for that purpose, after verifying their safety and legal compliance. Many of our wood products are CE-marked to guarantee that they comply with the relevant EU legislation. Our divisions have Product Safety Networks in place, and all our mills work to ensure that their products meet the relevant product safety requirements. ISO 22000, FSSC 22000, and FDA product safety certificates issued to many of our units further ensure that we apply a systematic approach to food safety issues. In addition, ISO 9001 certified quality management systems help our units to identify and meet customer requirements, and systematically improve product quality.

For unit-specific details of our sustainability certificates, see page 69.

In 2017, we achieved the highest recognition level, Gold, in the Ecovadis ethical supplier rating.



Unlike many competing materials, Stora Enso's raw materials are both renewable and recyclable, contributing to a sustainable bioeconomy as well as to a circular economy.

- Governance
- Social agenda
- Environmental agenda
- **Economic agenda**
 - **Customers**
 - Suppliers
 - Investors
- Data and assurance

Life cycle assessments and ecolabels

Stora Enso’s experts collect product-specific life cycle inventory (LCI) data, which is typically used in life cycle assessments (LCAs) conducted by our own experts, our customers, or brand owners. The environmental performance of our paper and board products is reported in line with the voluntary Paper Profile initiative. Paper Profiles have been calculated for all of our paper and containerboard products, and all main paperboard products.

More than 90% of our Paper division’s own brands are covered by one or more recognised ecolabels, including the EU Ecolabel, the Nordic Ecolabel, and the German Blue Angel (Blauer Engel). Many of our graphical board brands are also available as EU Ecolabel certified. Ecolabel criteria cover the entire life cycle of a product, from the extraction of raw materials through to production, product use, and disposal. Ecolabels are voluntary tools created to help customers and consumers identify products and services with environmental excellence compared to other similar products.

Many Stora Enso products are also sold as FSC or PEFC-certified, validating that they have been produced using wood from responsibly managed sources, and that the entire journey of the raw material – from forest to store shelf – has been verified by a third party. For more information about our responsible forestry and forest certification work, see pages 48–50.

Environmental Product Declarations (EPDs) offer transparent and comparable independent information about the environmental footprint of a product throughout its life cycle. Stora Enso’s EPDs for Classic Sawn Timber and Cross Laminated Timber (CLT) were third-party verified in 2017.

Progress

Continuous customer engagement

Customer needs are a key element in developing our products, services, and processes – both through systematic feedback and exchanging expertise with us on various sustainability topics. When it comes to new products, such as lignin and biocomposites, we collaborate closely with customers to create applications that meet their needs throughout the value chain.

We also provide training and support for customers on sustainability topics. Stora Enso conducted three Paper & Print Academy training sessions with over 50 paper customers in 2017. The sessions enable participants to follow the entire supply chain – from forest management and harvesting to



the final paper product. They encourage discussions about certificates, ecolabels, on-product labelling, and efficient ways to print and convert certified paper.

In 2017, together with 13 other companies, Stora Enso’s Consumer Board division signed an agreement with the Alliance for Beverage Cartons and the Environment (ACE UK) to enhance paper cup recycling in the United Kingdom. The companies, including many of our customers and their customers, will fund a programme making paper cup recycling available to more people.

Our Consumer Board division also worked with customers to create an alternative to small plastic cups used in the dairy industry. The new liquid packaging, called FibreCup, will have a reduced climate impact and can be recycled together with other fibre-based packaging.

Our Biomaterials division, together with its other pulp customers, is collaborating with the fashion industry to create a more sustainable and traceable value chain for clothing products.

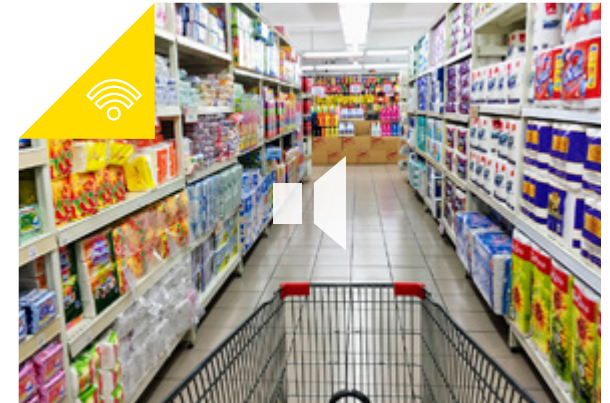
Certified sustainability in product stewardship

In 2017, Stora Enso’s Wood Products division continued to be a member of the stakeholder committee of the Sustainable Biomass Program (SBP) certification system, with Gruvön Mill in Sweden obtaining its own SBP certificate. The SBP certification system enables verification of the legal and sustainable sources of wood and greenhouse gas emissions throughout the supply chain. New ENplus™ certifications were implemented in 2017 at Gruvön and Ala pellet mills in Sweden. ENplus™ certification includes criteria for product quality, wood origin, and greenhouse gas emissions.

Sharing information as a supplier

By the end of 2017, 26 (26 in 2016) of Stora Enso’s mills were registered and active in the Supplier Ethical Data Exchange (Sedex). Sedex gives us a platform to share information with customers on our compliance with the Ethical Trading Initiative’s base code and other key sustainability topics throughout the supply chain. Sedex allows customers to use the same approach with several suppliers, instead of developing their own systems and running individual queries. It also means that suppliers only need to provide sustainability-related data once, which follows the common Sedex format and level of detail, and is regularly updated.

Stora Enso is also a member of the ethical supplier rating system Ecovadis. In 2017, we obtained a score of 80/100 and were included in the top 1% performers, achieving the highest recognition level, Gold.



The trick to attracting responsible consumers? Stay one step ahead

Consumers increasingly want to buy more sustainable products, so responsible retailers need to stay one step ahead – by rethinking packaging sizes and materials, for example.

