



The consequences of RED III amendments on the use of primary v secondary biomass

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HAWKINS WRIGHT

Introduction

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Executive summary

Background

- Proposed RED III amendments establish definitions of 'primary' and 'secondary' forest biomass. They also, in various ways, aim to exclude the renewable energy that is produced from primary biomass. The proposed amendments do this by either forbidding Member States from granting State Aid for renewable energy produced from primary biomass, and/or by excluding primary biomass energy from the definition of renewable energy when calculating progress towards EU or Member States' renewable energy targets.
- **If passed, the amendments would have negative implications for forest owners, forest industries, homeowners and businesses and for the EU's climate ambitions.**

The term "primary biomass" is not synonymous with high-value sawlogs

- **The term "primary biomass" also includes lower-value feedstocks used for bioenergy, such as are pictured on the cover of this report.**
- A small portion of the wood removed from EU forests comprises low quality logs that are too small for sawing, or are twisted, damaged or diseased. Such logs, together with forestry residues (e.g. tree tops and branches), are suitable only for pulp or, in the case of the lowest quality materials, for bioenergy. According to Eurostat data, 114Mm³ of wood that was subsequently used as fuel (fuelwood) was removed from EU27 forests in 2020.
- The production of wood chips, particles and sawmill residues (i.e. secondary biomass) in the EU27 in 2020 totalled 111Mm³. This is an imputed figure, based largely on the production of sawnwood (109Mm³ in 2020), of which wood chips and residues are the by-products.
- Primary and secondary wood fibre flows through complex and dynamic market-driven supply chains from multiple sources to numerous end-uses. The existing market is an efficient mechanism for allocating wood fibre to its highest and best end-use, ensuring that **only lower value (and thus lower priced) wood is used by the biomass sector.**

Prohibiting the use of all primary biomass would remove 15% to 20% of the EU27's renewable energy

- A study published by the JRC in 2021 estimated that the use of woody biomass for energy in the EU in 2015 was around 451Mm³. **Of this, 37% (166Mm³) was judged to be primary biomass and a further 14% (63Mm³) was of "unknown origin".**
- Solid biomass, overwhelmingly from forests, accounted 40% of total final renewable energy consumption in 2019, more than wind, hydro and solar energy combined. If we assume that 37%-51% of solid biomass final energy originates from sources of primary forest biomass, **we can conclude that at least 15% or as much as 20% of the EU's final renewable energy consumption is derived from primary biomass.**
- **If the EU prohibited the use of primary biomass, its withdrawal would – at a minimum – be akin to shutting down every wind turbine that was operating in the EU27 in 2019.** (In 2019, wind energy supplied 15% of the EU27's final renewable energy consumption.)
- In the meantime, additional sources of fossil energy would be required. If coal or natural gas were substituted for the prohibited primary biomass energy, **the EU's annual consumption of fossil energy would rise by between 1.7EJ and 2.4EJ.** As points of reference, France consumed 1.6EJ of natural gas in 2021, while Poland consumed 1.9EJ of coal.



Executive summary *continued*

Wood pellet suppliers would likely withdraw from the EU market if primary biomass is banned

- The business models of industrial wood pellet producers in North America are not designed to operate solely on secondary fibre, of which there is a limited supply and for which there is competition from other downstream industries. If the use of primary fibre is outlawed, the suppliers' most likely response would be to withdraw from the EU market, favouring instead the quickly growing Asian markets.
- Absent supplies from the USA and Canada, EU importers of industrial pellets would be forced either to shut, or to compete for the limited supply of heating pellets, raising heating costs and placing EU and national climate targets further out of reach.

Principal conclusions

- There is no scientific evidence that the removal of low-quality fuel grade primary biomass is environmentally damaging to a working forest. Quite the reverse; the management of working forests, including thinning and the removal of fuel grade wood fibre, is essential to the long term health of a forest.
- For forest management to be commercially viable, there needs to be a market for the low-quality wood that is extracted. Absent such a market, if thinning and maintenance are therefore reduced, growth rates will suffer, sawlog quality will decline and the health of the forest will be impaired.
- Any ban on the use of primary biomass will have an immediate effect on all utility-scale biomass power/CHP or district heating plants that have received, or may in the future receive, state aid. These plants would, in turn, need to require their suppliers of feedstock (mainly wood chips and pellets) to eliminate primary wood from their mix of feedstocks.
- As most biomass suppliers are already using as much secondary fibre as they can (as it is almost always cheaper than primary wood), total reliance on secondary biomass would often be impossible without creating damaging market distortions. The supply of secondary biomass is limited by the output of sawmills and, depending on local factors, there are often other industries that use secondary fibre too.
- With supply limited, increased competition would raise feedstock costs for the many EU producers of heating pellets that rely exclusively on secondary fibre. As a result, individual households will pay more to heat their homes.
- Bioenergy has an important role to play in the future decarbonisation of the European economy, one that would be curtailed if the use of primary biomass disqualified innovative projects from state aid. An example is *BECCS*, a technology which offers the prospect of negative carbon emissions. BECCS power stations will need low cost feedstock, a need that would be jeopardised if their use of primary biomass is excluded. Biomass is also an essential to the decarbonisation of hard-to-abate sectors such as aviation fuel and the production of bio-materials.
- If the more extreme RED III amendments are accepted, it is difficult to see how the EU's 2050 Net Zero ambition could be achieved. Arbitrarily redefining 178-247Mm³ (1.7-2.4EJ) of primary woody biomass energy as non-renewable would set back the EU's progress towards Net Zero by years if not decades. As points of comparison, the EU27's output of wind energy (both onshore and offshore) totalled 1.4EJ in 2020, while solar energy contributed 0.5EJ.



