



Sustainability REPORT

2016



SKJERN PAPIRFABRIK

Review 2016

Emissions to the air

P. 32 57.1% reduced CO₂ emissions per tonne of paper compared with 2015.

Water consumption savings

P. 25 26.8% decrease in specific water consumption over five years.

Savings in consumption of auxiliary materials

P. 20 18.6% decrease in specific consumption of auxiliary materials in the past year.

Waste management

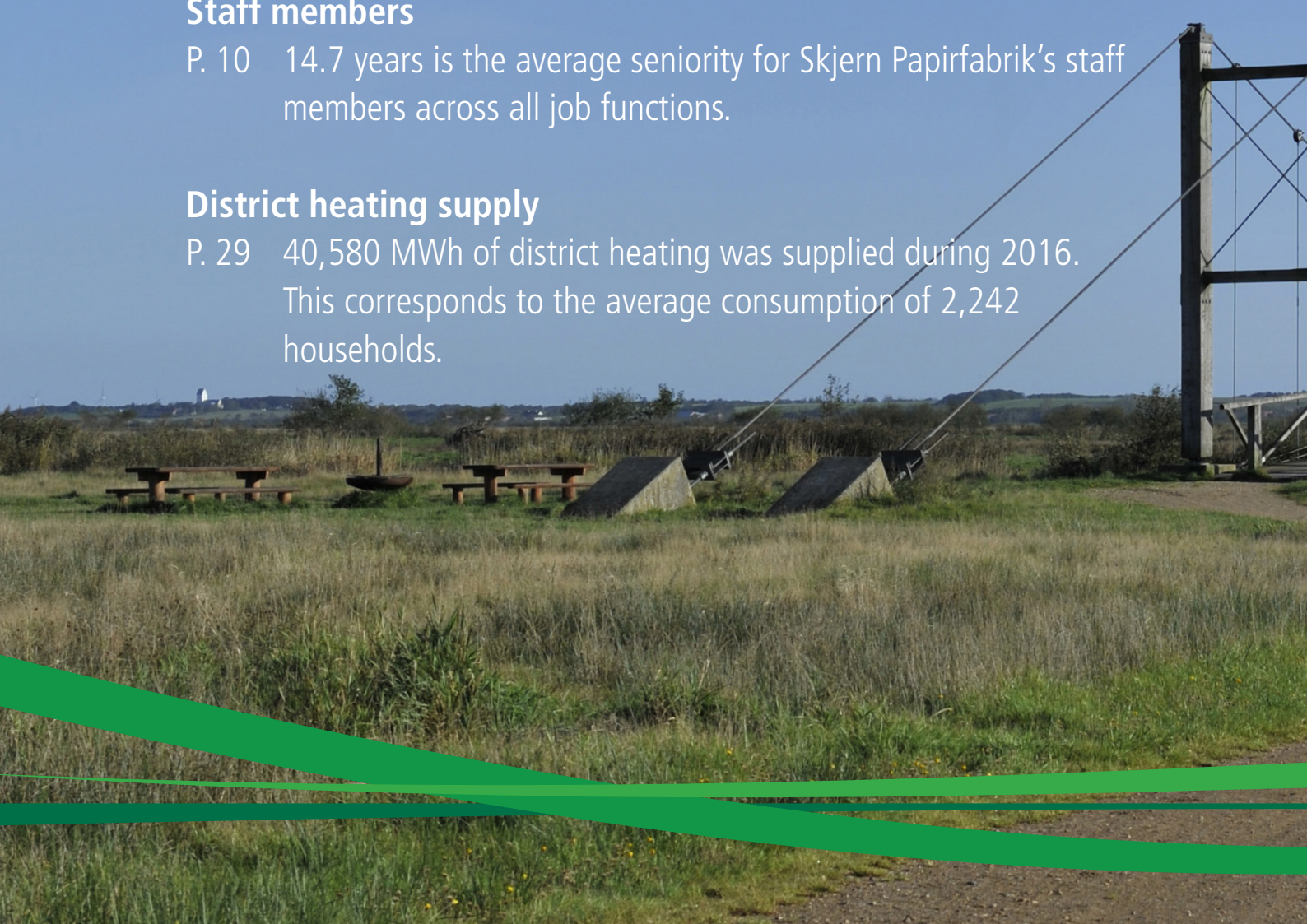
P. 21 93.2% of waste arisings were recovered in 2016.

Staff members

P. 10 14.7 years is the average seniority for Skjern Papirfabrik's staff members across all job functions.

District heating supply

P. 29 40,580 MWh of district heating was supplied during 2016. This corresponds to the average consumption of 2,242 households.



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Preface

Dear Reader

A year has gone by since our last sustainability report was published; 2016 is now in the past.

UN Global Compact

The UN Global Compact is a strategic initiative for companies committed to running a business in accordance with ten universally accepted principles within the areas of human rights, workers' rights, environment, and anti-corruption.

Skjern Papirfabrik acknowledges the growing importance of companies' corporate social responsibility, and as a reflection of this the mill has since 2013 been a member of the UN Global Compact, the world's largest initiative for communication of corporate social responsibility - CSR.

Looking back at 2016 we see various challenges; they come in the form of technical issues and not least in the different export markets in which Skjern Papirfabrik is normally operating.

In this Sustainability Report for Skjern Papirfabrik, which covers the financial year of 2016, we seek to present to internal as well as external collaborators and other stakeholders a holistic extract of the company's efforts in different areas.

Review

A major part of the mill's market segments have changed their structure and composition in the first six months of the year; for a substantial part these changes were caused by acquisitions in some of our key fields of business and product types.

The changes meant that Skjern Papirfabrik had to convert some of the established market shares to other market segments and product types in order for us to maintain volumes and turnover in general.

Unforeseen competitive parameters in other key fields brought further challenges for the company. Throughout 2016 these challenges have been met with conversions and changes in already established market segments so that by year-end we had gone through a shift in the balance between different product types.

In the same period Skjern Papirfabrik has managed to improve selected product types for specific key fields within tube winding. In several respects this development has given Skjern Papirfabrik an advantage as the preferred supplier of these specific products. Since Skjern Papirfabrik is a relatively modest player in our selected market segments it is necessary to be a frontrunner both in terms of development and improvement of the product range we can offer to the market – using the technical installations we have available at our mill.

For 2017, Skjern Papirfabrik expects a more stable market and a further expansion of interesting markets that are accessible to the mill.

In support of this and thereby the mill's growth, a study was commissioned in 2016 to an external consultant. This study is to support the preparation of a decision document for an extensive five-year plan covering an increase of capacity and a quality enhancement for existing product types, and it is intended to make way for the establishment on new markets.



Paper production is a very energy-intensive process; therefore, many resources are invested in utilising the consumed energy as much as possible and with the least possible impact on the internal and external environment. Thanks to almost twenty years of environmental certification, Skjern Papirfabrik was awarded with the Green Network Diploma for a remarkable contribution to environmental sustainability.

It is well-known that Skjern Papirfabrik has converted to biofuels for our new wood chip fired boiler plant. Despite some periods of standstill for modification this has had a very positive impact in 2016 on the environmental improvements that the mill has set up as target parameters.

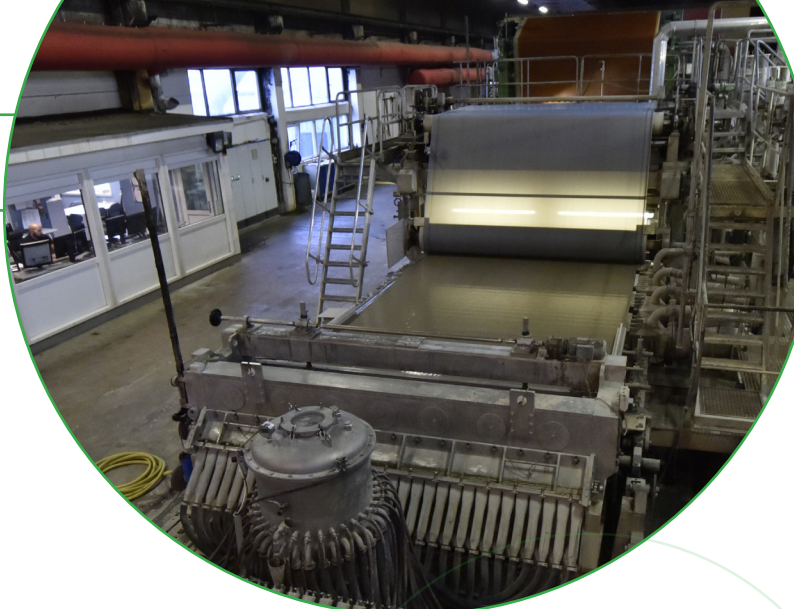
The gradual phasing out of fossil fuels has meant a decrease in emissions to the air of impressive 57.1% CO₂ per tonne of paper compared with the level of 2015. In addition to the generation of steam for the mill's paper machine the waste heat from the exhausts of the wood chip boiler and the drying section of the paper machine is used for heating water in the district heating system of Skjern.

