



Warmeston

Sustainability Report 2020





Message from our CEO

Biomass has a special role as a controllable renewable energy source in the transition away from fossil fuels. Currently, more than a third of EU's primary energy production is from renewable sources, 59% of which comes from bioenergy. As one of the leading local pellet producers in European Union, Warmeston is in a unique position to contribute to meeting the continent's climate goals for the next decades.

Sourcing of sustainable renewable biomass within Europe for use in heat and power applications enables numerous benefits beyond shorter transport distances for reduced emissions. Using local biomass supports employment in rural communities, but furthermore

provides a stable demand for woodworking by-products from the manufacturing of various long lasting consumer goods like doors, window frames, wooden houses, and furniture. As such it boosts the competitiveness of EU's forest and wood industry, both in local and in export markets. Greater integration of the union and decreased dependence of imported energy are additional benefits.

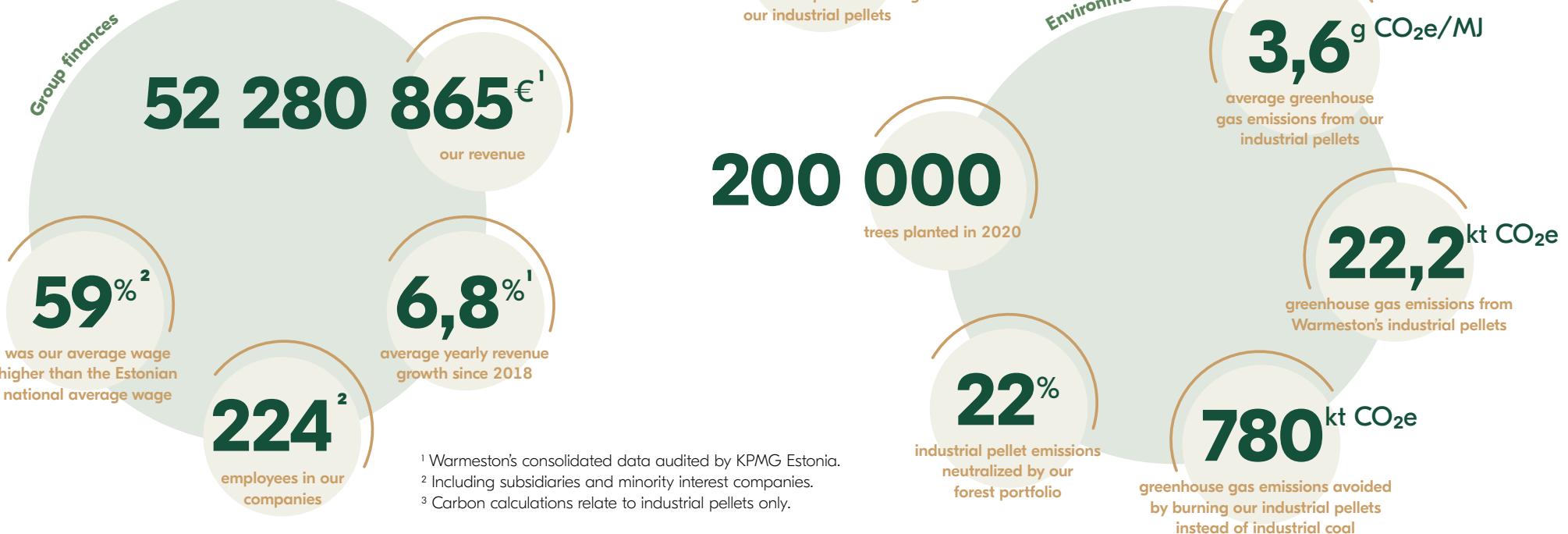
Outlook for controllable renewable bioenergy remains solid. With the regulators growing ambition to move away from fossil fuels, carbon-neutral biomass remains an essential solution to mitigate the increasing volumes of intermittent renewable energy like wind and solar.

Fossil fuels to biomass conversion enable up to 85% reduction of life cycle carbon emission at low investment costs, speeding up the transition for various industries. Furthermore, developments with carbon capture and storage provide an exciting outlook for bioenergy with negative emissions.

Sustainable biomass is the key foundation of renewable bioenergy. For years Warmeston has been certified to strict third-party sustainability standards, which provide a verifiable and transparent framework for evaluating our performance. This year, to underline our commitment, we are happy to introduce our first sustainability report.

Year 2020 in numbers

Despite the difficulties COVID-19 placed upon societies and economies all over the world, Warmeston's 2020 was rather successful. As a result of investments, we managed to increase the total production capacity of our factories by 8% compared to 2019. We also conducted our first carbon footprint analysis for Warmeston's industrial pellets, revealing that the use of our pellets helped with avoiding 780 kt CO₂e emissions relative to coal-based energy production. Lastly, we were happy to plant 200 000 trees in 2020, a number we plan to increase sixfold in 2021 with a goal of 1,2 M trees for the year.

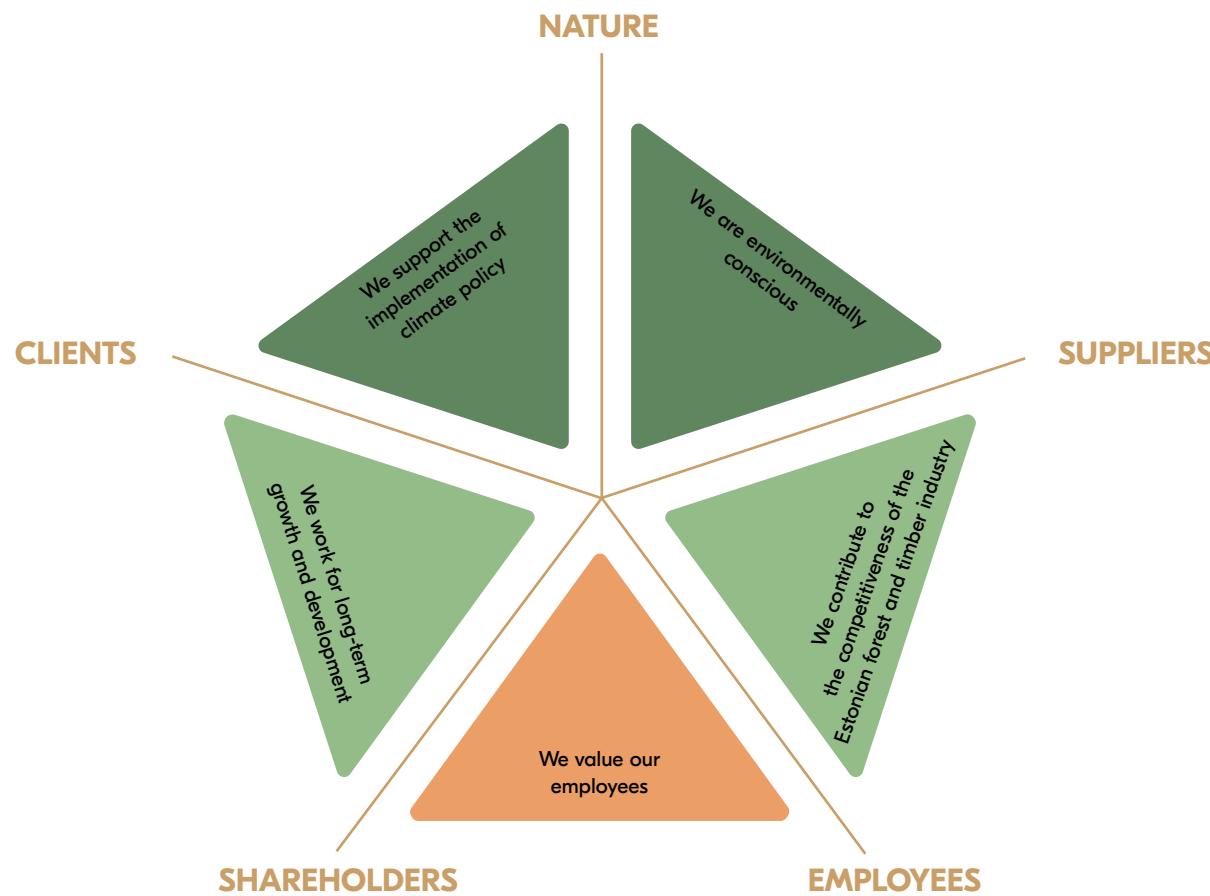




Sustainability strategy



Our strategic directions on sustainability



We are environmentally conscious by increasing resource efficiency, reducing emissions and waste generation

We are resource efficient and committed to sustainable solutions starting from the use of green energy, LNG powered truck transportation to paperless office. Conscious consumption and efficient resource use will lead to reduced emissions and carbon footprint.

We support the implementation of climate policy through production of wood-based biomass fuel

Climate policy shapes our business environment and frames our long-term purpose. The European Union aims to be climate-neutral by 2050 - a future where we will be led by biofuels and technological innovation. Pellet production will help economies to move from fossil fuels to renewable sources and towards a balanced carbon cycle. A vision that has been re-confirmed by the European Commission early in 2021.¹

¹ Renewable Energy — Recast to 2030 (RED II)

We contribute to the competitiveness of the Estonian forest and timber industry by processing the by-products of these sectors

The pellet industry adds value to the by-products from the forest and wood industries, and provides an output for low-value wood-based materials. The sale of their by-products provides the forest and wood industry additional income for growth, development and job creation in rural areas.

We work for long-term growth and development with economic sustainability in mind

For moving towards our strategic directions, economic capacity is an essential prerequisite. Maintaining our profitability allows us to ensure long-term operations, invest in innovation and safeguard jobs created.

We value our employees by offering meaningful work and competitive compensation

Skilled and motivated employees are a necessity for our success. Our employees have a meaningful and positively challenging job. We provide modern and secure work conditions, fair compensation, apply bonus programs, support participation in training programs and sports activities.