“Consumers care about sustainability, but they need information. The better alternatives need to be there first, for them to be able to make the right choices”, says **Emma Hernel**, Senior Analyst at the strategy firm United Minds.

➤ Listen to the podcast at storaenso.com/renewablefuture

- Governance
- Social agenda
- Environmental agenda
- **Economic agenda**
 - Customers
 - **Suppliers**
 - Investors
- Data and assurance

Suppliers

In addition to wood and fibre, Stora Enso sources other raw materials, products, and services from over 20 000 suppliers globally. We have strict sustainability requirements for all our suppliers.



Opportunities and challenges



Developing sustainable supplier networks

As a global business with an extensive supplier base worldwide, Stora Enso can use its purchasing power to drive its suppliers towards more sustainable operations. We can also help create a larger pool of more sustainable suppliers globally. On the other hand, developing a full understanding of a supplier's sustainability performance remains a challenge, even with very strict supply chain processes in place.

Although Stora Enso works in a variety of regulatory environments, we consistently respond to our stakeholders' demands concerning transparency and the sustainability performance of our suppliers. The [UK Modern Slavery Act](#), for example, requires our continuous commitment to monitoring and assessing the risk of modern slavery in our supply chains, and digitalisation brings new opportunities to increase supply chain transparency. Imposing sustainability requirements on our direct suppliers encourages them to develop their capacity to meet such new demands and improve their performance.

Our policies



A robust framework for responsible sourcing

The Stora Enso Supplier Code of Conduct (SCoC) is the cornerstone of our approach to responsible sourcing. The code is a legally binding document that imposes supplier sustainability requirements on human and labour rights, occupational health and safety, environmental commitments, and responsible business practices. It applies to all our sourcing categories globally.

Several other Stora Enso policies and documents also support responsible sourcing, including our:

- Sourcing Policy, our statement on the sourcing framework and objectives.
- Sourcing Guideline, defining how sourcing should be executed, managed, and controlled.
- Practical Instructions for Stora Enso Suppliers, detailed guidance and examples on the topics included in the SCoC.
- Instructions for Purchasers, practical guidance for our purchasers to help them address challenges related to sustainability.
- Policy on Wood and Fibre Sourcing, and Land Management, with standards that apply to our suppliers.
- Environmental Guidelines, guiding us on how to reduce our environmental impact through sourcing.

- Governance
- Social agenda
- Environmental agenda
- **Economic agenda**
 - Customers
 - **Suppliers**
 - Investors
- Data and assurance

How we work



Our sourcing process

Materials and products sourced by Stora Enso include wood and fibre-based materials such as pulp and paper for recycling (PfR), chemicals, fillers, energy, fuels, and spare parts, as well as maintenance, logistics, and IT services. In 2017, purchases of materials, goods, and services represented 49% of our total variable cost while fibre procurement accounted for 51%.

For Stora Enso, responsible sourcing means drawing on our deep commitment to sustainability, addressing the concerns of key stakeholders, complying with regulatory frameworks, adhering to best practices, and managing supply risks. These principles are put into practice every day by our employees working with sourcing.

Sourcing is a centrally led function at Stora Enso, serving the entire group and enabling clear and transparent decision making. Sourcing initiatives are reviewed and resolved by dedicated sourcing committees that meet when the sourcing need is specified, during the tendering process, and when a contract is drafted.

All suppliers wishing to do business with Stora Enso must first pre-qualify, during tendering or at the latest before a contract is drafted. Instead of using our own supplier numbering, we use D-U-N-S® numbering, which is a globally recognised system for identifying companies. To pre-qualify, suppliers must complete a questionnaire, submit confirmation of their compliance with our SCoC, and since 2017, also complete our Safety Trail training. Our suppliers are asked to provide information about their own suppliers, including sub-suppliers operating in high-risk countries.

Risk mapping and auditing

In addition to enforcing our SCoC, we actively help our suppliers improve their sustainability performance. In 2017, we introduced Safety Trail, an online e-learning to educate our suppliers in proactive safety management, and initiated topic-based “deep dives” or thorough reviews of specific supply chains. Deep dives help us better understand the operations, opportunities, and challenges of a supply chain related to a specific topic or category, and also serve the information needs of our customers. In addition, we conduct on-site visits and focused supplier audits, to monitor and improve supplier sustainability performance. Focused audits are conducted based on risk assessments or concerns raised by our stakeholders.

Stora Enso’s supplier sustainability risk mapping tool, created in collaboration with the non-profit organisation BSR,

supports our purchasers in making risk assessments. Based on a pre-evaluation of a supplier’s social and environmental risk profile, they may be selected for a third-party sustainability audit, conducted together with the purchaser.

Any suspected SCoC non-conformances brought to our attention are investigated and followed up. Similarly, any non-conformances identified during audits are followed up with supplier meetings where the findings are discussed and corrective action plans devised. Suppliers must sign up to these plans, and our purchasers will monitor their implementation. If a supplier does not take the necessary corrective actions, new discussions are held to examine the reasons, at a higher management level if necessary. In cases when a supplier is not willing to improve their performance, the relationship is terminated.

Some of our suppliers are contractors hired for long-term work, such as forest and plantation management, and some for shorter periods of time, for example in large-scale investment and mill maintenance projects. Our SCoC and

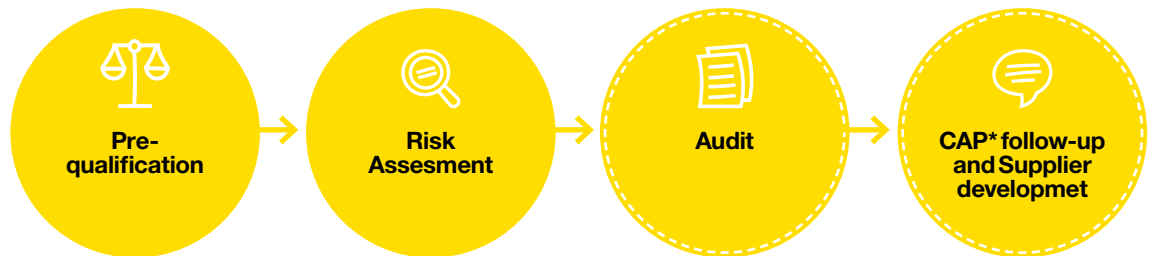
In 2017, 95% of our total spend was covered by our Supplier Code of Conduct.

sourcing process also applies to them. While contractors are primarily responsible for their own employees, we make every effort to ensure that everyone working on our premises is treated fairly and receives adequate safety training.

