

Sustainability Report 2022



Message from our CEO



Mait Kaup

Warmeston CEO

2022 was a year of many uncertainties. Energy markets were pushed out of balance, more so than we have seen in decades. Russian aggression in Ukraine and the subsequent limits on European gas supplies were a clear message to EU leaders on the importance of local energy supply. A message, that was acted upon swiftly, entailing the introduction of a new REPowerEU roadmap, with a renewed focus on energy saving, clean energy production, and diversifying our energy supplies. It is evident that clean renewable power from the biomass industry, combined

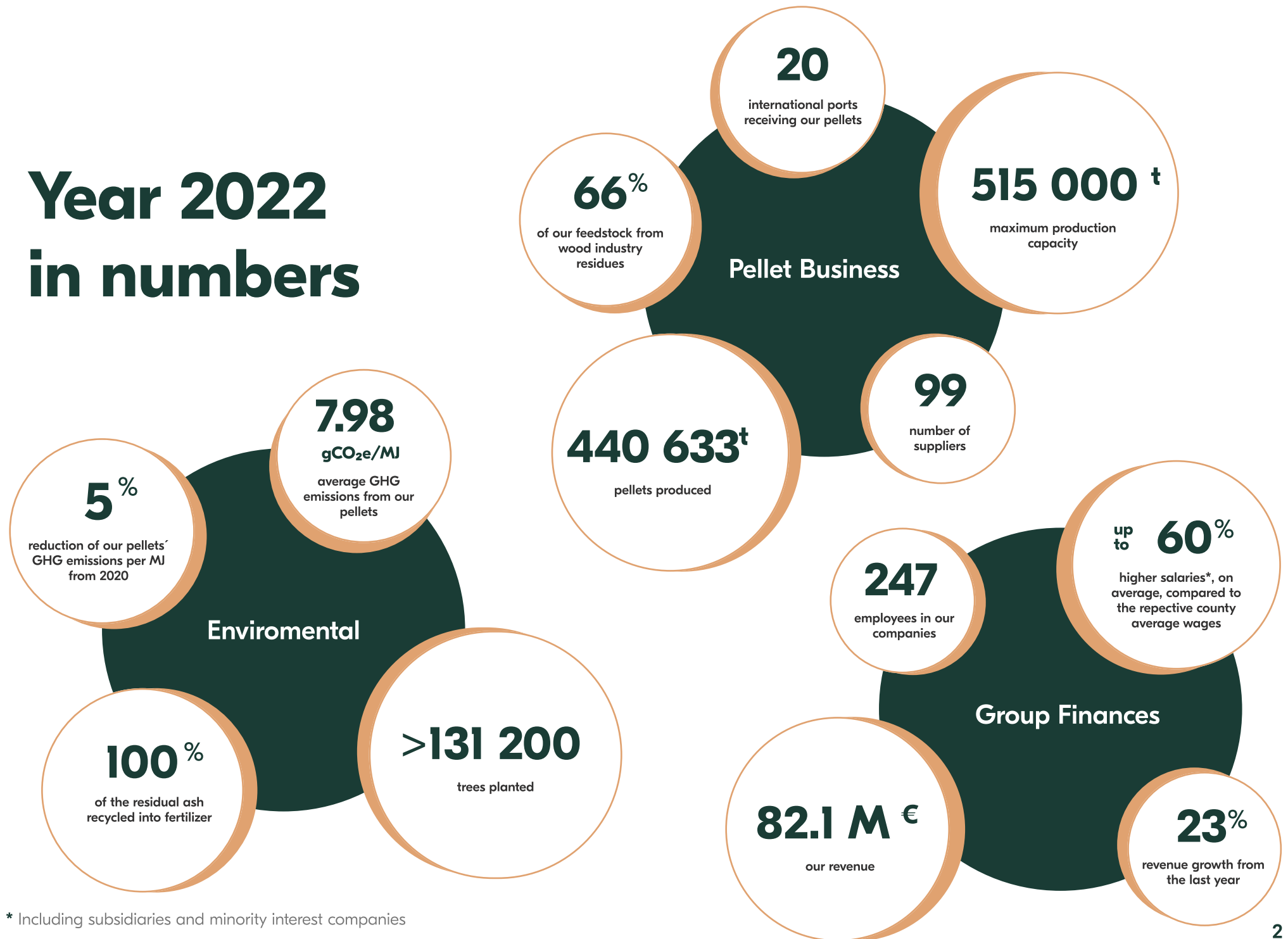
with jobs the sector supports locally, remains part of the solution. Especially now, as the industry moves further up in the value chain by increased utilization of BECC, driven by the need for CO₂ removal and growing demand for biogenic carbon.

It has been said that “if you can't grow it, you have to mine it,” meaning that anything we cannot grow, we have to extract from Earth in one way or another. This is also a fitting reference to how renewable, sustainably sourced bioenergy can be a replacement for coal mining as means to produce energy that can be disbursed at will – exactly what is needed to balance out intermittent solar and wind energy. In both cases it is critical to minimize the impact on the environment, however, bioenergy is a solution for woodworking residues and comes with a bonus of near CO₂ neutrality. Pellets produced by Warmeston in 2022 prevented mining about 300 000 tonnes of coal and therefore about 879 000 tonnes of CO₂e emissions from being emitted.

In Warmeston, one of our core beliefs and central focus areas is operational efficiency. Connected to this, the year 2022 saw several digital innovations across various business areas. One example is our move to a new ERP system – a step that was preceded by auditing and careful streamlining of our internal routines. Additionally, we implemented a digital waybill 2.0 for all biomass in and out of the factories and launched a digital gatehouse system for increased accuracy, transparency, and automatization. Focus on operational efficiency is a sure bet in building a competitive advantage but also in identifying new ways to mitigate our carbon footprint.

I am proud to say that we are certainly moving in the right direction. Over the last three years since we have published our sustainability report, Warmeston pellet's carbon emissions have decreased each year. We are now emitting 11% less per every MJ of pellets produced and are fully committed to keep improving.

Year 2022 in numbers



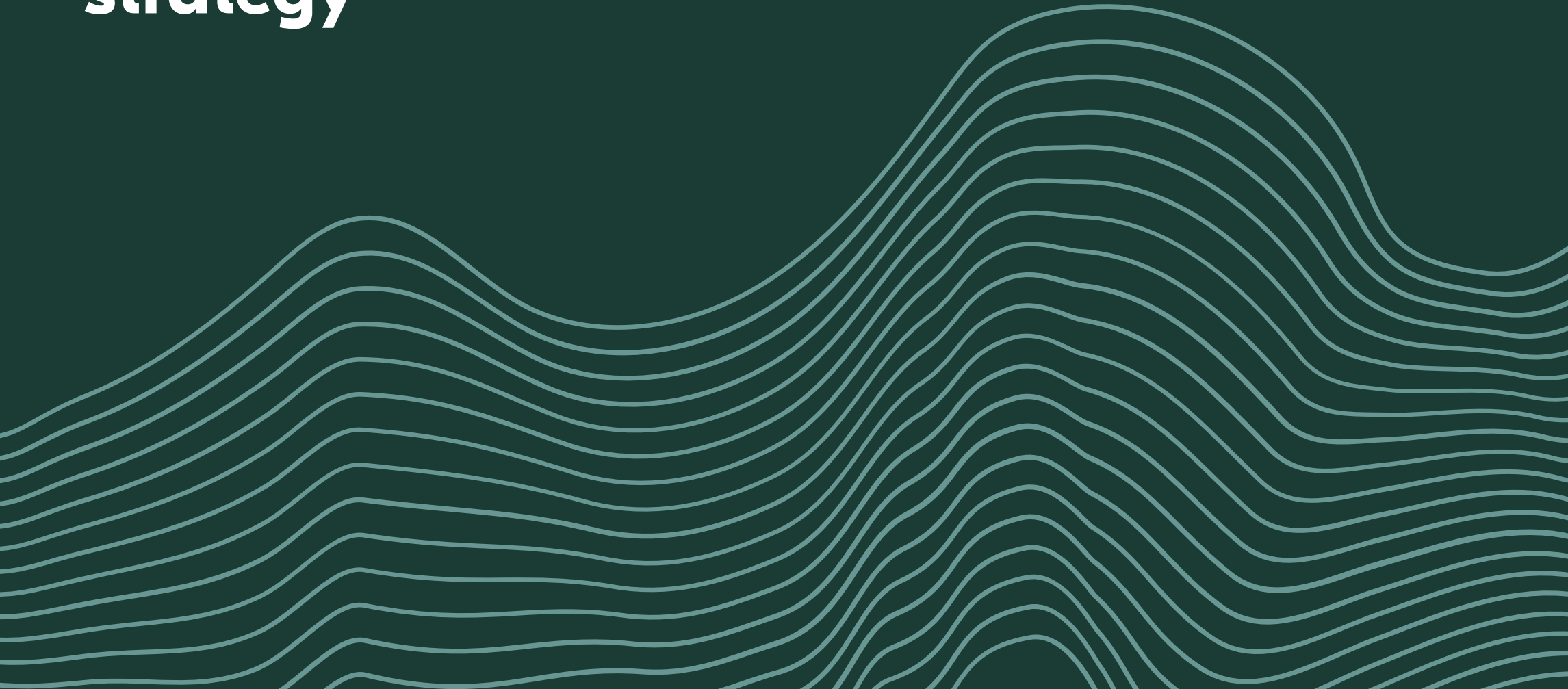
* Including subsidiaries and minority interest companies

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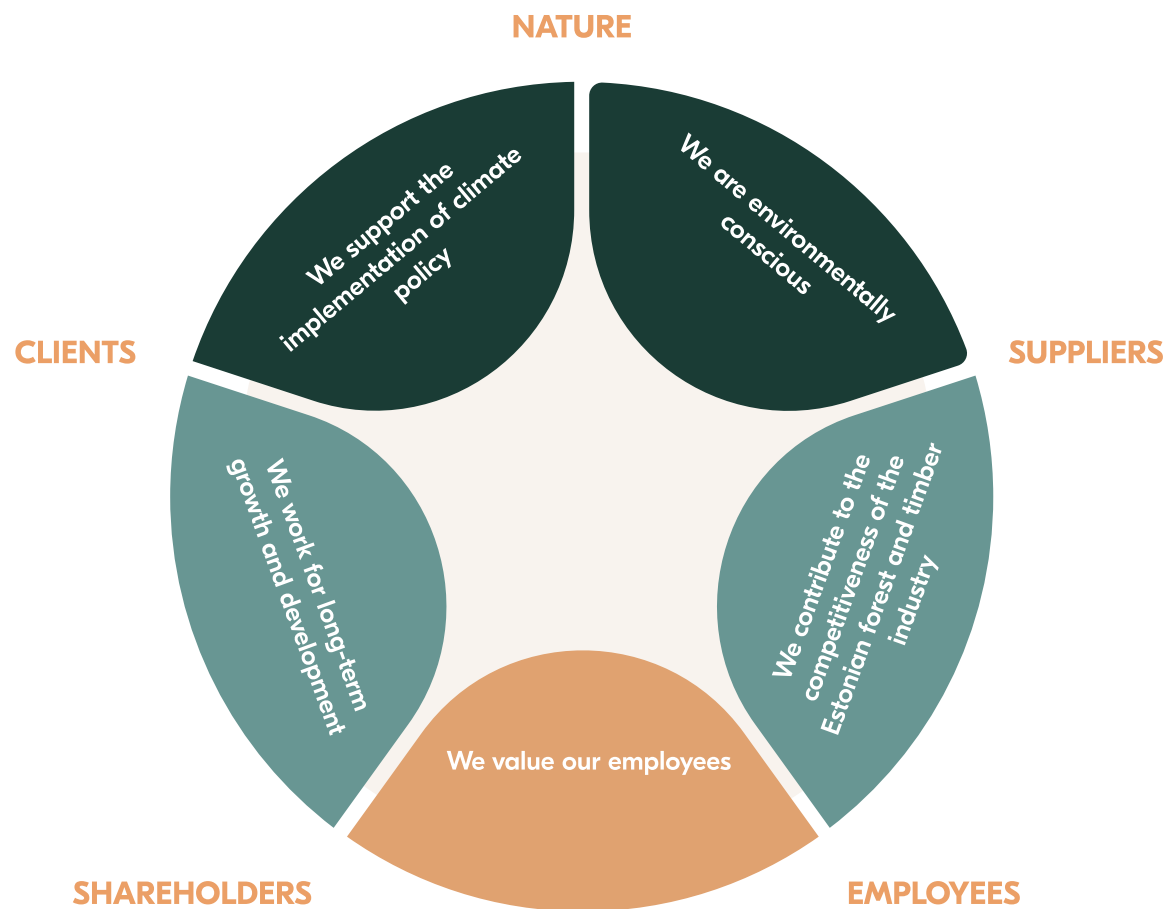
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Sustainability strategy



Our strategic directions on sustainability



- **We are environmentally conscious and therefore pay attention to our resource efficiency, emissions and waste management.**

We are resource efficient and committed to sustainable solutions starting from the use of green energy and the establishment of our own solar farm 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 and even negative emissions. A vision that is in line with the EU's Fit for 55 package

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

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

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

In order to move 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 the created jobs.

