**Comments on Inception Impact Assessment for Ambient Air Quality Directives**

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Please accept this feedback on the Inception Impact Assessment (IAA) from the Partnership for Policy Integrity, a US-based NGO working with allies across Europe and the world for the protection and restoration of natural forests. Here we provide brief comments on the contribution of biomass burning to air pollution in the EU, and how the Air Quality Directive(s) might be revised to better deal with this problem.

The IAA states

> The objective of the initiative is to further enhance the effectiveness of EU air quality legislation, specifically the Ambient Air Quality Directives, to avoid, prevent or reduce the harmful effects of air pollution on human health and the environment, in line with the European Green Deal's zero pollution ambition. It also has as an objective to improve the efficiency of the legislation, making it easier to meet a given level of effectiveness.

Burning wood and other biomass is one of the largest sources of air pollution in the EU, especially of fine particulate matter (PM2.5). Residential wood heating, in particular, is a very large source of air pollution in some member states, but industrial wood burning (at sawmills, paper mills, and other generators burning wastes and residues) and commercial wood-burning in large power plants can also be large local sources of pollution. Burning wood is very inefficient, therefore all other things being equal, and even when modern emissions controls are employed, burning wood emits more particulate matter than burning coal per unit energy.

Unfortunately, the EU continues to promote burning wood, biomass, and even garbage for the generation of renewable energy, and allocates billions of euro each year to subsidizing and promoting these activities. The "fitness check" for the air quality directives[1] acknowledges the mismatch of EU renewable energy policy and air quality objectives (p. 62):

> …analysis as well as stakeholder feedback also identified instances where the coherence of, and implementation of, specific EU policies may run counter to the implementation of the AAQ Directives. This includes the promotion of biomass combustion for energy production resulting from climate and energy policy, the shortcomings in the implementation of EU Type Approval Framework for cars in relation to NOx emissions or the choices made by some Member States to support diesel over petrol cars with a view

[1] European Commission. 2019. Fitness check of the ambient air quality directives. SWD(2019) 427 final. Brussels. https://ec.europa.eu/environment/air/pdf/ambient_air_quality_directives_fitness_check.pdf.

to reducing greenhouse gas emissions. These findings were corroborated by those of the European Court of Auditors.

The report highlights that the issue was "emphasised by the European Court of Auditors in its Special Reports 05/2018 on Renewable Energy and 23/2018 on Air Pollution, pointing out that the combustion of wood biomass can also lead to higher emissions of certain harmful air pollutants." Interestingly, the fitness check observes (p.72) that "concerns about emissions from biomass-generated heat tended to be raised by government authorities: of the nine responses on this topic, seven were from national or local government authorities."

Indeed, the EU continues to promote and subsidize biomass burning for renewable energy. Even the most polluting forms of energy – home wood-burning units with no emissions controls – are counted as contributing to member state renewable energy targets. The results have been predictable, with wood burning, and especially residential wood-burning, contributing disproportionately to total renewable energy generation in some member states. The following overview puts wood burning in context of air pollution overall. It is excerpted from our "Paper Tiger" report[2] and updated with data for 2017/2018:

> The issue of air pollution from residential wood-burning has been brought more into focus by the COVID-19 pandemic. Air pollution in the EU currently kills around 500,000 people in the EU each year.[3] Particulate matter in the 2.5 micrometre size class ($PM_{2.5}$) is the pollutant with the highest impact in terms of premature deaths. An EU report on air quality in Europe finds that $PM_{2.5}$ pollution alone was responsible for about 379,000 premature deaths in the EU-28 in 2018, and that particulate matter from households, commercial establishments and institutions, which is mostly from burning solid fuels (including wood) for heat, is responsible for 41% of total PM and 54% of $PM_{2.5}$.[4] Emissions of mercury and some other toxic pollutants are actually increasing, partly due to "re-emissions"; such re-mobilization is responsible for 60% of mercury emissions in the EU,[5] with domestic wood burning likely a significant source.[6] Residential wood-burning poses a particular danger because emission sources are located in homes and close to the ground. Achieving the WHO air quality standard for $PM_{2.5}$ in the EU-28 would decrease premature mortality by 27%.[7] Unfortunately, because death rates from the virus are higher in polluted areas,[8] death rates connected to air pollution can reasonably be expected to increase in the future.