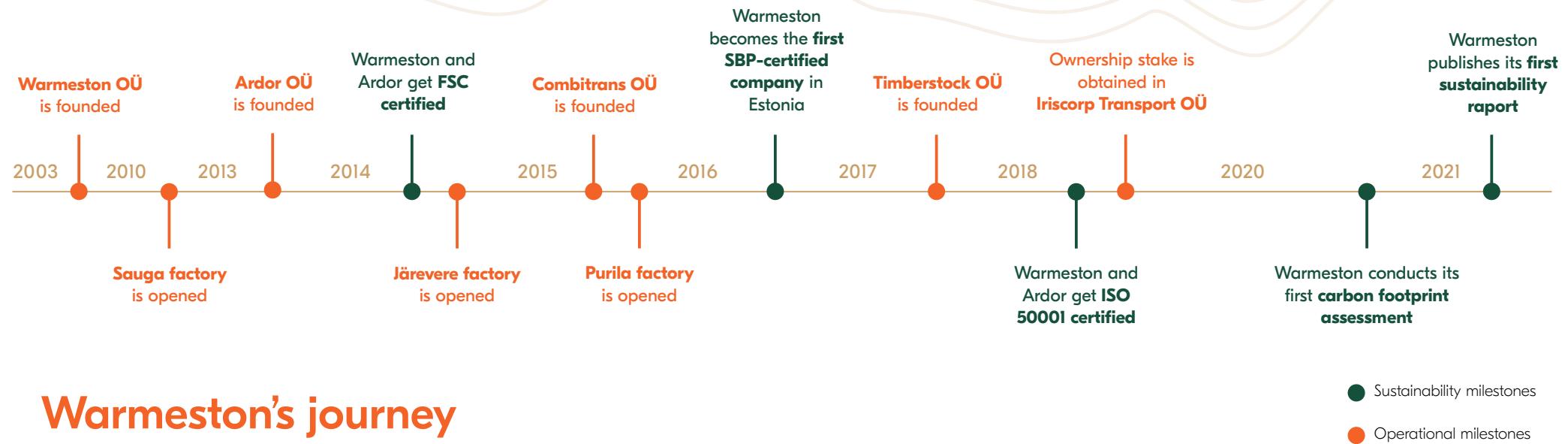
Our commitment to the Sustainable Development Goals of the UN

Goal	Our contribution
7 AFFORDABLE AND CLEAN ENERGY 	We support the uptake of renewable energy by producing wood-based biofuels from low-value by-products. Biomass is a sustainable, manageable and reliable energy source, that will help societies to move from fossil fuels to renewable energy sources and towards a low-carbon economy.
8 DECENT WORK AND ECONOMIC GROWTH 	We contribute to sustainable economic growth through our role in the forest and wood industry value chain. We create safe and rewarding jobs, mainly located in rural regions of Estonia.
12 RESPONSIBLE CONSUMPTION AND PRODUCTION 	We use renewable electricity to efficiently produce biofuel from responsibly-sourced and sustainable resources. We seek ways to improve resource efficiency and minimize waste generation. Our energy management system meets the requirements of international standards and we are actively working to improve our monitoring and reporting system further.
13 CLIMATE ACTION 	We have aligned our activities to the international climate policy and support its implementation by producing renewable biomass fuels to displace the use of fossil fuels in heat and power production. The avoided CO ₂ emission is a part of our contribution to the fight against climate change.
15 LIFE ON LAND 	We use only legal and sustainable biomass by carefully selecting our suppliers and making sure sustainable forest management practices are followed throughout the supply chain. We ensure that the sourcing of our wood-based feedstock does not cause deforestation, harm natural habitats or threaten natural biodiversity. We prioritize reforestation.



Warmeston at a glance





Warmeston's journey

The most significant milestones in Warmeston's history can be underlined in two categories. Firstly, the operational milestones include the founding of companies, building factories and forming strong partnerships through equity investments. Our first factory was established in Sauga in 2010, followed by Ardor in 2013, Järvere in 2014 and Purila in 2015. The last time we became shareholders in a new company was in 2018 when a 12,5% stake was obtained in Iriscorp Transport OÜ - a company trading with forest based materials and providing logistic services.

The second important category is sustainability actions, including the implementation of internationally acknowledged chain of custody and energy management systems as well as other, sustainability-

focused projects. In 2016, Warmeston was among the first 10 companies worldwide and the first in Estonia to become SBP certified. Today, there are more than 300 SBP certified companies and the amount of SBP certified pellets consumed in 2020 accounted to 76.8% of EU-28 industrial pellet consumption. We think this serves as a clear indicator of our sustainability focus even years ago when the topic of biomass sustainability had not caught everyone's attention yet to the extent it has now. Our other important milestone is the implementation of ISO 50001 certified energy management system in 2018. The focus of the system is to achieve higher energy efficiency through a continual improvement process. Being holders of ISO 50001 certificate, our energy efficiency must be continually monitored and improved, ruling out complacency.

Finally, with regards to sustainability-related projects, we have carried out a carbon footprint analysis in 2020 for our industrial pellet production as the first stage of our commitment to monitor our sustainability performance and report it in a transparent way in our sustainability reports.

Going forward, we intend to deepen the carbon footprint analysis by measuring the environmental impact of our premium pellets. We also intend to keep annually publishing our sustainability reports documenting our progress.

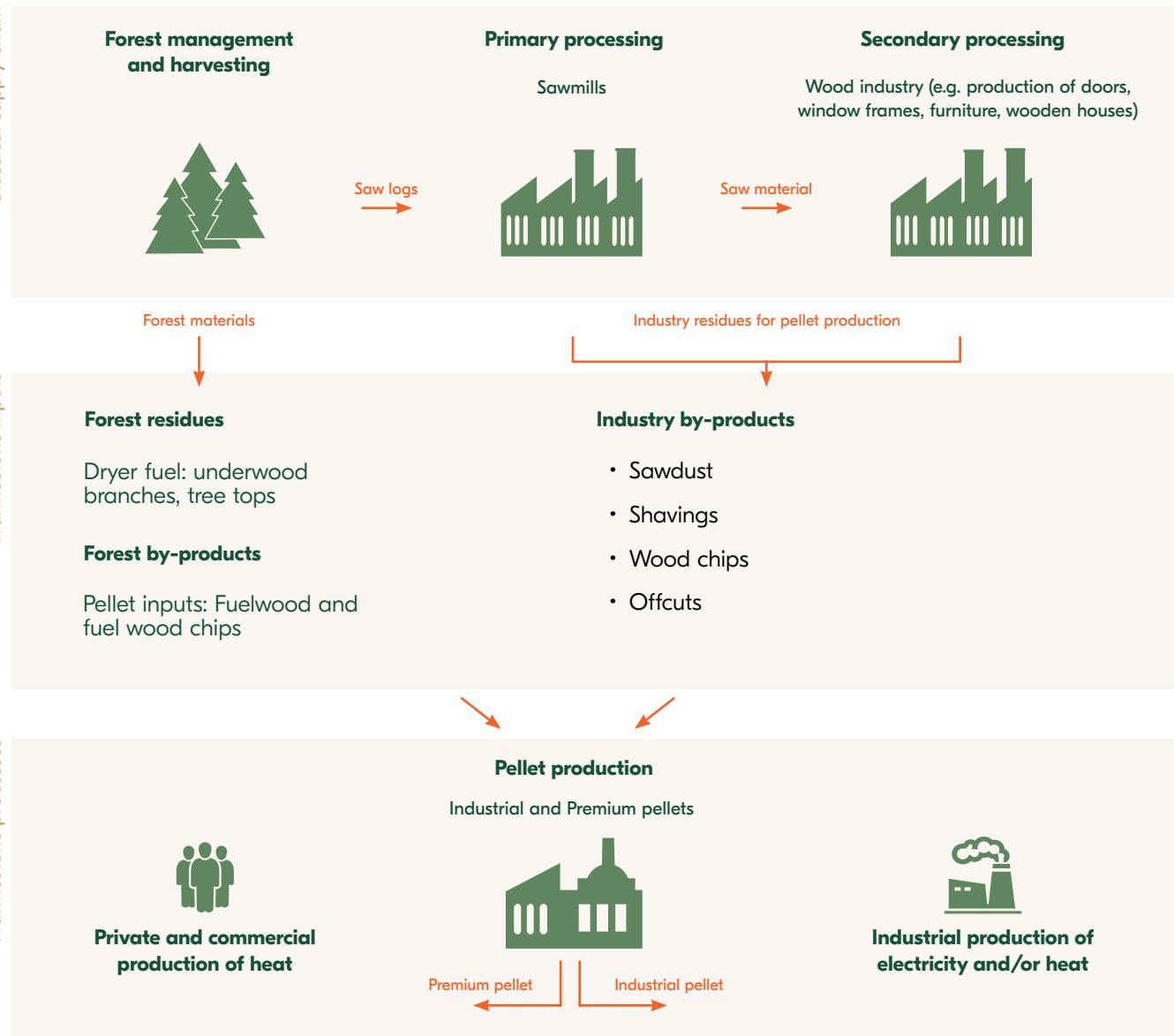




Classical supply chain

Warmeston's inputs

Warmeston's processes



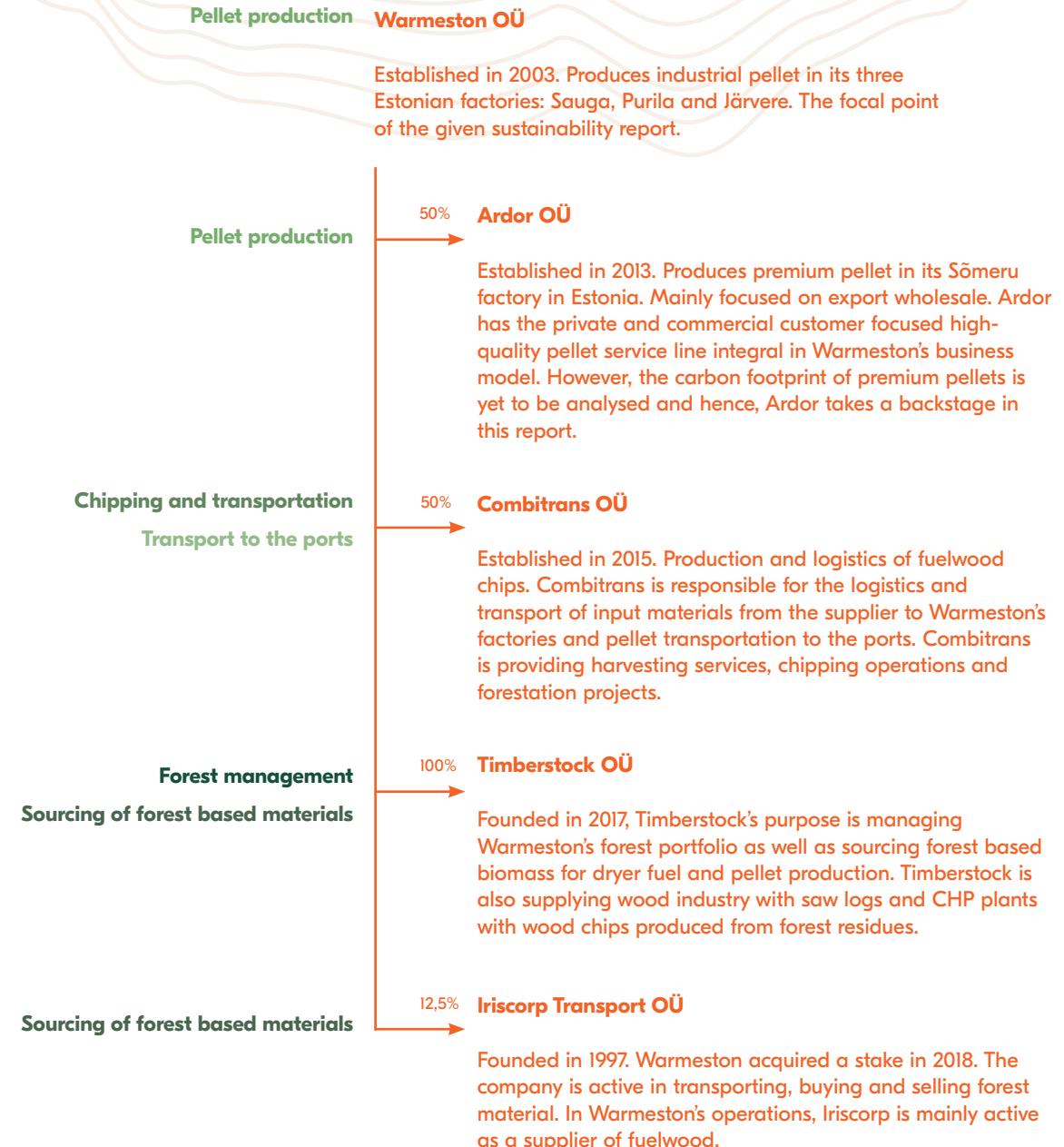
Warmeston's pellet production in wood industry's supply chain

Warmeston produces pellets by converting both forest and wood industry by-products into energy efficient biofuel. Input materials are brought down to acceptable moisture levels, fine crushed and pressed into durable pellets. The produced pellets are distributed to industrial, commercial and private use.