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.

At Warmeston we value:

FLEXIBILITY
in solutions



TRANSPARENCY
in actions



RELIABILITY
in cooperation



Our commitment to Sustainable Development Goals of the UN

Goal

Our contribution



Despite the economic turbulence and raw material shortages, the year 2022 ended with Warmeston's 2nd highest production volume in its history: > 440 000 mt. We have directed our focus toward supplying combined heat and power (CHP) plants to ensure that the pellets are used in energy-efficient production. Despite the decreased production volume, we prioritize the residential market and managed to increase premium pellets' share of the total output and sold volume.



Last year we made changes to improve the daily operations of our company by reviewing employment contracts and job descriptions. We want our employees to feel more secure during these economically challenging times. We provided our employees with access to employer health insurance and sports facilities, recognizing the importance of promoting healthy lifestyles and ensuring their overall well-being. At Warmeston we believe in investing in our employees and supporting their health, both inside and outside of the workplace.



In 2022 we took multiple steps toward further increasing our operational efficiency and production reliability. Besides adding and replacing physical assets (such as a pelletizing press, loader, and warehouses), our main avenues for increased performance were digitalization and automatization. One of the more notable examples is our new digital gate which utilizes a LoadMon solution that scans the incoming trucks and the raw material within to get accurate data on the material's volume characteristics.



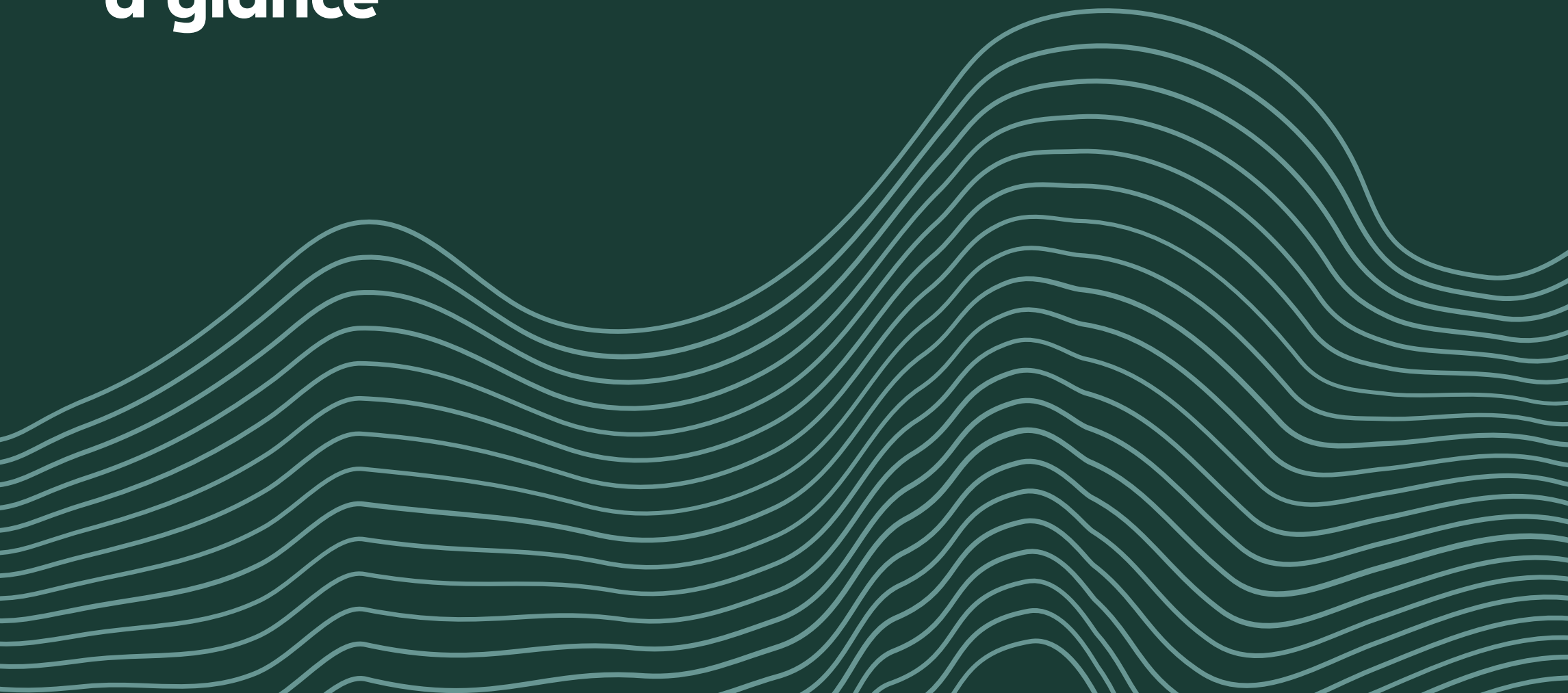
Besides producing renewable fuel, we also generate and use renewable energy. In addition to the fully operational 1.3 MW solar park on Sömeru factory's premises, in 2022 we finalized the planning stage of two additional solar parks: in Järvere (1 MW) and Purila (0.75 MW). This means that Warmeston's renewable energy output will be more than doubled. Both parks are due to be established in 2023.



Nature's health and well-being are of high importance to Warmeston. Besides having strict rules in place to refrain from sourcing our material from high conservative value areas such as Woodland Key Habitats, Natura 2000 Forest Habitats or natural sacred sites, we also give our best effort to ensure the continuation and good health of the forest ecosystems by actively participating in post-harvest regeneration.



**Warmeston at
a glance**



Warmeston's journey

The journey of Warmeston OÜ begins with its establishment in 2003 and gains momentum in 2010 when the first factory was established in Sauga. On three consecutive years from 2013, Sõmeru (Ardor), Järvere and Purila factory were opened. Warmeston acknowledges its role in global energy transition, so sustainability has played an important role in the company right from the early years.

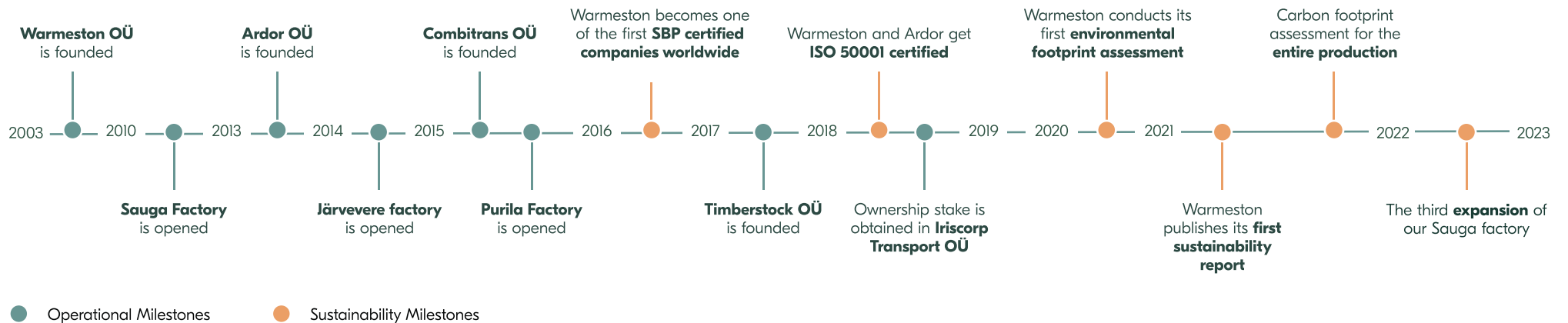
In 2016, when biomass sustainability had not yet caught everyone's attention to the extent it has now, Warmeston was among the first 10 companies worldwide and the first in

Estonia to become SBP (Sustainable Biomass Program) certified.

This proved to be the right direction, as Commission has recognized it under the new sustainability framework as a credible way to demonstrate compliance with the revised Renewable Energy Directive (RED-II). Moving ahead to 2018, Warmeston implemented the ISO 50001 certified energy management system which ensures increasing energy efficiency through a continuous process of monitoring and improvement.

Understanding the importance of knowing one's impacts, we carried out a carbon

footprint assessment in 2020 for our industrial pellet production as the first stage of our commitment to monitor our sustainability performance and report it transparently. This report presents the results of the RED-II aligned carbon footprint assessment for the year 2022 and covers our whole pellet production. Connected to the EU Corporate Sustainability Disclosure Regulation (CSRD) which will enter into force in 2024, we will gradually start implementing the regulation's requirements into our subsequent sustainability reports.



Warmeston's pellet production

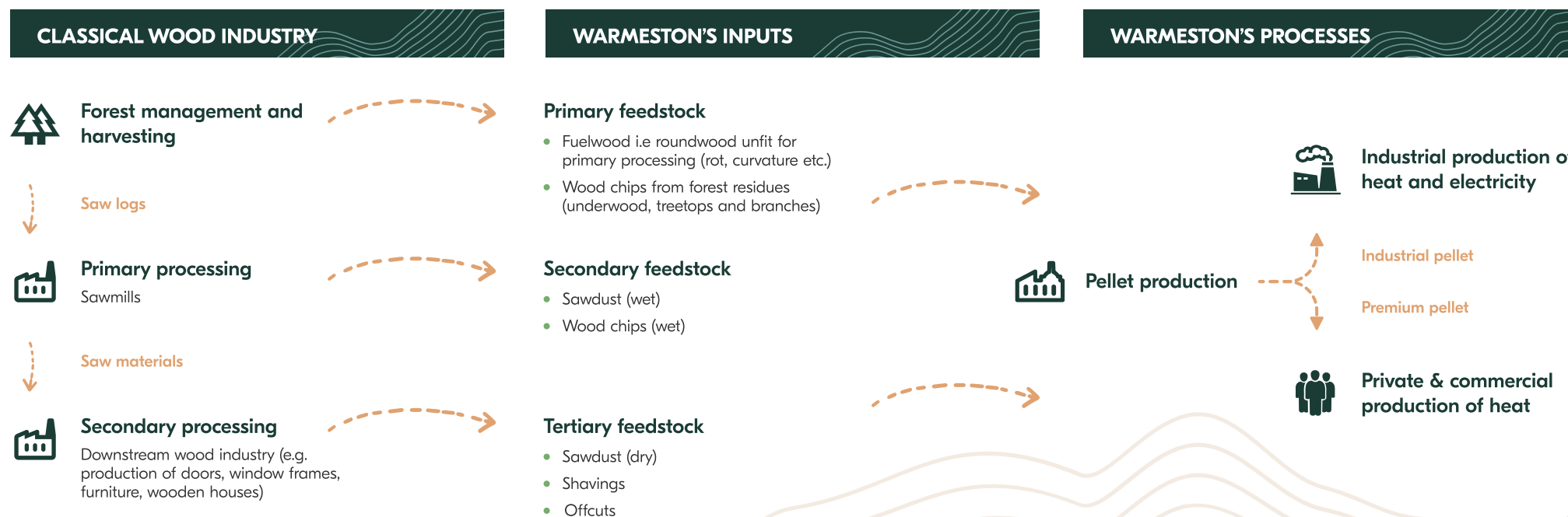
Warmeston produces pellets by converting both forest and wood industry residues into energy efficient biofuel. The part of our feedstock that comes directly from the forest (forest residues) consist of low grade and low-value forest-based biomass which is unfit for primary processing due to reasons such as defects, diseases or curvature. The wood industry provides us their residues such as sawdust, wood chips, shavings, and offcuts.