Pulp procurement

Most of the pulp used in Stora Enso’s operations is produced internally at our mills (97% in 2017). For quality and logistical

Managing supplier sustainability risks at Stora Enso



- Supplier Code of Conduct
- Safety Trail

- Category
- Geography
- Other

- Risk assesment
- High risk areas
- Global category focus

- Corrective actions
- Verification

Supplier Code of Conduct Steering Group
 Consultation and decision body, follows progress

* Corrective action plan

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
- [> **Economic agenda**](#)
 - [> Customers](#)
 - [> **Suppliers**](#)
 - [> Investors](#)
- [> Data and assurance](#)



While contractors are primarily responsible for their own employees, we make every effort to ensure that everyone working on our premises is treated fairly and receives adequate safety training.

reasons, a small proportion of the pulp for our paper and board production is purchased from external suppliers (3%). Pulp from our joint operation Veracel in Brazil is considered internally produced in these figures. As with wood procurement, we ensure that all the pulp we purchase is sustainably sourced by applying third-party-verified traceability systems and forest certification systems, and by complying with the relevant regulations. For more information about our approach to sustainable wood procurement, see page [47](#).

Paper for recycling

Stora Enso sources paper for recycling (PFR) from various local authorities and waste management companies. For more details of our PFR use, see page [31](#).

Progress

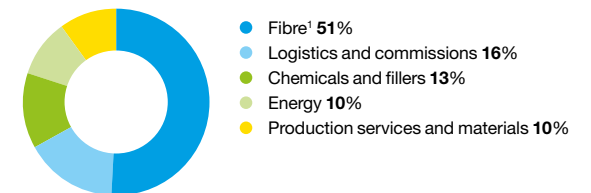
Capacity building on safety

Stora Enso's related key performance indicator (KPI) measures the proportion of our total supplier spend covered by

In 2017, we introduced the Safety Trail campaign to promote occupational safety among our suppliers.

Breakdown of raw material and service costs

% of our total variable costs



¹ Wood, Paper for Recycling and purchased pulp

our SCoC, including all categories and regions. By the end of 2017, 95% of Stora Enso's total spend on materials, goods, and services was duly covered (92% at the end of 2016), meeting the target of 95% for the year. Invoicing by customs, bank fees, intellectual property rights (IPR), leasing fees, and financial trading are not included in the total supplier spend.

In 2017, we introduced the Safety Trail campaign to promote better occupational safety among our suppliers. Safety Trail is a safety capacity building e-learning for existing suppliers and a mandatory element in the pre-qualification



- Governance
- Social agenda
- Environmental agenda
- **Economic agenda**
 - Customers
 - **Suppliers**
 - Investors
- Data and assurance

process for potential suppliers. At least one supplier employee must complete the training and commit to sharing it within their organisation. Our short-term target for 2017 was to cover 50% of our total supplier spend with Safety Trail, and this target was achieved with a coverage of 65% by year end. The target will be reviewed in 2018. For more information about Stora Enso's approach to occupational health and safety, see page 15.

Revised strategy and vision

Our sourcing and logistics work was reviewed and the ambition level was raised in 2017, with sustainability as a defining component. We received stakeholder feedback on this work through our group materiality assessment during the spring 2017. Occupational safety and fossil CO₂ emissions are our top priorities when evaluating supplier sustainability performance. In 2018, our aim is to include these priorities as specific criteria in our tenders for existing and potential new suppliers, as part of the supplier selection process.



Various chemicals are needed to enhance the quality of our products.

Supplier audits: human and labour rights in focus

In 2017, Stora Enso continued to conduct third-party supplier audits with a focus on suppliers in high-risk areas, and on chemical sourcing as well as people-intensive sourcing categories such as service providers and logistics. These categories were chosen because of increased stakeholder interest in chemicals sourced from mining and agriculture, and because of our continuous effort to thoroughly understand our potential human rights risks and impacts.

During 2017, we conducted a total of 26 third-party supplier audits (47 in 2016). These audits revealed non-conformances particularly related to working hours, basic workers' rights and preparedness for emergency situations in the workplace. No supplier relationships needed to be terminated in 2017 (three in 2016). Other related work in 2017 included the introduction of a checklist template for our purchasers to assist in making observations during supplier visits. We also developed a specific audit approach for product safety.

**Sourcing developments in China and the USA
Coal sourcing for Beihai Mill in China**

In southern China, coal is currently the only feasible energy source for an industrial facility as large as Stora Enso's Beihai Mill. However, as part of our long-term planning, we are investigating opportunities to use more renewable energy – for more information, see page 43. In 2017, we continued to look for more sustainable alternatives to coal, and monitored our current supplier's performance with on-site visits and regular discussions. We also continued to expand our network of potential local suppliers with the aim to identify a supplier that best fulfils our criteria.

Audits of mineral suppliers are rare in China, as mining companies typically do not allow customers to visit their mines. In 2017, Stora Enso was able to audit its entire coal supply chain, excluding shipping, and a social impact assessment was conducted in villages near the mine as well as along the logistics chain. Corrective actions for the supply chain were followed up with another audit, and while some advancement was observed, further improvement is required.