Our feedstock inputs can be divided into two. Firstly, low-value forest-based biomass (forest residues and by-products) that comes directly from the forest and is unfit for primary processing due to defects or its generally low wood quality. Secondly, wood industry by-products such as sawdust, shavings, wood chips and offcuts. Apart from pellet production these feedstock groups do not have any other major application in Estonia. All inputs are pre-processed and two different categories of pellets are produced. Premium pellets have a lower ash content and a lighter color and are intended for private and commercial heat production. Industrial pellets are sent to large-scale power plants for electricity production or to combined heat and power (CHP) plants for electricity and heat co-generation. The use of pellets displaces fossil fuels with renewable energy sources and combats climate change.

Warmeston's organizational structure and process flow

Warmeston's organizational structure composes of Warmeston OÜ and four associated companies in which Warmeston is a shareholder and that provide services along the supply chain. Forest management company Timberstock is Warmeston's subsidiary with Warmeston being the only shareholder. Premium pellet producer Ardor, forest wood chip logistics and production company Combitrans and fuelwood dealer Iriscorp Transport are Warmeston's affiliates through a minority shareholding. For the sake of simplicity, in this report we refer to all of these companies as Warmeston's affiliates.



SAUGA FACTORY

Entry into operation: 2010
Maximum production capacity: 185 MT

Quality: I2, ENplus A2
Products: 6 mm industrial pellets
Employees: 28

Main input categories for production:
Fuelwood (24%)
Wet sawdust (24%)
Chipped fuelwood(23%)
Other (29%)

SÖMERU FACTORY

Entry into operation: 2013
Maximum production capacity: 80 MT

Quality: ENplus A1
Products: 6 mm Premium pellets
Employees: 12

Main input categories for production:
Dry sawdust (88%)
Offcuts (11%)
Industry wood chips (1%)

JÄREVERE FACTORY

Entry into operation: 2014
Maximum production capacity: 95 MT

Quality: II, I2, ENplus A1 and A2
Products: 6 mm industrial and Premium pellets
Employees: 25

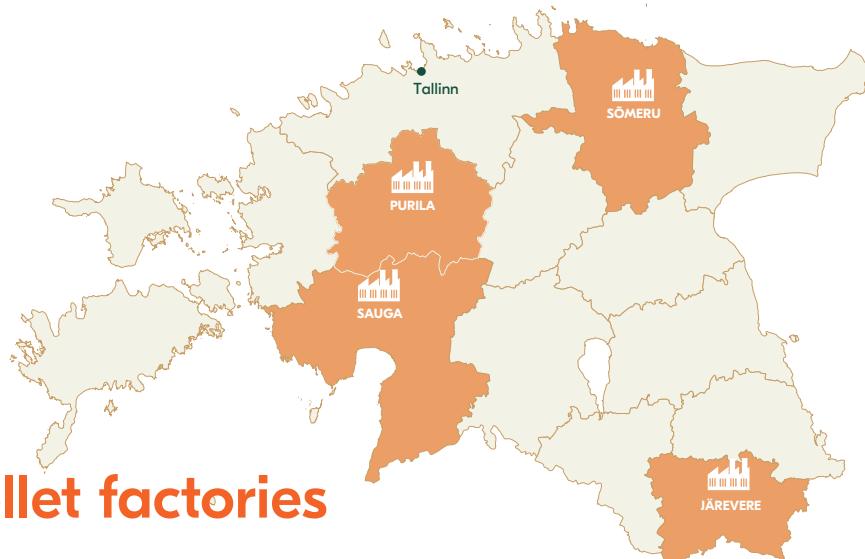
Main input categories for production:
Wet sawdust (45%)
Industry wood chips (28%)
Fuelwood (13%)
Other (14%)

PURILA FACTORY

Entry into operation: 2015
Maximum production capacity: 100 MT

Quality: I2, ENplus A2
Products: 6 mm industrial pellets
Employees: 18

Main input categories for production:
Fuelwood (34%)
Wet sawdust (21%)
Industry wood chips (19%)
Other (26%)



Our pellet factories

Warmeston's production of pellets takes place in four factories located all over Estonia. Our largest factory with its 185 thousand metric ton annual production capacity, is located in Southwestern Estonia in Pärnumaa in the former parish of Sauga. Purila factory that has a maximum annual production capacity of 100 thousand metric tons is located in a small village in Central Estonia in Raplamaa and Järvere factory

with an annual production capacity of 95 thousand tons situated in a small village in Southeastern Estonia in Võrumaa. Sömeru factory with an annual capacity of 80 thousand tons operates in Northeastern Estonia. Purila and Sauga factories produce industrial-class pellets and Sömeru produces premium-class pellets only. Järvere factory is unique as it is the only factory equipped with a pellet bagging line as well as it is

flexible to produce both industrial and premium pellets. This provides additional production reliability for long-term offtake contracts.

The relative sustainability advantage of Sauga and Sömeru factories is their proximity to a port, whereas the advantage of Järvere factory is its proximity to the raw material. Purila balances these two aspects.

Our main activities



Factories: Sauga, Järvere, Purila
Clients: Power and CHP plants
Quality: I1, I2 and ENplus A2
Production volume in 2020: 327 247 tons



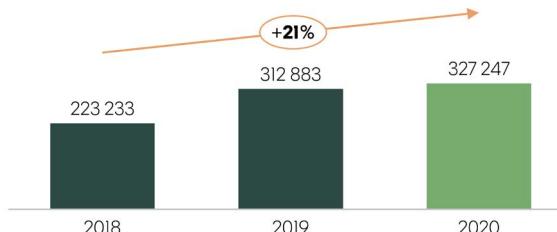
Factories: Sõmeru (Ardor), Järvere
Clients: private consumers and commercial entities producing heat in pellet boilers
Quality: ENplus A1
Production volume in 2020: 102 809 tons



Factories: 3 Risutec PM tree planting machines
Clients: state and private forest owners
Advantages: flexibility, tracking capabilities, efficiency, speed
Maximum planting capacity: 1 200 000
Planted trees in 2020: 200 000

Industrial pellets are mainly burned in large-scale power plants for electricity production or combined heat and power (CHP) plants for electricity and heat generation. According to BioEnergy Europe, 64% of EU-28 industrial pellet consumption in 2018 came from the UK because of the regulation-driven trend of converting coal-powered electricity plants to biomass plants.¹ The EU-28 consumption of industrial pellets in CHP plants was led by Denmark followed by Sweden.

WARMESTON'S INDUSTRIAL PELLET PRODUCED 2018-2020, t

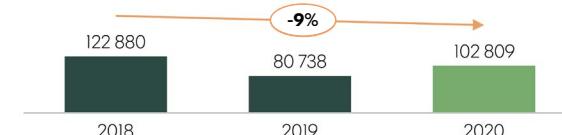


¹ Bioenergy Europe Statistical Report 2019

² In 2019, 33,3 M trees were planted, 21,3 M by the state and 12 M by the private sector. The state plans to plant 24 M in 2021. The rough estimate assumes a planting growth rate for the private sector constant with the state.

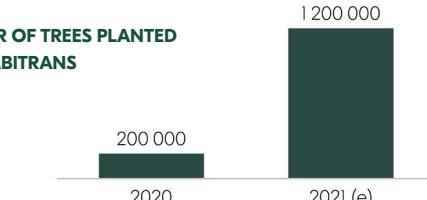
Premium pellets meet the highest quality requirements and are supplied with a consistently light colour. They have a residential or commercial use where pellets are burned in pellet stoves or boilers for heating. According to BioEnergy Europe, 55% of the pellets consumed in Europe in 2018 were used residentially or commercially.¹ In 2018, Italy was leading residential use with 28% of EU-28 total and Denmark was leading commercial use with 17% of EU-28 total.

WARMESTON'S PREMIUM PELLET PRODUCED 2018-2020, t



Warmeston's affiliate Combitrans manages forest renewal projects in Estonia. Planting is conducted with three Risutec machines. To our knowledge, there are only three other professional tree planting machines operating in Estonia. The main advantages of our specialized machines are lower cost per ha, higher success rate, GPS tracking and documentation of planted trees as well as the increased efficiency from using excavators outside of the active forestry season in the winter. In 2021, roughly 37,5 million trees will be planted² in Estonia. Combitrans plans to plant 3,2% of this.

NUMBER OF TREES PLANTED BY COMBITRANS



Our development in 2018-2020

Between 2018 and 2020, Warmeston has significantly invested into the growth and development of the company and the group, focusing on pellet production units. The investments have improved our production capacity, operational efficiency as well as our capacity to focus on sustainability-related projects. Over the three years, we have invested roughly 7,7 million euros to the operations, 33% of which has been dedicated to modernizing our oldest factory in Sauga and another 33% to Sõmeru (Ardor). 48% of the investment to Sõmeru's factory has been allocated to establishing a solar energy farm to produce our pellets with renewable energy. The largest overall share of investments has gone into equipment that enhances our production capacity and efficiency.

Our growth

Between 2018-2020, the Warmeston Group has expanded both in terms of group size and production volume. In 2018, we took a 12.5% stake in Iriscorp Transport OÜ. The main objective of the transaction was vertical expansion in the value chain and to increase supply efficiency. Iriscorp is involved in our operations mainly as a supplier of fuelwood.

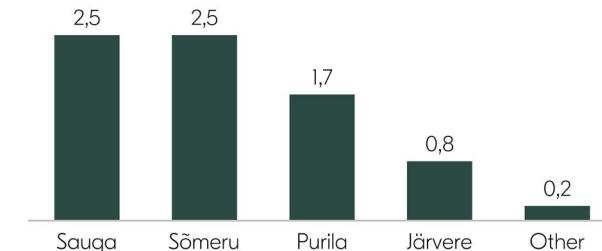
Additionally, as a result of the investments we have increased our production capacity in our factories in Sauga, Järvere and Sõmeru. From 2019 to 2020, our overall maximum production capacity increased by 8%.

Development in sustainability action

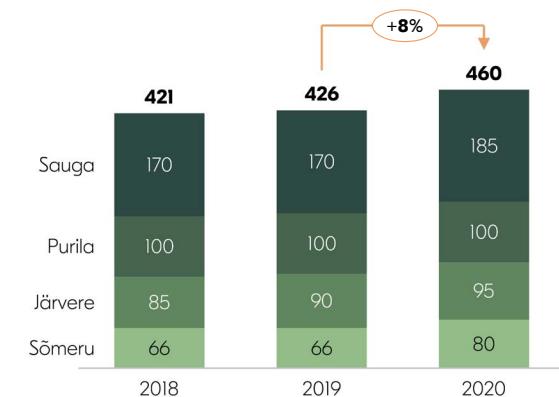
Along with growth, sustainable thinking has increasingly been promoted in the development of the company. In a world struggling with the climate crisis, it is increasingly important to take responsibility for sustainable change and show initiative.