As these feedstock groups do not have any other major application in Estonian wood industry, we enable our suppliers to commercialize their residues, thereby contributing to the competitiveness of the Estonian forest and wood industry as well as to job creation in rural areas.

Two different categories of pellets are produced from the feedstock. 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 helps combating climate change.

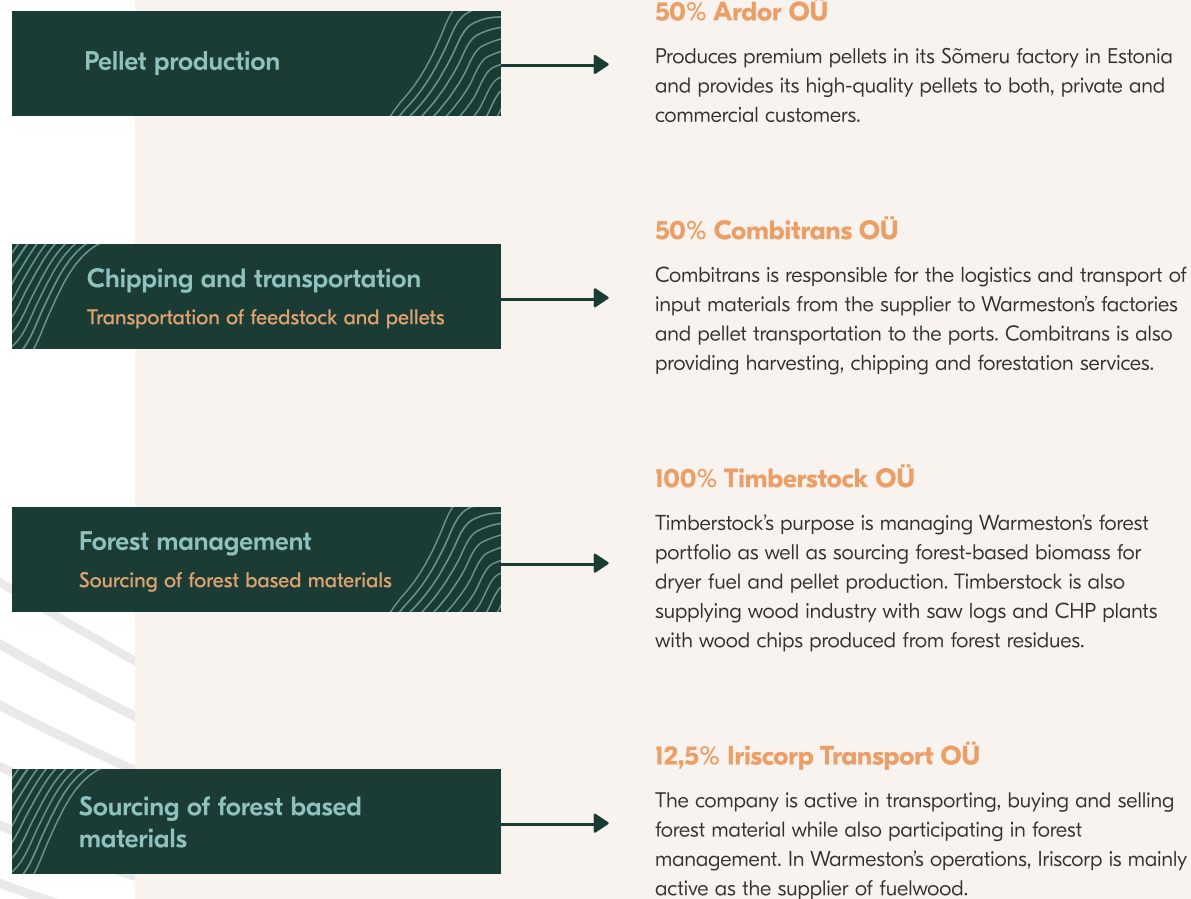


Warmeston's organisational structure and process flow

Warmeston's organizational structure is composed of Warmeston OÜ and four associated companies 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, service provider 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.

Pellet production

Warmeston OÜ operates three pellet factories in Estonia: Sauga, Purila and Järvere.

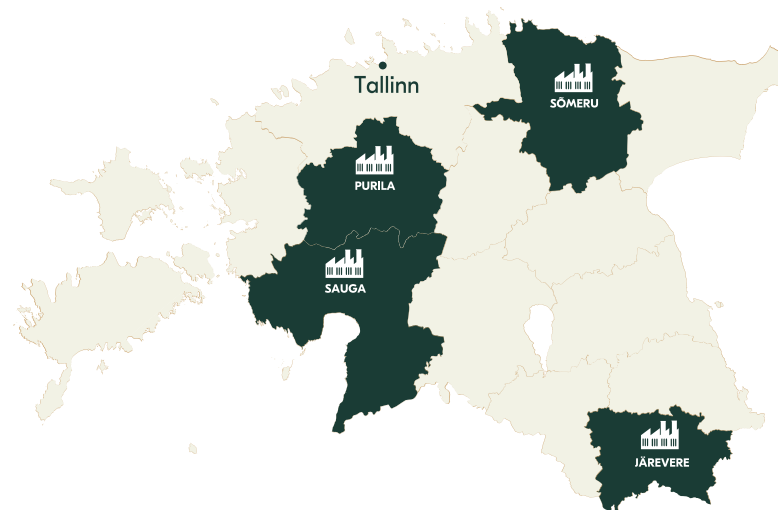


Our pellet factories

Warmeston's pellet production takes place in four factories located all over Estonia. Our largest factory – Sauga – with its 210 thousand metric ton annual production capacity is located in southwestern Estonia in Pärnumaa. Purila factory is located in central Estonia, in Raplamaa, while Järvere and

Sõmeru factories are in southern and northern part of the country, respectively. The location advantage of Sauga and Sõmeru factories is their proximity to the port, whereas Järvere factory is close to its raw material. Purila balances both of these aspects.

Purila and Sauga factories produce industrial-class pellets while the premium pellets are manufactured in Sõmeru. Järvere factory is unique as it is the only factory equipped with a pellet bagging line as well as it has the capacity to produce both, industrial and premium pellets which provides an additional production reliability for long-term offtake contracts.



SAUGA FACTORY

Entry into operation: 2010
Maximum production capacity: 210 kT
Quality: I2, ENplus A2
Products: 6 mm industrial pellets
Employees: 29
Main input categories for production:
 Primary feedstock (42%)
 Secondary feedstock (44%)
 Tertiary feedstock (14%)

SÕMERU FACTORY

Entry into operation: 2013
Maximum production capacity: 90 kT
Quality: ENplus A1
Products: 6 mm Premium-class pellets
Employees: 12
Main input categories for production:
 Tertiary feedstock (100%)

JÄRVERE FACTORY

Entry into operation: 2014
Maximum production capacity: 115 kT
Quality: I1, I2, ENplus A1 and A2
Products: 6 mm industrial and Premium-class pellets
Employees: 21
Main input categories for production:
 Primary feedstock (15%)
 Secondary feedstock (59%)
 Tertiary feedstock (26%)

PURILA FACTORY

Entry into operation: 2015
Maximum production capacity: 100 kT
Quality: I2, ENplus A2
Products: 6 mm industrial pellet
Employees: 21
Main input categories for production:
 Primary feedstock (56%)
 Secondary feedstock (39%)
 Tertiary feedstock (5%)

The value of Estonian-sourced wood

The vast majority (98,7 %) of the Warmetson's raw material is sourced locally, from Estonia. Besides minimising the raw material's

transport demands, Estonian-sourced wood provides a significant contribution to the overall sustainability of Warmeston's pellets.

- About 54% of Estonia's land is covered with forest and the forest area has been expanding steadily since the 1950s.
- Estonia's forests are managed sustainably, meaning that the forests and forest land are used in a way which maintains their biodiversity, productivity, regeneration capacity and vitality.
- Nearly 66% of Estonian forests are under third party certification, by FSC (Forest Stewardship Council) PEFC (Programme for the Endorsement of Forest Certification) or both.
- Transparency International ranks 180 countries and territories around the world by their perceived levels of public sector corruption by assigning a Corruption Perceptions Index (CPI). The results are given on a scale of 0 (highly corrupt) to 100 (very clean) and as of 2022, Estonia is holding a remarkable 14th rank with its CPI score of 74. This gives a high confidence that doing business with Estonian suppliers means that business is done fairly and ethically.



Our pellets



Production of industrial pellets (Warmeston)

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.

Factories: Sauga, Järvere, Purila

Clients: Power and CHP plants

Quality: II, I2 and ENplus A2

Production volume in 2022: 339 911 tonnes



Production of premium pellets (Ardor and Warmeston)

Premium pellets meet the highest quality requirements and are supplied with a consistently light color. They have a residential or commercial use where pellets are burned in pellet stoves or boilers for heating.

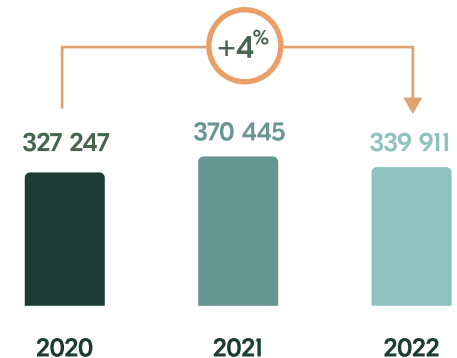
Factories: Sõmeru, Järvere

Clients: private consumers and commercial entities producing heat in pellet boilers

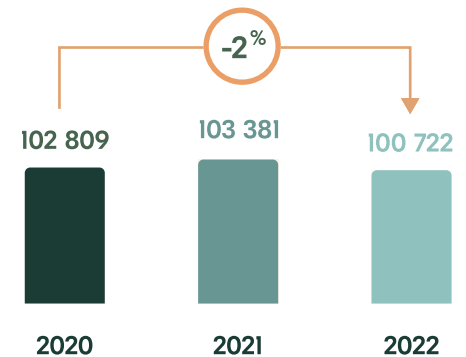
Quality: ENplus A1

Production volume in 2022: 100 722 tonnes

WARMESTON'S INDUSTRIAL PELLET OUTPUT, 2020-2022, tonnes



WARMESTON'S PREMIUM PELLET OUTPUT, 2020-2022, tonnes



Forest renewal through tree planting

Estonia's forest renewal projects are managed by Warmeston's affiliate Combitrans which uses three unique Risutec machines to carry out the planting. These professional machines allow for an increased agility and efficiency, demonstrating the direct results of our constant quest for more innovative solutions.

The main advantages of our specialized machines are:

- Higher success rate
- GPS tracking
- Flexibility
- Documentation of planted trees
- Lower cost per hectare
- Increased efficiency compared to using excavators

Forestation (Combitrans)



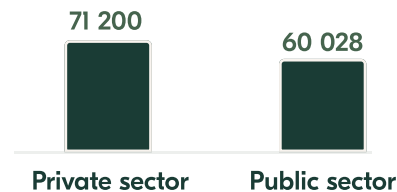
Equipment: 3 Risutec PM tree planting machines

Clients: State and private forest owners

Maximum planting capacity: 1 200 000

In 2022, Combitrans planted 131 228 trees helping to regenerate forest on approximately 60 ha of forest land.

THE NUMBER OF TREES PLANTED BY COMBITRANS IN 2022



In addition to Combitrans, Warmeston's affiliate Iriscorp Transport planted 55 500 trees on over 28 hectares.





Our development 2022

Similarly with many other businesses, the year 2022 demanded additional flexibility and new solutions from Warmeston. Amidst the ongoing energy crisis and Russia's invasion of Ukraine, the economy's slow-down had a ripple effect on the building sector which saw a reduction in wooden material demand. This, together with higher prices for energy and raw material resulted in a strong decrease in the wood industry's production volumes, directly affecting our feedstock profile.