Sourcing sugar industry by-products

Stora Enso has completed the construction of a demonstration and market development plant in Raceland, Louisiana, USA, to validate extraction and separation technologies. The plant converts cellulosic biomass into highly refined xylose sugars. The first batches of xylose will be produced at the plant during 2018. For feedstock, the



High ambitions for supply chain sustainability

Stora Enso buys goods and services from over 20 000 suppliers around the world. To ensure that all of them respect our sustainability requirements, we have clear and systematic sourcing processes in which sustainability is deeply embedded.

“Our direct suppliers must also carefully select and monitor the suppliers they work with,” says **Johanna Hagelberg**, who leads our Sourcing and Logistics function.

➤ Read the full article at storaenso.com/sustainability

demonstration plant purchases bagasse, a residual from the sugar-making process, from a nearby sugar mill.

Due to the seasonal nature of the work and the shortage of available local workers, the sugar industry in Louisiana is dependent on seasonal migrant foreign workers for harvesting, transportation and sugar-making during a compressed 100-day period of production. Since there is no federal legislation in the USA, nor state legislation in Louisiana, directly limiting maximum working hours, Stora Enso is monitoring labour rights in its bagasse supply chain to ensure that working hour schedules do not have adverse impacts on workers' health and safety. We will continue to monitor and support our bagasse supplier in adopting our SCoC requirements, while continuously pushing for improvements.

- Governance
- Social agenda
- Environmental agenda
- **Economic agenda**
 - Customers
 - Suppliers
 - **Investors**
- Data and assurance

Investors

We strive to continuously improve our sustainability performance and reporting to keep investors informed of our progress, future direction, and ambitions.



Opportunities and challenges



Sustainability drives competitiveness

Sustainability is increasingly important for a growing number of socially responsible investors (SRIs), and the incorporation of environmental, social, and governance (ESG) performance into mainstream investment decision-making is accelerating. Both of these trends encourage companies to aim for more sustainable operations. Simultaneously, shareholders expect financial rewards from their investments.

At Stora Enso, we believe that only truly sustainable operations can ensure long-term financial success. Stora Enso's Investor Relations work is guided by several laws and regulations, including the EU's Market Abuse Regulation (MAR), the Finnish Securities Markets Act, Nasdaq rules in Helsinki and Stockholm, and the standards of the Finnish Financial Supervisory Authority.

Our policies



Guiding our Investor Relations

Company policies and guidelines related to Stora Enso's Investor Relations include our:

- Disclosure Policy, a set of rules covering all our communications with investors and other stakeholders, and encompassing insider guidelines, closed periods, communications governance, and communications procedures.
- Code of Conduct, applied to all our operations around the world, including Investor Relations.

How we work



Consistent and transparent communications

Various aspects of sustainability, such as global warming and sustainable forest management, are important to Stora Enso's investors. Our main shareholders are long-term investors that place high value on sustainable business practices and continuously follow and evaluate our performance. For more information on how we create value with a sustainable business model, see our [Progress Book](#). For details of Stora Enso's ownership distribution see our [Financial Report](#).

Timely and transparent communication with shareholders is a top priority for Stora Enso. We actively maintain open dialogue with our investors on ESG matters through face-to-face meetings, conference calls, seminars, and webcasts.

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
- [> **Economic agenda**](#)
 - [> Customers](#)
 - [> Suppliers](#)
 - [> **Investors**](#)
- [> Data and assurance](#)



Many investors today are committed to integrating ESG factors into their investments. We actively maintain open dialogues with our investors on ESG matters.

We also regularly share updated information on our sustainability performance with our shareholders in our Interim and Annual Reports, stakeholder letters, web updates, and investor newsletters. We regularly participate in sustainability events of interest to investors. For more information about our investor relations, see storaenso.com/investors.

Progress

Focus on material sustainability ratings

In 2017, our Investor Relations function organised 13 investor meetings focusing on ESG-related topics, including one-to-one meetings, conference calls, and one webinar. The focus was on Stora Enso's sustainability strategy and activities. In total, approximately 40 investor representatives participated in these meetings.

During the year, we also continued our strategy to enhance the availability of ESG information to shareholders, and



prioritise Stora Enso's participation in questionnaires and assessments for the ESG index and ratings schemes that are most material for our investors.

In the long-term, Stora Enso's goal is to work with funding partners who have sustainability as a key part of their lending agenda. We aim at contributing to a scenario where the sustainability of business is a key metric for credit risk

At Stora Enso we believe that only truly sustainable operations can ensure long-term financial success.



How can we identify what really matters?

Corporate sustainability can be a jungle of voluntary standards, policies, and initiatives. Stora Enso believes that the key is to focus on credible, non-financial reporting and materiality – which means identifying the most relevant sustainability challenges and opportunities.

“Sustainability can only be the outcome of a carefully thought through business strategy, and not a separate job function, report, or department,” says **Rodney Irwin**, Managing Director for Redefining Value and Education at the World Business Council for Sustainable Development (WBCSD).

[Read the full article at storaenso.com/sustainability](http://storaenso.com/sustainability)

assessment. In December 2017, Stora Enso signed a new Revolving Credit Facility (RCF) loan where part of the pricing is based on Stora Enso's ability to reduce greenhouse gas emissions per tonne of pulp, paper, and board produced, agreed in accordance with the Science Based Targets initiative. The facility size is EUR 600 million with maturity in January 2023. The purpose of the facility is to act as an undrawn back-stop facility. 13 commercial banks participated in the RCF loan as lenders.

ESG indices and other external recognition in 2017

- Governance
- Social agenda
- Environmental agenda
- **Economic agenda**
 - Customers
 - Suppliers
 - Investors
- Data and assurance



Ecovadis
Stora Enso is included in the top 1% of the Ecovadis ethical supplier rating system, and achieved the highest recognition level (Gold).



Science Based Targets initiative
As the first forest products company, Stora Enso set science-based targets for its greenhouse gases in 2017, in line with the 2°C limit set for global warming by the Paris Agreement.



