

# Ørsted

## Sustainable biomass



Programme for procuring  
sustainable biomass

# Preface



“Sustainable biomass today plays a central role in Ørsted’s and Denmark’s transformation from coal to climate-friendly energy.”

The forest and its many resources play a crucial role in Denmark’s green transformation. In fact, wood from sustainable production forests can replace climate-damaging materials. This applies, in particular, to the construction sector, in which wood can replace materials such as steel and concrete in housing construction and furniture making. Wood also plays a key role in the green transformation of the energy sector, where sustainable biomass replaces fossil fuels like coal, oil and gas.

In Ørsted, we’ve reduced our coal consumption by 82% since 2006, and we’ve decided completely to stop using coal in our combined heat and power plants from 2023. Sustainable biomass today plays a central role in Ørsted’s and Denmark’s transformation from coal to climate-friendly energy.

Together with our heat customers, we’ve invested billions of kroner in converting our combined heat and power (CHP) plants to biomass use. In the longer term, we expect that biomass will play a minor role in the overall energy mix in line with our integration of more solar energy and wind power in our heating system. However today, and

for a long time to come, biomass helps ensure that we have a green and stable energy system, thus there’s always power in the sockets and heat in the radiators when the sun isn’t shining, and the wind isn’t blowing.

In our transformation away from fossil fuels, we must ensure that the biomass is sustainable. In Ørsted, we carry out continuous extensive work aimed at ensuring and documenting the sustainability of our biomass, and we’ve prepared a number of sustainability criteria which are in line with the Danish industry agreement on sustainable biomass.

Today, Ørsted only uses sustainable biomass. On the following pages, you can read more about our ‘Programme for procuring sustainable biomass’, in which we describe the activities that ensure the sustainability of our biomass.

**Morten Hultberg Buchgreitz**  
Executive Vice President and CEO  
of Markets & Bioenergy, Ørsted

# Why does Ørsted use sustainable biomass?

At Ørsted, we want to create a world that runs entirely on green energy. We've spent the past ten years on a conversion from black to green energy, and we're among the world's most sustainable energy companies<sup>1</sup>. As part of this transformation, we've been converting our CHP plants from using coal and gas to using sustainable biomass in their heat and power production for a number of years.

Biomass is typically wood residues from sawmills and forestry. In Ørsted, we carry on continuous extensive work aimed at ensuring and documenting that the biomass used in our CHP plants is sustainable. The activities are gathered under the name 'Programme for procuring sustainable biomass', which is described in this publication.

## Sustainable biomass replaces coal

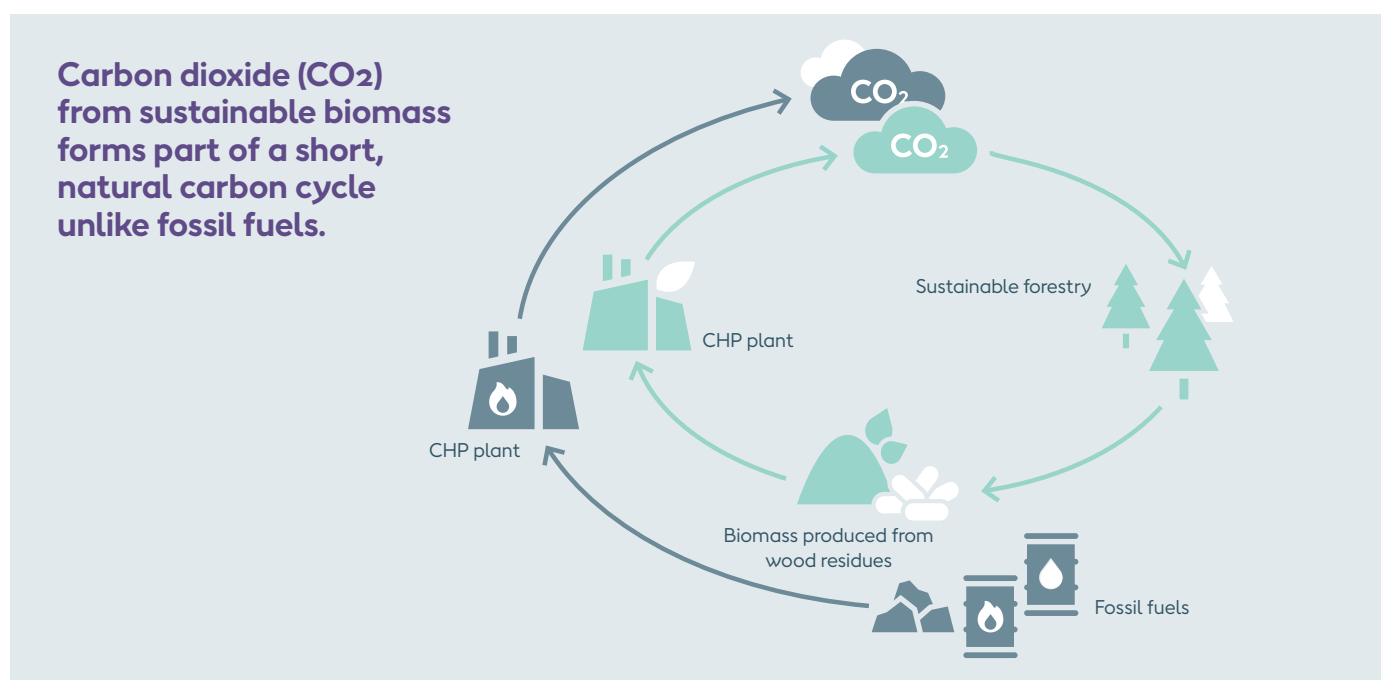
Our CHP plants have been able to discontinue using coal as a necessary energy source precisely because of biomass. At Ørsted, we've reduced the coal consumption of our CHP plants by 82% since 2006.