Despite the last year's uncertainties, we were able to continue our investments to improve our production capacity and operational efficiency. On the production side, we continued with our efforts in the Sauga factory where we installed a new pelletizing press and acquired a new wheel loader. These additions enabled to increase the factory's maximum production volume as well as production stability. Another important development was the replacement of Järvere factory's automation system to proactively mitigate the potential risks that may arise from aging hardware. In Järvere and Sõmeru, various storage facilities were built and upgraded to

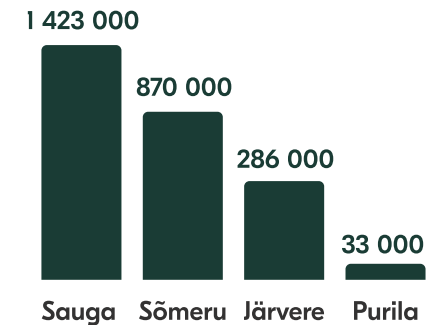
provide additional warehousing capacity and ensure raw material and pellet storage at optimal conditions. In Sõmeru factory, we installed a power generator that ensures a sufficient power connection for office and auxiliary systems in case of power outages. From the organizational side, we moved the blowing truck department under Ardor OÜ, which already provided the main sale volume. We believe that this will increase efficiency and allow us to build an even better service for supplying the local market.

In 2021, influenced by our Sõmeru factory, we initiated new renewable energy projects in other factories, by first mapping the solar energy potential of the surroundings. In 2022, our solar energy projects reached to a positive investment decision and the construction of the 1MW and 0.75MW solar parks in Järvere and Purila factories, respectively, will start in 2023.

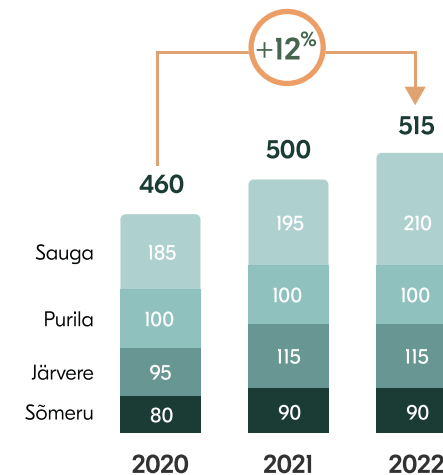
All in all, despite the challenging circumstances, Warmeston continued to grow and develop. Last year we created three new job positions in our head office: purchasing

manager, quality specialist, and logistics manager. Furthermore, we decided to (re)open an office in Tallinn.

2022 INVESTMENTS BY FACTORIES, €



MAXIMUM PRODUCTION CAPACITIES OF OUR FACTORIES
thousand tonnes/year



Digital innovation

We place high importance on operational efficiency – be it in manufacturing processes or day-to-day activities in the office and beyond. Connected to this, digitalization and automatization have been our strategic priorities for the past few years. In 2022 we continued our efforts and are happy to say that they resulted in quite a few advancements.

SOURCING & TRANSPORT

In Sauga factory, we built a digital LoadMon gate that scans the trucks and the raw material within, when entering the premises. In addition to receiving an image of the sourced material, the software measures the exact volume of each delivery, thereby substantially increasing load measurement accuracy. In 2023, we will assess the feasibility of the same investment in the Järvere and Purila plants.

The use of this digital gate enables us to record each incoming load to our warehouse database Toora 2 which aggregates all the factory's systems under one platform.

Furthermore, this data is also made available to our suppliers, thereby making raw material sourcing more transparent, accurate, and reliable – values that are central to Warmeston's activities.

We also improved our digital waybill system which now uses QR codes to recognize and connect different measurement results with the deliveries. Compared to the previous version which made use of physical NFC cards, the new setup is more accurate and reliable.

MANUFACTURING

We have been utilizing drones for scanning our feedstock piles for faster, more accurate and flexible inventory management. Last year, a few of our staff members were trained in drone flying, meaning that we now have an in-house capability in this field.

We implemented a new Enterprise Resource Planning (ERP) system Odoo. The main challenges were organizing the old and creating new processes, automating data entries, and interfacing with our main

software. In addition to resulting in more efficient time management and a reduced number of errors, the new system also made processes clearer and reporting easier.

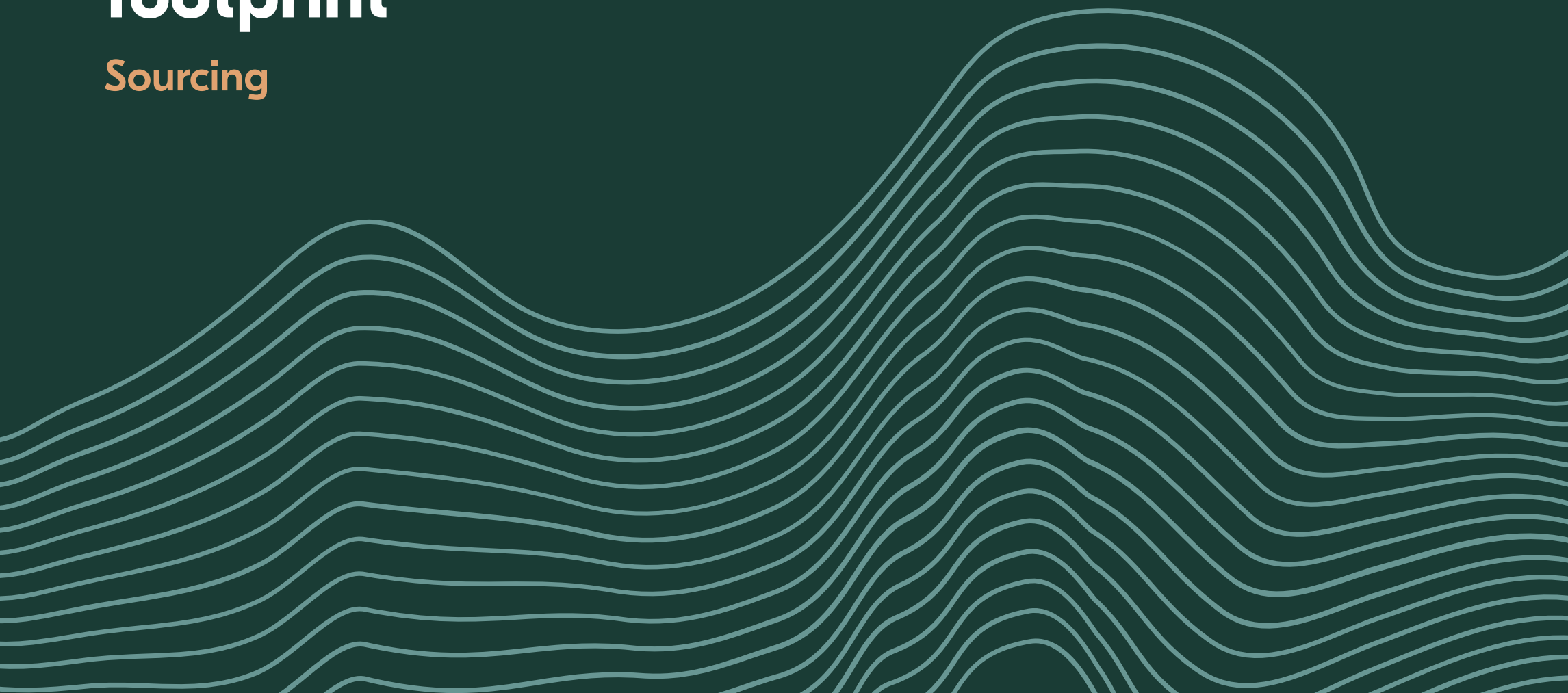
LoadMon digital gate in our Sauga factory





Our carbon footprint

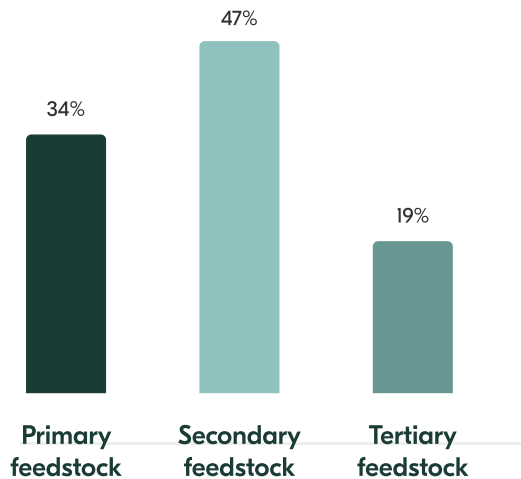
Sourcing



Overview of raw input materials

Our raw material groups can be divided into forest industry residues (fuelwood and fuelwood chips) and residues of the wood industry. The properties of these residues are being homogenized during our pellet production and the increased energy density allows for a convenient use by the end-user in converting the pellets into bioenergy and displacing the use of fossil fuels.

FEEDSTOCK PROFILE IN 2022, %



FOREST INDUSTRY RESIDUES Primary feedstock

Fuelwood



Fuelwood is also known as low-quality roundwood. It is defective roundwood, e.g., with rot, splits or curves, that would not be used outside of energy production.

Fuelwood chips



Fuelwood can also be delivered in the form of wood chips.

WOOD INDUSTRY RESIDUES Secondary and tertiary feedstock

Shavings



Residues from the planing process, consisting of fine wood particles.

Industry wood chips



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.

Sawdust



Residues 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

Offcuts



Dry pieces of wood from the wood industry (e.g., finger jointed wood production).

Decreased volume and increased energy content of pellets

Besides the final pressing stage, pellet production also involves processes such as drying and grinding the feedstock into a small fraction size. This results in a very compact end-product with significantly higher energy content per m³ compared to the raw material.



PELLETS' ENERGY DENSITY IS ON AVERAGE 3-4 TIMES HIGHER THAN RAW MATERIAL'S

When converted into pellets, the volume of material needed for 1 GJ of energy is reduced by 3-4 times, on average.

Besides simplifying the use of produced biomass for the end user, the significant increase in energy density has great implications on the downstream supply chain.

The smaller volume of distributable mass allows for a more efficient transportation and as the logistics-related activities such as transport, cargo loading etc. play an important role in the product's carbon footprint. This reduction has direct impact on the transport-related emissions.



Reliability of our supply chain

Our supply chain is robust and transparent, meeting all the legal and sustainability requirements. This is annually re-confirmed by the external

auditors of the three most established international chain of custody certification systems for wood and wood-based products.

“The energy crises, war in Ukraine and the slowdown of the construction sector caused among many other complications significant challenges in our supply chain. As a result, we needed to restructure our feedstock profile, adjust our sourcing to the new market conditions and build up new supply routes. All this without compromising our values: flexibility, reliability, and transparency.

Now a year later and thanks to the joint effort with our partners, we can proudly say we succeeded. Not only did we complete our annual chain of custody audits, but also an additional corporate social responsibility audit by one of our customers without any non-conformities. “



Certified since 2014

FSC® (Forest Stewardship Council®) was founded in 1993 and stands for responsible forest management around the world. The FSC Principles and Criteria provide a foundation for all global forest management standards and the FSC chain of custody certification enables a credible assurance that products which are sold with an FSC claim originate from well-managed forests, controlled sources, or reclaimed materials.



Certified since 2016

SBP (Sustainable Biomass Program) was established in 2013 and its certification system provides assurance that the woody biomass used in industrial, large-scale energy production is sourced from legal and sustainable sources, allowing companies in the biomass sector to demonstrate their compliance with regulatory requirements.



Certified since 2018

PEFC (Programme for the Endorsement of Forest Certification) was founded in 1999 in response to the specific requirements of small- and family forest owners providing independent assessment, endorsement and recognition of national forest certification systems. The PEFC chain of custody certification provides an independently verified assurance that the certified forest-based material contained in a product originates from sustainably managed forests.



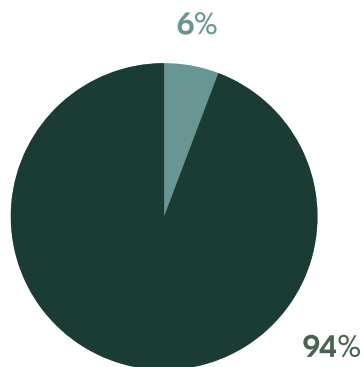
Viljo Aros, Quality and Environmental Manager

Our high expectations and thorough vetting process for suppliers

We have established reliable processes for selecting our suppliers and have strict requirements for them in place to minimize the possibility of raw material not complying with our criteria entering the value chain. All 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. Therefore, we can say with great certainty that we only use and supply biomass which is legal, sustainable and in compliance with our high standards of conducting business.

SHARE OF FSC-CERTIFIED SUPPLIERS, %

- FSC Control Programs
- FSC Certified



The minimum requirement for our raw material is compliance with a FSC Controlled Wood Standard. Building on that, **94% of our feedstock is delivered by FSC certified companies**, meaning that they have established third-party-verified procedures to avoid any use of wood products with controversial origin. The suppliers without a certificate are mainly small companies that have been trained by us and comply with the above-mentioned requirements, but who are yet to complete the necessary steps to get certified.