In 2016, 40,580 MWh were supplied, corresponding to the average consumption of 2,242 households, or impressive 52% of the city's heating needs.

Another area for effort with regard to reducing impacts on the environment is the specific water consumption at the mill: by the end of 2016 this consumption has been reduced over five years by 26.8% thanks to continuous focus on water savings options.

After use of the water intake - which is reused around 18 times – it is discharged to the municipal wastewater treatment plant in the town of Tarm. The discharged quantity has been reduced by 5.1% during the last year.

The mill's specific consumption of auxiliary materials that may affect the aquatic environment has also decreased by 18.6% over the last year.



When the mill receives raw materials of recyclable paper for use in our production they contain quite a share of waste in the form of non-recyclable fractions. These impurities are segregated into different fractions for recycling. 93.2% of this waste quantity was recovered in 2016.

Energy consumption is a significant factor in paper production, and therefore this issue calls for much attention. Every year new targets for the specific energy consumption are set up, and we are dissatisfied to note that the targets per net tonne were not met. One of the most important reasons is that the total tonnage for the year was not as high as expected. Furthermore, a savings project under which the existing traditional lighting elements were replaced with LED lighting was realised very late in the year. In addition, the electricity consumption of the new wood chip fired boiler is substantially higher than that of the natural gas fired facility.

It is evident from the above review that 2016 was a challenging year for Skjern Papirfabrik. Therefore, the target for the coming year will be: higher stability associated with the production equipment and thereby higher tonnages; further energy optimisation; progress in the five-year plan; and not least an increase in the supply of district heating to the city's grid.

A further target is the implementation of safety improvements of the entire production equipment stock based on a safety assessment already carried out by an external consultant.

Jørgen Thomsen, CEO

Facts about the mill

Name and location

Skjern Papirfabrik A/S
Birkvej 14, DK-6900 Skjern, Denmark
Tel +45 97351155
E-mail: Skjernpaper@skjernpaper.com
Website: www.skjernpaper.com

Industry/NACE code

21.12 – Production of paper and paperboard
17.12 – Production of paper pulp

Supervisory authorities

Waste and wastewater: Municipality of Ringkøbing-Skjern
Other issues: Danish Environmental Protection Agency,
City of Aarhus

Major environmental approvals

20.12.2000: Environmental approval, revised general approval. This approval is under review.
08.07.2010: Environmental approval of natural gas fired boiler plant.
27.10.2015: Environmental approval of wood chip fired boiler plant.
17.06.2014: Approval of connection of wastewater to Tarm wastewater treatment plant. This approval is under review.

Most important legislation

Danish Environmental Protection Act
Danish Liability for Environmental Damage Act
Danish Statutory Order on Waste
REACH
BAT conclusions for Pulp & Paper

Certifications

Skjern Papirfabrik is certified according to the following standards:
ISO 14001
ISO 50001
FSC™, for recycled paper

Period covered

01.01.2016 – 31.12.2016

Date of Issue

Mid April 2017



The mark of
responsible forestry



Owners

Since 2005 Skjern Papirfabrik has been owned by S.P. Holding, Skjern A/S, which is again owned by Buur Invest and three of the employees from the mill's management.

Management

Chairman of the board	Charlotte Buur
CEO	Jørgen M. Thomsen
CFO	John T. Nybo
Sales manager	Nikolaj Thybo

Paper machine

Type	Fourdrinier
Machine width	294 cm
Grammage	90 – 480 g/m ²

About Skjern Papirfabrik

Skjern Papirfabrik produces paper and paperboard consisting of 100% recycled paper. The primary production is semi-product cardboard and paper delivered for further processing at our customers around Europe.

The products are produced with a high respect for the surrounding environment, and Skjern Papirfabrik has been certified under ISO 14001 since 1998.

The products are delivered in large rolls, in narrow cut reels, or in sheets delivered on pallets.

Skjern Papirfabrik is an order producing mill, and all products are made in close cooperation with customers. In this way, products can be adapted to specific customer needs.

Meeting customers' expectations and requests has high priority at Skjern Papirfabrik. As a consequence, it was decided in 2016 to work towards an ISO 9001 certification, and we expect to have it implemented by the end of 2017.

Furthermore, it has been possible to buy FSC certified products from Skjern Papirfabrik since 2013.

As a relatively minor paper mill Skjern Papirfabrik's strength lies in being a good business partner, supplying quality products on time, and showing large flexibility when it comes to varying customer needs.

Investments in production efficiency are made continuously. They include the reduction of energy consumption and other environmental impacts caused by our paper production.

In 2015 a new large wood chip fired boiler was installed, replacing the existing natural gas consumption with wood chips. A large part of 2016 has been spent on adjusting and trimming the operation of the wood chip fired boiler; by the end of the year the boiler achieved extremely fine exploitation rates of the wood chips and low emissions from the flue gas, which is in accordance with the guarantees of the supplier.

Thanks to this, very large CO₂ reduction rates are attained, and Skjern Papirfabrik will thereby be positioned far below the CO₂ emission benchmark for comparable products.

Furthermore, Skjern Papirfabrik supplies large volumes of district heating generated from waste heat from the drying section of the paper machine and residual heat in the flue gas from the boiler. The district heating is supplied directly through the district heating grid of Skjern to the users in the City of Skjern.

0.28 % was the rate of complaint in 2016

Based on the above we claim that Skjern Papirfabrik is among the most environmentally friendly paper mills in Europe.



Strategy for selected parameters

	Status 2015	Status 2016	Targets 2017	Value for Skjern Papirfabrik and society
Paper production	60,642 net tonnes	59,783 net tonnes	63,019 net tonnes	Improved financial basis, which is a precondition for the further development of the mill. Increased paper production also has a positive impact on other environmental parameters.
Specific energy consumption	1,470.3 kWh/net tonne	1,588.4 kWh/net tonne	1,600.0 kWh/net tonne	Affects finances and CO ₂ emissions per tonne of paper. Calculated on the basis of gas, wood chips, and electricity for production.
Supply of district heating	39,243 MWh	40,580 MWh	45,000 MWh	Increasing district heating volumes produced from waste heat reduces the consumption of fuels at the Skjern district heating company.
Share of biomass as a fuel	8%	64%	95%	Substitution of natural gas leads to substantially reduced CO ₂ emissions.
CO ₂ emitted from production ¹⁾	13,094 tonnes	5,483 tonnes	600 tonnes	Substitution of fossil fuels with biofuels leads to substantially reduced CO ₂ emissions.
Water consumption	331,503 m ³	315,546 m ³	315,000 m ³	Lower water consumption reduces the burden on water resources.
Wastewater quantities	301,391 m ³	286,079 m ³	292,000 m ³	Wastewater quantities affect the hydraulic load on the Tarm wastewater treatment plant.

1) CO₂ originating directly from paper production and reported to the Danish Energy Agency.

(In mass balances later on in this publication CO₂ emissions are slightly higher, since secondary contributions from internal transport have been included).



Photo: Atmosphere at the River of Skjern

Staff

At Skjern Papirfabrik the number of staff members is very constant. There is a positive trend of staff members staying at the mill for many years. Thanks to this, there is a good stability among staff members and a very experienced workforce in all divisions.