Another milestone was reached in 2018 as our energy management system became ISO 50001 certified. Our aim is to reduce the organization's energy use and thus greenhouse gas emissions. In 2020, we took another step and conducted a carbon footprint analysis of Warmeston's industrial pellets to gain a more detailed understanding of our impact. The analysis became the basis on which we prepared our first sustainability report.

2018-2020 INVESTMENTS BY FACTORIES, M €



MAXIMUM PRODUCTION CAPACITIES OF OUR FACTORIES, t/a





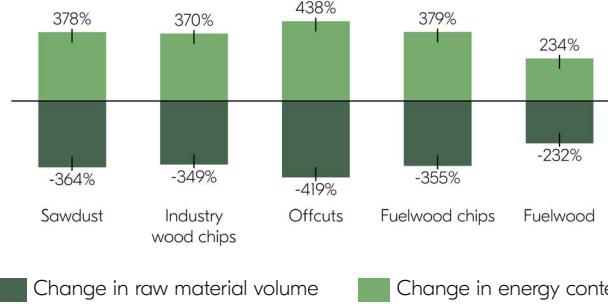
Our carbon footprint

Sourcing



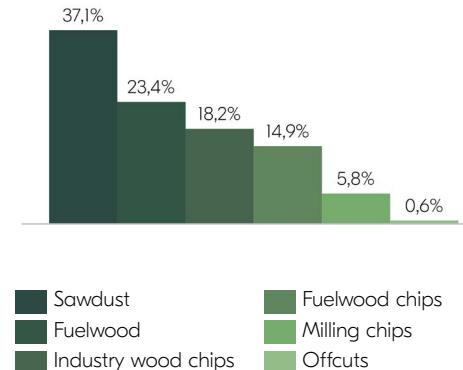
DECREASE IN VOLUME (m³/t) AND INCREASE IN ENERGY CONTENT (GJ/m³) WHEN RAW MATERIALS CONVERTED INTO PELLETS

When raw materials are converted into pellets, their volume decreases and energy content per m³ increases significantly.



■ Change in raw material volume ■ Change in energy content

RAW MATERIALS USED FOR INDUSTRIAL PELLET PRODUCTION IN 2020, t



Overview of raw material inputs

Our raw material groups can be divided into forest industry by-products (fuelwood and fuelwood chips) and by-products of the wood industry. The common denominator to all the raw material groups is that there is no other significant use for those by-products. Not too long ago these by-products were considered waste and where either left in forest or landfilled to decay, foregoing the energy potential, but gradually releasing the captured carbon. In pellet production, we enable these by-products to be efficiently converted into bioenergy, as well as support our Estonian suppliers, enabling them to commercialize their by-products. This in turn increases the competitiveness of the Estonian forest and wood industry and supports job creation in rural areas.



Fuelwood are also known as forest wood chips. It is fuelwood that has been chipped.



Residues from the wood industry in the form of small pieces of wood with particle size less than 50mm. Can be in both dry (moisture level approx. 10%) and wet (approx. 45%) form.



By-product of wood processing (sawing, drilling, grinding, etc.) with a particle size less than 20 mm. Both dry and wet sawdust are used for pellet production. The moisture level of the latter is almost six times higher, which requires proper drying.



Dry pieces of wood that are produced in the wood industry (e.g. furniture industry).

Reliability of our supply chain

Our supply chain is legal and sustainable and we have worked hard to make it transparent. As a result, our supply chain meets the requirements of the three most established international chain of custody certification systems for wood and wood based biomass.

Warmeston is not directly or indirectly involved in:

- illegal logging or trade in illegal wood or forest products;
- violation of traditional and human rights in forestry operations;
- destruction of high conservation value forests in forestry operations;

- significant conversion of forests to plantations or non-forest use;
- introduction of genetically modified organisms in forestry operations;
- violation of any of the ILO Core Conventions, as defined in the ILO Declaration on Fundamental Principles and Rights at Work, 1998

Certified since 2014



The mark of
responsible forestry

FSC® (Forest Stewardship Council®) is an international non-profit organization founded in 1993 that stands for responsible forest management around the world. The FSC certification is considered the “gold standard” designation for wood harvested from forests that are responsibly managed, socially beneficial, environmentally conscious, and economically viable.

Certified since 2018



PEFC (Programme for the Endorsement of Forest Certification) is the world's leading forest certification organization, which aims to promote sustainable forest management.

Certified since 2016



Warmeston OÜ earned the SBP certificate in 2016 and Ardor OÜ in 2019. The certification of Warmeston was especially noteworthy, because back then we were worldwide among the first 10 companies and the first company in Estonia to obtain it.

SBP (Sustainable Biomass Program) is a certification scheme aimed at facilitating the use of economically, environmentally and socially responsible biomass to achieve climate goals. SBP helps biomass and energy producers to demonstrate compliance with relevant biomass-related legal and sustainability criteria.

Our high expectations and thorough vetting process for suppliers

We have set strict requirements for our suppliers and established reliable processes for their selection. This minimizes the possibility of any raw material not complying with our principles entering our value chain. All of our suppliers understand our expectations, have signed our Supplier Code of Conduct and passed the vetting process meeting FSC's, PEFC's and SBP's requirements. Because of this, we can say with great certainty that we use and supply good biomass, that is legal, sustainable and in compliance with our high standards of conducting business. Last year we took another step towards more sustainable sourcing by implementing FSC controlled material as a minimum requirement at material reception. This step replaced our previous minimum requirement of PEFC Controlled Sources.

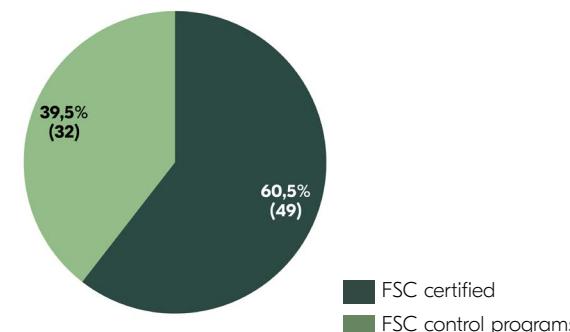
60,5% of our suppliers are FSC certified. These suppliers are highly aware of the concerns related to sustainable forest management. Furthermore these suppliers have established procedures that have been verified by third party auditors to avoid any use of wood products with controversial origin. Those suppliers without a certificate are mainly small companies, who must complete a training program, establish necessary procedures and successfully pass a supplier audit before they are approved as a supplier.

Before acceptance, all feedstock deliveries are controlled at the factory according to our Acceptance of Material and Implementation of the Control Programs procedure. It consists of 3 main stages with the purpose to verify whether:

- the supplier is in the list of approved suppliers;
- the delivery documents are consistent with the delivery;
- the delivered material originates from a certified chain of custody or meets required sustainability criteria to enter our supply chain.

If any of the criteria is not met, the delivery is not accepted.

SHARE OF WARMESTON'S AND ARDOR'S FSC-CERTIFIED SUPPLIERS, %
(NUMBER OF SUPPLIERS)





All of our suppliers have signed the Supplier Code of Conduct, confirming to operate in accordance with the values and principles important to Warmeston. The Code is based on the 10 principles of UN Global Compact and covers among other:

Human and labor rights

- The supplier may not use any form of forced or compulsory labor.
 - The supplier must not discriminate against any employee and must treat all employees fairly and with respect.
 - The supplier must document and investigate all accidents and incidents related to occupational health and safety.

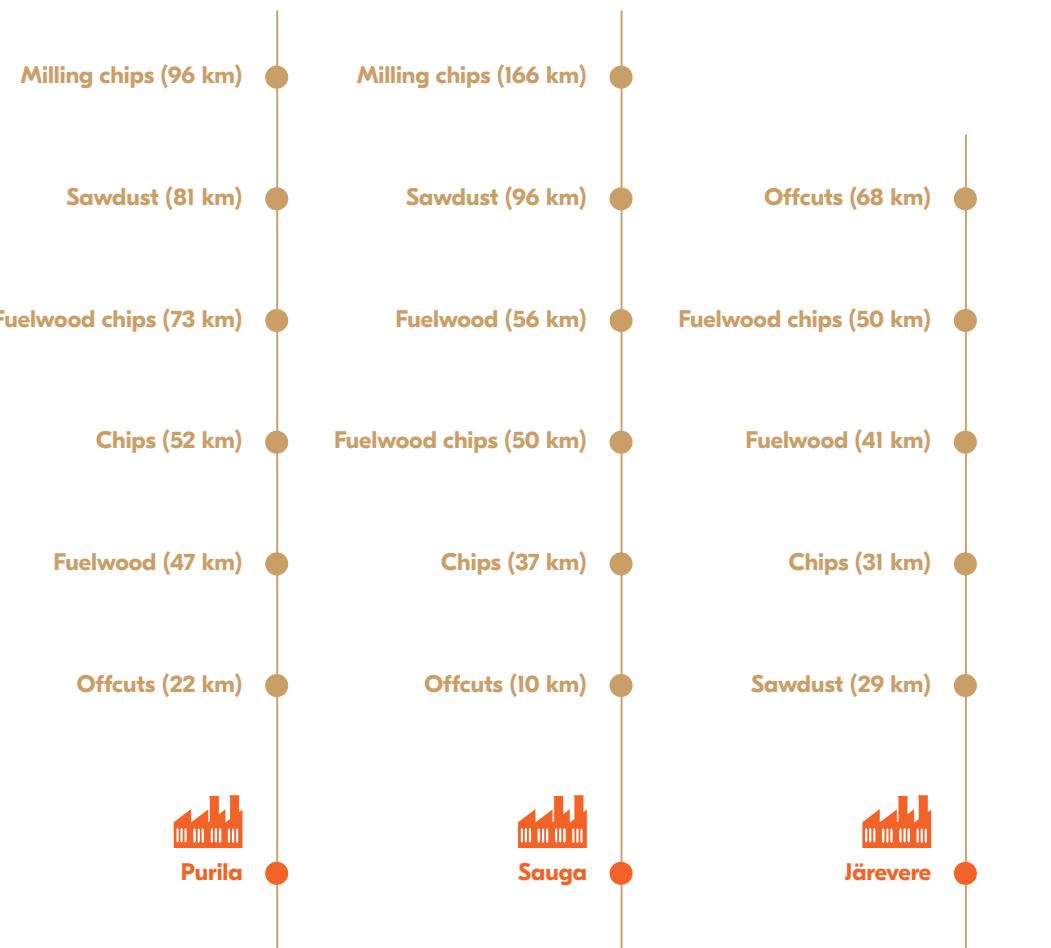
Environment

- The supplier confirms that the timber harvested by them and delivered to is legal and sustainable.