Before acceptance, all feedstock deliveries are controlled at the factory gate. The control procedure 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 delivered material;
- the delivered material originates from a certified chain of custody or meets the required sustainability criteria to enter our supply chain.

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

Our Code of Conduct is based on the 10 principles of UN Global Compact, covering the topics of human and labor rights, environment and anti-corruption.

Carbon footprint of raw material

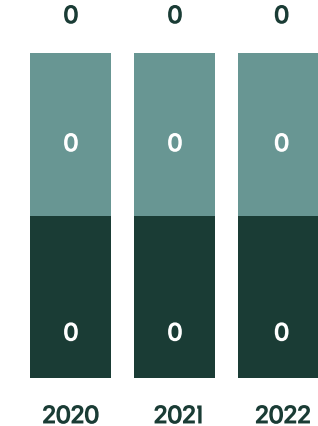
Carbon footprint analysis of the Warmeston’s pellet manufacturing starts with the feedstock. The resulting emissions have been calculated by following the RED-II which categorizes the raw material used by Warmeston into residues originating from the forestry and wood industry. According to the directive’s default emission values, there are no emissions associated with the sourcing of residual wood.

Due to the fact that 100% of Warmeston’s raw material is comprised of residue, the carbon footprint of this first stage is zero.



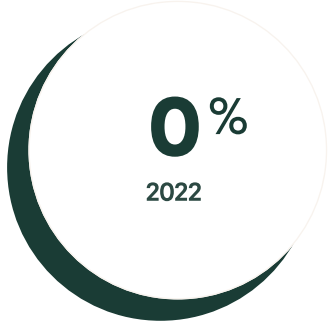
“RESIDUE” means a “substance that is not the end product(s) that a production process directly seeks to produce; it is not a primary aim of the production process, and the process has not been deliberately modified to produce it” *

WARMESTON’S PELLET EMISSIONS FROM RAW MATERIAL CULTIVATION, gCO₂e/MJ



- Wood industry residue
- Forestry residue

SHARE OF TOTAL EMISSIONS CONTRIBUTED BY RAW MATERIAL CHAIN







NACHI

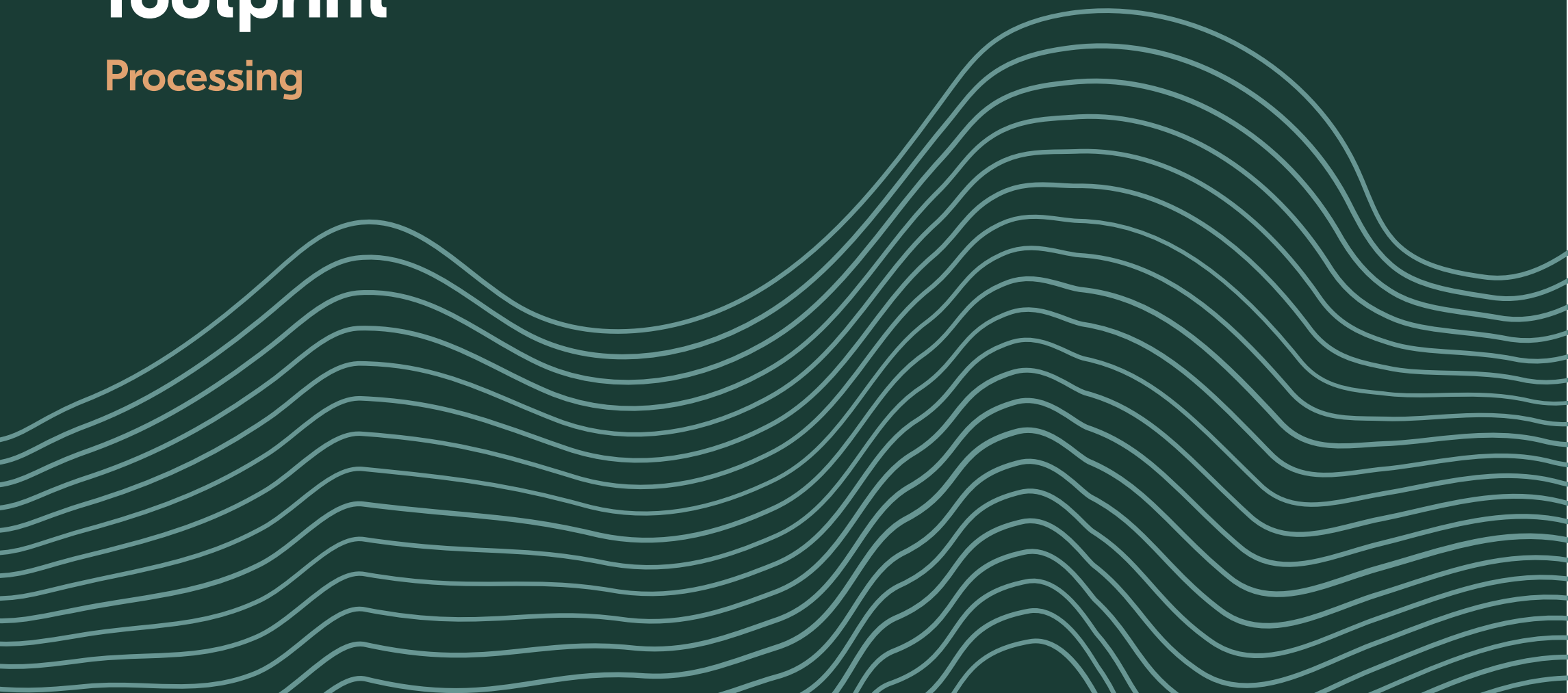
FISKER

PREMIUM WOOD PELLETS
7000
A-pellet

PREMIUM WOOD PELLETS
7000
A-pellet

Our carbon footprint

Processing





Our pellet production process

Our production process can be roughly divided into four stages — chipping, drying, grinding and pressing.

Firstly, fuelwood is chipped with a mobile chipper either in the factory or in the forest, prior the delivery.

After this, all wood chips are fine chipped with a stationary chipper to give the feedstock a suitable fraction size for further processing. The used inputs are diesel fuel in the mobile chipper and/or renewable electricity in the stationary fine chipper.



Mobile chipping

Diesel fuel*

Mobile chipper processes fuelwood to wood chips with a fraction size of up to 50 mm. This is done either at the harvesting site or at the factories and is necessary to prepare the material for the next production steps.



Fine chipper

Diesel fuel*, Renewable electricity

All different input groups besides sawdust are processed in stationary fine chippers to achieve a particle size of less than 20 mm. This results in a fine homogenous biomass ready for thermal drying.

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

Our pellet production process



Thermal drying

Biomass

All feedstock with a moisture level above 15% (forest and industry wood chips, wet sawdust) is dried in a drum dryer to achieve the moisture level of ca. 10%.



Grinding

Electricity

After drying, the feedstock enters a hammer mill for grinding which further reduces particle size.



Pressing

Electricity

Having achieved the desired particle size, the biomass is ready to be compressed into pellets.



Cooling

Electricity

As the pellets are very hot from the compression process, they need to be cooled. This is done in counter flow air coolers where the cooling medium is the outdoor air.

Pellet production process creates two types of residues.

- **Ash** is a residue of burning the biomass in the dryers. In 2022, all factories combined generated over 350 metric tonnes of ash, 100% of which was recycled into a lime fertiliser which helps to fight soil acidification and provides plants with micronutrients. The ash management has been outsourced to a licensed external company.
- **Flue gas emissions** from the dryers are proportional to the volume of biomass used in the dryers. We report our emissions quarterly according to our environmental permits and maintain our furnaces and emission control equipment on a regular basis.

Carbon footprint of Warmeston's pellet production

In contrast to the previous stage where emissions were derived from RED-II default values, the carbon footprint of pellet production has been calculated based on Warmeston's actual production activities and used resources.

The carbon footprint assessment of the production phase includes chipping and pellet production which involves drying, grinding, pelletizing and few other inputs/activities (e.g., transportation within the production area, used water and starch).

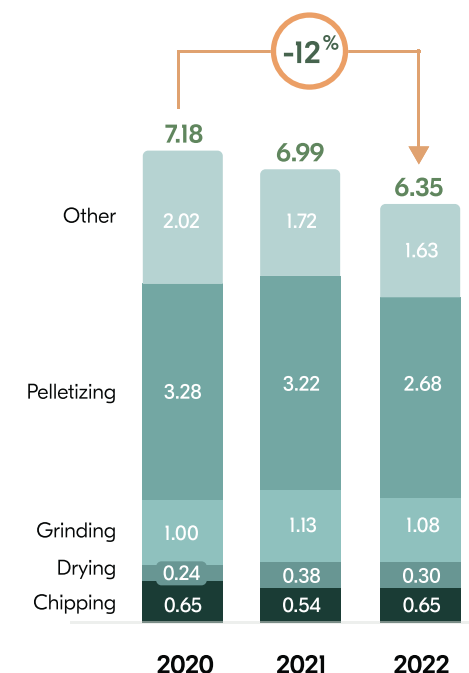
The most significant contribution to this stage's emissions come from pelletizing, which contributes about 40% to the total production footprint. It should be noted that 100% of the used electricity in Sauga, Purila and Järvere is from renewable sources.

But according to the RED-II requirements, the use of renewable energy which has been purchased from the grid cannot be considered in the carbon footprint calculations, making the electricity-intensive processes such as pellet pressing seem more emission-intensive than in real life. When accounting for the used renewable energy, then the 2022 emissions for this stage would be **more than 4 times smaller: 1,46 gCO_{2e}/MJ.**

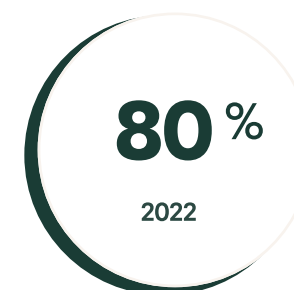
Compared to 2020, the emissions from pellet production have decreased by roughly 12% in 2022. This is mainly attributable to efficiency improvements within the production processes as well as the decrease in Estonia grid electricity's emission factor.

Chipping is the only stage where emissions have increased from the previous year. This is due to the changed feedstock profile – a larger share of primary input results in additional chipping need and associated emissions.

