

Joint Statement on the

Proposal of the European Commission for a Directive of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants



Bundesverband BioEnergie e.V.



Holzenergie-Fachverband
Baden-Württemberg e. V.



I Background

On 18 December the EU Commission published a new policy package to clean up Europe's air. It includes a proposal for a directive which for the first time incorporates emission limit values for medium combustion plants (1-50 MW_{th}).¹

The purpose of the Commission's policy package is not to amend the existing Air Quality Directive (Directive 2008/50/EC). Rather, it is to propose measures which will make it possible to meet the air quality standards specified in the proposed directive for 2020 so that Member States can address the problems they have in implementing the Air Quality Directive. In the Commission's view, one of the top priorities is to reduce nitrogen emissions in the transport sector.²

Other measures in the package, apart from the tightening of emission limits for medium combustion plants, include a revision of the National Emission Ceilings Directive (Directive 2001/81/EC), emission requirements for non-transport machinery, the reduction of ammonia emissions in agriculture and the reduction of emissions from shipping. The amendment of the so-called Ecodesign Directive (Directive 2009/125/EC³) should also be seen in this context.

The Proposal of the European Commission for a Directive of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants (henceforth the Medium Combustion Plant Directive or MCP Directive) is intended to close a "regulatory gap" in Europe. Directives are already in place for the reduction of emissions from combustion plants < 1 MW_{th} (Ecodesign Directive 2009/125/EC) and > 50 MW_{th} (Industrial Emissions Directive (IED) 2010/75/EC⁴), but that is not the case for combustion plants with a capacity range of 1-50 MW_{th}.

In the view of the EU Commission, the proposed directive is also needed to prevent negative effects on air quality caused by the increasing use of biomass in the energy sector⁵. The directive is thus explicitly directed at biomass combustion plants.

¹ Proposal for a Directive of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants:

http://ec.europa.eu/environment/air/clean_air_policy.htm

² German Chamber of Commerce and Industry (DIHK): <http://www.dihk.de/themenfelder/innovation-und-umwelt/info/ecopost>, on 17 January 2014

³ Directive 2009/125/EC of the European Parliament and of the Council establishing a framework for the setting of ecodesign requirements for energy-related products

⁴ Directive 2010/75/EC of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control)

⁵ Questions and answers on the EU Clean Air Policy Package: http://europa.eu/rapid/press-release_MEMO-13-1169_en.htm

II Evaluation of the bioenergy sector

The signatory associations support the intention of the European Commission to further reduce the emissions of particulates (dust), nitrogen oxides (NO_x) and sulphur dioxide (SO₂) from medium combustion plants in the 1-50 MW_{th} capacity range. The combustion of biomass may be low in CO₂ and thus make sense in climate policy terms, but it must still comply with ambitious environmental standards.

In effect, there is a need to bring the regulatory area governed in Germany by the Technical Guidelines on Air Quality Control (TA-Luft) in line with the state of the art and the ambitious air quality targets. In some cases the current limit values of the TA-Luft for solid biomass combustion plants in the 1-5 MW_{th} capacity range are higher than those specified for the second stage of the first Federal Emission Control Act (1. BImSchV) which is due to come into force for smaller plants as of 2015. An approximation of the limit values is, therefore, understandable and sensible and is supported by the industry.

Article 5 – Emission limit values

The proposed directive of the European Commission entails a **disproportionate tightening** of the emission limit values for the biomass sector, which to date have **only been required for waste incineration plants in Germany**. Moreover, the proposal makes no distinction between various capacity classes and plant categories or between what are in some cases completely different biomass fuels, the properties of which have a significant influence on plant emissions.

Excursus: The proposal for a directive excludes combustion plants covered by Chapter III or IV of the Industrial Emissions Directive 2010/757/EU, [viz. Art. 2 (2) (a)]. However, since Art. 2 (1) of the proposed directive only applies to combustion plants with a rated thermal input of less than 50 MW, exclusion from the scope of the proposal for a directive can only apply to the use of the fuel (Art. 28 (S) (2) IED) but not to the capacity limit (rated thermal input of 50 MW or more, Art. 29 (S) (1) IED).