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[2] http://eubiomasscase.org/wp-content/uploads/2020/07/RED-II-biomass-Paper-Tiger-July-6-2020.pdf

[3] Carvalho, H. 2019. Air pollution-related deaths in Europe - time for action. Journal of Global Health 9(2):020308. At https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6858990/

[4] European Environment Agency. 2020. Air quality in Europe - 20202 report. EEA Report No 09/2020. Luxembourg: Publications Office of the European Union, 2019. At https://www.eea.europa.eu/publications/air-quality-in-europe-2020-report

[5] Ibid.

[6] Huang, Jiaoyan, et al. 2011. "Mercury (Hg) emissions from domestic biomass combustion for space heating." Chemosphere 84 (11):1694-1699. At http://www.sciencedirect.com/science/article/pii/S0045653511005091

[7] European Environment Agency. 2019. Air quality in Europe - 2019 report.

[8] See https://projects.iq.harvard.edu/covid-pm

Reducing wood burning in the EU could improve air quality significantly. Unquestionably, reforming the EU's renewable energy policies and state aid policies to stop promoting and subsidizing burning biomass for energy would be a big step in the right direction, and is probably even legally mandated under rules that require state aid to not undermine environmental objectives.

But what can be done in the Air Quality Directive, specifically, to support member states achieving a reduction in air pollution from wood burning? That is a more difficult question. Given the often disproportionate contribution of biomass burning to air pollution, arguably the Air Quality Directive could include provisions designed to reduce this particular threat, although at this stage of identifying policy areas in the IAA, the suggestions are fairly general. The three policy areas outlined in the IAA do have potential for increasing focus on the specific threats of this time.

### Policy area 1: a closer alignment of the EU air quality standards with scientific knowledge including the latest recommendations of the World Health Organisation (WHO).

Yes, the EU should adopt more rigorous standards, as current standards lag, particularly for fine particulate matter (PM2.5), the size class of PM that is disproportionately emitted by burning wood for energy. However, even the WHO standards may not be rigorous enough given the connection between air pollution and Covid-19. Oddly, while we have responded to a number of consultations regarding forests, energy, and climate, and have seen Covid recovery mentioned in nearly all, this IAA on the Air Quality Directive barely mentions it. We hope the issue will get more attention in the actual revision of the Directives, given the apparent connection between air pollution and increased mortality from Covid.

It is also vital that the EU take ecosystem impacts of air pollution into account in a much more active way. The fitness check of the air quality directive highlights the impacts of air pollution on ecosystems and agriculture, from foliar damage to acidification to eutrophication. As the EU takes its nitrogen deposition problem more seriously, other policies, including the Air Quality Directives, should acknowledge that in addition to fossil-fueled power plants, biomass power plants are large sources of nitrogen emissions, as has been recognized by legal cases brought in the Netherlands.[9]

### Policy area 2: improving the air quality legislative framework, including provisions on penalties and public information, in order to enhance effectiveness, efficiency and coherence.

The legislative framework of the Air Quality directives is quite expansive. The directives authorize and mandate all manner of activities having to do with air quality monitoring, modeling, reporting, and enforcement. The options offered under this policy area include potentially increasing penalties for non-attainment of air quality standards and greater standardization of the information made available to the public.

However, the Directives are not the place where emissions standards for point sources are actually set. This is a big problem when it comes to biomass burning, because the units that are disproportionately

[9] See https://www.ad.nl/binnenland/johan-vollenbroek-na-stikstofzaak-volgt-nu-biomassastrijd~a698f2f5/

responsible for the most air pollution (residential wood-burners and small to medium industrial and commercial biomass burners) are either not subject to enforceable emissions standards at all, or are subject to very lax standards. Yes, there are guidelines and programs to encourage purchase of "cleaner" residential wood stoves, but these do not have teeth. For instance, the fitness check document states that "under the Ecodesign Regulation new energy efficiency and air quality requirements will enter into force in 2020 for solid fuel boilers and local space heaters. In addition, the new EU sustainability criteria post-2020 include minimum energy efficiency standards for large-scale biomass in heat and power." Unfortunately, each of these requirements will have only a *de minimis* effect on overall air pollution emissions from biomass burning.