WARMESTON'S PELLET EMISSIONS FROM THE PRODUCTION STAGE, gCO_{2e}/MJ



SHARE OF TOTAL EMISSIONS CONTRIBUTED BY PELLET PRODUCTION





A-pellet

PREMIUM WOOD PELLETS

15 KG / Ø 6 MM

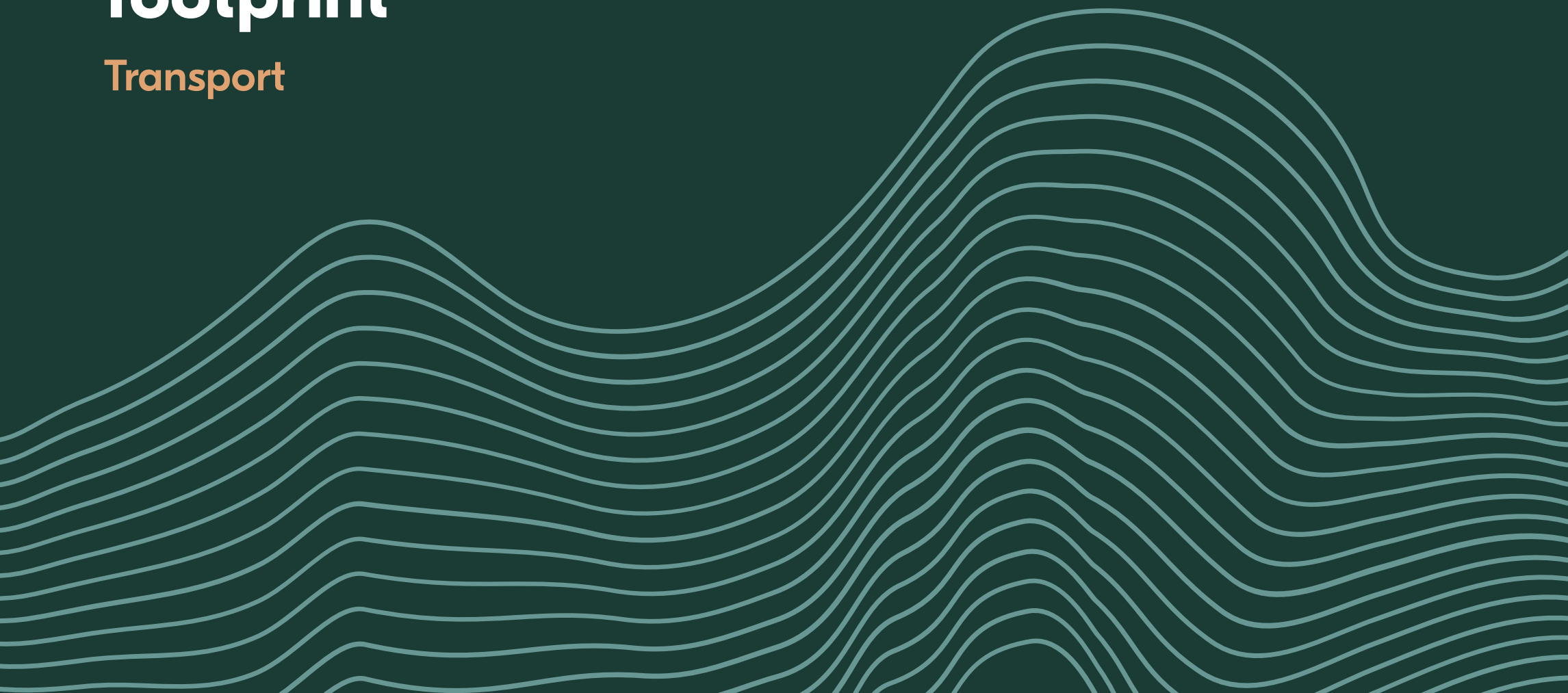
Tonni / Producer / Produttore / Producteur
Peltelley / Producent / Tilvækkere / Vabrikatale
Wärmeston OÜ
Magasini 3.4, P. 1005 Tartu, E. 10101
www.warmeston.ee





Our carbon footprint

Transport



Raw material journey from our suppliers to our factories

Besides one small Latvian sawmill near the Estonian border and two shipments of roundwood from Finland in 2022, 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 in terms of sustainable forest management.

We pay great attention to optimizing our supplier network to keep the raw material chain as short as possible to lower the cost to the environment and increase the flexibility and efficiency of the factories' operation.

RAW MATERIAL'S JOURNEY TO THE FACTORIES. WEIGHTED AVERAGE DISTANCE, 2022

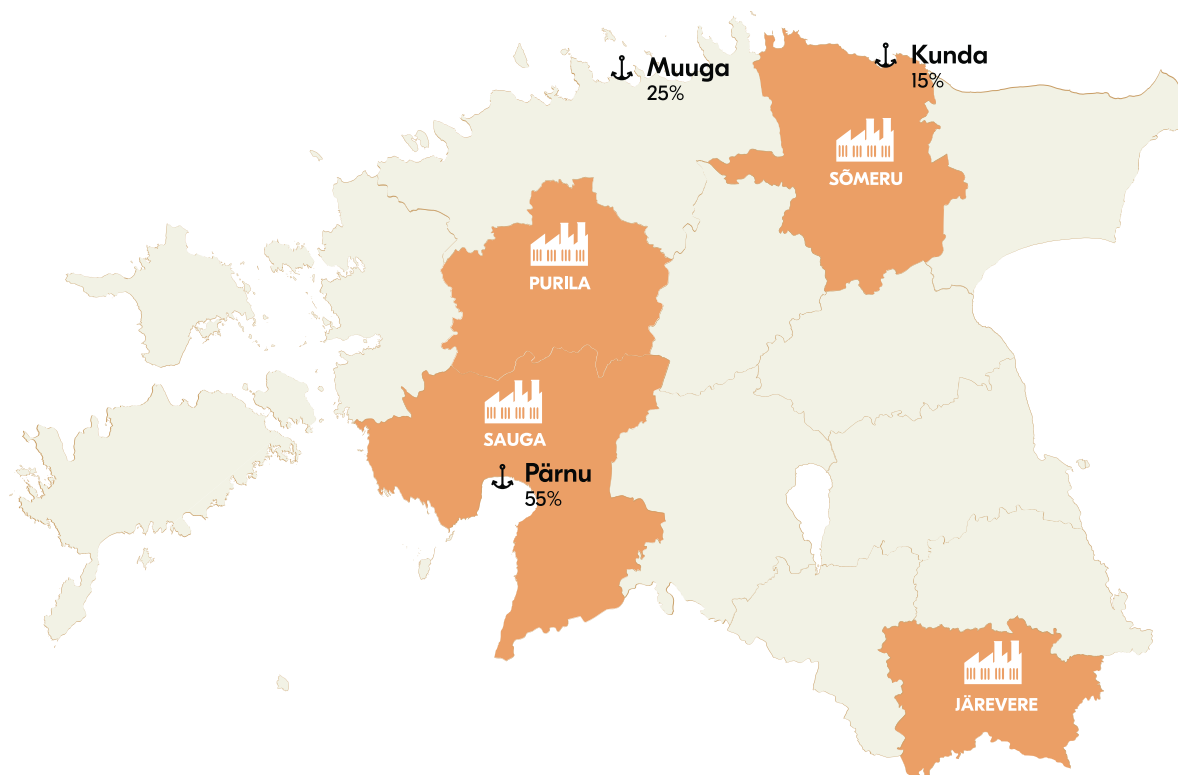




Finished product's delivery to ports

Once the pellets are ready for storage, they are transported from the factories to one of the three Estonian ports Warmeston uses: Pärnu, Muuga or Kunda. Sauga, Purila and Sõmeru ship only from the ports closest to their respective factories while Järvere pellets are shipped from all our ports.

Pellets are transported from the factories to the ports by Warmeston's affiliate Combitrans OÜ. Our trucks run on diesel fuel but connected to our pilot project, Purila-Muuga route is serviced by an LNG-powered truck.

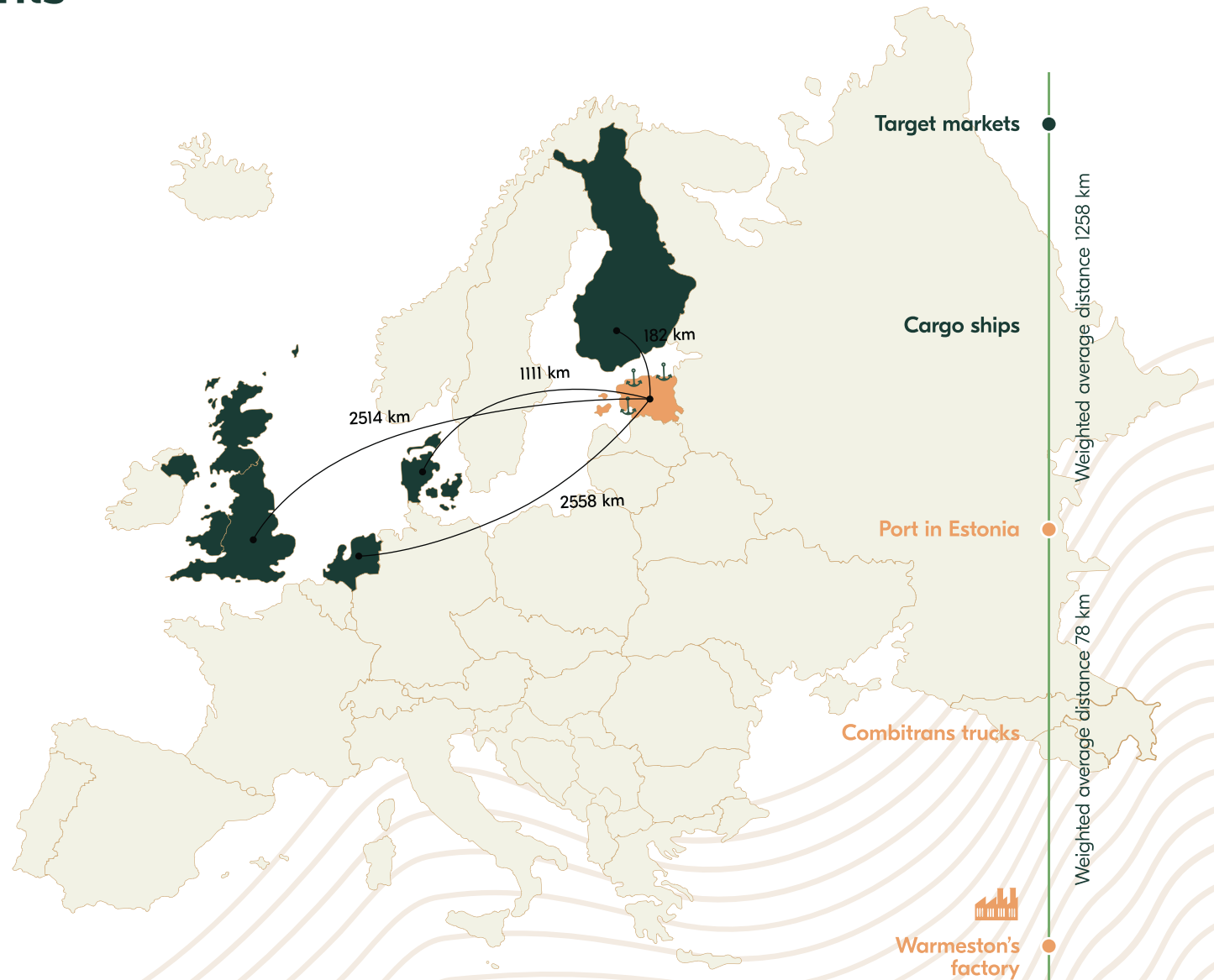


Pellets' journey to the clients

Once the pellets have been transported to the ports, they are delivered to our customers by coasters (3-10kt DWT), handysize (15-35kt DWT) or by handymax (35-50kt DWT) vessels which run on marine fuel oil.

Our key clients are large-scale CHP plants that produce with high efficiency electricity and heat. The key market in 2022 was Denmark which is the second-largest European pellet importer after the UK and the largest on per-capita basis.¹

This is due to a strong movement away from fossil fuels and towards renewable energy sources, driven by governmental regulation and subsidies incentivizing further bioenergy uptake.²

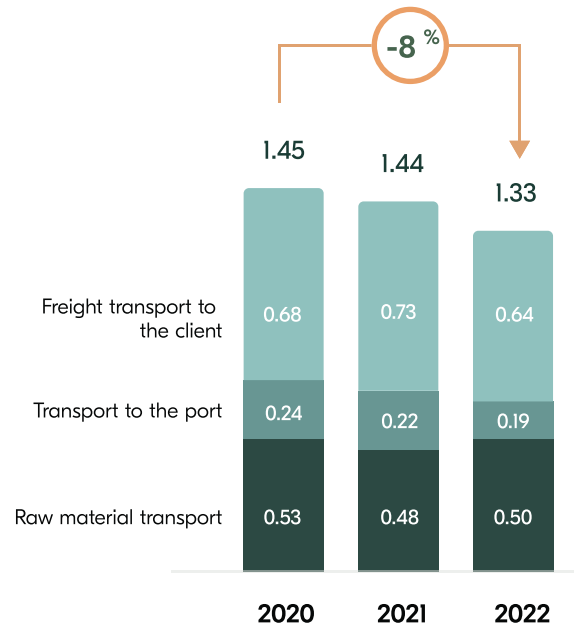


Carbon footprint of Warmeston's transportation

As for the previous stage, the emissions related to transportation were calculated by taking Warmeston-specific activities and used resources into account. The carbon footprint of the transportation includes the transport of both – raw material to our factories and manufactured pellets to the end-clients.

Compared to 2021, the clients in 2022 were located slightly closer, resulting in a 12% decrease, of the emissions per MJ. In 2022, the carbon footprint of the raw material and pellet transport comprises 17% of the total carbon emissions of Warmeston's pellet.