The reverse exception in Art. 28 (S) (2) (j) in conjunction with Art. 3 (31) (b) IED means that combustion plants which burn wood waste in categories AI and AII as specified in the Waste Wood Ordinance are exempted from the proposal for a directive (cf. Art. 3 (31) (b) IED, according to which wood waste is excluded with the exception of wood waste which may contain halogenated organic compounds or heavy metals as a result of treatment with wood preservatives or coating, i.e. waste wood in categories AIII und AIV pursuant to the Waste Wood Ordinance).

In reading the proposal for a directive, attention should be paid to the fact that, in the case of waste wood, it only applies to combustion plants (from 1 to 50 MW rated thermal output) which use woods in category AIII and/or AIV.

Because of the lack of any qualified distinction, biomass heating plants (e.g. with a rated thermal output of 1 MW_{th}) which use residual forest wood to supply heat to residential quarters and business enterprises are subject to the same emission requirements, for example, as industrial waste wood power plants in the upper performance category (50 MW_{th}) which use AIII or AIV woods. It is thus questionable whether municipalities, for instance, will decide in favour of wood-fired heating plants to heat public buildings and residential quarters if the legislature prescribes unjustifiably strict emission limit values for such regional heating plants. This would run counter to the Federal Government's objective of using biomass at the municipal level.⁶

Fuel differentiation is an urgent necessity

The signatory associations also criticise the proposed directive's lack of any qualified differentiation in respect of fuel use, although there is a significant difference between the emission characteristics of natural wood and treated biomass, such as wood-based materials which are normally produced using nitrogenous glues. No distinction is made either between wood and herbaceous biomass, which is customary practice in the German TA-Luft and rightly so.

It is difficult for existing plants as well as for new biomass plants – even if they use only a handful of high-quality, natural wood fuels (trunk softwood without branches or bark) – to meet the generally prescribed emission limit values for NO_x and SO₂ set out in Annex II of the proposed directive by taking primary measures in combustion technology. The proposed limit values for particulates (fine dust) can usually only be achieved with the help of secondary measures (electrostatic or fabric filters).

In the case of biomass combustion plants which use natural wood or other biogenic solid fuels (for example, stalks or mill by-products) the planned limit values for NO_x and SO₂ **cannot be achieved either without costly secondary measures for flue-gas cleaning**. The same applies to wood fuels of inferior quality (attributable to a high content of bark, for instance), such as wood from short-rotation coppices, residual forest wood or landscape conservation materials, special incentives for whose use were provided, in particular, in the wake of the amendment of the Renewable Energies Act in 2012.

The proposed limit values in Annex III consistently require the full range of secondary flue gas cleaning for all biogenic solid fuels.

Hence the purpose of introducing emission limit values for medium combustion plants must be to allow the continued use of inferior quality biogenic fuels, which in turn would avoid additional pressure to use higher-quality materials in the light of potential rival uses.

⁶ For example via the programmes for bioenergy regions and bioenergy villages: <http://www.wege-zum-bioenergiesiedorf.de/>

Technical and commercial application questionable

There are severe limitations on the retrofitting capacity of existing biomass plants. Flue gas cleaning technologies of the kind used, for example, in waste combustion plants to comply with the relevant emission limit values cannot be transferred one-to-one to biomass heating plants or biomass CHP plants, because such plants are relatively small and have boilers configured to handle fluctuating heat intake. Moreover, structural conditions generally impede the retrofitting of secondary flue gas cleaning. Adherence to the new limit values therefore requires considerable technical and structural expenditures which – assuming they were technically possible – would **make most of the existing biomass plants economically unviable** and **prevent any new investment at all**.

Moreover, it makes no sense for the wood-based materials industry, which normally recycles its production residues in its own combustion plants, to have to resort to external disposal of its residues in waste combustion plants because of the more stringent limit values. The fuel lost in the process would then have to be replaced by fossil fuels.

In fact, the aim of fixing limit values should be to ensure that the emission limit values cannot be achieved exclusively by means of technically sophisticated and capital-intensive secondary measures, as is correctly pointed out in the justification of the proposal for a directive. Nor can the aim of the proposed emission limits be to undermine the bioenergy strategy initiated by the Renewable Energies Act.