Background

Amongst the many amendments to the EU's Renewable Energy Directive (RED III) that have been proposed by the Rapporteur and by members of the ENVI committee, there are three amendments, or groups of amendments, which are of particular interest to the biomass sector and which are the focus of this study.

1. **Amendment #9** establishes a definition of 'primary' v 'secondary' forest biomass':
 - i. **Primary forest biomass** is defined here as "*comprising all wood obtained from removals, i.e., the quantities removed from forests, including wood recovered due to natural mortality and from felling and logging. It includes all wood removed with or without bark, including wood removed in its round form, or split, roughly squared or in other form, e.g., branches, roots, stumps and burls (where these are harvested) and wood that is roughly shaped or pointed*".
 - ii. **Secondary biomass** from forests comprises all other woody material, including: "*residues from forest-based industry, including bark, sawdust and wood shavings that result from sawmilling or wood milling, and recovered post consumer wood*".
2. **Amendment #13** proposes to add a line to the RED III Directive that forbids Member States from granting State Aid support [i.e., subsidies] for renewable energy produced from "primary biomass from forests". Other amendments proposed by ENVI committee members will have a similar effect. For example, **Amendment #649 (Pascal Canfin et al)** would have the effect of making the consumption of primary forest biomass ineligible for financial support.
3. Other proposed amendments go further. For example, **Amendment #650 (Idoia Villanueva Ruiz)** proposes that energy from primary woody biomass fuels shall not be taken into account when: a) calculating progress towards EU or Member States' renewable energy targets or; b) measuring compliance with renewable energy obligations or ; c) assessing eligibility for financial support. **Amendment #653 (Mihal Wiezik et al)** has a similar effect as Amendment #650 by disqualifying primary forest biomass from the definition of renewable energy and also making it ineligible for state aid.

This short paper describes how these amendments are likely to affect negatively the markets for biomass and biomass products, and considers whether the proposals are likely to have the environmental effects that their sponsors anticipate. Our paper explores the implications for the EU's energy policy and the achievement of the region's Net Zero ambition. We begin with a brief summary of the role of biomass within the European Union's energy system.



The role of biomass in EU energy supply

Biomass is the EU's largest source of renewable energy by a considerable distance. In 2020, solid biomass – essentially woodchips, pellets and renewable waste materials – accounted for 7% of gross inland energy consumption and 40% of the final consumption of renewable energy, more than any other source.

In addition, liquid biofuels and biogases contributed a further 3% of the EU's total energy consumption and 17% of final renewable energy consumption.

Together, solid biofuels and liquid and gaseous biofuels accounted for 57% of the EU's final renewable energy consumption in 2019, as shown in the pie chart on page 6.

The role and future opportunities for bioenergy differ between the three principal market sectors in which it is used: electricity, heat and transport fuels.

Of these, **bioelectricity** generation receives arguably the most media and political attention, though bioheat is much the bigger sector in terms of resource use, as discussed overleaf.