The mill has 74 employees with the following composition:

- 4 metalworkers
- 2 automation mechanics
- 53 blue-collar workers
- 15 white-collar workers

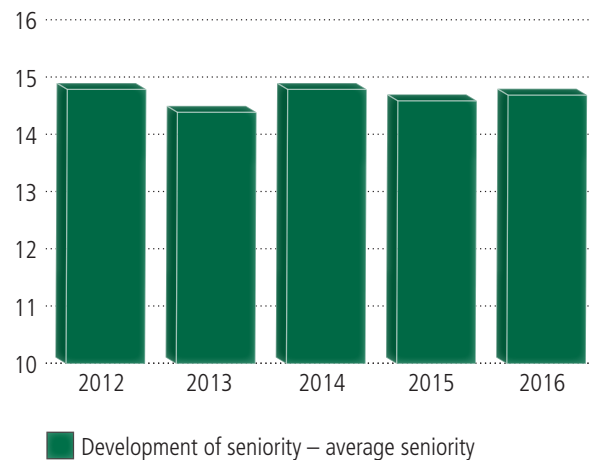
Skjern Papirfabrik sees it as a natural part of our activities to treat staff members with respect and dignity, thus avoiding discrimination. This is a natural part of being a responsible company in Denmark. We believe that this is highly contributable to the high seniority of our staff members.

14.7 years was the average seniority in 2016

Staff turnover in %



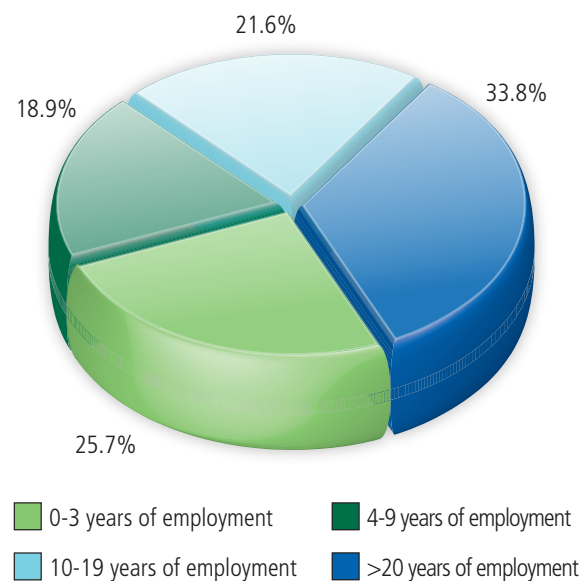
Development of seniority – average seniority



In Denmark we have many nationalities, and Skjern Papirfabrik sees it as a natural part of our activity to offer people of foreign nationalities work at the mill on equal terms with Danish citizens.

A substantial part of training in the production is in the form of mentoring, where experienced staff members train new staff members, thereby sharing their experience.

In addition to mentoring, staff members are offered courses when expedient. This may be courses in the operation of equipment and machines, IT courses, occupational health courses, and many other subjects. A recent initiative is the implementation of a scheme, where staff members from the production can apply for participation in long-term process worker training.



Occupational health and safety

At Skjern Papirfabrik we believe that a good working environment strengthens the mill's productivity resulting, among others, in low sickness absence, higher job satisfaction, and more flexibility of the individual staff member.

The management and the health and safety organisation both play an active role, just as they have a large responsibility with regard to safeguarding a good and safe working environment for all staff members. The occupational health and safety organisation at Skjern Papirfabrik consists of seven health and safety representatives, three foremen, and the health and safety manager. In addition, since early 2016 an agreement has been in place with an external occupational health consultant that participates, among others, in the meetings of the occupational health and safety organisation to make its work more efficient.

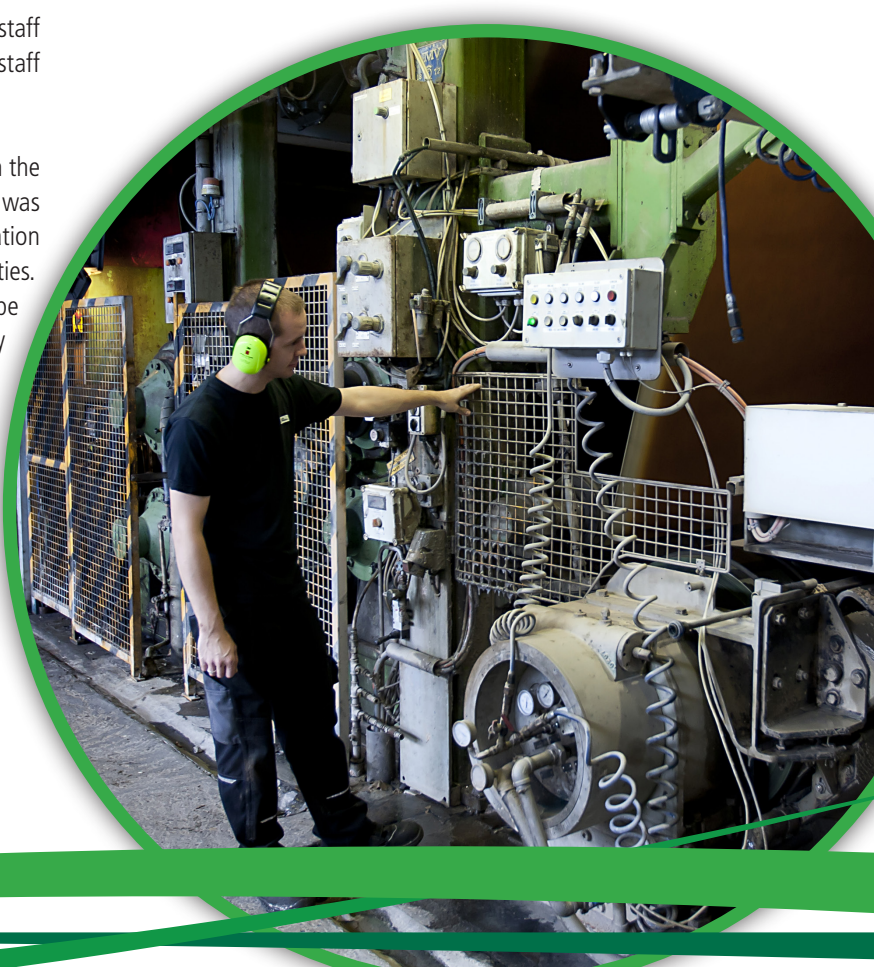
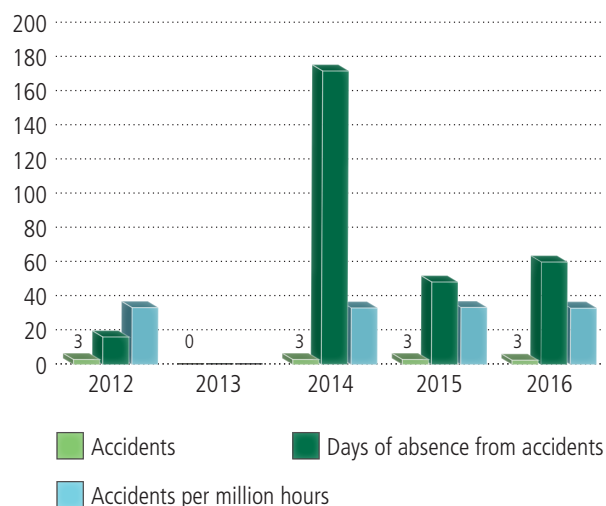
All members taking a seat in this occupational health committee go through mandatory occupational health training. All members of the occupational health and safety organisation are active in the daily health and safety work. The health and safety work is an ongoing process with, among others, continuous activities to implement proposals from workplace assessments.

Occupational health and safety is a combination of staff members' safety and the physical and mental impacts that staff members are exposed to.

In 2016 much focus was on the safety of staff members. In the period, a global risk assessment of the entire production was launched, under which an external consultant in cooperation with internal staff members go through all production facilities. As a follow-up, reports are prepared over issues with scope for improvement. These reports will subsequently be a key tool for the occupational health and safety organisation.

In 2016, three notifiable accidents were registered. Thereby, the target of zero accidents was regrettably not achieved for 2016. In 2016, accidents were primarily of minor nature, however, they should have been avoided. On the company's info board the number of days since latest accident is presented.

Development in number of accidents, accidents per million hours, and days of absence due to accidents



Environmental impacts

Paper production is known to be a most energy intensive method of production. Therefore, at Skjern Papirfabrik we are proud to use primarily wood chips for the steam production by the end of 2016. The steam mainly feeds the drying section of the paper machine, which is the main consumer of energy for drying the paper web.