Is there a way to mitigate this problem with additional requirements in the Air Quality Directives? For instance, perhaps the Directives could include a requirement that if a country is not meeting its air pollution standards, then it should not be permitted to subsidize or encourage wood-burning, or count wood-burning toward renewable energy targets.

Regarding public information, there is relatively little information available on the sectoral contributions to air quality, and the contribution of biomass burning in particular. The "Air Quality in Europe" reports summarize sectoral contributions including the residential sector, but having tried to research the specific contributions of wood-burning to member state air pollution it is nearly impossible to find data on this topic from official EU sources. Nor is the problem of air pollution from residential wood-burning widely discussed. It's not even mentioned in many EU materials, often to the point of providing actively misleading information. For instance, this webpage (https://www.eea.europa.eu/themes/air/intro) states that household use of fossil fuels is to blame for air pollution, not even mentioning biomass-burning (Figure 1):

## Sources of air pollution

There are various sources of air pollution, both anthropogenic and of natural origin:

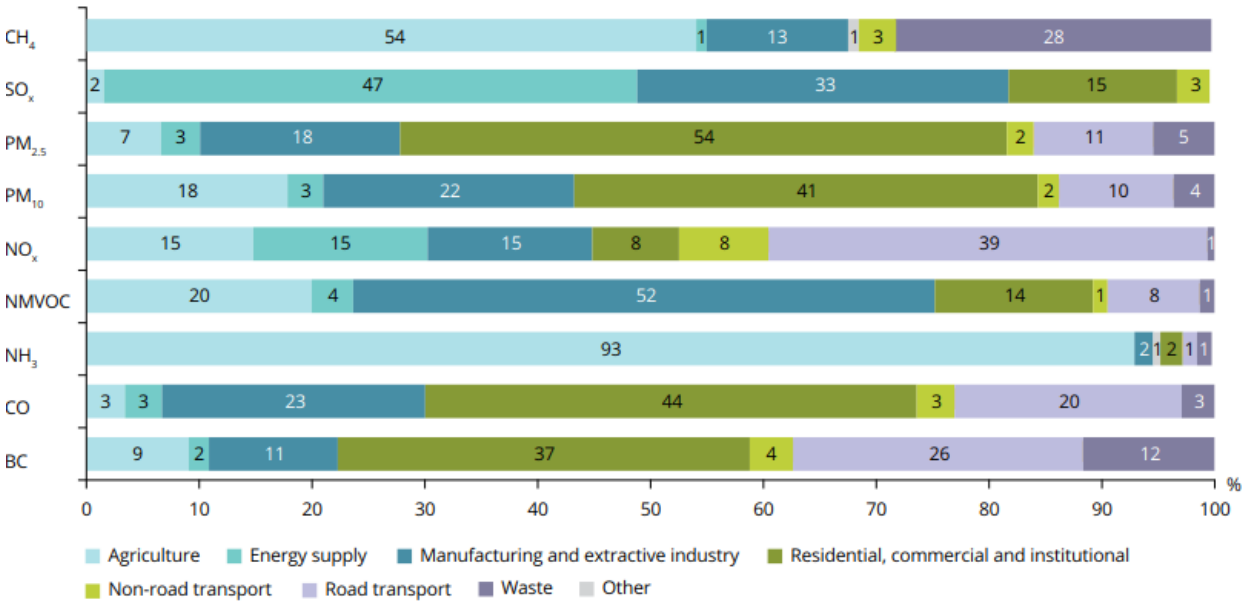
- burning of fossil fuels in electricity generation, transport, industry and households;
- industrial processes and solvent use, for example in chemical and mineral industries;
- agriculture;
- waste treatment;
- volcanic eruptions, windblown dust, sea-salt spray and emissions of volatile organic compounds from plants are examples of natural emission sources.

Figure 1. Excerpt from EU website[10] that misleadingly does not implicate wood-burning as a leading cause of air pollution in the EU.