Business ethics

- The supplier's business must comply with all applicable anti-corruption laws.
 - The supplier's business must comply with all rules and regulations related to the safety and quality requirements of products and services.

Warmeston expects the supplier to continuously reduce environmental impact of its operations and confirms that, other variables held constant, it prefers a supplier who supplies certified material and/or whose supply chain has a lower environmental impact.



Raw material journey from our suppliers to our factories

With the exception of one small Latvian sawmill located close to the Estonian border, we rely solely on the Estonian forest and wood industry to supply our feedstock. Our suppliers include forest owners and management companies, sawmills, plywood factories, planing mills, furniture producers, log-cabin manufacturers etc. They come in various shapes and sizes, but share the same values with high regard to sustainable forest management. The ability to sell by-products of production (e.g. sawdust) is particularly important for smaller companies.

We pay a lot of attention to optimizing our supplier network to keep the raw material chain as short as possible. The closer to the factory the raw material comes from, the lower the cost to the environment and the more flexible and efficient the plants can be in their operations. Warmeston aims to reduce the use of those raw materials in a given factory that cannot be sourced from nearby businesses. The weighted average transportation distance is 57,7 km and deliveries from further than 90 km are an exception in all plants or are done with the backhaul on a fixed route.

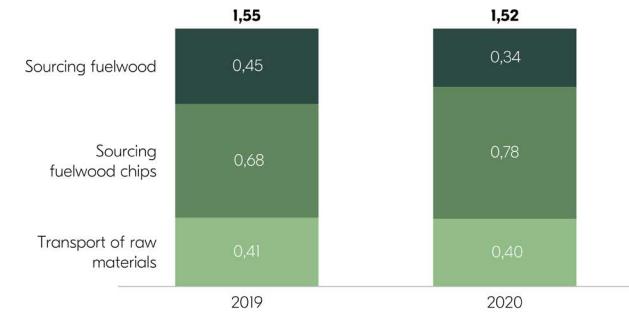
Carbon footprint of Warmeston's industrial pellet raw material chain

The feedstock sourcing phase includes sourcing the materials and transporting them to the production site. For sourcing, Warmeston's impact is only related to forest-based materials (fuelwood and fuelwood chips). The harvesting of feedstock used by the wood industry for primary and/or secondary processing is taking place irrespectively of Warmeston's involvement. Therefore, these materials enter Warmeston's supply chain at the factory gate where they were produced. However, the footprint of transportation to our factories is accounted for both forest and wood industry by-products.

SHARE OF TOTAL CARBON EMISSIONS CONTRIBUTED BY RAW MATERIAL CHAIN



WARMESTON'S INDUSTRIAL PELLET CARBON EMISSIONS FROM THE RAW MATERIAL CHAIN, gCO₂e/MJ



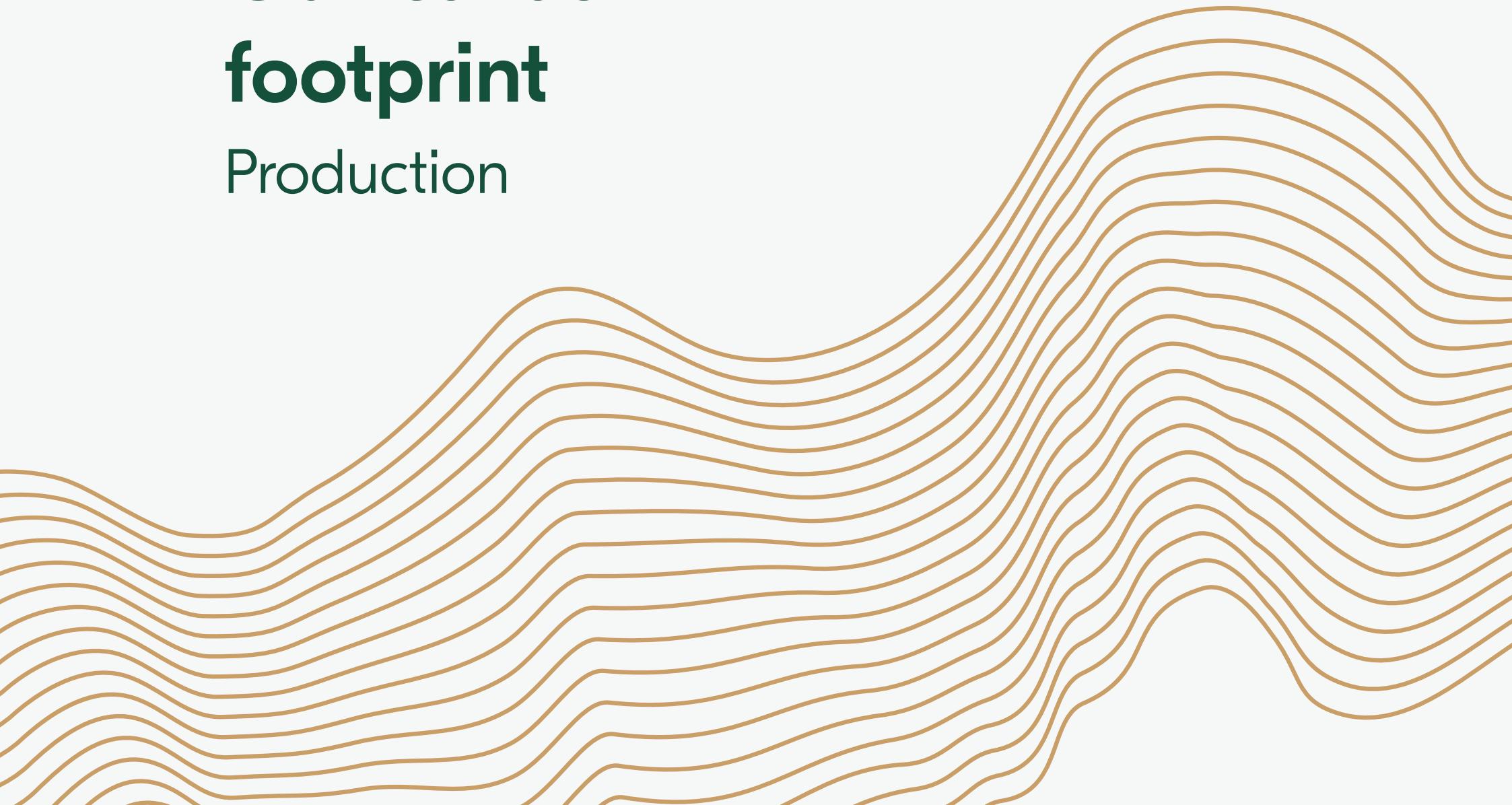
The sourcing of feedstock constitutes a significant 31,2% share of the Warmeston's industrial pellet greenhouse gas emissions. This is mainly because the more energy-intensive fuelwood chips that also account for the energy needed for chipping. In case of fuelwood, these emissions are accounted for in the pre-chipping phase. Transportation of feedstock amounts to a modest 11,1% share. The whole raw material chain constitutes 42,3% of the total industrial pellet carbon footprint. The share has stayed roughly the same compared to 2019.

In the raw material chain, the most significant emissions come from the sourcing of fuelwood chips constituting 51% of the phase's total environmental impact. The reason is that sourcing fuelwood chips includes emissions from harvesting as well chipping, which for other feedstock groups is accounted for in the pre-chipping phase. The overall emissions from the raw material chain decreased around 2% from 2019 to 2020, mainly resulting from a roughly 20% decrease in the volume of fuelwood sourced that outweighed the relative growth of sourced fuelwood chips.



Our carbon footprint

Production



Our production process — pre-chipping

Our production process is roughly divided into two stages — pre-chipping and pellet production. Firstly, fuelwood is chipped with a mobile chipper and all wood chips are fine chipped with a stationary chipper to give the feedstock a suitable fraction size for further processing. The inputs used for pre-chipping are diesel fuel and renewable electricity.



Materials involved	Used resources
Fuelwood	Diesel fuel
Fuelwood, fuelwood industry wood chips, milling chips, offcuts	Electricity

Fuelwood

Mobile chipper processes fuelwood to wood chips with a fraction size of up to (50 mm). Mobile chippers are used either at the harvesting site or at the factories. Chipping is necessary to prepare the material for next production steps.

Transport within the production area

Fuelwood, fuelwood industry wood chips, milling chips, offcuts

All different input groups apart from sawdust are fine crushed in stationary crushers to smaller than 20mm mm particles. The fine crushing process results in a fine homogenous biomass ready for thermal drying.

Diesel fuel is used to power chipping and transportation within the production area.

Our pellet production process

The production process creates two types of residues:

- **Ash** is a residual of burning biomass in the dryers. In 2020, 459,5 metric tons of ash was generated. Järvere factory has registered its ash as fertilizer that is used by local agricultural companies to fight acidification of soil and to give micronutrients to crops. This resulted in 92% of the factory's residual ash being recycled. That means 40% of the residual ash from 2020 was reused as a fertilizer. The remaining 60% is transferred to licensed waste management companies for proper handling. For 2021, Warmeston is working on solutions to further increase the share of wood ash being directly used as fertilizers in the agricultural sector.
- Emissions of **flue gases from the dryers** are proportional to the volume of biomass used in dryers. We report our emissions quarterly according to our environmental permits and maintain our furnaces and emission control equipment on a regular bases.



Materials involved	Used resources
Forest and industry wood chips, wet sawdust	Green electricity
All feedstock	Green electricity
Pellets	Green electricity

Forest and industry wood chips, wet sawdust

All feedstock with a moisture level above 15% is dried in drum dryer to the moisture level of ca 10%.

All feedstock

After drying, the feedstock enters hammer mill for the grinding process to further reduce particle size. This is an important step right before pressing the biomass into pellets.

Pellets

Pellets are very hot from the compression process and need to be cooled. The cooling process is done in counter flow air coolers where the cooling medium is outdoor air.

SHARE OF TOTAL CARBON EMISSIONS CONTRIBUTED BY PRODUCTION STAGE

WARMESTON'S INDUSTRIAL PELLET CARBON EMISSIONS FROM THE PRODUCTION STAGE, gCO₂e/MJ

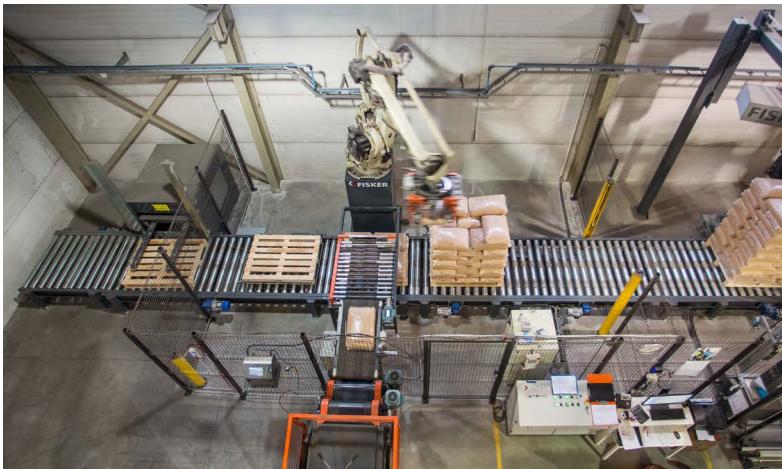
Carbon footprint of Warmeston's industrial pellet production

The carbon footprint assessment of the production phase includes pre-chipping the raw materials for production, transporting activities within the production areas as well as the pellet production itself.