On the prescribed limit values

Dust emissions (particulates)

Highly efficient electrostatic or fabric filters are needed to meet the particle limit values specified in Annex II. These measures are **very costly** when seen in relation to the overall investment and operating costs of a biomass combustion plant. In existing plants there is also the problem of the general **lack of any installation surface** in or on the heating building. Compliance with the limit values in Annex III is only feasible with the help of fabric filters or additional measures, such as flue gas scrubbers, which further increases the investment and operating costs.

Nitrogen oxides (NO_x)

For new and modern biomass boilers operating with high-quality, natural and bark-free wood it will be extremely difficult – using primary measures such as flue gas recirculation and air staging – to adhere to the NO_x limit values specified in Annex II of the proposed directive and at 6 percent reference oxygen content. Moreover, these combustion measures run counter to the aim of ensuring the lowest possible CO emissions. Since the proposal for a directive contains no requirements for carbon monoxide and hydrocarbon emissions, there is the risk of plants being optimised to operate

with a one-sided focus on low NO_x emissions to the detriment of the emissions from unburned waste gas components (CO, OGC, organic particles).

The NO_x limit value for herbaceous biomass fuels and AI wood (assuming it is incorporated – see above) specified in Annex II, which is half that in the TA-Luft, will inevitably involve the need for secondary measures such as the SNCR process (injection of ammonia (NH₃) or urea into the combustion chamber) or SCR catalysts with the addition of ammonia. That again will lead to a significant increase in investment and operating costs.

The question is to what extent the nitrogenous production residues from the wood-based materials industry can be burned in the existing combustion plants, if at all. Before any SNCR measure could be contemplated, the existing combustion plants would first need to have the relevant temperature range, which is not the case as a rule. In fact, SCR catalysts in combustion plants using AI wood fuels have so far not got beyond the experimental stage.

In addition there may be NH₃ slip and unresolved issues with ammonia-loaded filter ash. The NO_x limit values specified in Annex III generally entail the secondary denoxing of flue gases for all biogenic solid fuels.

Sulphur dioxide

The use of technical secondary measures (such as dry sorption) is essential if herbaceous fuels (especially rapeseed straw) and fuels from grain and mill by-products, in particular, are to comply with the general SO₂ limit value laid down in Annex II and Annex III. These secondary measures will also greatly increase the investment and operating costs. There is not expected to be any appreciable amount of sulphur in the flue gas from most of the biomass fuels, so a general limit value would simply lead to an increase in the regular measuring costs without any other effect being achieved.

Remarks on the economic viability

The operation of additional units for intensified flue gas cleaning can significantly reduce both the energetic efficiency and the commercial viability of the plants, since the requisite secondary measures are not only costly, but also result in additional energy consumption, which greatly reduces the overall efficiency of the plant.

For example, the requisite secondary measures for a combustion plant of 1 MW_{th} with an investment volume of €200,000 would entail additional investment costs of €150,000. Moreover, there is further annual expenditure for management, auxiliary energy and disposal. There is clearly a serious imbalance here between income and expenses. Operators will undoubtedly be unable to pass these additional costs on to private heat users. The upshot is that existing biomass plants in the 1-5 MW_{th} capacity range, in particular, which make up the majority of the medium combustion plants in the

electricity conversion sector⁷, would be deprived of their commercial basis and an end would be put to any new investment in wood-fired heating plants and biomass (heating and) power stations.

Ascertaining the best available technology for biomass combustion plants

The EU Commission's impact assessment did not involve any examination of the technical feasibility or the economic consequences of the implementation of the proposed emission limit values for biomass combustion plants.⁸ This is despite the fact that emission limit values for solid biomass must of necessity build on investigations into the state of the art and the best available technology for biomass plants in the small, medium and top performance bracket if ambitious emission reduction targets are to be specified without "throwing the baby out with the bathwater" or putting the existence of an entire sector in jeopardy as a result of exaggerated and unadjusted requirements.

Article 3, definitions, (15) "biomass"

The proposal for a directive merely distinguishes between "solid biomass" and "other solid fuels". A definition of what input substances qualify as biomass within the meaning of the MCP Directive is provided in Article 3 (15). The signatory associations submit that the definitions provided in the directive lead not just to legal "grey areas" in respect of the qualification of certain fuels as biomass (for example with respect to the term "waste"), but also that the proposed directive specifies different emission requirements for the plant depending on the qualification.