We've decided that all our CHP plants must be coal-free by 2023. In 2017 alone, we reduced our coal consumption

by 35% because two of our large CHP plants replaced coal with biomass.

The disadvantage of burning fossil fuels like coal is that it results in the emission into the atmosphere of large quantities of carbon dioxide (CO<sub>2</sub>) which it has taken millions of years to form through geological processes in the underground. Like coal, biomass based on wood also consists of carbon. Trees therefore also emit carbon dioxide into the atmosphere when burned. But when the trees are replanted and grow, they absorb carbon dioxide again within a few years. Overall, there's consequently no increased concentration of carbon dioxide in the atmosphere. You can read more about this in the folder '[Sustainable Biomasse](#)' (danish), published by the Danish Energy Association.

The burning of coal, however, results in emissions of carbon dioxide which has been bound in the underground for millions of years (slow fossil carbon cycle), and this carbon dioxide from the underground is the primary cause of the increased concentration of carbon dioxide in the atmosphere and the resulting climate change.

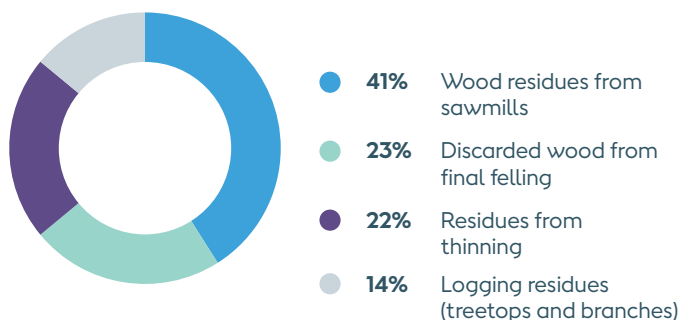


### From wood residues to green energy

Ørsted's biomass is primarily wood pellets and wood chips consisting of wood residues from sustainably managed production forests. The forests are mainly located in Scandinavia, the Baltic States, Southern Europe, Russia and the United States. The purpose of the production forests is to produce sustainable wood for timber production as efficiently as possible.

Timber production for, in particular, the construction industry results in large quantities of wood residues from the continuous thinning done to ensure space for the trees which will grow and become mature trees used for timber as well as from residues in the form of branches and treetops when the trees are felled. In addition, there are some wood residues in the form of sawdust from sawmills as well as from discarded tree trunks of such poor quality that they can't be used for timber. These are the wood residues that we use as biomass. Overall, sustainably managed production forests therefore have a great potential to supply wood residues that can be used for climate-friendly energy. Wood residues are an integral part of the production cycle of the forest, and the use of biomass for climate-friendly energy therefore doesn't have a negative impact on the size of the forest or its health.