NO_x emissions will go up as a result of using wood chips as a fuel. In return, CO₂ emissions are reduced radically through the substitution of fossil fuels with biomass.

This CO₂ reduction has a double impact since Skjern Papirfabrik supplies a large volume of district heating generated from waste heat. The largest volume of district heating is produced by utilising energy contained in waste heat in the exhaust from the drying section of the paper machine. From the wood chip boiler district heating is also generated from the residual heat contained in the flue gas system. Finally, excess steam is utilised in an excess production heat exchanger for the generation of district heating in connection with minor unplanned stops of the paper machine.

We have worked actively with projects aiming at the supply of district heating and thereby the utilisation of waste heat during the past five years. In 2012 Denmark's largest heat pump facility was established at Skjern Papirfabrik with the aim to increase the temperature of the waste heat from the drying section to a level where it can be led directly to the district heating grid of the City of Skjern.

The same technology was used to utilise as much heat as possible from the flue gas emitted from the wood chip fired boiler: also here a heat pump and an additional accumulator tank were acquired.

52% of the City of Skjern was heated by means of waste heat from Skjern Papirfabrik in 2016

The supply of district heating to the City of Skjern will save large volumes of CO₂, as the boilers of Skjern district heating facility would otherwise have to generate this heating from other sources.

Total CO₂ emissions from the City of Skjern have been reduced radically thanks to the district heating generated from waste heat at Skjern Papirfabrik.

Environmental impacts associated with paper production can be divided into direct and indirect impacts. Direct impacts arise as a direct result of the production. Skjern Papirfabrik is constantly working to limit these impacts as much as possible.

Indirect environmental impacts are not directly affected by the production, but primarily consist of the transportation of raw materials and finished products as well as impacts associated with the collection of waste paper, the production of auxiliary materials, and the end-user's disposal of products.

The most significant environmental impacts have been evaluated on the basis of approvals, legislation, and the largest possible potential impacts on the external environment and the immediate surroundings.

For Skjern Papirfabrik the most significant environmental impacts are:

- Energy consumption
- Consumption of auxiliary materials
- Water consumption
- Discharge of wastewater
- Waste management
- Noise

It is a natural consequence of Skjern Papirfabrik's almost 20 years of environmental certification that we have a good grasp of the above environmental impacts. Therefore, it is assessed that we have a very low risk of causing a significant negative impact on the environment.



In 2016 Skjern Papirfabrik was awarded with the Green Network Diploma that is given to companies for a remarkable contribution to environmental sustainability.

All staff members were invited to participate in a celebration in connection with the award event. The rationale for the award was primarily our active and serious work in the strive to reduce the environmental impacts of the company.

Environmental policy

For the last 20 years Skjern Papirfabrik has had defined principles and guidelines for the mill's environmental work in the form of an environmental policy.

Environmental policy

In accordance with business and management objectives and beliefs Skjern Papirfabrik will minimise the impacts on the surrounding environment as much as possible. This is achieved by utilising raw materials and energy in the best possible way, and by reducing emissions produced from the mill's processes.

Skjern Papirfabrik will reduce our burden on the environment by:

- Having an open communication about the environmental impacts associated with the company's processes and products
- Making sure that staff members act in an environmentally responsible way and comply with internal and external rules
- Having positive cooperation with supervisory authorities
- Encouraging our suppliers to provide environmentally friendly raw materials, products, and services
- Complying with relevant legislation and other requirements that the company has endorsed

- Ensuring ongoing environmental improvements, regardless of the fact that regulatory requirements have already been met
- Carrying out environmental assessments of new projects
- Encouraging staff members to participate in preventive environmental work
- Making sure that external craftsmen and contractors are aware of and comply with the company's environmental directions
- Ensuring that buyers of the company's products are informed of environmental issues associated with the manufacture, use, and disposal of the company's products.

The company publishes our environmental policy in this annual Sustainability Report, which can be found on Skjern Papirfabrik's website.



Corporate Social Responsibility, CSR

For many years Skjern Papirfabrik has considered it a natural part of our activities to contribute to a harmonic cooperation with the local community. This means, among others, that we invite local craftsmen to participate in tenders in connection with large projects.

Skjern Papirfabrik conducts many tours at the mill, and for instance educational institutions, associations, and local authorities make good use of this offer, showing their students / employees what happens in the recycling of paper, thus helping them understand how important it is to separate and recycle this important resource.

Also in 2016 we have seen a large interest in the large heat pump facility of Skjern Papirfabrik; this facility was established to allow for the generation of district heating from waste heat produced in the drying section of the paper machine. Our energy manager continuously invests many resources in disseminating information about the heat pump technology to interested audiences, among others at conferences and during visits from other companies. Skjern Papirfabrik supports a large number of small local and national NGOs.

Examples of NGOs are associations supporting vulnerable groups or people suffering from various diseases, or local sports associations.

Skjern Papirfabrik encourages its staff members to participate in sports events during the year. In order to motivate our staff members into participating in such events, the mill organises joint registration, payment of any fees, and equipment needed for the event.

Many staff members take the opportunity to participate in such events.

In 2013 Skjern Papirfabrik joined the UN Global Compact's principles and is thus obliged to show an ethically correct execution of business.

Skjern Papirfabrik is an independent company with only one production site located in Denmark. In Denmark the respect of human rights, including the dissociation from forced and child labour is an integrated part of Danish mentality, and Skjern Papirfabrik considers this a natural part of operating on an international market. Skjern Papirfabrik complies with Danish law, thereby supporting the above-mentioned issues. This is also substantiated by Transparency International's yearly report for 2016, where Denmark was again number one, being assessed as the least corrupt country in the world.

Skjern Papirfabrik has become a partner company with Green Network, thereby demonstrating our desire to continuously develop our efforts within CSR/sustainability by sharing knowledge with a large number of other companies.

This partnership means that Skjern Papirfabrik has joined up with a third party who is ready to provide critical opinions and input for our present activities. Skjern Papirfabrik has a continuous dialogue with Green Network about our own efforts.

As a substantiation of the above-described issues, Skjern Papirfabrik has prepared a CSR policy.



CSR policy

Social responsibility is a fundamental element for us as an organisation to appear as a legitimate and responsible company within the industry.

Today, there is an expectation all over the world that companies include social responsibility in their activities.

At Skjern Papirfabrik we are convinced that it also gives us commercial benefits to focus on environmental protection, staff development, health and safety, and other aspects of corporate social responsibility.

Skjern Papirfabrik wants to show Corporate Social Responsibility by:

- complying with existing legislation in all respects
- demonstrating transparency and an accommodating attitude also in social areas
- being open for conducted tours for amongst others educational institutions, associations, and other interested parties
- supporting voluntary work in the local community
- contracting as much external work as possible to local craftsmen and contractors
- having zero tolerance towards bribery
- demanding fair competition and fair trade with customers and suppliers

Skjern Papirfabrik's commercial advantages are to be found in the supply of good products and services, and never in unethical and illegal sales promotion.

Skjern Papirfabrik has joined the UN Global Compact as a natural continuation of the company's activities as a legitimate and responsible company and player on the international market.

Skjern Papirfabrik wants to comply with the ten Global Compact basic principles by:

- supporting and respecting the protection of internationally proclaimed human rights
- upholding the freedom of association and the effective recognition of the right to collective bargaining
- supporting the elimination of all forms of forced labour
- supporting the effective abolition of child labour
- supporting the elimination of discrimination in respect of employment and occupation
- promoting greater environmental responsibility
- working against corruption in all its forms, including extortion and bribery

This Sustainability Report is made to serve as the COP reporting to the UN Global Compact.