Moreover, it is not clear why the qualification of apparently subjectively selected input substances as biomass should be linked to a mandatory use of heat. This means that biomass used for conversion to electricity in combustion plants, in which the spatial conditions (e.g. the lack of a heat sink) or the technical specificities (e.g. only available for a limited time) mean they have no capacity to make sensible use of the heat produced, cannot be recognised as biomass within the meaning of the MCP Directive. No mention is made either of the amount of heat to be used or of any technical requirements. This will encourage abuse involving certain raw materials nonetheless being classed as biomass.

Input substances which don't qualify as biomass must, therefore, fulfil the emission requirements for "other solid fuels", which vary considerably for existing plants in terms of their SO₂ limit values and for existing and new plants in respect of particle emissions. Hence it can be more attractive to dispense with the use of heat, for example, in the conversion to electricity of rice husks or olive

⁷ German Biomass Research Centre (DBFZ): Biomass Power Generation, https://www.dbfz.de/web/fileadmin/user_upload/Referenzen/Berichte/biomassemonitoring_zwischenbericht_bf.pdf, retrieved on 24 January 2014

⁸ http://ec.europa.eu/environment/air/pdf/clean_air/Impact_assessment_en.pdf

stones as residues or waste materials from the foodstuffs industry, because then they need only meet the less stringent SO₂ emission limit values for “other solid fuels”.

III. Industry recommendations

- Maintaining the usable supply of low-cost, regionally generated biogenic solid fuels by staggering the limit values for NO_x and SO₂ based on plant capacity in a manner analogous to that in the German TA-Luft regulations, at least in the 1-5 MW_{th} and 5-50 MW_{th} ranges.
- **For plants equal to or less than 5 MW_{th}** the proven, sufficiently strict limit values of the German TA-Luft for NO_x und SO₂ (**converted to 6 volume per cent oxygen**) should be maintained or taken over. Most biomass fuels are not expected to have any appreciable sulphur content, so it will be possible to do away entirely with a limitation of SO₂, as is the case in the German TA-Luft for wood biomass, particularly since this could only be verified on a regular basis by expensive measuring methods. Herbaceous biomass should be based on the German TA-Luft (i.e. limit values of 525 mg/Nm³ related to 6 percent oxygen, which corresponds to 350 mg/Nm³ at 11 volume percent oxygen).
- In view of the possible increase in emissions from non-incinerated waste gas components in primary combustion measures, the usable fuel range and the high cost of secondary measures, the NO_x limit values for plants larger than 5 MW should be carefully approximated to the state of the art.
- Staggering the limit values on the basis of the fuel used in compliance with Table 1 of DIN EN 14961-1, in which the biomass fuels are classified into two groups:
 - Group 1: wood biomass, Figure 1 according to DIN EN 14961-1
 - Group 2: herbaceous biomass and others, Figs. 2-4 according to DIN EN 14961-1
- Staggering the limit values for NO_x depending on whether the fuel used is in Class AI or AII, ***provided these are not exempted from the proposal for a directive, as pointed out above.***
- Introduction of a uniform particle limit value for new plants amounting to 37.5 mg/Nm³ (at 6 volume per cent oxygen, which corresponds to 20 mg/Nm³ at 13 per cent volume oxygen analogous to the already very restrictive German limit value pursuant to Stage 2 of the Federal Emission Control Act for combustions plants < 1 MW_{th}).
- In areas in which air quality standards are not complied with, there should initially be stricter regulation of existing combustion plants with very high pollutant emissions and of other sources of pollution (industry / transport). To this end it is sufficient for new plants to comply with the current limit values. New, additional and low-emission biomass combustion plants

should then present no problem. Annex III of the proposed directive should be dispensed with completely.

- A data base to establish the state of the art and the existing plants should be established in order to lay down specific limit values for biomass combustion plants. The retrofitting of existing plants should also be investigated.
- Transitional periods extending up to the year 2030 should be laid down uniformly for existing plants in all capacity classes.
- The transitional period for new plants should cover a period of five years after the directive comes into force in order to allow for further technological developments.