STOXX ESG indices
Stora Enso is included in several STOXX ESG indices. These indices rate leading global companies according to environmental, social, and governance criteria.



Euronext Vigeo
Stora Enso is listed in the Euronext Vigeo World, Europe, and Eurozone 120 indices as one of the 120 most advanced companies in terms of environmental, social, and governance performance.



CDP
Stora Enso received an A- score as a result of its response to CDP's annual climate change questionnaire in 2017.



Oekom Research
Stora Enso is classified as "Prime" by Oekom Research's environmental, social and governance rating methodology.



FTSE4Good Index
Stora Enso is included in the FTSE4Good Index Series. These indices measure the performance of companies that meet globally recognised corporate responsibility standards.



Ethibel Investment Register
Stora Enso is listed in Forum ETHIBEL's Ethibel EXCELLENCE Investment Register and Ethibel PIONEER register.



Stockholm School of Economics
Stora Enso was top-ranked in the 2017 "Walking the talk" study on sustainability communications by the Mistra Center for Sustainable Markets (Misum) at the Stockholm School of Economics. The study included 88 Large Cap companies at the Stockholm stock exchange.



OMX GES Sustainability Finland index
Stora Enso is included in the NASDAQ OMX and GES Investment Service's OMX GES Sustainability Finland index.



ReportWatch
Stora Enso's Annual Report 2016, including the Sustainability Report, was included in ReportWatch's Best Practices in Annual Sustainability Reporting. Stora Enso was also top-ranked in its industry category.



ECPI Ethical Indices
Stora Enso is included in the ECPI EMU Ethical Equity index, which covers environmental, social, and governance criteria.



MSCI
Stora Enso is included in several of MSCI's ESG indices.

> Governance

> Social agenda

> Environmental agenda

> Economic agenda

> **Data and assurance**



Data and assurance

> Reporting scope 68

> Data by production unit 69

> Independent assurance report 72

Reporting scope

At Stora Enso, we regularly review the priorities in our Sustainability Agenda and ensure that our reporting duly addresses them. When defining the materiality of issues impacting our sustainable business model, we consider the expectations of significant internal and external stakeholders. For more information on our approach to materiality, see page 6.

Data boundaries

Unless otherwise stated, the group's consolidated performance data expressed in this report covers the parent company, Stora Enso Oyj, and all companies in which we hold over 50% of voting rights directly or indirectly. The consolidated figures and reporting on human rights, community, and forests, plantations, and land use also include the 50% owned joint operations Veracel in Brazil and Montes del Plata in Uruguay, due to their materiality to the group's sustainability impacts and stakeholder interest in these topics. For the same reason the report also covers specific material topics related to human rights and community work of 35% owned equity-accounted investment Bulleh Shah Packaging, which the group completed the divestment of in September 2017. Otherwise the consolidated figures and reporting do not include equity-accounted investments where Stora Enso's ownership is between 20% and 50%, or companies in which our ownership share is less than 20%.

Our consolidated environmental and energy data covers our production units. As expressed in the respective footnotes, Stora Enso's sawmills and converting facilities are excluded from water, energy, and certain CO₂ indicators that are normalised per tonne of sales production. This is due to the lower materiality of sawmills and converting facilities in the group's related performance and different metric for sales production, compared to pulp, paper, and board mills.

Human resources (HR) data is derived from separately collected HR statistics, except for numbers of employees, which are derived from financial accounting. Unlike in our Financial Reporting, consolidated HR data in this Sustainability Report excludes employees of our 50%-owned joint operations Montes del Plata and Veracel. All the HR data presented here covers our permanent and temporary employees as of 31 December 2017, except for the unit-specific numbers of employees on pages 69–71, which

are yearly averages. Certain administrative functions and sales offices are not included in the group's consolidated occupational health and safety (OHS) data due to data availability and lower occupational safety risk compared to production units.

Significant changes in scope during 2017

In September 2017, Stora Enso completed the divestment of its 35% minority holding in the equity-accounted investment Bulleh Shah Packaging (Private) Ltd, which reduced the group's related reporting on human rights and community work. In February, the group announced the closure of paper machine 8 at Kvarnsveden Mill, Sweden. The closure was completed during September and affected approximately 120 people. In November, the group divested the Finnish Puumerkki Oy and the Estonian Puumerkki AS, affecting approximately 170 people. Also in November, the group announced the divestment of Baienfurt sheeting centre in Germany. The divestment was completed in January 2018, affecting approximately 60 people. For more information on the group's acquisitions and disposals, see [note 4](#) in the Financial Report 2017.

In our environmental and energy reporting, divestments and closures are managed according to the Greenhouse Gas Protocol. This means that, when necessary, figures for the historical performance are recalculated following the removal of divested units from the baseline. However, closed units are maintained in the environment and energy target and trend calculation baselines.

Following the GRI framework

This report corresponds to the 'Comprehensive' level in the G4 reporting framework of the Global Reporting Initiative (GRI). This means that our reporting covers all the Standard Disclosures of the G4 framework, as well as all the sustainability aspects we have identified as material in our operations. Our GRI index (storaenso.com/gri) lists our Standard Disclosures with reference to G4 categories, aspects, and indicators, and refers to the chapter names or locations where these issues are addressed in our annual reporting publications and/or other information channels.

References to chapter names or locations are complemented with additional reporting in the index as necessary. Impacts that make sustainability topics relevant to us may occur outside Stora Enso, or they may be material only for some of our operations or locations. When our reporting on a sustainability aspect or indicator only concerns specific units, geographical regions, or other data collection

boundaries, based on the identified materiality, this is specified in the comment field in the G4 index table, or in connection with the respective disclosure. Stora Enso's generic management approach to sustainability covers all the aspects of the G4 framework identified as material. We also report on our management approach with regard to specific aspects in the relevant sections of this report, with respective references included in the G4 index table.