### Distribution of wood-based biomass

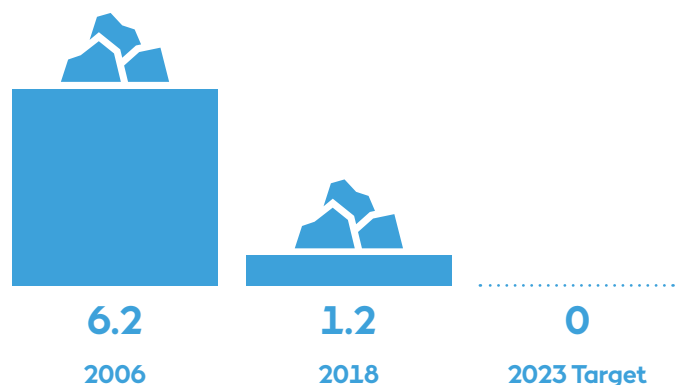


### Biomass must be sustainable

To ensure that the biomass is sustainable, it must meet a number of strict sustainability requirements, which we describe in further detail on the following pages. Here, you can read more about the details of our 'Programme for procuring sustainable biomass', and how the Danish industry agreement on sustainable biomass, the six sustainability requirements and our certification of suppliers ensure that we use sustainable biomass for production of green heat and power at our CHP plants.

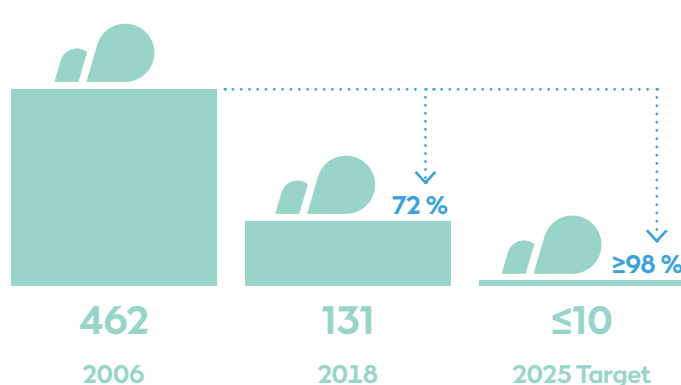
### Ørsted's total coal reduction 2006-2023

Coal (million tonnes)



### Ørsted's total reduction in carbon emissions since 2006

Carbon intensity (g CO<sub>2</sub>e/kWh)



# How does Ørsted ensure sustainable biomass?

## The Danish industry agreement on sustainable biomass

In Denmark, an [industry agreement](#) between the Danish Energy Association, the Danish District Heating Association and the Danish Ministry of Energy, Utilities & Climate ensures that forest-based biomass used in Danish CHP plants is sustainable. In Ørsted, we only buy biomass which meets the requirements of the Danish industry agreement for procurement of sustainable forest-based biomass.

## Ørsted's six sustainability requirements for suppliers

To ensure that Ørsted meets the requirements of the Danish industry agreement and consequently uses sustainable biomass, we've implemented the six sustainability requirements of the industry agreement in addition to our [code of conduct](#). Our biomass suppliers must therefore, as a minimum, comply with the following requirements for sustainable production:

1. The trees must be legally felled.
2. The forest ecosystems must be protected.
3. The productivity of the forests and their ability to contribute to the global carbon cycle must be maintained.
4. The forests must be healthy and well-functioning.
5. Biodiversity, sensitive and heritage areas must be protected.
6. Social and work-related rights must be respected.

In the [Danish industry agreement on sustainable biomass](#), you can read more about the six sustainability requirements.