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



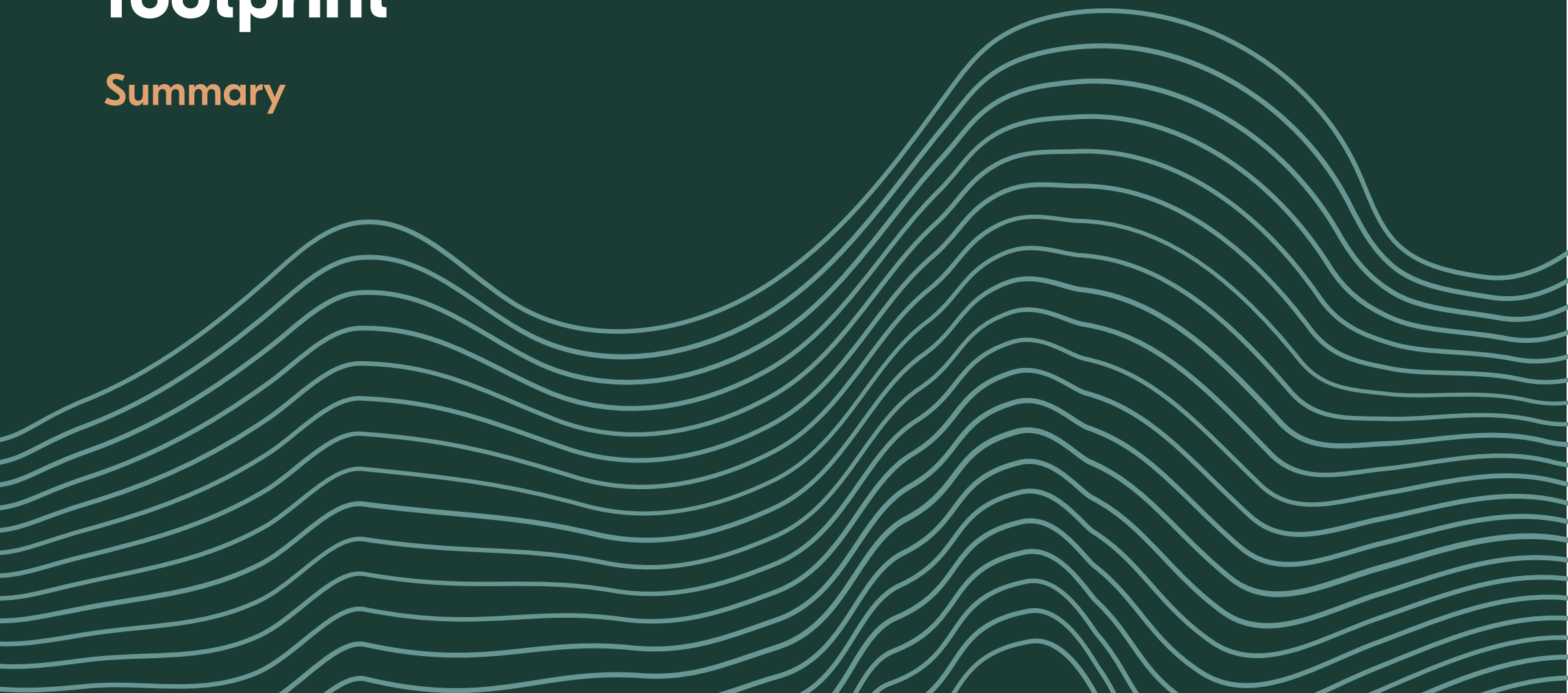
SHARE OF TOTAL EMISSIONS CONTRIBUTED BY PELLET TRANSPORTATION





Our carbon footprint

Summary



Snapshot of our pellet carbon footprint

In 2022, the carbon footprint of Warmeston's pellets amounted to 7,98 gCO₂e/MJ which represents pellets' carbon intensity in grams of carbon dioxide equivalent per megajoule of energy. The footprint is comprised of four general stages: raw material, production, transport and non-CO₂ emissions from the fuel in use*.

The vast majority of the emissions originate from the energy-intensive pellet production which is responsible for 80% of the total footprint. Compared to the previous year, the pellets' emissions per MJ reduced by 9%, largely due to a decrease in Estonian grid electricity's GHG emissions.

Warmeston's pellets can, and often do substitute fossil fuels and therefore play an important role in avoiding the enormous emissions associated with their use.

By replacing coal, our 2022 pellet output had the potential to avoid:

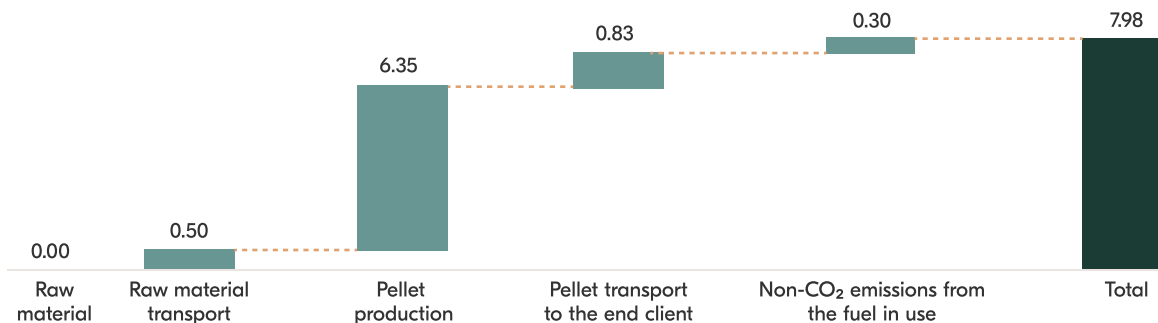


More than 295 000 t of coal being burned

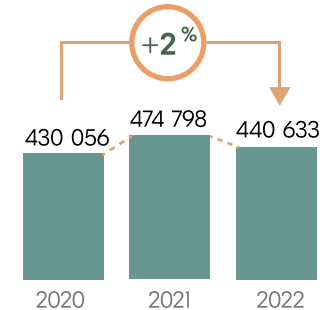


More than 879 000 t of CO₂e emissions being emitted

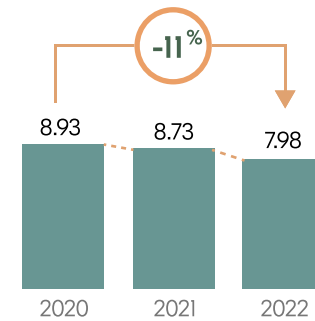
WARMESTON PELLET'S CARBON FOOTPRINT OVERVIEW BY PRODUCTION STAGES, gCO₂e/MJ, 2022



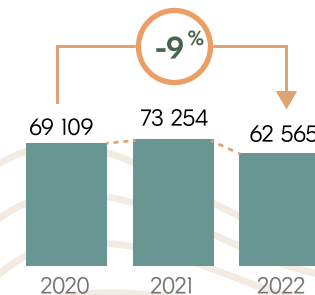
WARMESTON PELLET OUTPUT
2020-2022, t



WARMESTON PELLET'S CARBON EMISSIONS IN 2020-2022, gCO₂e/MJ



WARMESTON PELLET'S CARBON EMISSIONS IN 2020-2022, tCO₂e



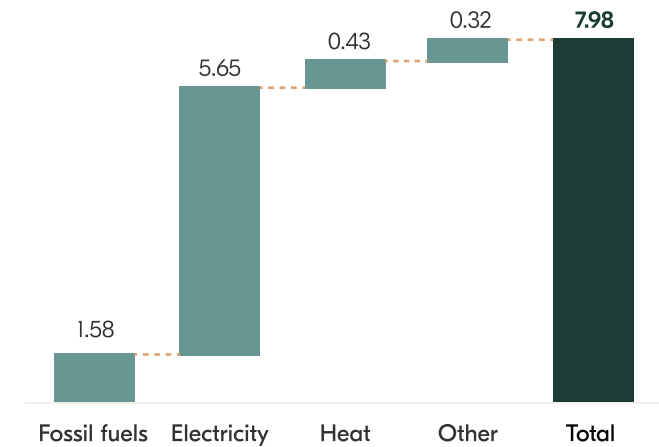
Carbon footprint sources

When considering the various energy sources contributing to the total carbon footprint, it is clear that electricity plays the biggest role, being responsible for more than 70% of the impact.

Looking at the factory-specific results, it is clear that the premium pellet factory in Sömeru has the smallest emission intensity per MJ: 5,89 gCO_{2e}.

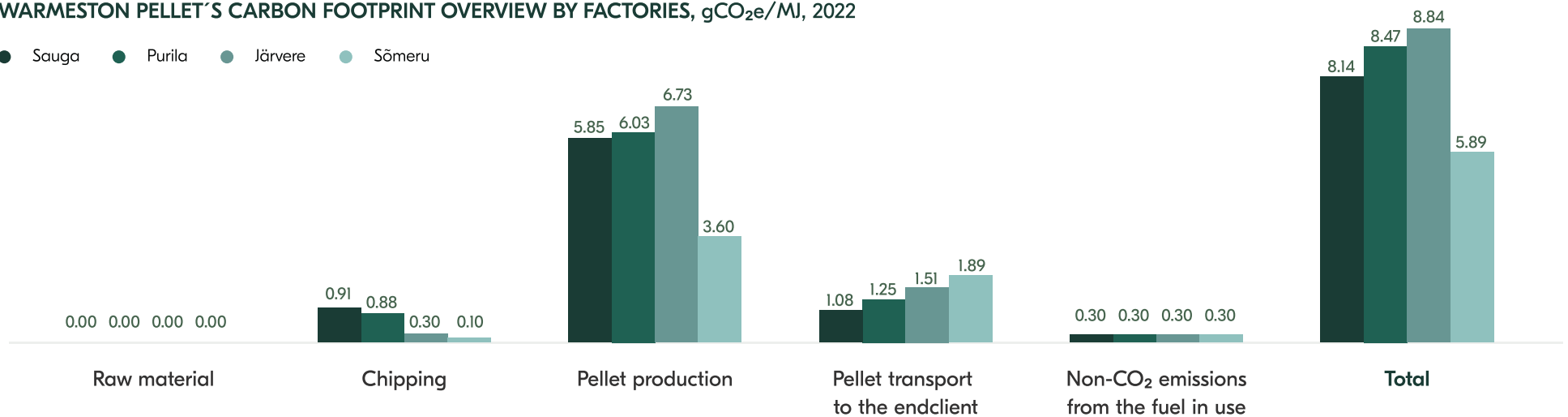
The main cause for this can be found in the used feedstock – as the raw material is already dry and only a small fraction of it needs to be chipped, it requires less processing, i.e. less resources and results in 40% reduced production-associated emissions compared to the other factories.

WARMESTON PELLETT'S CARBON FOOTPRINT OVERVIEW BY PRODUCTION STAGES, gCO_{2e}/MJ, 2022



WARMESTON PELLETT'S CARBON FOOTPRINT OVERVIEW BY FACTORIES, gCO_{2e}/MJ, 2022

● Sauga ● Purila ● Järvere ● Sömeru



RED-II in the context of the findings

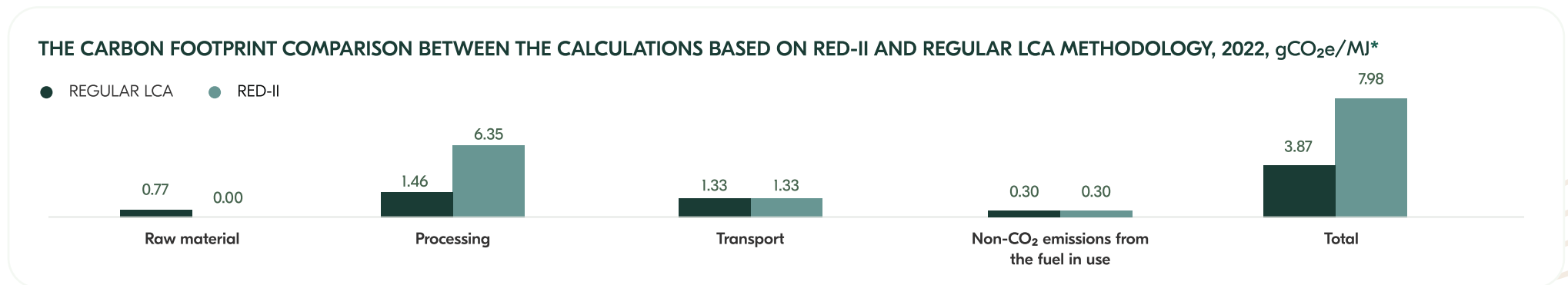
Like already mentioned earlier, the presented carbon footprint results for 2022 were calculated according to the RED-II which divides the impact categories between four groups, as shown below. In order to ensure that the calculated results are as reflective of real life as possible, the total carbon footprint of Warmeston’s pellet production is a mix between the default values provided by the directive and Warmeston-specific calculations:

Here it is important to note that due to the RED-II requirements, the renewable electricity used in Warmeston’s operations was not allowed to be included in the analysis - instead, an emission factor for Estonia’s average electricity was used. Therefore, despite the fact that 100% of the electricity demand in Sauga, Järvere and Purila are met with renewable electricity, while Sõmeru

factory uses the solar energy generated on the site, used renewable electricity has not been accounted for in the GHG calculations.