External assurance

This report has been assured by an independent third-party assurance provider in accordance with the voluntary external assurance practices followed in sustainability reporting. The assurance report appears on page 72. Deloitte Oy has provided a limited level of assurance covering all the contents of this report. For the third year running, a level of reasonable assurance has been provided for Stora Enso's reporting on direct and indirect fossil CO₂ emissions (scopes 1 and 2).

The UN Global Compact

Stora Enso supports the ten principles of the United Nations' Global Compact, an initiative set up in 2000 to encourage businesses worldwide to embed responsibility into their operations. We respect and promote these principles throughout our operations, and report on our progress in this report. We annually upload our Communication on Progress to the [UN Global Compact website](#) as a public record of our commitment.



This is our **Communication on Progress** in implementing the principles of the **United Nations Global Compact** and supporting broader UN goals.

We welcome feedback on its contents.

- Governance
- Social agenda
- Environmental agenda
- Economic agenda
- **Data and assurance**
 - **Reporting scope**
 - Data by production unit
 - Assurance report

Data by production unit

This table presents unit-specific information on environmental performance, production, certificates, and numbers of employees. Joint operations and divested or closed units are excluded.

Unit	Number of employees ^{a)}	Production capacity ^{b)} 1 000 t	Products	Recovered fibre ^{c)}	Certificates								Fossil CO ₂ emissions														
					ISO 9001	ISO 14001	ISO 22000	FSSC 22000	FDA	ISO 50001	OHSAS 18001	FSC® CoC	PEFC™ CoC	Process waste to landfill	Hazardous waste ^{d)}	SO ₂ ^{e)}	NO _x as NO ₂	Direct CO ₂ ^{f)}	Indirect CO ₂ ^{f)}	CO ₂ , on-site transportation ^{g)}	Carbon neutral CO ₂ , biomass fuels ^{h)}	COD	AOX	Phosphorus	Nitrogen	Process water discharges	
Belgium																											
Langerbrugge	340	555	④	x	x	x				x	x	x	x	6 129	63	4	260	113 557	25 217	1 400	566 435	1 067	0.8	6.1	29.1	6 665	
China																											
Beihai ^{h)}	424	390	①		x	x	x			x	x	x	x	367	40	121	171	356 974	171 707	1 072	43 667	234		2.5	11.8	4 402	
Dawang	224	140	④	x	x	x				x	x			0	1				136 203	2		53		2.0	1 077		
Gabou, Dongguan	1 313	50*	③		x	x				x	x			0	5			3 315	10			24					
Jiashan, Zhejiang	450	10*	③		x	x				x	x			0	3				1 825	11					0	6	
Qian'an, Hebei	1 876	55*	③		x	x				x	x			0	2				14 567	90					0	2	
Estonia																											
Tallinn	28	15*	③		x	x	x							0	0			103	180	24						1	
Finland																											
Anjala/Ingerois	544	435/280	① ④		x	x	x ^{h)}	x ^{h)}		x	x	x	x	0	85	9	302	108 554	99 349	1 530	160 196	3 328		5.4	137.4	10 112	
Enocell	176	475	②		x	x				x	x	x	x	8 653	19	113	967	49 524	3 991	144	1 495 089	8 383	52.0	2.0	49.0	22 394	
Heinola Fluting	174	300	①		x	x	x			x	x	x	x	1 150	182	384	388	145 620	6 212	176	184 284	1 117		1.9	24.5	1 376	
Heinola ^{h)}	133	100*	③		x	x	x			x	x	x		0	23				1 078	113						12	
Imatra	1 108	1 155	① ②		x	x	x	x	x	x	x	x	x	514	423	154	2 202	179 015	57 963	1 712	2 205 064	19 476	88.0	13.7	212.0	60 844	
Kristinankaupunki	47	20*	③		x	x	x			x	x	x		0	1			180	63	24							
Lahti	183	40*	③		x	x	x			x	x	x		0	107					3 808	102		2		0	0.2	13
Oulu	612	1 080	② ④		x	x				x	x	x	x	23	264	366	1 135	240 186	29 529	3 083	1 168 101	9 373	43.0	9.9	87.0	19 112	
Sunila	155	375	② ⑥		x	x				x	x	x	x	4 103	85	55	688	27 396	2 457	509	848 782	5 735	29.9	6.0	30.1	14 494	
Varkaus	237	390	①	x	x	x	x			x	x	x	x	2 450	54	128	569	71 185	13 710	523	713 074	2 456		5.0	64.0	14 713	
Veitsiluoto	529	790	④		x	x				x	x	x	x	662	38	277	903	169 589	29 629	308	1 007 812	8 104	19.5	6.3	124.0	9 761	
Germany																											
Maxau	427	530	④	x	x	x				x	x	x	x	3	179	3	300	115 327	155 752	3	313 693	1 473	0.6	2.9	12.3	5 594	
Sachsen	258	310	② ④	x	x	x				x	x	x	x	23	18	4	138	163 098	1 717	780	38 055	738	0.5	0.5	13.8	3 509	
Latvia																											
Riga	143	100*	③		x	x	x							0	84		2	3	617	148						7	
Lithuania																											
Kaunas	49	20*	③		x	x	x							0	2					1 539	71					3	
Poland																											
Łódź	249	120*	③		x	x	x			x	x	x		0	0		3	3 570	8 017								
Mosina	101	25*	③		x	x	x			x	x	x		0	69			310	1 602	46						4	
Ostrołęka ^{k)}	1 236	723	① ③ ④	x ^{h)}	x	x	x ^{m)}			x	x	x		1 083	37	195	268	332 325	155 189	1 460	418 345	1 080		4.3	18.8	8 240	
Tychy	147	110*	③		x	x	x			x	x	x		0	3			2 854	4 075	171						13	

- Governance
- Social agenda
- Environmental agenda
- Economic agenda
- **Data and assurance**
 - Reporting scope
 - **Data by production unit**
 - Assurance report