## Carbon emission reductions compared with fossil fuels

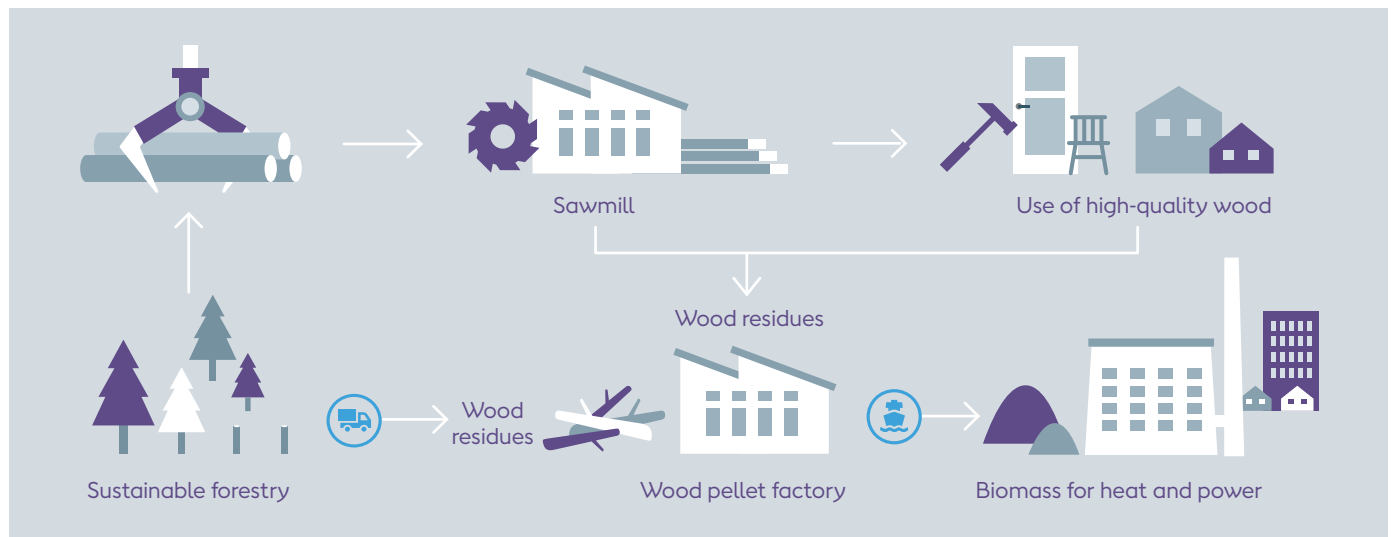
In addition to the sustainability requirements, Ørsted makes requirement for the reduction of carbon emissions from biomass compared with fossil fuels in accordance with the industry agreement. This means that we only use biomass which contributes to a significant reduction of carbon emissions compared with coal and natural gas. We use EU calculation model called [Biograce II](#). The calculation includes carbon emissions from the whole supply chain from felling of the trees to burning as well as the efficiency of the plant.

Industry agreement requirements for the total reduction of carbon emissions compared with coal and natural gas:

2015	2020	2025
70%	72%	75%

In Ørsted, our ambition is to go one step further than the industry agreement. Our target is to reduce carbon emissions by more than 80%.

## Supply chain for sustainable wood-based biomass



### Certification of suppliers of sustainable biomass

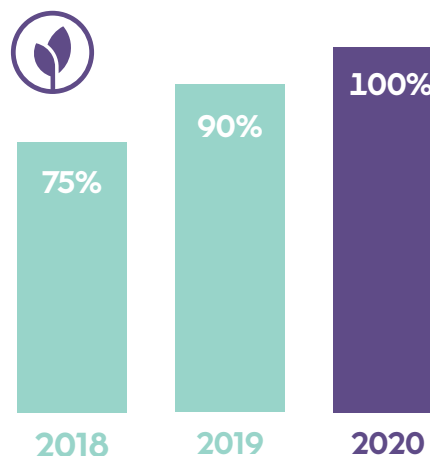
To ensure that our suppliers comply with the sustainability requirements and the requirement for reduction of carbon emissions, we've implemented the certification schemes [Sustainable Biomass Program \(SBP\)](#), [FSC](#)<sup>2</sup> and [PEFC](#), under which independent third-party auditors are responsible for monitoring and certifying that the suppliers meet our requirements<sup>3</sup>. Each year, we document the performance of the industry agreement in a public report, which is checked and approved by independent auditors. The report is available on our [website](#).

### Implementation of sustainability requirements in Ørsted's chain of suppliers

The sustainability requirements for biomass will be phased in over a period. In 2018, 83% of Ørsted's wood pellets and wood chips (measured in weight) was certified sustainable. The biomass which hasn't yet been certified as sustainable by a third party must meet Ørsted's own requirements for sustainability and our general [code of conduct](#).

The phase-in pace meets the requirements in the Danish industry agreement. In Ørsted, however, we go one step further than the industry agreement, as the industry agreement stops the phase-in requirement at 90% in 2019. Our goal is that all biomass used at Ørsted's CHP plants is certified sustainable in 2020.

**In 2020, all biomass from forests must be sustainable**



### Sustainability criteria for biomass which doesn't come from forests

In addition to wood chips and wood pellets, Ørsted uses small quantities of biomass which doesn't come from forests. This include straw from Danish farmers and other residual products from agricultural production which are not suitable for food or feed, such as e.g. sunflower seed husks.

In addition, a minor part of biomass consists of trees and bushes from towns and hedges. We ensure that all these non-forest biomass fuels are residual products produced in accordance with Ørsted's [code of conduct](#).

2. FSC\_C130685

3. As FSC® and PEFC do not register GHG emissions in the chain of suppliers, these data are collected separately for FSC®-certified and PEFC-certified suppliers.