

Industry agreement to ensure sustainable biomass (wood pellets and wood chips)¹

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One of the major challenges for the Danish energy supply right now is to reduce levels of permanent CO₂ emissions into the atmosphere, thus contributing to keeping the temperature rise under 2 degrees Celsius, as well as addressing current dependence on fossil fuels.

The use of sustainable biomass to replace fossil fuels is an important tool in this context, as the burning of fossil fuels creates permanent emissions of CO₂ into the atmosphere, whereas sustainable biomass creates only temporary emissions, which minimises the impact on the climate.

In order to ensure that a significant CO₂ reduction is achieved, it is essential that only biomass fractions that have a positive effect on the climate (in relation to the objective of 2 degrees) are used.

As part of the Energy Agreement of 2012, an analysis has been prepared of the use of bioenergy in Denmark. The analysis has identified whether the right conditions are present for efficient and environmentally sustainable use of biomass resources in the Danish energy supply. The analysis concluded that the move by combined heat and power (CHP) plants to wood pellets and wood chips is good for climate, when using sustainable biomass.

In this context, there exists no national legislation specifying requirements for sustainable biomass. Nonetheless, by this agreement the Danish District Heating Association and the Danish Energy Association wish to establish an industry-initiated voluntary framework for sustainable biomass, and thereby support the significant and sustainable reductions in CO₂ when compared to fossil fuels.

This framework agreement (hereinafter “the Agreement”) is a contribution to support that the use of solid biomass (chips and wood pellets) for energy production in Denmark is compliant with the framework for sustainability in terms of the environment, health and safety and climate, where CHP producers are themselves responsible and both document and satisfy requirements for sustainability through a third-party

The following points define the framework for the criteria that the industry agrees need to be met if biomass is to be considered sustainable in accordance with this Agreement.

Power plants covered

¹ The agreement to ensure sustainable biomass applies only to wood pellets (compressed wood shavings and sawdust) and wood chips (comminuted wood) including wood supplied as logs to the utility which are comminuted after arrival at the utility. The agreement covers biomass from forest defined as areas greater than 0.5 hectares with a minimum width of 20 m with trees higher than 5 meters with a crown cover of more than 10 per cent or trees that are potentially able to achieve these values to the locus. The definition does not include areas dominated by agricultural or urban use, including holiday home areas ([Den danske skovstatistik](#)).

The requirements for sustainable biomass, as defined in this Agreement shall include all plants that generate heat and electricity using biomass. To ensure that this does not incur disproportionately high costs for smaller plants, only plants whose rated thermal input exceeds 20 MW², will be subject to documentation requirements.

The timeframe for the Agreement

These documentation requirements will enter into force from 1/8/2016 (thus with effect for purchases for heating season 2016-2017)³. The CHP stations affected shall commit to demonstrating on an annual basis that the following proportion (by weight) of wood pellets and wood chips in compliance with the requirements:

2016:	40 %
2017:	60 %
2018:	75 %
2019:	Fully phased-in ⁴

The Danish Energy Association and Danish District Heating Association are also required to keep the Agreement up-to-date on an ongoing basis, with the possible adoption of common sustainability requirements in the EU or globally, as well as to evaluate the industry agreement in 2018. This evaluation shall include (inter alia) a discussion of whether the 20MW requirement may be phased out or reduced so that additional plants are covered by the documentation requirements of the Agreement.