The whole production process amounts to a 27,5% share of the Warmeston's whole industrial pellet greenhouse gas emissions. Pellet production alone amounts to 20,4% of the total emissions. Production area transport and pre-chipping have a modest combined carbon impact of 7,1% of the whole emissions. There have not been significant changes in the

importance of respective categories to the whole emissions, however it is notable that the share of the whole production process has slightly decreased from 28,1% in 2019 to 27,5% in 2020.

In the production stage, the most significant emissions come from thermal drying of raw materials (29%), followed by the pressing of pellets (23%). The overall emissions from the raw material chain decreased roughly 3% from 2019 to 2020, mainly resulting from a roughly 12% decrease in the impact of drying.

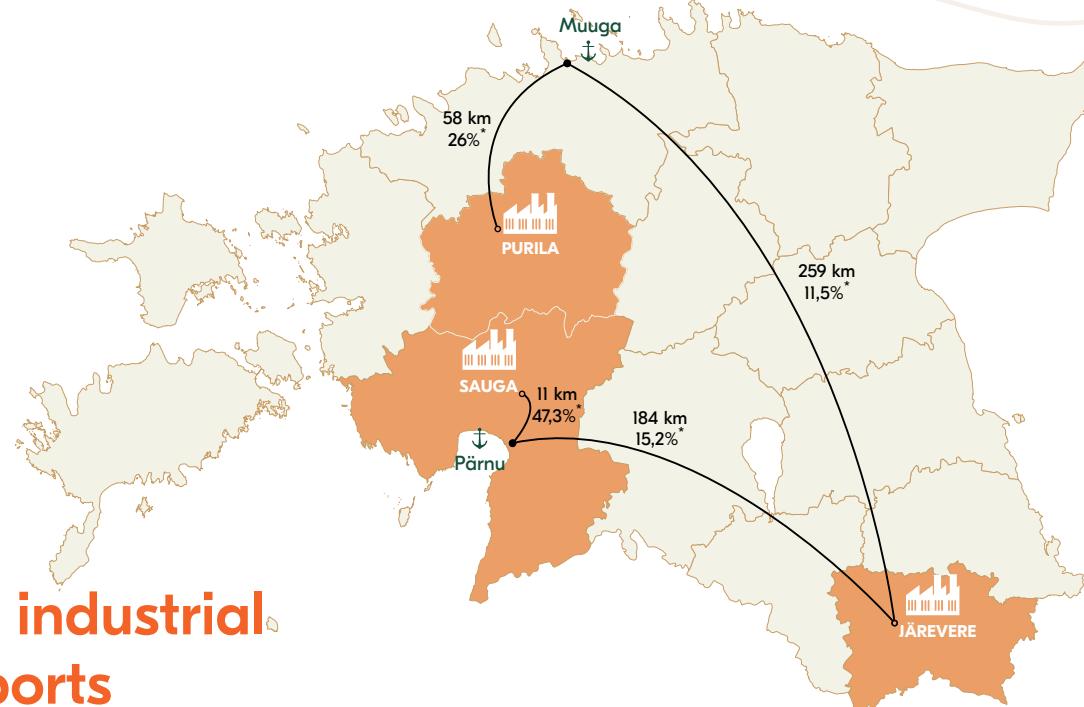




Our carbon footprint

Transportation to clients





Delivery of industrial pellets to ports

Once the industrial pellets are ready for storage, they are transported from the factories to one of the two Estonian ports Warmeston uses: Pärnu or Muuga. Sauga and Purila ship only from the ports closest to their respective factories. Järvere stores pellets in both ports. A proximity to suitable ports has been one of the two key considerations when the factories were established, the other consideration being proximity to raw materials. The Port of Pärnu is the most used, shipping out 62,5% of Warmeston's exported industrial pellet.

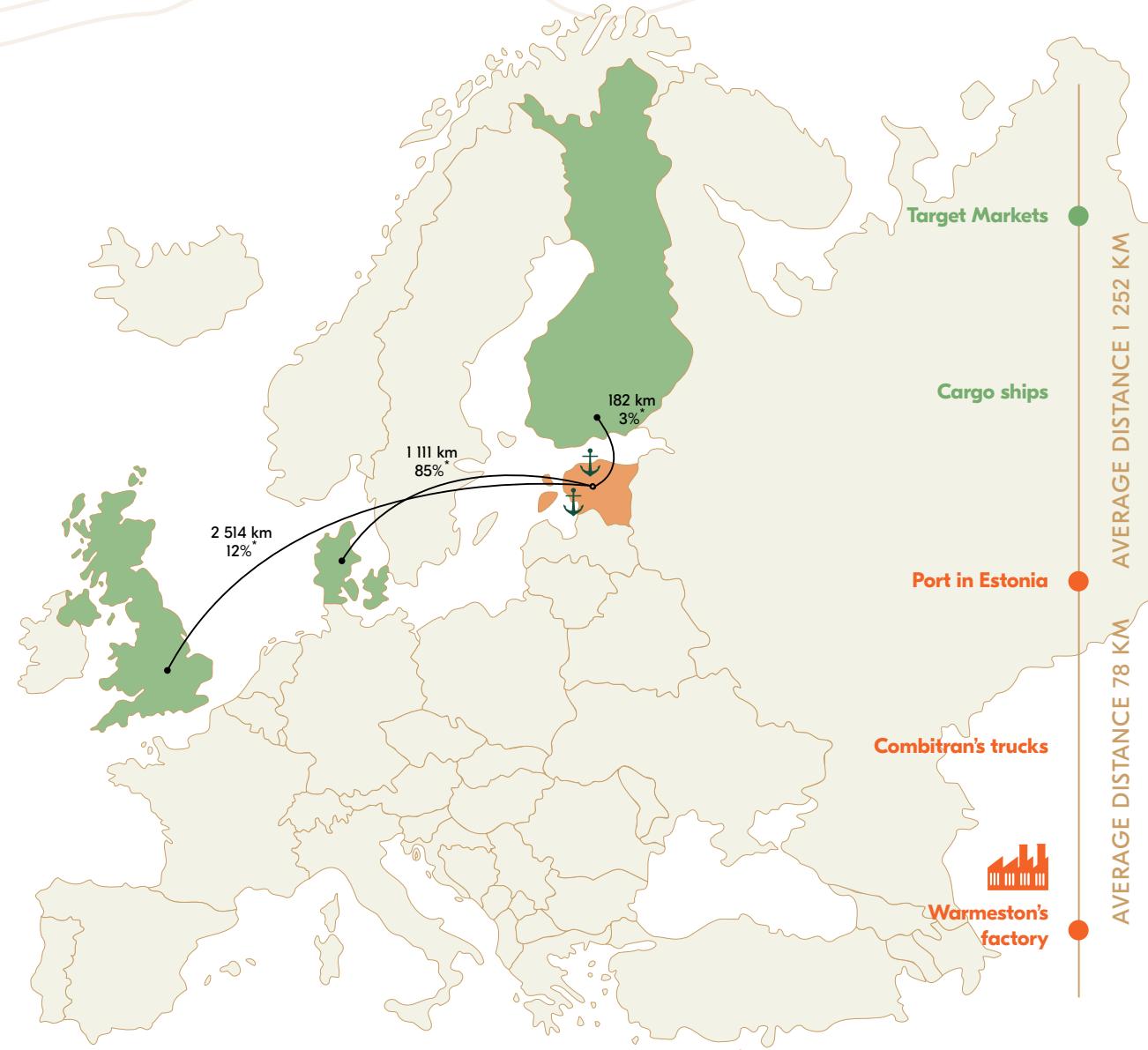
Pellets are transported from the factories to the ports by Warmeston's affiliate Combitrans OÜ. Although most of our trucks run on diesel fuel we have started a pilot project with a truck running on LNG. From the ports, cargo ships running on marine fuel oil transport the shipments to the 7 ports in our three target markets. Warmeston exports industrial pellet in bulk shipments ranging from 3000 to 50 000 tons.

* Tons of pellets (% of total flows to ports)



Industrial pellet journey to clients

The key markets of Warmeston's industrial pellets are Finland, Denmark and the UK. Shipping to the customers is done by coasters (3-10kt DWT), handysize (15-35kt DWT) or by handymax (35-50kt DWT) vessels which are either outsourced or owned by our clients. Most of our industrial pellets are exported to Denmark which is the second-largest European pellet importer after the UK and the largest on per-capita basis.¹ Denmark has had a strong movement away from fossil fuels and towards renewable energy sources, driven by governmental regulation and subsidies incentivizing further bioenergy uptake.² Our clients in Denmark are mainly large-scale combined heat and power appliance (CHP) plants for electricity or heat generation.



¹ Bioenergy Europe Statistical Report 2019

² Danish Energy Agency. Facts about bioenergy in Denmark.

* Share of export to the country (tons), 2020



Carbon footprint of Warmeston's endpoint transportation

The carbon footprint assessment of the transportation phase includes transport of pellets from factories to the ports in Estonia as well as loading and sea transport from Estonia to the specific ports in our three target countries (Denmark, UK and Finland). The trucks transporting pellets to the Estonian ports are powered by diesel fuel. The cargo ships delivering pellets to our European clients run on marine fuel oil.

The whole endpoint transportation process including transport to the Estonian ports and from the ports to international end clients amounts to 30,3% share of

SHARE OF TOTAL CARBON EMISSIONS CONTRIBUTED BY ENDPOINT TRANSPORTATION

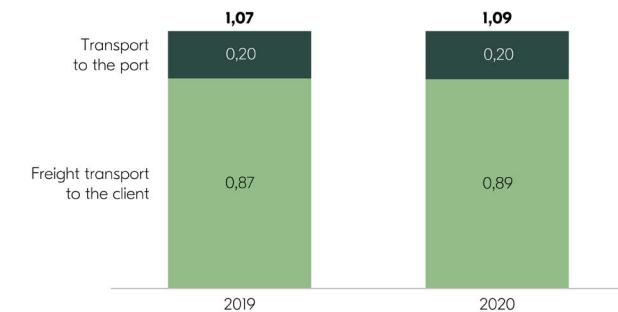


Warmeston's whole industrial pellet greenhouse gas emissions.

The share of endpoint transportation in the total carbon emissions of Warmeston's industrial pellet has increased 0,9% in 2020 compared to 2019. The increase is explained by an increase in freighter-related emissions coupled with steadily decreasing emissions in other categories all over the product lifecycle.

In the endpoint transportation phase, 81,6% of the emissions come from the cargo ship transport to

WARMESTON'S INDUSTRIAL PELLET CARBON EMISSIONS FROM THE ENDPOINT TRANSPORTATION STAGE, gCO₂e/MJ



the end client because the average distance of ship transport is 16 times longer than that for transport from the factories to the Estonian ports.

The overall emissions from the endpoint transportation increased roughly 2% from 2019 to 2020, resulting from a corresponding increase in freight transport which in turn results from higher proportion of exports going into relatively more distant ports.