- Governance
- Social agenda
- Environmental agenda
- Economic agenda
- **Data and assurance**
 - Reporting scope
 - **Data by production unit**
 - Assurance report

Unit	Capacities					Certificates								Fossil CO ₂ emissions							
	Number of employees ^{a)}	Sawn products	Further processed	CLT	LVL	Wood pellets	ISO 9001	ISO 14001	ISO 50001	OHSAS 18001	FSC [®] CoC	PEFC [™] CoC	SBP	Process waste to landfill	Hazardous waste ^{b)}	SO ₂	NOx as NO ₂	Direct CO ₂ ^{c)}	Indirect CO ₂ ^{c)}	CO ₂ on-site transportation ^{d)}	Carbon neutral CO ₂ biomass fuels ^{e)}
	1 000 m ³	1 000 m ³	1 000 m ³	1 000 m ³	1 000 m ³	1 000 t								t	t	t	t	t	t	t	t
Wood Products units																					
Austria																					
Bad St. Leonhard	237	350	105	72			x	x	x	x	x	x		0	51		4		0 ^{e)}	1	
Brand	191	440	255				x	x	x	x	x	x		0	39				0 ^{e)}	1	
Ybbs	358	550	430	78			x	x	x	x	x	x		0	112				0 ^{e)}	1	
Czech Republic																					
Planá	232	360	220				x	x	x	x	x	x		456	29	1.2	54		0 ^{e)}	2 007	31 000
Ždírec	274	550	220			65	x	x	x	x	x	x		3 650	48	2.3	120		0 ^{e)}	2 203	118 426
Estonia																					
Imavere	324	335	155			100	x	x		x	x	x	x	2 378	56	5.4	54		66	50 154	1 746
Näpi	89	40	120			15	x	x		x	x		x	0	14	0.7	7		26	12 564	363
Finland																					
Honkalahti	101	310	70				x	x	x	x	x	x		0	9		29	218		3 084	685
Kitee	82	260	110			25	x	x	x	x	x	x		10	10		24			2 138	420
Uimaharju	53	240	20				x	x	x	x	x	x		0	18					13 807	531
Varkaus	103	125			65		x	x	x	x	x	x		77	81					6 631	682
Veitsiluoto ^{f)}	52	200					x	x	x	x	x	x		0	0	8.0	19			6 430	592
Germany																					
Pfarrkirchen	94		130				x	x	x	x	x	x		0	7	2.1	15			0 ^{e)}	264
Latvia																					
Launkalne	128	190	20				x	x	x	x	x	x		466	3		38	286		1 879	3
Lithuania																					
Alytus	216	200	90				x	x	x	x	x	x		0	38	2.0	16			2 500	1 220
The Netherlands																					
Amsterdam	40		50				x	x		x	x	x		17	1			12		1 015	3
Poland																					
Murow	232	250	210								x	x		0	31	2.4	23			0 ^{e)}	1
Russia																					
Impilahti	98	120	10			15	x	x	x	x	x	x		1 174	0		5			16 475	992
Nebolchi	163	180	30			35	x	x	x	x	x	x	x	5 352	0	0.5	48			31 523	1 179
Sweden																					
Ala	154	370	45			75	x	x	x	x	x	x		0	0	1.6	63			9	1 875
Gruvön	101	370	150			100	x	x	x	x	x	x	x	0	8			832		1 623	1 403
Wood products units total		5 440	2 440	150	65	430								13 581	554	26.2	517		1 440	149 832	16 173

^{a)} Yearly average.
^{b)} Reporting is based on country-specific definitions applied in national regulations.
^{c)} All CO₂ figures are calculated using the WRI/WBCSD Greenhouse Gas Protocol.
^{d)} "Biogenic" changed to "carbon neutral" to harmonise report language. See page 43 for full description of concept.
^{e)} Our sawmills in Austria, the Czech Republic, Germany, and Poland began purchasing 100% renewable electricity at the beginning of 2017, eliminating their indirect CO₂ emissions.
^{f)} Sawing capacity reported with the Paper division.

Certificate documents can be found at storaenso.com/certificates.

- [> Governance](#)
- [> Social agenda](#)
- [> Environmental agenda](#)
- [> Economic agenda](#)
- [> Data and assurance](#)**
 - [> Reporting scope](#)
 - [> Data by production unit](#)
 - [> Assurance report](#)**

Independent assurance report

To the Management of Stora Enso Oyj

We have been engaged by Stora Enso Oyj (hereafter Stora Enso) to provide limited assurance on Stora Enso's Sustainability information and reasonable assurance on Stora Enso's direct and indirect (scopes 1+2) fossil CO₂ emissions as a whole within the Sustainability Information for the reporting period of January 1, 2017 to December 31, 2017. The information subject to the assurance engagement is the Sustainability Report 2017 and the Sustainability information disclosed in the Progress Book 2017 on pages 5–13 (hereafter: Sustainability Information).

Management's responsibility

Management is responsible for the preparation of the Sustainability Information in accordance with the Reporting criteria as set out in Stora Enso's reporting principles on page 68 of the Sustainability Report and the Sustainability Reporting Guidelines (G4 Comprehensive) of the Global Reporting Initiative. This includes: designing, implementing and maintaining internal control relevant to the preparation and fair presentation of the Sustainability Information that are free from material misstatement, whether due to fraud or error, selecting and applying appropriate criteria and making estimates that are reasonable in the circumstances.

Assurance provider's responsibility

Our responsibility is to express an assurance conclusion on the Sustainability Information based on our engagement. We conducted our assurance engagement in accordance with International Standard on Assurance Engagements (ISAE) 3000 (Revised) to provide limited assurance on performance data and statements within the Sustainability Information, and in accordance with ISAE 3410 to provide reasonable assurance on direct and indirect (scopes 1+2) fossil CO₂ emissions as a whole.