Requirements for sustainable biomass

The following outlines the requirements and criteria that the industry aims to ensure and document as being fulfilled before the use of biomass can be considered sustainable. The requirements takes their point of departure in the currently most ambitious legislation, which is the English legislation on biomass sustainability -

[Timber Standard for Heat & Electricity: Woodfuel used under the Renewable Heat Incentive and Renewables Obligation](#)

The Agreement also reflects the content of the Danish Ministry of the Environment's *Guidelines on securing sustainable timber in public procurements of goods and services*, and *Forest Europe's criteria for sustainable forest management*. The Agreement is supplemented by criteria

² Production units generating electricity and/or heat with rated thermal input of 20 MW or more. The above thresholds refer in general to production capacity or production scale. If multiple activities that fall under the same category are carried out at the same production unit, the capacities of such activities are added together. When calculating a production unit's total nominal rated thermal input with a view to determining whether it is subject to the documentation requirements outlined in the agreement, the nominal rated thermal input of all the production unit's technical facilities that burn wood pellets and/or wood chips will be added together. Geographically dispersed production units that share common corporate ownership affiliations (same owner) count as a single production unit, and the calculation of rated thermal input is the sum of the rated thermal input from the individual production units.

³ This means that annual reporting in 2016 will cover 40 % of wood pellets and wood chips (in tonnes), purchased and delivered to the utility between 1/8/2016-31/12/2016. From 2017 this will be purchases between 1/1/2017-31/12/2017 etc.

⁴ The Agreement shall be fully phased-in during 2019. This means that 90% of wood pellets and wood chips can be documented as being sustainable in compliance with the requirements of the Agreement. The remaining 10 per cent. must comply with the requirements of the Agreement, but only document that the legality requirement (item 1) is met.

The reason why it is not possible to document 100% of the fuel as sustainable is, for example, new or small suppliers who have difficulties with (the resources) to incorporate the documentation processes required to document (fulfilment of) all requirements of the Agreement. Additionally, there may be biomass from storm damage, or the like. When the agreement is evaluated in 2018, an assessment will be made as to whether the requirement of 90% documentation can be further tightened.

for CO₂ savings compared to fossil alternatives, which ensure that the biomass used contributes to a positive effect on climate in terms of keeping the increase in temperature below 2 degrees.

1) Legality

Legality of forest management and utilisation is safeguarded through:

- Logging from legally designated areas
- Payment of all relevant taxes and duties related to the forest sector
- Logging complies with applicable legislation governing the environment and forest areas
- Logging respects the rights acquired by prescription and the civil rights of indigenous people
- Compliance with the trade and customs legislation governing the forest sector.

2) Protection of the forests' ecosystems

Forest management must ensure the preservation of the fundamental conditions of the ecosystem through:

- Assessment of the environmental (eg water, soil) impact related to clearance of wood
- Impact assessment of the influence of management on ecosystem and biodiversity
- Scheme to minimise negative impact on ecosystems and biodiversity, including impact from fertilisers, pesticides and waste disposal.

3) The forests' productivity and ability to contribute to the global carbon cycle must be maintained.

Management of forests must ensure the least negative impact on the forest's productivity and carbon sequestration through:

- Maintaining the forest's ability to produce wood for future generations
- Balancing logging and growth rates
- Establishing a system for measuring the forest's productivity
- Education and training of producers and subcontractors
- Refraining from using wood from forests which cannot be replanted/rejuvenated
- Refraining from converting land with forest status
- Refraining from converting forests with high carbon content^[1]

4) The forests must be healthy and well-functioning

Forest management must ensure healthy and well-functioning forests through:

- Maintaining or increasing forest health and vitality
- Management of natural processes, including forest fires, pests and diseases
- Protection against illegal logging and mining operations

5) Protection of biodiversity, sensitive areas and areas worthy of preservation

Forest management must ensure protection of biodiversity, sensitive areas and areas worthy of preservation through:

- Identification of particularly vulnerable areas or areas which are particularly worthy of preservation
- Protection of designated areas through forest management with due consideration to sensitive areas and areas worthy of preservation

^[1] In this context, forests with high carbon content are forests growing in wetland areas and in undrained peat soil.

Areas may have special value if they eg protect against soil erosion, protect water resources, have high biodiversity, have special scenic values and/or comprise particularly valuable animal or plant species.