Mass balance

CO₂ emissions from the combustion of natural gas, auto gas, and diesel oil
5,567 tonnes of CO₂

Evaporation of water
33,648 m³

Paper raw materials
57,398 tonnes DM

Energy
103,693 MWh

Auxiliary materials
552 tonnes

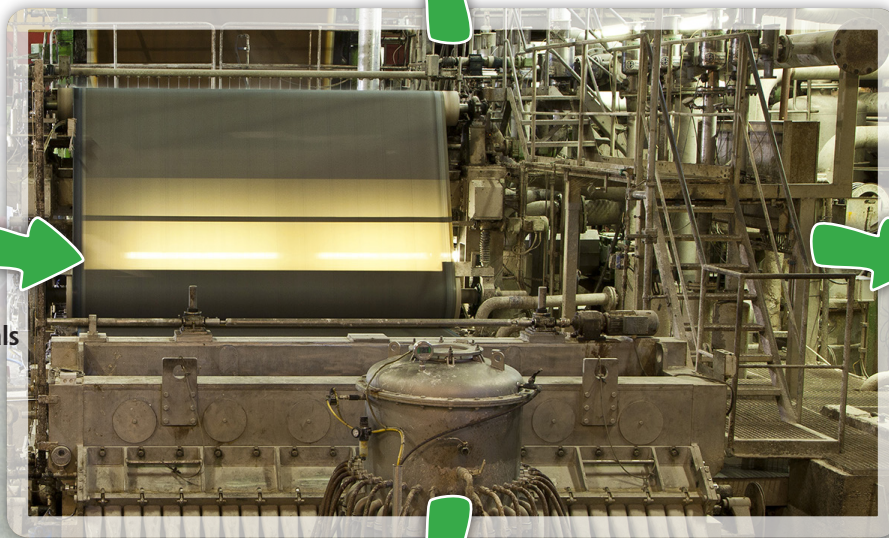
Water
325,516 m³

Finished products
55,897 tons TS

Water
291,868 m³

District heating sales
40,580 MWh

Waste/reject
1,965 tonnes DM



Input and output of materials

Waste/reject

· Waste reject	275 tonnes DM
· Reject for soil improvement	52 tonnes DM
· Incineration	1,259 tonne DM
· Fly ash	34 tonnes DM
· Bottom ashes	232 tonnes DM
· Suspended solids	94 tonnes DM
· Hazardous waste	5.1 tonnes
· Metals for recycling	13.9 tonnes

Paper raw materials

57,398 tonnes DM

Auxiliary materials

- Production
517.6 tonnes
- Maintenance and boiler plant
34.6 tonnes



Finished products

55,897 tonnes DM





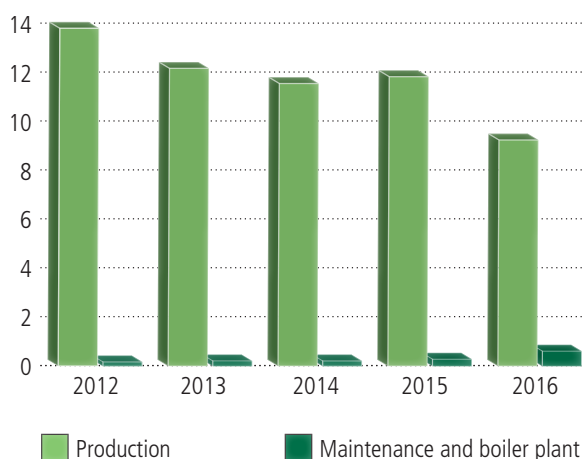
Input and output of materials (continued)

Auxiliary materials

Many auxiliary materials are used at Skjern Papirfabrik. The majority is used in the production process. Auxiliary materials for production mainly cover glue to make the paper water repellent, starch to improve the strength, and a number of auxiliary materials to improve dewatering. In addition, cleaning agents are used to clean the felts and wires of the paper machine.

Auxiliary materials mentioned in this report are materials of a relatively large consumption, which means that for example the consumption of spray bottles in the metalworking department are not included. By contrast, materials used for maintenance of the production equipment, such as oil, grease, and cleaning agents, are included.

Auxiliary materials compared to quantity produced.
kg/tonnes DM



The illustration shows the distribution of auxiliary materials compared to quantity produced. It is seen that the consumption of auxiliary materials in the production is significantly lower than in 2015. Deviations are mainly due to changes of the production mix deciding which auxiliary materials must be used, and in which amounts. However, in 2016 we have also had much focus on, among others, dewatering agents.

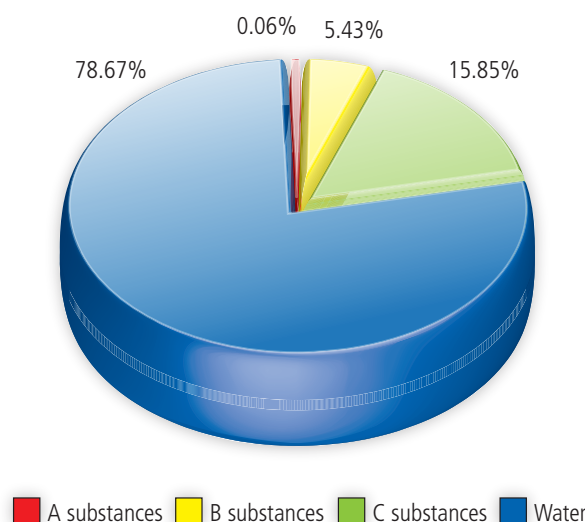
The consumption of auxiliary materials for maintenance and boiler facility has gone up considerably compared with 2015. This is due to the fact that the new wood chip fired boiler has been in operation during most of 2016. At this facility relatively large quantities of lye are used for the neutralisation of condensate generated in the facility.

Furthermore, auxiliary materials are used for band filter cleaning of the condensate from the plant, before it is led with the process wastewater to public wastewater treatment. It is expected that the quantity of auxiliary materials for the boiler facility will increase further in 2017 due to larger steam production at this facility.

A, B, and C substances

The guidelines on environmentally harmful substances in industrial wastewater from the Danish Environmental Protection Agency operate with three categories of organic substances: A, B, and C substances. A substances are undesirable substances that should be substituted or reduced to a minimum. B substances should be regulated using the best available technology. C substances are regarded as unproblematic. The remaining part consists of water and inorganic auxiliary materials.

The relative distribution of total consumption of auxiliary materials can be seen in the figure below:



only 0.06% of auxiliary materials are undesirable A substances

Again in 2016, the relative share of A substances is at a remarkably low level. The use of auxiliary materials with contents of A substances is due to the production of specific products for which the use of exactly these auxiliary materials is necessary due to the properties of the product.

Input and output of materials (continued)

Generally, we have much focus on avoiding the use of new auxiliary materials with a content of A substances. This is a crucial factor when it comes to maintaining the very low level of total A substances. Before a new auxiliary material is being used, an assessment of its contents of A, B, and C substances along with an environmental assessment of the material are made. These assessments are submitted to the authorities.

Waste

As far as possible Skjern Papirfabrik recovers the waste generated at the mill. This means that iron is recycled, waste is sent for controlled composting in order to utilise the fibre content for soil improvement, waste suitable for incineration is energy recovered, and bottom ashes from the new wood chip fired boiler are recovered by spreading them on agricultural land in order that nutrients contained in them are returned to nature.

93.2% of the waste was recovered in 2016

Waste generated at Skjern Papirfabrik mainly consists of segregated impurities from paper raw materials containing a number of non-usable materials, such as plastics, paper clips, glass, textile residues, etc. These residual products are segregated in several cleaning units.

In addition, the wood chip fired boiler generates a considerable amount of waste. The bottom ashes from this facility, which constitute the largest fraction, comply with requirements stipulated in the Statutory Orders on Bioashes and Sludge, respectively, and can thereby be recovered.

By contrast, the content in fly ash of primarily heavy metals is so high that this fraction must be managed separately by landfill disposal. Waste going to landfill amounted in 2016 to 0.6 kilograms per net tonne of finished product. This is far below figures published in CEPI's latest Sustainability Report from 2013 giving figures on sustainability in the Pulp and Paper industry. It appears from this report that the industry as a whole generates 14.3 kilograms of waste for landfill per tonne of finished product.

The term »waste reject« covers waste segregated in the pulper. This reject primarily consists of metal bands from the paper bales along with plastic and textile residues. This fraction is also called the rag: the waste is wound to a long »rope«, which is drawn from the pulper to a container. The waste reject is sent for further processing, where the metal parts are segregated and recycled, and combustible waste is incinerated with energy recovery.

The term »reject for soil improvement« is a waste product primarily consisting of paper fibres mixed with a minor part of styrofoam and plastics. This waste fraction is composted in a controlled environment, before it is used for soil improvement. Thanks to its high fibre content this fraction can contribute to a better soil structure in agriculture.