This requires that we comply with ethical requirements and plan and perform the assurance engagement to

obtain limited assurance whether any matters come to our attention that cause us to believe that the Sustainability Information has not been prepared, in all material respects, in accordance with the Reporting criteria. In addition, we have a responsibility to form an independent conclusion, based on our reasonable assurance procedures, on whether the fossil direct and indirect CO₂ emissions as a whole are reported, in all material respects, in accordance with the reporting criteria.

We did not perform any assurance procedures on the prospective information, such as targets, expectations and ambitions, disclosed in the Sustainability Information. Consequently, we draw no conclusion on the prospective information. Our assurance report is made in accordance with the terms of our engagement with Stora Enso. We do not accept or assume responsibility to anyone other than Stora Enso for our work, for this assurance report, or for the conclusions we have reached.

A limited assurance engagement with respect to Sustainability related data involves performing procedures to obtain evidence about the Sustainability Information. The procedures performed depend on the practitioner's judgment, but their nature is different from, and their extent is less than, a reasonable assurance engagement. It does not include detailed testing of source data or the operating effectiveness of processes and internal controls and consequently they do not enable us to obtain the assurance necessary to become aware of all significant matters that might be identified in a reasonable assurance engagement.

Our procedures on the limited assurance included:

- Conducting interviews with senior management responsible for Sustainability at Stora Enso to gain an understanding of Stora Enso's targets for Sustainability as part of the business strategy and operations;
- Reviewing internal and external documentation to verify to what extent these documents and data support the information included in the Sustainability Information and evaluating whether the information presented in the Sustainability Information is in line with our overall knowledge of Sustainability at Stora Enso;
- Conducting interviews with employees responsible for the collection and reporting of the Sustainability Information and reviewing of the processes and systems for data gathering, including the aggregation of the data for the Sustainability Information;

- Performing analytical review procedures and testing data on a sample basis to assess the reasonability of the presented Sustainability information;
- Performing site visits to Beihai in China, Sachsen in Germany and Veitsiluoto and Imatra in Finland to review compliance to reporting policies, to assess the reliability of the Sustainability data reporting process as well as to test the data collected for Sustainability reporting purposes on a sample basis;
- Assessing that the Sustainability Information has been prepared in accordance with the Sustainability Reporting Guidelines (G4 Comprehensive) of the Global Reporting Initiative.

The reasonable assurance engagement involved performing procedures to obtain evidence about the direct and indirect fossil CO₂ emissions as a whole. In addition to the limited assurance work, our key assurance procedures have included an evaluation of the operating effectiveness of internal controls and the systems and processes for collecting and processing the direct and indirect fossil CO₂ emissions data. Furthermore, we have performed testing on a sample basis at selected sites, chosen based on an evaluation of significance, as well as general and specific risks, to evaluate whether direct and indirect fossil CO₂ emissions as a whole presented in the Sustainability Information are reported according to the Reporting Criteria.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Our independence, quality control and competences

We complied with Deloitte's independence policies which address and, in certain cases, exceed the requirements of the International Federation of Accountants Code of Ethics for Professional Accountants in their role as independent assurance providers and in particular preclude us from taking financial, commercial, governance and ownership positions which might affect, or be perceived to affect, our independence and impartiality and from any involvement in the preparation of the report. We have maintained our independence and objectivity throughout the year and there were no events or prohibited services provided which could impair our independence and objectivity.

Deloitte Oy applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. This engagement was conducted by a multidisciplinary team including assurance and sustainability expertise with professional qualifications. Our team is experienced in providing sustainability reporting assurance.

Limited assurance conclusion

On the basis of the procedures we have performed, nothing has come to our attention that causes us to believe that the information subject to the assurance engagement is not prepared, in all material respects, in accordance with the Sustainability Reporting Guidelines (G4 Comprehensive) of the Global Reporting Initiative or that the Sustainability Information is not reliable, in all material respects, with regard to the Reporting criteria.

Reasonable assurance conclusion

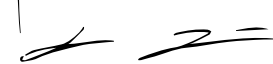
On the basis of the procedures we have performed, in our opinion, Stora Enso's reporting on direct and indirect fossil CO₂ emissions as a whole is prepared in accordance with the Reporting criteria and is reliable, in all material respects, with regard to the Reporting criteria.

Our assurance report should be read in conjunction with the inherent limitations of accuracy and completeness for Sustainability information. This independent assurance report should not be used on its own as a basis for interpreting Stora Enso's performance in relation to its policies of sustainability.

Helsinki 12 February 2018
Deloitte Oy



Jukka Vattulainen
Authorized Public Accountant



Lasse Ingström
Authorized Public Accountant

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It should be noted that Stora Enso and its business are exposed to various risks and uncertainties and certain statements herein which are not historical facts, including, without limitation those regarding expectations for market growth and developments; expectations for growth and profitability; and statements preceded by "believes", "expects", "anticipates", "foresees", or similar expressions, are forward-looking statements. Since these statements are based on current plans, estimates and projections, they involve risks and uncertainties, which may cause actual results to materially differ from those expressed in such forward-looking statements. Such factors include, but are not limited to: (1) operating factors such as continued success of manufacturing activities and the achievement of efficiencies therein, continued success of product development, acceptance of new products or services by the group's targeted customers, success of the existing and future collaboration arrangements, changes in business strategy or development plans or targets, changes in the degree of protection created by the group's patents and other intellectual property rights, the availability of capital on acceptable terms; (2) industry conditions, such as strength of product demand, intensity of competition, prevailing and future global market prices for the group's products and the pricing pressures thereto, price fluctuations in raw materials, financial condition of the customers and the competitors of the group, the potential introduction of competing products and technologies by competitors; and (3) general economic conditions, such as rates of economic growth in the group's principal geographic markets or fluctuations in exchange and interest rates. All statements are based on management's best assumptions and beliefs in light of the information currently available to it and Stora Enso assumes no obligation to publicly update or revise any forward-looking statement except to the extent legally required.