6) Social and work-related rights must be respected

Forest management must safeguard respect for social and work-related rights by:

- identifying, documenting and respecting original inhabitants with a traditional or legal forest easement
- establishing complaint mechanisms, if not already available, to regulate disagreements in connection with the identified forest easements and working environment
- employees shall be entitled to organise themselves and child labour, forced labour or discrimination are not permitted
- the work must be organised and executed in such a way that the employees' health and safety are taken into due consideration.

7) CO2 emissions limits from biomass value chain

Biomass may only be used where CO₂ emissions from the biomass value chain in question do not exceed the applicable limits resulting from this Agreement at any given time.

BIOGRACE model is chosen as the method of calculation CO₂ emissions from the biomass value chain (<http://www.biograce.net/biograce2/>). The advantage of BIOGRACE is that it is European based and is the method and tool is recommended by the European Commission, which is an advantage concerning the validity of the method and also increases the chances that the selected model is consistent with the future EU regulation.

The limits are in place to ensure a significant CO₂ reduction compared to the reference and will take as its starting point the following criteria:

- Reduction Percentage with reference to the EU's current applicable guidelines, combined with the most ambitious of suitable European standards. The most ambitious standard in Europe right now is from the UK, see the table below.
- Reduction compared to the reference specified by the EU (fossil fuel comparator).
- Involvement of the entire value chain for both biomass and fossil reference. It is assumed that the value chain includes: Operation that can be attributed specifically to the production of the fuel (incl. planting, maintenance and felling), processing of the fuel, transportation to end customer (energy producers) and utilisation rate of power station.

	2015	2020	2025
EU reduction recommendation (2015)	70 %	72 %	75 %
UK reduction recommendation (2020/2025)			
Absolute limit (electricity) ¹	201 kg/MWh	187 kg/MWh	167 kg/MWh
Absolute limit (heat)	86 kg/MWh	81 kg/MWh	72 kg/MWh
Absolute limit (power planted heat)*	100 kg/MWh	94 kg/MWh	84 kg/MWh

¹ EU fossil fuel comparator: 670 kg/MWh (electricity), 335 kg/MWh (power planted heat)*, 288 kg/MWh (heat). All based on energy output.

Source: Commission staff working document: State of play on the sustainability of solid and gaseous biomass used for electricity, heating and cooling in the EU (*own estimate based on total combined heat and plant efficiency at a rate of 85%).

8) Additional requirements targeted at carbon cycle, maintenance of forest carbon stock, Indirect landuse change (ILUC) and Indirect wooduse change (IWUC)

In addition to the biomass value chain, the use of biomass as a form of energy can have indirect implications for global carbon balance. In May 2014 the Danish Energy Agency published an analysis of the use of biomass for energy in Denmark: "*Analyse af bioenergi i Danmark*" (*Analysis of bioenergy in Denmark.*) The analysis highlights a number of biomass types, where the use of energy will have varying effects on carbon balance, and therefore the climate benefits that will be obtained by using biomass to replace fossil fuels.

To ensure a climate-appropriate carbon balance in addition to the actions in the above 7 items and based on the conclusions of the analysis, the industry aims to not use biomass:

- where there regionally exists an actual alternative demand for high-value production (including the production of timber)
- which comes from trees that are grown on fertile soil, which has been unwisely converted from agriculture to forestry
- is to blame for deforestation in the region
- that negatively affects the quantity and quality of forest resources in the medium and long terms

If standardised methods for documenting retention of forest carbon stock, IWUC- and ILUC effects, are developed, the industry must accept these methods before they can be incorporated into the industry agreement as documentation requirements.

Compliance with requirements

Biomass sustainability must be documented through annual reporting on compliance with requirements. The report must be either developed or verified by a third party⁵. For further details see Appendix 1.

Publication of compliance with requirements

The annual report shall be made available on the industry members' websites. The Danish Energy Association and the Danish District Heating Association will additionally link to the annual reports on their respective websites.

⁵ The costs associated with the annual reporting of the industry agreement shall be borne by the respective company/CPH station relative to the fuel distribution of electricity and heat or other agreed formula in heating agreements.