Our carbon footprint

Summary



Snapshot of our industrial pellet carbon footprint

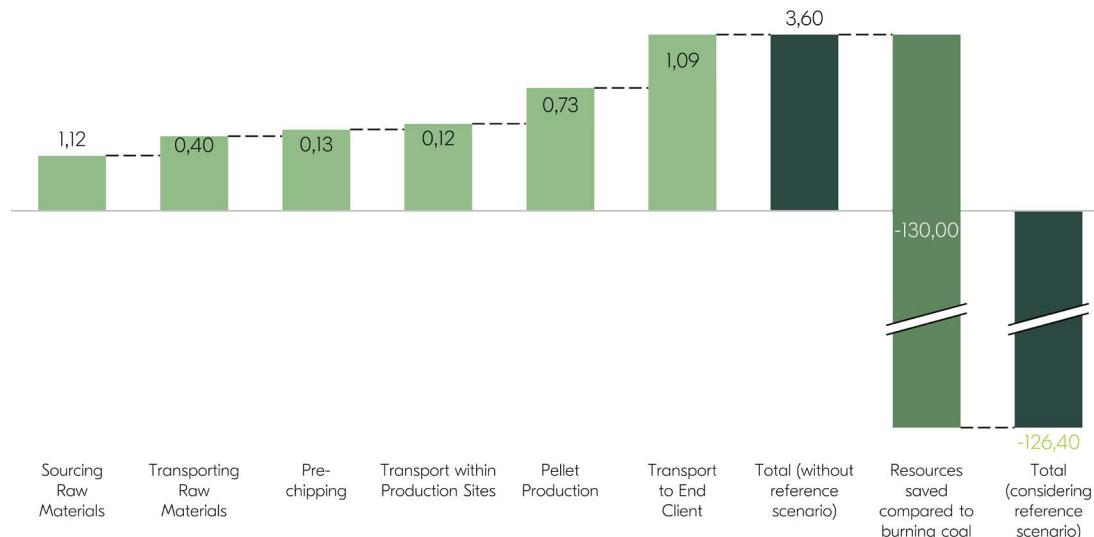
In 2020 the average carbon footprint of Warmeston's industrial pellet amounted to 3,60 gCO₂e/MJ. The measurement used is carbon intensity that measures grams of carbon dioxide equivalent per megajoule of energy. When compared to reference scenario in which industrial coal is burned, Warmeston's carbon footprint turned out to be highly negative. One MJ of energy produced from our industrial pellets emits 36,1 times less CO₂e than one MJ of energy produced industrially from hard coal in Europe. Transforming coal

power plants to pellet plants has therefore significant positive impact on the environment. The highest contributors to Warmeston's carbon footprint were raw material sourcing and transportation to our foreign end clients, constituting 31% and 30% respectively. Both pre-chipping and transport within production sites amounted to less than 5% of emissions each.

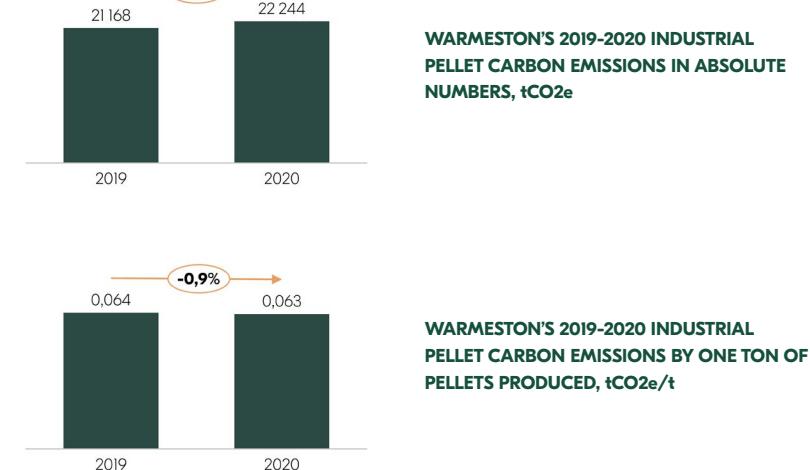
In absolute numbers, Warmeston's industrial pellets emitted 22 244 tons of carbon dioxide equivalent in

2020. The emissions increased 5,1% compared to total emissions in 2019. The increase in total emissions is a direct result of increased production capacity of 6,1% over the respective period. Thus Warmeston's production process has shown efficiency gains.

Warmeston's industrial pellet total emissions per unit decreased 0,9% in 2020 compared to 2019. Therefore, a ton of pellets produced in 2020 emits 0,9% less carbon dioxide equivalent than it did in 2019.



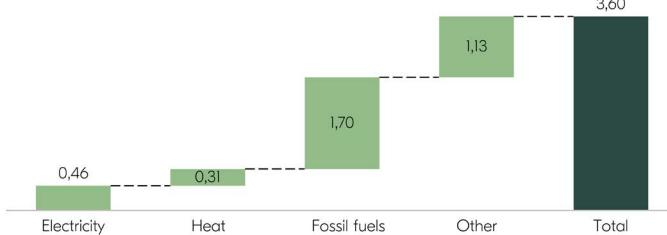
WARMESTON'S 2020 INDUSTRIAL PELLET CARBON FOOTPRINT OVERVIEW
BY PRODUCTION STAGES, gCO₂e/MJ



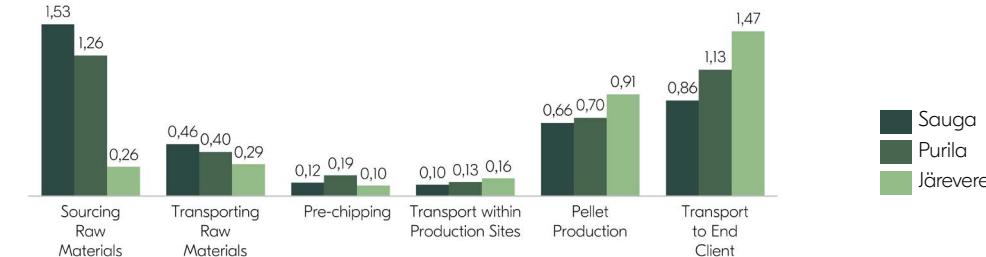
WARMESTON'S 2019-2020 INDUSTRIAL
PELLET CARBON EMISSIONS IN ABSOLUTE
NUMBERS, tCO₂e

WARMESTON'S 2019-2020 INDUSTRIAL
PELLET CARBON EMISSIONS BY ONE TON OF
PELLETS PRODUCED, tCO₂e/t

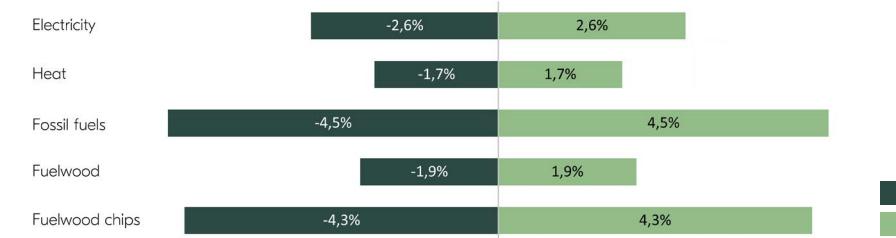
WARMESTON'S 2020 INDUSTRIAL PELLET CARBON FOOTPRINT OVERVIEW
BY ENERGY SOURCES, gCO₂e/MJ



WARMESTON'S 2020 INDUSTRIAL PELLET CARBON FOOTPRINT OVERVIEW
BY FACTORIES, gCO₂e/MJ



CHANGE IN TOTAL INDUSTRIAL PELLET FOOTPRINT MEASURED BY
CHANGE IN EMISSION COEFFICIENTS, CO₂e



■ 20% decrease of coefficient
■ 20% increase of coefficient

Carbon footprint sources and sensitivity

The energy source contributing the most to Warmeston's industrial pellet carbon footprint is the fossil fuel powering trucks and freighters in various transportation stages. Fossil fuels amounts to 47% of the total carbon emissions. It is also notable that electricity used mainly for pre-chipping and producing pellets, amounts to only 13% of the total emissions. Electricity's emissions are reduced because only renewable electricity is used throughout the life cycle.

Some notable differences are observed when looking at emissions per factory. For example, Järvere's sourcing footprint is 5,9 times smaller than Sauga's. The difference is both caused by Järvere sourcing materials closer from the factory as well as sourcing more wood industry by-products which have a smaller carbon footprint. On the other hand, we see Järvere's footprint from transport to end client being 1,7 times higher than for Sauga. This is caused by the relatively higher distance from ports.

The sensitivity analysis shows how much total emissions would change if the emission coefficient per unit in a given category increased (more energy intensive) or decreased (less energy intensive). The two categories with the biggest potential effect on the industrial pellet's footprint are fossil fuels and fuelwood chips. For example, if instead of diesel or marine fuel oil, 20% more environmentally friendly fuels were to be used for powering trucks and freighters, the total carbon footprint of Warmeston's industrial pellets would decrease 4,5%.



Our employees, communities and society

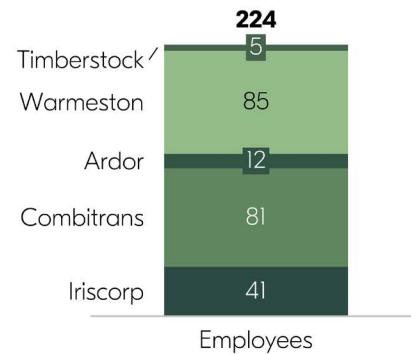
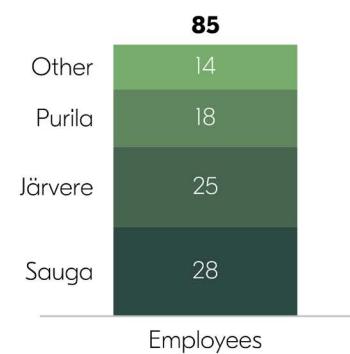


Overview of Warmeston's people

Warmeston, together with its affiliate companies, employed 224 people at the end of 2020. The most, 38% of them, were employed by Warmeston with Combitrans as the close second employing 36%. The smallest companies in the group by employee count were Timberstock and Ardor, employing a combined 8%.

At the end of 2020, Warmeston OÜ employed 85 people. 84% of them were working in our three factories. The remaining 16% worked either in Warmeston's office located in Tartu (10 employees) or were the drivers operating silo trucks tasked to deliver Warmeston's Premium pellets all over Estonia (4 employees).

WARMESTON GROUP'S EMPLOYEES, 2020

WARMESTON OÜ EMPLOYEE'S DISTRIBUTION BY
BUSINESS UNITS, 2020

In our further analysis of our people along different categories, we will focus on the employees working in our pellet factories. This serves as a way to highlight the people in charge of handling our production processes, the core of the given report and Warmeston's business.

The average employee working in our factories is 40 years old. The average is the highest in Ardor's factory and the lowest in Järvere. The average person working in Järvere is 11 years younger than the average person working in Ardor's factory. Our employees are well experienced with 4.6 years being the average employment length of our current employees and several operators having more than 10 years working experience on our plants.