The fraction of »suspended solids« is the residual solid matter remaining in wastewater when it is led for wastewater treatment. Suspended solids primarily consist of paper fibres too small for being retained in the mill's vargo filters.



Input and output of materials (continued)

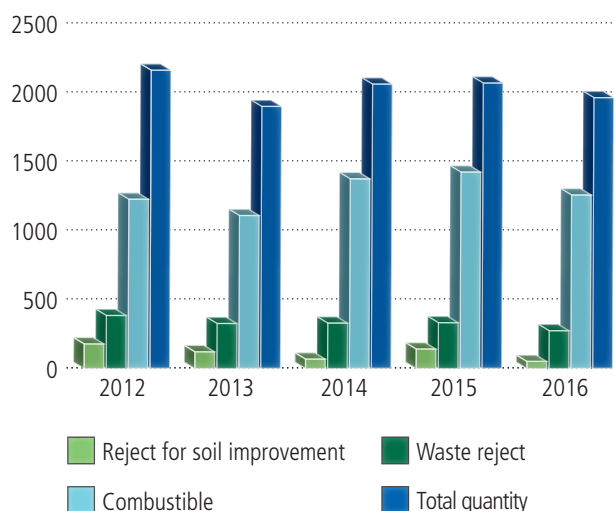
Overall, waste arisings have decreased significantly from 2015. This is due to a slightly lower consumption of paper raw materials in 2016 compared with 2015. However, it is also assessed to be due to lower quantities of impurities in paper raw materials received. Part of the explanation is to be found in a change in the amount of various waste paper types. This again is due to variations in the type of finished products sold, which determines the consumption of the different types of paper raw materials.

An increase in the generation of ashes has been seen from 2015; this is a natural consequence of a major part of the natural gas consumption for steam generation being substituted with wood chips in 2016.

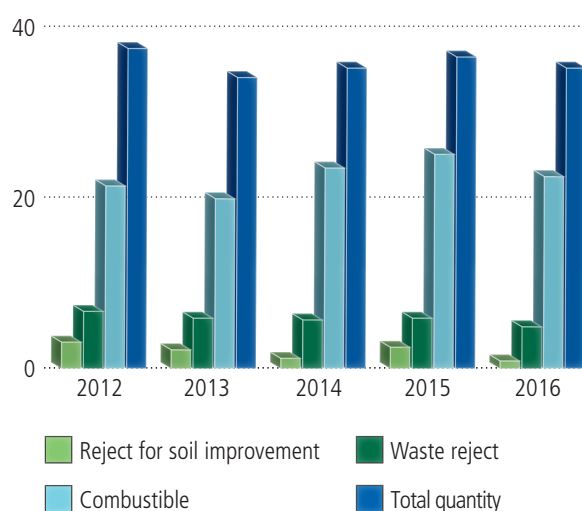
Total waste arisings are expected to increase in 2017. This is partly due to expectations for larger net production resulting in more tonnes of purchased raw materials; with the same waste content per tonne this will lead to a higher total waste quantity.

The most significant reason for the expected increase, however, is that we expect a further increase in ash quantities generated at the wood chip fired boiler in 2017, since the facility is expected to be in operation most of the year. The mill expects a total of approx. 300 tonnes DM of ashes in 2017.

Waste and reject quantities in tonnes DM

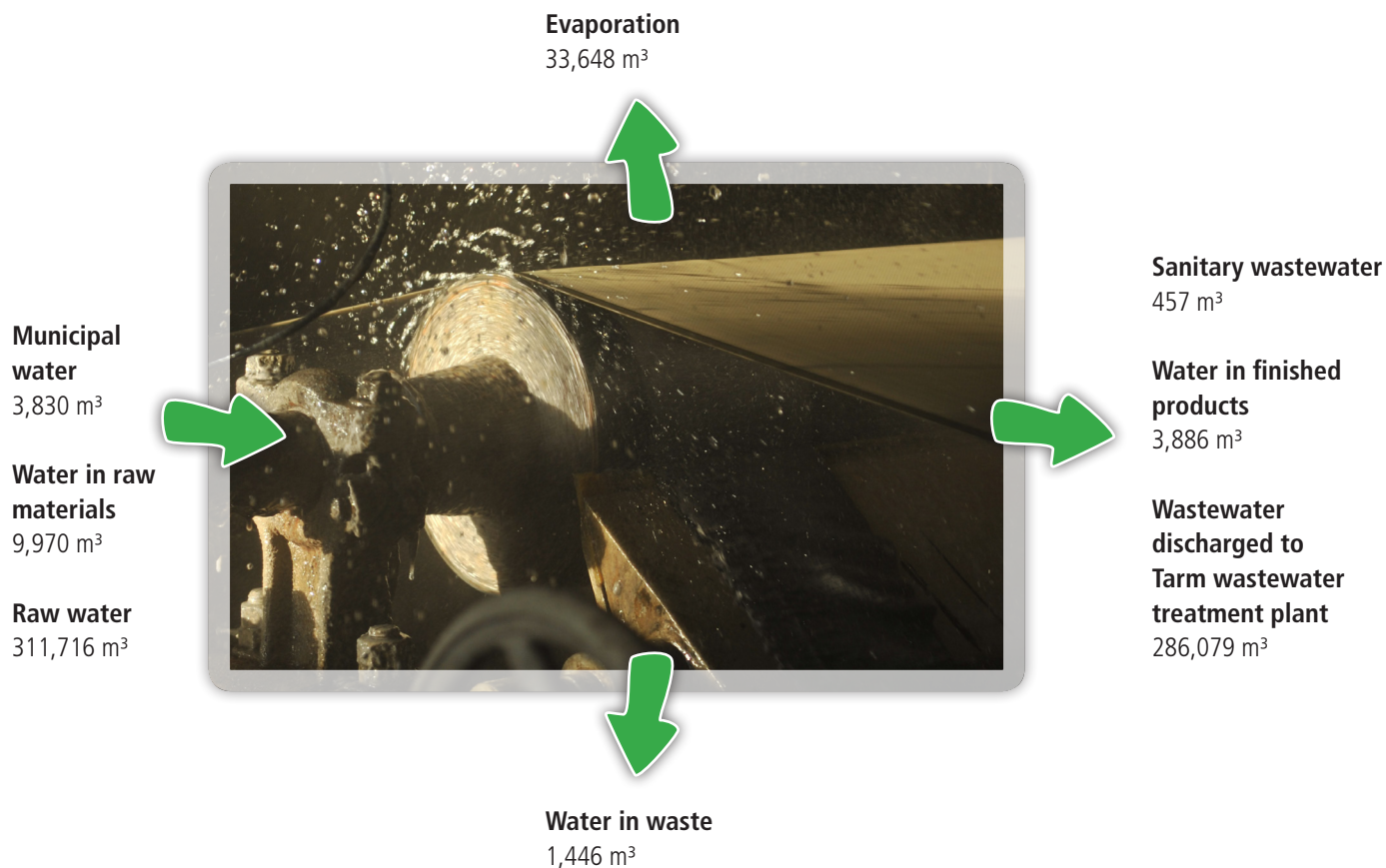


Waste and reject compared with quantities of paper produced in kg/tonne DM





Water balance



Notes on specification of quantities

Municipal water	Consumption metered by local utility, RS Forsyning
Water in raw materials	Calculated from random sampling measurement
Raw water	Consumption metered by local utility, RS Forsyning
Evaporation	Calculated from mass balance of water
Water in waste	Calculated from random sampling measurement
Waste reject	Assessment, since rag is not suitable for sampling
Sanitary wastewater	Measurement of discharge
Discharge to Tarm wastewater treatment plant	Discharge metered by local utility, RS Forsyning
Water in finished products	Calculated/measured (average water content of 6.5%)

Water balance (continued)

Water intake

The mill's process water is primarily unfiltered water from a former municipal drinking water well. The term used for this water quality in this report is »raw water«. The local utility of Ringkøbing-Skjern Forsyning supplies the mill with raw water. The supplies were very stable, and thus no river water was used as process water during 2016.

In addition to raw water a small amount of municipal water is used. This water quality is used for sanitary water and drinking water as well as at few points in the process where completely clean water is needed.