[10] https://www.eea.europa.eu/themes/air/intro

By assembling data from various sources, however, we can determine that it is actually biomass burning that is largely to blame. Figure 2 is a table from the overview report that shows households are an important source of particulate matter:

**Figure 3.4** **Contribution to EU-28 emissions from the main source sectors in 2018 of $CH_4$, $SO_x$, $NO_x$, primary $PM_{10}$, primary $PM_{2.5}$, $NH_3$, NMVOCs, CO and BC**




**Note:** Only sectors contributing more than 0.5 % of the total emissions of each pollutant were considered.

**Source:** EEA (2020e; 2020f).

Figure 2. Table from EU's overview report showing households are a large source of air pollution and especially particulate matter. [11]

The fitness check document[12] provides a further indication of the importance of solid fuel combustion for air pollution, reporting that benzo(a)pyrene (BaP) target values were exceeded at more than one third of the sampling points. BaP is a marker for solid fuel burning (coal and wood)[13] and is listed as a probable human carcinogen by the US EPA.

But the individual contributions are still hard to make out, partly because residential contributions are bundled with "commercial" and "industrial" pollution. Surely the data are not collected in such an aggregated matter. Further, the overview report mostly discusses "coal and wood" as both contributing

[11] European Environment Agency. 2020. Air quality in Europe - 20202 report. EEA Report No 09/2020. Luxembourg: Publications Office of the European Union, 2019. At https://www.eea.europa.eu/publications/air-quality-in-europe-2020-report

[12] European Commission. 2019. Fitness check of the ambient air quality directives. SWD(2019) 427 final. Brussels. https://ec.europa.eu/environment/air/pdf/ambient_air_quality_directives_fitness_check.pdf.

[13] European Commission. 2001. Ambient air pollution by Polycyclic Aromatic Hydrocarbons (PAH). Position Paper. Luxembourg. https://ec.europa.eu/environment/air/pdf/pp_pah.pdf.

to pollution, but does not explain the relative contributions of the two fuels. For that, we have to look to the scientific literature, for instance a recent study (Figure 3) that makes it clear that biomass burning far outstrips coal as share of residential heating in the EU:

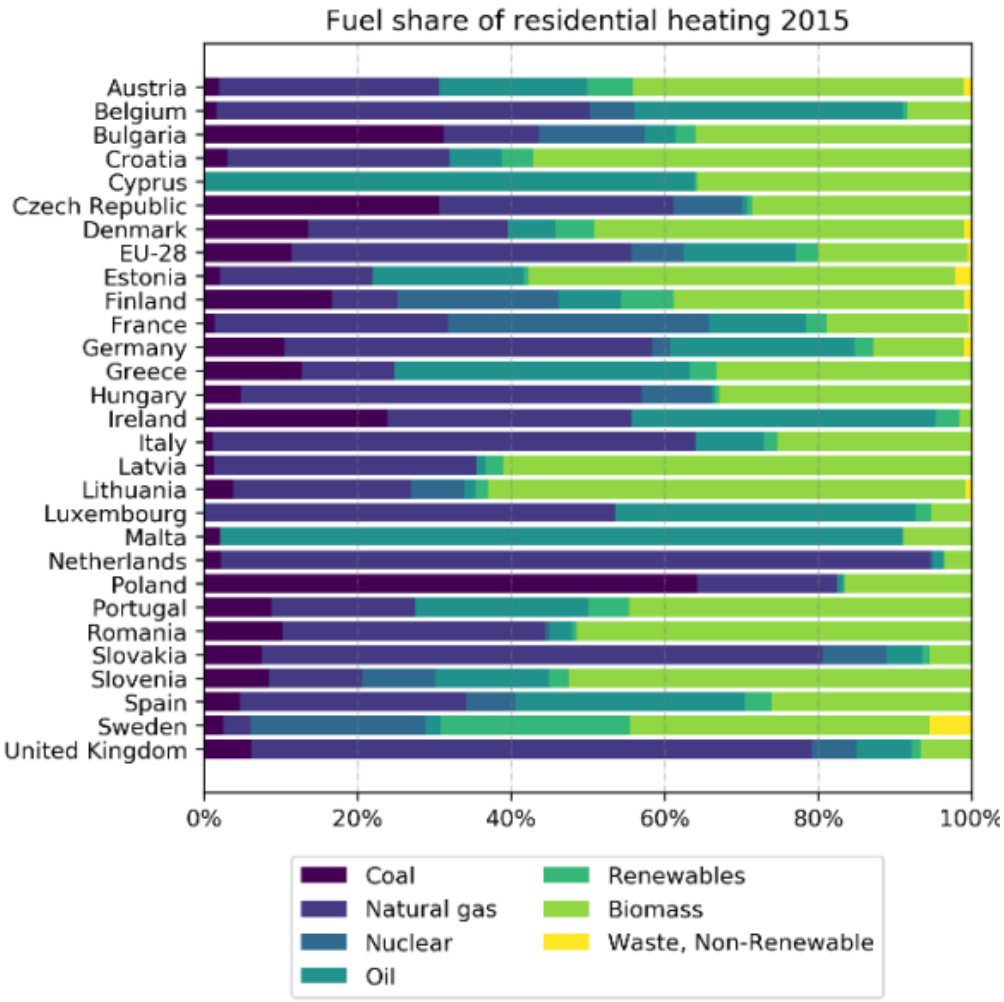



Figure 3. Demonstration that biomass burning meets a greater share of residential heating needs than does coal.[14]

Yet the overview report from the European Environmental Agency barely mentions wood-burning. The omission is so obvious it almost seems there may be political interference to prevent the authors calling out wood-burning for renewable energy as a source of pollution. For instance, the report (page 14) mentions subsidies for diesel cars but does not mention that the EU actively encourages use of wood for renewable energy:

> "As greenhouse gases and air pollutants share the same main emission sources, potential benefits can arise from limiting emissions of one or the other. Policies aimed at reducing

[14] Bertelsen, Nis, and Brian Mathiesen. 2020. "EU-28 Residential Heat Supply and Consumption: Historical Development and Status." Energies 13:1894. At: https://www.mdpi.com/1996-1073/13/8/1894/htm.

> air pollutants might help to keep the global mean temperature increase below two degrees. Moreover, climate policies aimed at reducing combustion of fossil fuels or reducing BC and CH4 emissions contribute to mitigating the damage of air pollution to human health and the environment. Implementing integrated policies would avoid the negative impact of climate policies on air quality. Examples are the negative impacts on air quality arising from subsidising diesel cars (which have lower carbon dioxide (CO2) but higher PM and NOX emissions) and the potential increase in PM emissions and emissions of other carcinogenic air pollutants, which an increase in wood burning for residential heating may cause."

Figure 2 shows transport is responsible for 11% of PM2.5 emissions and residential/commercial/industrial for 54%. Why is the report thus so timid in its conclusions? This failure obscures potential solutions. For instance, achieving a 10% reduction in PM2.5 emissions could be accomplished by eliminating nearly 100% of transport pollution or by reducing solid fuel combustion in households by some much smaller percentage.

Regarding enforcement, it is remarkable to see the IAA acknowledge that "the effectiveness of legal enforcement action by civil society is linked to the functioning of access to justice at national level and the dynamism of NGOs." In other words, improvements in air quality enforcement often only occur because NGO's bring lawsuits. Can the new version of the Directive do more to help the EU clean its own house?

## Policy area 3: strengthening of air quality monitoring, modelling and plans.

Under this policy area, options under consideration include improving air quality monitoring, modeling, and action plans. Given the failure of many member states to achieve even the existing air quality standards, it is clear that air quality planning and implementation are in need of drastic improvements. The fitness check (page 10) makes it clear that the Directives have a lot of latitude in this regard:

> "where the established standards for ambient air quality are not met, the Directives require Member States to prepare and implement air quality plans and measures (for these pollutants exceeding the standards). These air quality plans need to **identify the main emission sources responsible for pollution**, detail the factors responsible for exceedances, and spell out abatement measures adopted to reduce pollution. **Abatement measures can include, for example, measures to reduce emissions from stationary sources (such as industrial installations or power plants, as well as medium and small size combustion sources, including those using biomass)** or from mobile sources and vehicles (including through retrofitting with emission control equipment), measures to limit transport emissions through traffic planning or encouraging shifts towards less polluting modes (including congestion pricing or low emission zones), promoting the use of low emission fuels, or using economic and fiscal instruments to discourage activities that generate high emissions."

It is not immediately clear what tools are at hand to improve planning, but the Directive might include requirements for member states to first go after the “low hanging fruit” – the sources that disproportionately contribute air pollution and where relatively small adjustments could yield big reductions in pollution. Additionally, as stated above, member states should be prohibited from encouraging or subsidizing wood and garbage burning for energy if they are not meeting their air quality targets.

Thank you for the opportunity to comment.

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