75 men are working in the production units as opposed to 8 women. Therefore women constitute just under 10% of the factory employees. The average woman is 4 years younger than the average man, being 37 and 41 years old respectively.

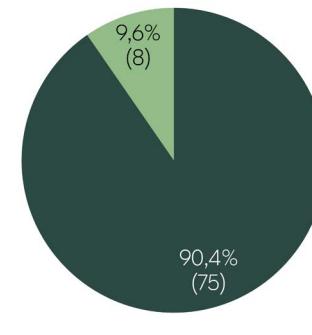
40

the average age of a
production-unit employee

41

average age for
men

37

average age for
womenGENDER DISTRIBUTION OF
PRODUCTION UNIT EMPLOYEES

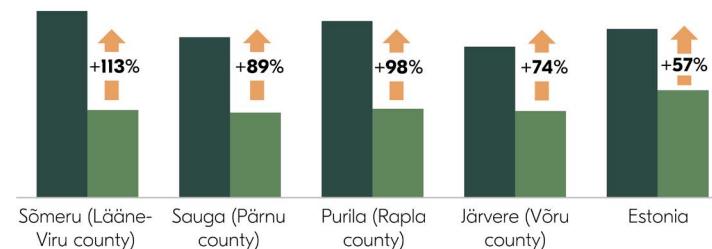
Men

Woman

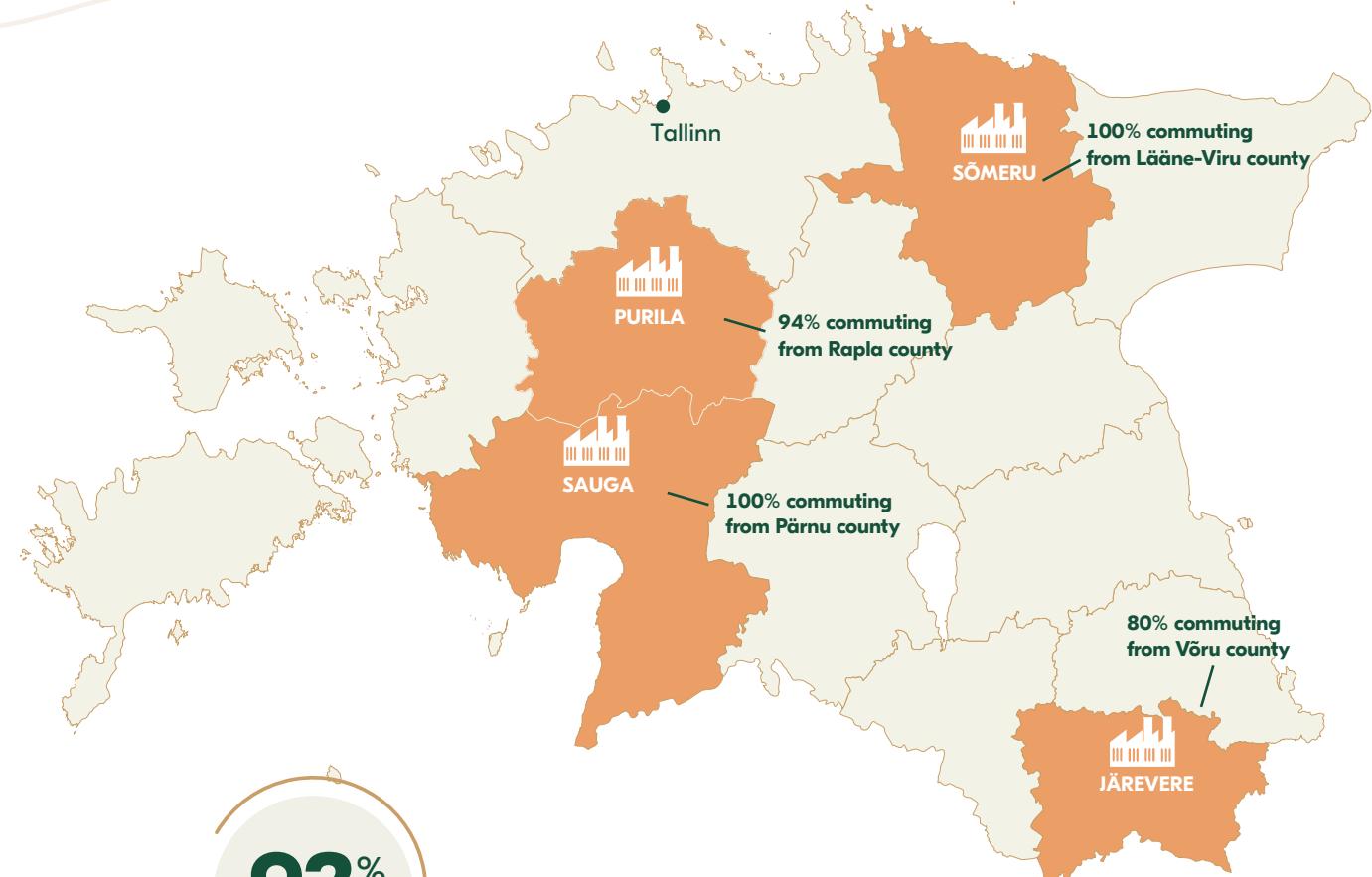
Contribution to our people and communities

We offer our employees meaningful and positively challenging jobs with fair compensation. Furthermore, we also aim to support our employees' physical health by compensating their purchase of eyeglasses as well as sporting activities of the employee's choice. A further aspect related to physical wellbeing is workplace safety. We are strictly in line with the Estonian workplace safety regulations. Each new onboarded employee is made aware of the contents of Warmeston's internal safety instructions that outline, among other things, the use of protective equipment and the risks to consider while working with the production machinery followed by on site training. We are currently also developing a new and improved system for documenting work incidents that helps us learn where we can improve and prevent accidents from happening.

**LEVELS OF OUR PRODUCTION UNIT EMPLOYEE MONTHLY GROSS WAGES
RELATIVE TO AVERAGE WAGES OF THEIR COUNTIES AND NATIONAL
AVERAGE, 2020**



93%
share of production-unit
employees commuting to
work from the same county



Contribution to society

Warmeston and its affiliates have successfully grown in the last years and it is important for us to give back to our local communities and the society as a whole. Our charitable activities have been the reflection of what our team values and cares about. We have contributed the most to Estonian sport because we value physical health and believe in the importance of the examples professional athletes set. We have also supported the not-for-profit organizations that have constantly contributed to the communities around our factories, often so voluntarily from their free time. Finally, we have been a long time member of the Estonian Forest and Wood Industries Association, but in 2020 we took a more active role as we joined the managing board of the association. We feel our time and knowledge can benefit the and of the society as a whole through a more competitive economy.

Sport

- Team Nordic Jobs Worldwide – a young team of professional cross-country marathon skiers that won Tartu marathon in 2021.
- Foundation Youth to Olympics (Noored Olümpiale) that supports young athletes in their development.
- Long time supporter of the professional basketball and volleyball teams of Tartu.
- Pärnu Kalev SK, a football youth academy based in Pärnu.

Local communities

- Association of Pärnu-Jaagupi volunteering firemen. Donation in pellets for heating their cordon.
- Volunteering work for the renovation of Purila's village square.
- Donations to Järvere Village Society.
- Local animal shelter. Donation of pellets for bedding.

Societal dialogue

- Longtime members of the Estonian Forest and Wood Industries Association (EFWIA) that represents the core of the Estonian forest and wood industry companies.
- Since 2020, our CEO Mait Kaup joined the association's managing board in a mission for us to be more active in supporting and developing the sector.





Warmeston OÜ is proud to have received an honorary title as a Supporter of Volunteer Rescuers 2021 in Estonia. The title is given by the Estonian Ministry of Interior as a recognition to those organizations that have provided volunteer rescuers with facilities and equipment for use, helped to conduct exercises, contributed to the work of volunteers financially or in their personal time. Warmeston was nominated by the Association of Pärnu-Jaagupi volunteering firemen for our donation of pellets for the heating season. The honorary title came as an immensely positive surprise to the whole Warmeston team, which hopefully encourages other Estonian industries to join us in supporting volunteers invaluable to their communities.

Annex: Carbon footprint assessment methodology

The main purpose of Warmeston's carbon footprint assessment is to assess the company's carbon footprint from its industrial pellet production in terms of global warming potential per 100 years (GWP 100) and to compare it with alternative raw material uses.

Methodology and standards

- Warmeston's carbon footprint analysis is conducted in accordance with principles of Life Cycle Assessment (LCA). It follows two generally accepted international ISO standards - ISO 14040: 2006 and ISO 14044: 2006
- ISO 14040: 2006 formulates the principles and framework of the analysis
- ISO 14044: 2006 formulates the analytical requirements and instructions for use
- The analysis is in accordance to the directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources.

Impact category

Global warming potential (GWP 100, kg CO₂ equivalent)

Reference scenario

The reference scenario for the analysis is considered to be the alternative use of raw materials as biofuels

System boundaries

Raw materials to client
(cradle-to-gate) approach

Structure of the analysis

The analysis is based on an MS Excel dynamic model specially developed for Warmeston. The analysis was additionally run through the LCA software OpenLCA and CCcalc, that were also used for the database of raw data.

Functional unit

Production of 1 metric ton of industrial pellets; 1 MJ of energy

Annex: Carbon emissions data used in carbon footprint assessment

Input/Output	Quantity	Unit	Source
Diesel fuel	2,68	kg CO2/litre	https://people.exeter.ac.uk
LPG	1,51	kg CO2/litre	https://people.exeter.ac.uk
Cargo ship transport	0,0113	kg CO2/km*t	Ecoinvent v3.5 “transport, freight, sea, transoceanic ship transport, freight, sea, transoceanic ship, U GLO”
Forest chopping	0,0139	kg CO2/kg wood	Ecoinvent v3.5 “forest chopping, mixed wood”
Fuelwood chips	0,0495	kg CO2/kg wood	Ecoinvent v3.5 “forest wood chips, mixed wood”
Industry wood chips	0,0378	kg CO2/kg wood	Ecoinvent v3.5 “industry wood chips, mixed wood”
Sawdust	0,0300	kg CO2/kg wood	Ecoinvent v3.5 “sawdust”
Electricity	0,8172	kg CO2/kWh	Ecoinvent v3.5 “Average medium voltage electricity in Estonia”
Green electricity	0,05	kg CO2/kWh	Estimated average of wind and solar energy coefficients
Thermal energy (Hardwood chips)	0,0126	kg CO2/kWh	Ecoinvent v3.5 “Hardwood chips 300 kW in EU28”
Water	0,0008	kg CO2/kg water	Ecoinvent v3.5 “water, deionised at plant, EU28”
Waste water	0,0003	kg CO2/kg water	Ccalc “Waste water”
Ash	0,0187	kg CO2/kg ash	Ecoinvent v3.5 “ash to landfill, EU28”
Ash use as a fertilizer	-0,0150	kg CO2/kg ash	
Hard coal	0,13	kg CO2e/MJ	Ecoinvent v.3.4 „Heat production at hard coal industrial furnace 1-10MW“

www.warmeston.ee
+372 7425 696
info@warmeston.ee



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