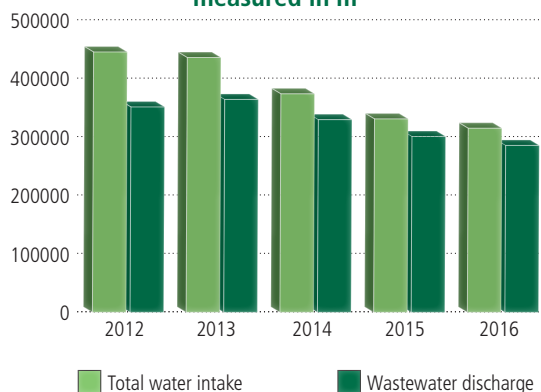
Most of the process water is used through the spray nozzles on the paper machine. Then the reclamation of process water starts: the water is reused on average 15-20 times before discharge to the municipal treatment plant. The process water is filtered in vargo filters to retain fibres, before it is reused or discharged as process wastewater.

In connection with the establishment of the new wood chip fired boiler it became possible to use raw water instead of municipal water as feeding water to the boiler. This has led to savings of 10,879 m³ of municipal water compared with 2015, corresponding to a 74% decrease in municipal water consumption.

In 2016 we attained a total decrease in the water intake of 15,957 m³.

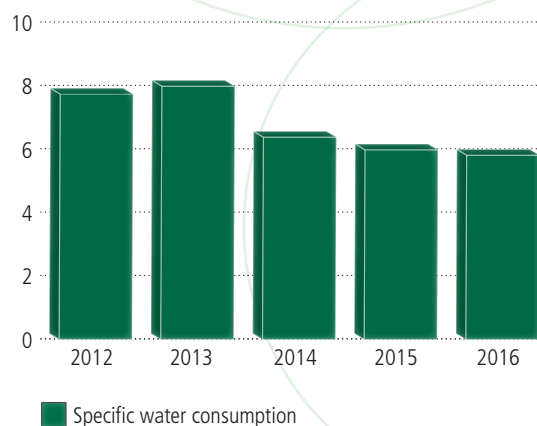
The target for 2016 was a water intake reduction of 5,000 m³, which has been met with a very fine margin. The reason for the lower water consumption is primarily a high focus on water consumption in the process. The water consumption is monitored closely on a daily basis.

Water intake and wastewater discharge measured in m³



4.8% decrease in water consumption in 2016

Water consumption per tonne of paper produced measured in m³/net tonne DM



The above figure shows the specific water consumption for the last five years. There has been a decrease in specific water consumption from 5.99 m³/net tonne DM in 2015 to 5.82 m³/net tonne DM in 2016. This corresponds to a decrease in the specific water consumption of 2.8%.

Over a five-year period the specific water consumption has decreased from 7.95 m³/net tonne DM to 5.82 m³/net tonne DM.

26.8% decrease in specific water consumption over the last five years

Target for 2017

The target is to maintain the low water consumption attained in 2016. With an expected higher net production this will correspond to a further reduction of the specific water consumption by some 2%.

Water balance (continued)

Discharge of wastewater to public wastewater treatment plant

Wastewater from Skjern Papirfabrik is led to public wastewater treatment at Tarm wastewater treatment plant. Skjern Papirfabrik has its own sewage pipe from the mill to the treatment plant, and the process wastewater is led directly to Tarm treatment plant. In the below table the process wastewater limit values to be complied with at Skjern Papirfabrik are shown.

Furthermore, the average own control analysis results for 2016 are also shown.

The total wastewater volume amounted in 2015 to 301,391 m³. The target for 2016 was to attain total wastewater volumes of 310,000 m³.

In 2016 only 286,079 m³ of process wastewater was discharged to the public wastewater treatment plant; thereby, a decrease in wastewater volumes of 15,312 m³ has been attained despite higher wastewater volumes from the wood chip fired boiler, which comes in the form of condensate.

5.1% decrease in wastewater volume in 2016

The target for 2016 was thereby attained with a very fine margin. The major reason for the decrease in the wastewater volume is found in a large focus on the water consumption.

Parameter	Limit value	Average discharge
Water volume	1,240 m ³ /day	766 m ³ /day
pH	6.0-9.0	7.0
SS	500 mg/l	329 mg/l
COD	11,000 mg/l	3,762 mg/l
BOD	6,200 mg/l	2,308 mg/l
Tot-N	20 mg/l	12.1 mg/l
Tot-P	3 mg/l	2.4 mg/l
Chloride	1,000 mg/l	97 mg/l
Oil/grease	20 mg/l	11 mg/l
Chromium	0.3 mg/l	0.0098 mg/l
Zinc	3 mg/l	0.211 mg/l
Cadmium	0.003 mg/l	0.0008 mg/l
Molybdenum	0.03 mg/l	0.017 mg/l
Lead	0.1 mg/l	0.016 mg/l



The target for 2017 is to maintain a wastewater discharge of around 286,000 m³ despite expectations for larger net production and expected larger number of operating hours at the wood chip fired boiler and the resulting larger volume of condensate.



Energy balance

**Electricity for
paper production**
20,691 MWh

**Electricity for
heat generation**
5,305 MWh

Natural gas
26,715 MWh

Wood chips
50,981 MWh

Auto diesel
35,498 L

Auto gas
1,909 kg

Air emissions*)

- CO₂ 5,567 tons
- NO_x 21.1 tons



**District heating
sales**
40,580 MWh

*) relevant emissions according to environmental survey

Notes on specification of quantities

Electricity, natural gas, and wood chips	Measured, consumed amount
CO ₂ og NO _x	Calculated from emission factors found on the Danish Energy Agency's website (CO ₂) and key figures from the Danish excise duty guidelines (NO _x)
Autodiesel and auto gas	Purchased quantity
Electricity for paper production	Incl. consumption for electricity based heating



Energy balance (continued)

Use of energy

Natural gas and wood chips: Used for steam production in boilers.

Electricity: Used for electric motors, trucks, pumps, agitators, fans, heat pumps, etc.

Auto diesel: Used for wheeled loader.

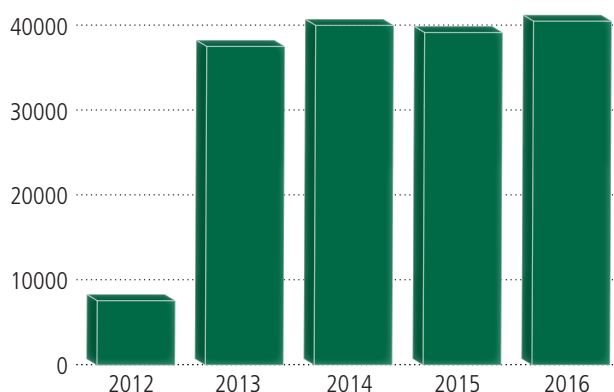
Auto gas: Used for trucks in small amounts.

District heating sales

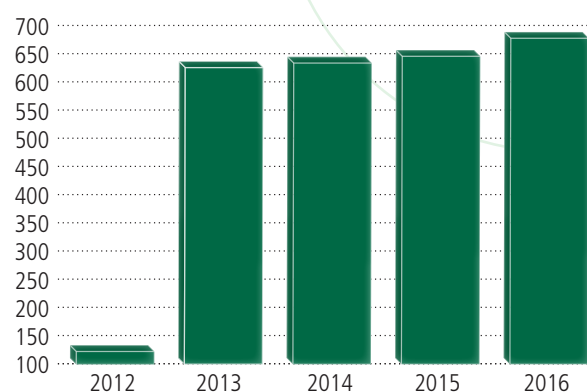
Since 2010 district heating has been sold. District heating is generated in a flue gas exchanger on the gas boiler and in a heat pump facility installed in 2012 and using waste heat from the paper machine's drying section.

In addition, as from the end of 2015 district heating is also generated by one more heat pump utilising waste heat contained in the flue gas from the wood chip fired boiler. District heating is also generated in an excess production exchanger, utilising excess steam in connection with reduced absorption of steam from the paper machine, for instance in case of web break.

Development in district heating generation
MWh



Development in specific district heating generation
kWh/net tonne



approx.

5,000 tonnes CO₂

Skjern district heating company reduces its annual emissions by approximately 5,000 tonnes of CO₂ thanks to the purchase of district heating from Skjern Papirfabrik

The development in specific district heating generation shows that there is an increase every year in the utilisation of the waste heat compared with the amount of produced net tonnage. This is due to the fact that we continuously find new options for the utilisation of waste heat as well as to our substantial efforts to optimise existing heat pump facilities.