Appendix 1 Compliance with requirements

The purpose of a voluntary industry agreement is to encourage the industry's members and branches to adopt a particular behavior (the purchase of sustainable biomass), but also to give members the freedom to choose means necessary to comply with the Agreement's sustainability requirements. In this context, it is essential that the effective means that the industry's members decide to adopt are also sufficient guarantees to demonstrate that wood pellets and wood chips are sustainable.

Requirements 1-6 Sustainable forestry

By way of documentation of requirements 1-6, the certification system developed by Sustainable Biomass Partnership can be used. The Sustainable Biomass Partnership certification system is a certification of the production and purchase of wood pellets and wood chips. The certification scheme is the result of a collaboration between a number of energy companies including DONG Energy, Vattenfall and E.ON. Certification schemes, which are widely used worldwide and are recognised as documentation of sustainability by the Danish Nature Agency may also be used. Currently, only FSC and PEFC are recognised. FSC and PEFC set standards for forest management, tracking and labelling, which means that timber sold to the end user that has certified traceability from one of these schemes will be deemed to satisfy requirements 1-6.

Requirements 1-6 of the Agreement may also be observed by another appropriate form of documentation than certification. Appropriate and sufficient evidence that a forest is managed in accordance with the industry agreement's sustainability criteria would in such cases have to be audited annually by an independent third party. Rules concerning third party are outlined in the section "Third party verification". Other forms of documentation (than certification) are also required for previously certified timber that has passed through one or more non-certified stage before it reaches the end user (the CHP station). In such instances, the documentation may then be limited to tracking from the last valid certification stage to delivery of the contracted wood pellets or wood chips.

Requirements 7 Emission of CO₂ in the value chain

The requirements for CO₂ emissions in the value chain are calculated both as an absolute limit and as a percentage in comparison with a fossil reference. The requirements ensure a significant CO₂ reduction compared to the reference⁶. When determining the limits of the industry agreement, EU recommendations and the tightest regulation in the area (currently the UK) will be taken into consideration. The values are thus in line with the recommendations of the EU Commission on solid biomass from July 28, 2014: "State of play on the sustainability" and "Solid and gaseous biomass used for electricity, heating and cooling in the EU".

The emission is calculated as an annual average of delivered biomass using the calculation model and the phasing-in route. The annual report must indicate how the used biomass (wood chips, wood pellets) deliver absolute CO₂ reductions and how the biomass performs compared to a fossil reference fixed by the EU (fossil fuel comparator). The requirements for emissions will be tightened up to 2020 in line with expected increased imports of wood pellets and wood chips.

⁶ EU fossil fuel comparator: 670 kg/MWh (electricity), 335 kg/MWh (power plant heat)*, 288 kg/MWh (heat). All based on energy output. (*own estimate based on total power plant heat efficiency rate of 85%).

It is assumed that the value chain will include: Operation that can be attributed specifically to the production of the fuel (incl. planting, maintenance and felling), processing of the fuel, transportation to end customer (energy producers) and power station coefficient of utilisation.

Requirement 8 Satisfying requirements targeted to carbon cycle, maintenance of forest carbon stock, ILUC and IWUC

There are currently no similar methods for calculating the additional requirements as for requirements 1-7. The industry will therefore (in collaboration with authorities and other key stakeholders) work to develop methods to document and formulate more detailed criteria for the 3 items under the heading *further requirements targeted to carbon cycle, maintenance of forest carbon stock, ILUC and IWUC*.

Third-party verification

Fulfilment of requirements 1-7 must be documented through annual reporting. The report must be either developed or verified by an independent third party that is either accredited to undertake FSC or PEFC forest certification, SBP certification or by an organisation that is EU-approved as an EUTR monitoring organisation⁷. The report shall be available on the websites of the affected plants/companies and are thus freely available to the public. The report is not subject to control by the authorities.

⁷ http://ec.europa.eu/environment/forests/timber_regulation.htm