For the sake of transparency, a separate carbon footprint assessment which accounts for the use of renewable energy was also carried out. In that case, the total carbon footprint of Warmeston’s pellet production in 2022 would be reduced by half, to 3.87 gCO₂e/MJ. This is an important aspect to highlight as it demonstrates the significant emission reduction that Warmeston has achieved through its conscious move towards renewable energy in all of its factories.

Impact category	Basis for calculations
Cultivation	Based on the RED-II default values
Processing	Based on the actual input data from Warmeston
Transport	Based on the actual input data from Warmeston
Non-CO ₂ emissions from the fuel use	Based on the RED-II default values



45 *In the given context, regular Life Cycle Assessment (LCA) includes the same inputs and activities as the calculation based on RED-II, but also considers the share of renewable energy used in the production processes.





**Our employees,
communities and
society**

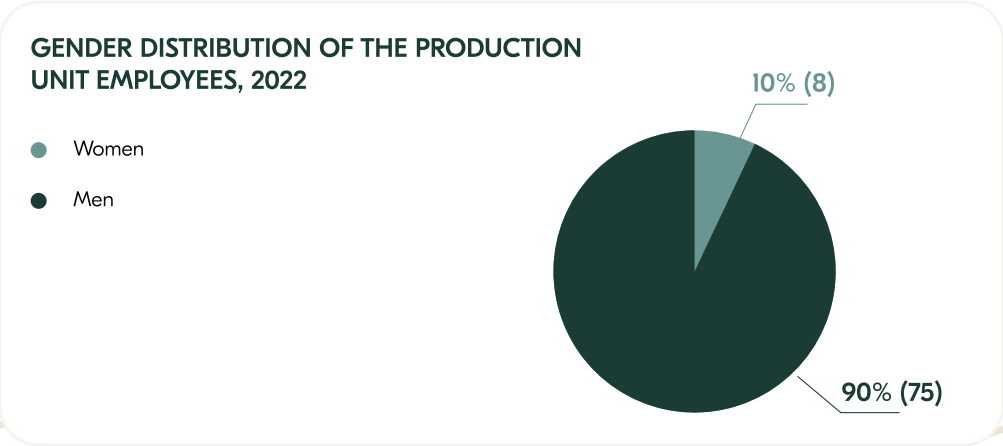
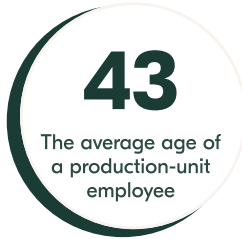
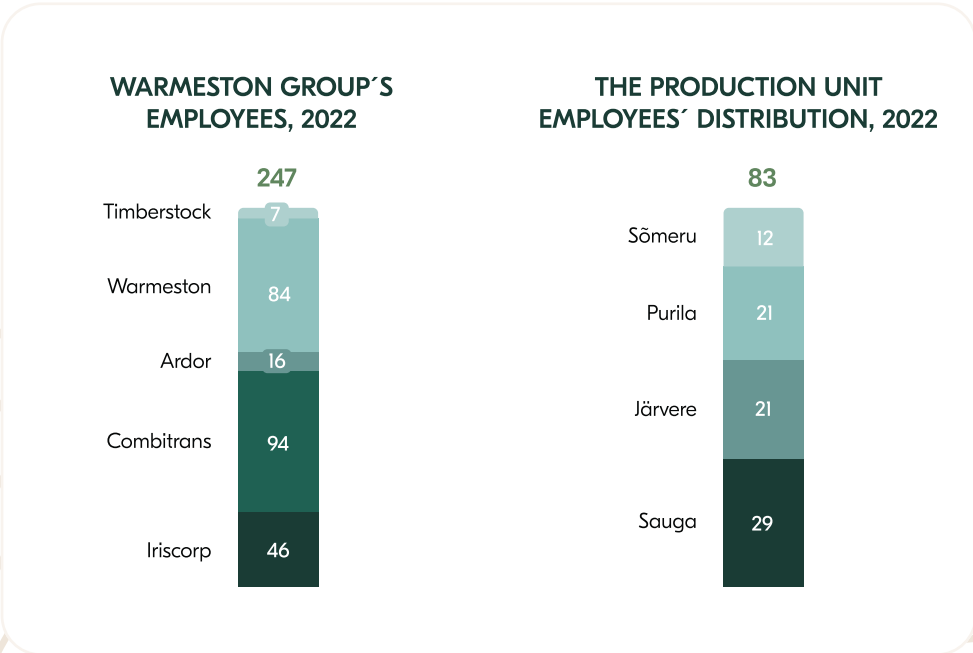


Overview of Warmeston's people

By the end of 2022, Warmeston, together with its affiliate companies, employed 247 people, often in the rural areas of Estonia. The biggest employer is Combitrans, with Warmeston coming second, employing 38% and 34% of the employees, respectively. At the end of 2022, Warmeston OÜ employed 84 people, 85% of whom were working in the three factories and the remaining in our offices in Tartu and Tallinn.

In the further analysis of our people, we will focus on the employees working in the four 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 43 years old and is well experienced, as the average employment

length of the current employees is 6 years and several having more than 10 years of experience with our plants. 75 men are working in the production units as opposed to 8 women. Therefore, women constitute just 10% of the factory employees. The average woman is 6 years younger than the average man, being 38 and 44 years old respectively.



Contribution to our people and communities

At our company, we are dedicated to making a positive contribution to our people and communities.

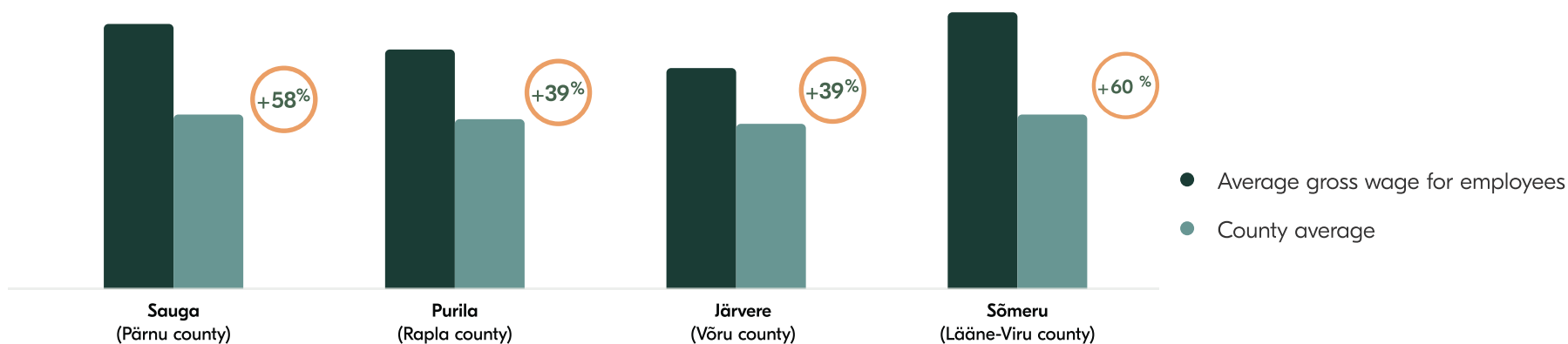
We offer our employees a meaningful and positively challenging jobs with wages up to 60% higher than the respective county averages. In addition to fair compensation, we pay great attention to our employees' health and well-being. Connected to this, in 2022 we started providing employer's health insurance which covers our employees' medical examinations and dental care, as well as provides them with a faster access to necessary specialists.

Safety is our first priority - we pay great attention to workplace safety and are strictly in line with related Estonian 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.

The year 2022 also saw the creation of three new job positions: purchasing manager, quality specialist, and logistics manager.

As many of our new as well as existing employees live in Tallinn and we wanted to provide them with a modern and convenient work setting, we also opened a new Warmeston office in Tallinn. Additionally, we updated all employment contracts with our employees to ensure their relevance in light of our new advancements.

THE LEVELS OF OUR FACTORY EMPLOYEES' GROSS WAGES (INCL. BONUSES AND THE PLANT MANAGEMENT) RELATIVE TO THEIR RESPECTIVE COUNTIES, 2022



Contribution to society

Warmeston and its affiliates place great importance on giving back to the local communities and society as a whole. Our efforts in 2022 can broadly be categorized into four themes: sport, local communities, help to Ukraine, and thought leadership.

Sport

Our charitable activities are the reflection of what our team cares about - we value physical health and believe in the importance of the examples professional athletes set. Therefore, the biggest support from Warmeston is directed towards Estonian sport – we have been a long-time supporter of teams and individuals practicing sports like basketball, football, volleyball, athletics, and horse riding all over the country. Additionally, we support the Youth to Olympics Foundation (Noored Olümpiale SA) which guides young athletes in their development. Occasionally, we join sporting challenges or social activities ourselves. For example, in the last year Warmeston's team participated in Tartu Marathon as well as the Estonian Logging

Championships 2022, the latter of which brought us a notable 2nd place.

Local communities

Each year we find various ways of contributing to our local communities. In 2022 we supported the activities of Purila MTÜ, including the memorable annual event: two bridge rally, where people compete in a rowing competition, using homemade floating vessels. As a sponsor, we provided various forms of support, including prizes for the event, and assisted in the revitalization of the local playground. Similarly, we contributed to the construction of the Audru school's playground near our Sauga factory.

Our support for schools and education continued with our support to Kadrina Middle School's annual engineering-themed competition, CADrina.

We remain committed to making a positive impact and look forward to continuing our engagement with local communities in meaningful ways.





Help to Ukraine

Following the devastating consequences of Russia's invasion of Ukraine, we were determined to extend our support to Ukrainian citizens and the country in general. Warmeston made financial donations to relevant NGOs and Red Cross to ensure that the aid was sent and used where needed.

Thought leadership

We have also seen an increase in our communication with Estonian media. The examples of the articles include topics such as the National Forestry Development Plan (metsanduse arengukava), clarifications on the falsely perceived pellet shortage, as well as expanding on the increasing demand for Warmeston's pellets. We find it important to share our insight, as it helps improve society's understanding of the use of biomass. Furthermore, we strive to set an example for others and be an active representative of the sector. Connected to this, our CEO Mait Kaup was once again elected into the board of a Woodworking Industry Development Cluster.

Having undergone the process of carbon footprint assessment and sustainability reporting for three years now, we fully recognize the broader value that these processes create — both, in terms of enhanced transparency as well as operational improvements from the improved knowledge. To share our experience with ESG reporting and perhaps inspire others, we were invited to perform at a Swedbank seminar, directed at the wood industry.

Despite our previous experience, we acknowledge that the landscape of sustainability is vast and everchanging. To ensure our growth within this area, we participated in a program for sustainability experts which was launched by TalTech and Swedbank. There we learned valuable insights for further implementing sustainability into Warmeston's business strategy as well as day-to-day activities.

Annex

Carbon footprint assessment methodology

The main purpose of Warmeston's carbon footprint assessment is to assess the company's carbon footprint from its pellet production in terms of global warming potential per 100 years (GWP 100).

Methodology and standards

- Warmeston's carbon footprint analysis was conducted by following the principles of Life Cycle Assessment (LCA), adhering to two generally accepted international ISO standards - ISO 14040: 2006 and ISO 14044: 2006.
- Emissions per unit of input were calculated in SimaPro program, using IPCC 2021 methodology and the emission factors from BioGrace-II and Ecolnvent Database v3.8.
- The analysis is in accordance with the directive (EU) 2018/2001 (recast) on the promotion of the use of energy from renewable sources.

Impact category

Global warming potential (GWP 100, kg CO₂ equivalent).

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.

Functional unit

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



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