2,242 households

had their heating needs covered in 2016 by district heating generated from waste heat at Skjern Papirfabrik

Energy balance (continued)

Energy focus in 2016

In 2016 focus was on having the new wood chip fired boiler adjusted and optimised to the best possible operation and thereby the best possible utilisation of the wood chips.

However, the year was marked by challenges associated with commissioning of the boiler, and the facility was in 2016 subjected to two major modifications that meant long periods without operation of the wood chip fired boiler.

In these periods steam supply was maintained by using the existing natural gas fired steam boiler that was kept as a backup for the new boiler plant.

The first alteration project concerned the establishment of flue gas feedback since there were incidences of ash melting and locking of the inclined grate inside the boiler. The other project was an alteration of the entire system of venting excess steam during web breaks to a lower steam pressure further to several incidences of bursting of the excess steam exchanger.

In the second semester of 2016 the new boiler plant was in stable operation and secured a fine steam production. Therefore, we are optimistic when it comes to the future operation.

In addition, in 2016 all light sources in the production department were equipped with LED lighting. This is expected to lead to a very substantial reduction in the energy consumption for lighting.

Target and results for energy 2016

Target and results are described in the following table:

Target and results for specific energy consumption	Target on 31/12-2016	Result on 31/12-2016
Specific electricity consumption	330.0 kWh/net tonne	346.1 kWh/net tonne
Specific total energy consumption	1400.0 kWh/net tonne	1588.4 kWh/net tonne

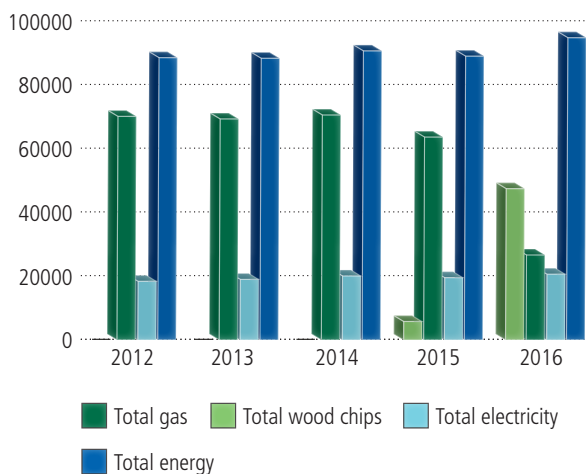
In key figures, the year has seen some disappointing results, which is reflected in the above table. The table also shows that the energy targets for 2016 were not met.

The key figure for specific electricity consumption is 5% above the target, while the result of the specific key figure for total energy is 13% above the target.



Energy balance (continued)

Development in total energy consumption – MWh

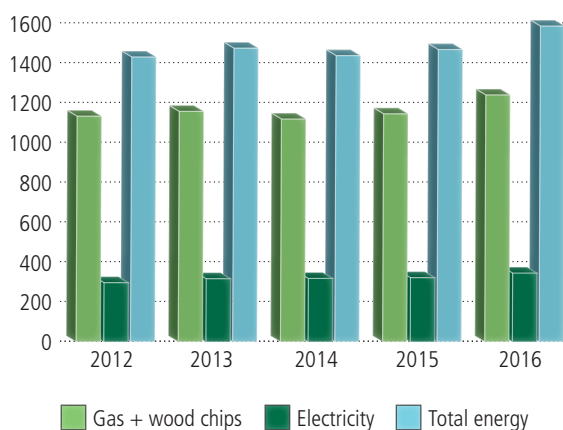


It was somewhat expected that the specific electricity consumption was substantially higher in 2016 than in 2015, since the electricity consumption for the operation of the wood chip fired boiler is significantly higher than that of the natural gas fired steam facility. In addition, the LED substitution project was implemented late in the year, so the calculated savings in the electricity consumption from this source will not be realised until 2017.

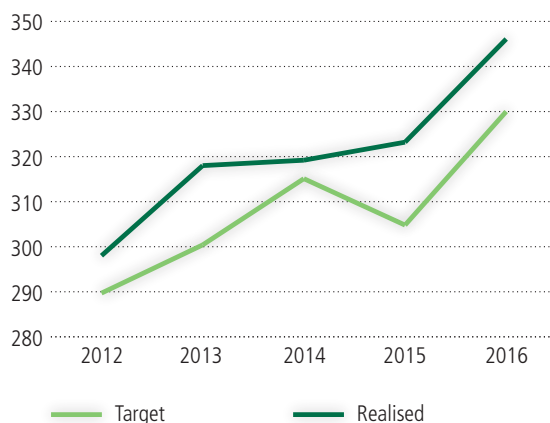
The poor result achieved for total energy is primarily due to a lower steam efficiency rate at the wood chip fired boiler compared with the expected steam efficiency rate as well as with the steam efficiency rate of the natural gas fired steam boiler.

The above-mentioned issues have a major impact on the energy key figures that cannot for that reason be compared directly with the key figures of the preceding years in which only natural gas was used for the steam generation.

Development in specific energy consumption kWh/net tonne



Development in electricity kWh/net tonne



Energy balance (continued)

	Specific CO ₂ emissions	Specific NO _x emissions
2012	253.3 kg/net tonne DM	0.129 kg/netto tons TS
2013	258.7 kg/net tonne DM	0.131 kg/netto tons TS
2014	248.7 kg/net tonne DM	0.127 kg/netto tons TS
2015	232.3 kg/net tonne DM	0.155 kg/netto tons TS
2016	99.6 kg/net tonne DM	0.377 kg/netto tons TS

Development in air emissions

Specific CO₂ emissions decreased by 57.1%, which is ascribed to the conversion to steam generation at the wood chip fired boiler facility. For the same reason NO_x emissions have increased substantially, since the combustion of wood chips causes higher NO_x emissions than natural gas combustion.

7,607 tonnes CO₂

was the decrease in 2016 further to use of wood chips instead of natural gas

Targets and action plans 2017

Also in 2017 focus will be on the operation of the wood chip fired steam boiler as well as on the optimisation of its wood chip utilisation. We expect significantly higher operating time of the wood chip fired boiler in 2017, and the target is to generate 95% of the steam consumption in this boiler, leading to further substantial decreases in CO₂ emissions.

The district heating supply from the mill will also in 2017 be a significant focal point, and we expect total district heating sales of 45,000 MWh in 2017. Any expansions of sales have a positive impact on the mill's net energy balance.



Global Compact

The report's relation to Global Compact

As a member of the UN Global Compact, Skjern Papirfabrik is committed to being in compliance with the ten basic principles.

The below table shows the correlation between the report and these ten principles.

Skjern Papirfabrik has been a member of the UN Global Compact and Global Compact's Nordic network since 2013.

Global Compact principles

	The company should:	Page
Human rights	01. Support and respect the protection of internationally proclaimed human rights 02. Make sure that the company is not complicit in human rights abuses	14, 15
Labour	03. Uphold the freedom of association and the effective recognition of the right to collective bargaining 04. Support the elimination of all forms of forced and compulsory labour 05. Support the effective abolition of child labour 06. Eliminate discrimination in respect of employment and occupation	10, 11, 14, 15
Environment	07. Support a precautionary approach to environmental challenges 08. Undertake initiatives to promote greater environmental responsibility 09. Encourage the development and diffusion of environmentally friendly technologies	12-13, 20-32
Anti-corruption	10. Work against corruption in all its forms, including extortion and bribery	14-15

Read more about the UN Global Compact and the principles of the organisation on
www.unglobalcompact.org



Glossary

Accredited	Approved.
Audit	Review.
BOD	Biological oxygen demand during five days, also called BI5.
CEPI	Confederation of European Paper Industries.
COD	Chemical oxygen demand in wastewater.
CO₂	Carbon dioxide.
DM	Dry matter.
FSC®	Short for Forest Stewardship Council. Certification based on the use of wood fibres from responsible sources.
Limit value	Conditions of environmental approval.
NO_x	Nitrogen oxide.
Tot-N	Total amount of nitrogen in a sample.
Tot-P	Total amount of phosphorus in a sample.
SO₂	Sulphur dioxide.
SS	Suspended solids in wastewater.





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