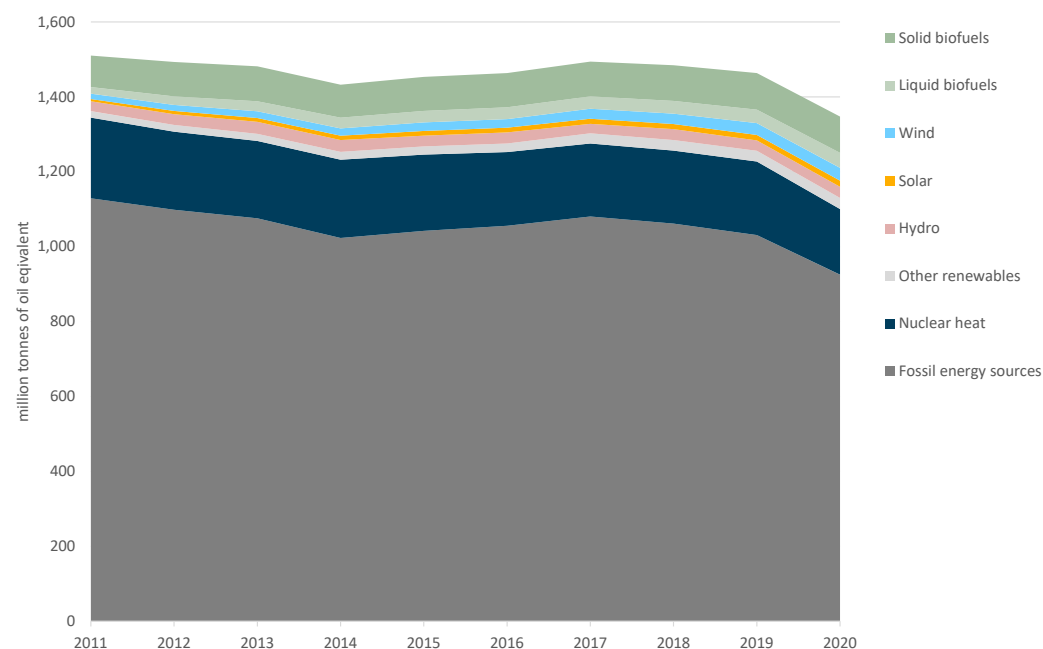
Bioelectricity is generated in a relatively small number of dedicated or cofiring power-only plants in the EU. These generated 21.2TWh_e from solid biomass in 2020. (Source: Eurostat)

However, almost three-times more bioelectricity, 61.8TWh_e, was generated in the many biomass CHP plants that are present in every EU member state except Cyprus.

In addition, the **renewable heat** from these CHP plants is used in district heating networks or for industrial processes.

The use of solid biomass to make **transport fuels** is not yet significant, though the development of, for example, biojet fuel projects are making progress.

EU27: Gross inland consumption of energy by fuel source, 2011-2020



Source: Eurostat



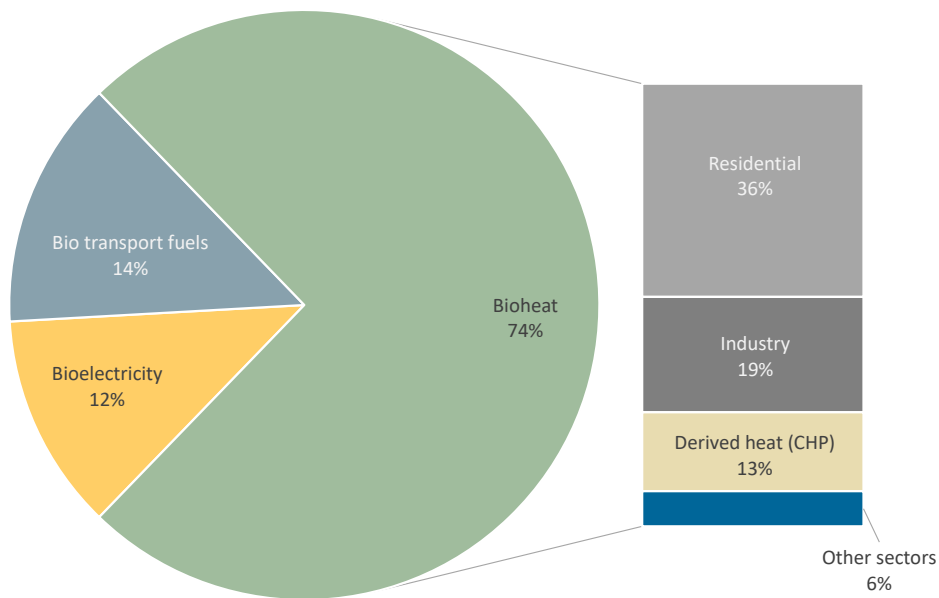
The role bioenergy in EU energy supply

Bioelectricity accounted for 12% of final bioenergy consumption in the EU27 in 2019. In that year, the use of biomass for heating and cooling was six times greater, accounting for three quarters of total final consumption of biomass energy in the EU27. Over 90% of the bioheat came from the combustion of solid biomass.

As such, bioenergy (and solid biomass) currently dwarfs the use of all other renewable heating fuels and technologies. For example, bioheat accounted for 19% of all heating and cooling in the EU27 in 2019 (both renewable and non renewable). In comparison, heat pumps contributed 2.4%, solar thermal 0.5% and geothermal 0.3%.

Bioheat finds uses in many different markets. The direct use of biomass provides heat to hundreds of thousands of homes across Europe, particularly

The final consumption of biomass energy by end-use in the EU27, in 2019



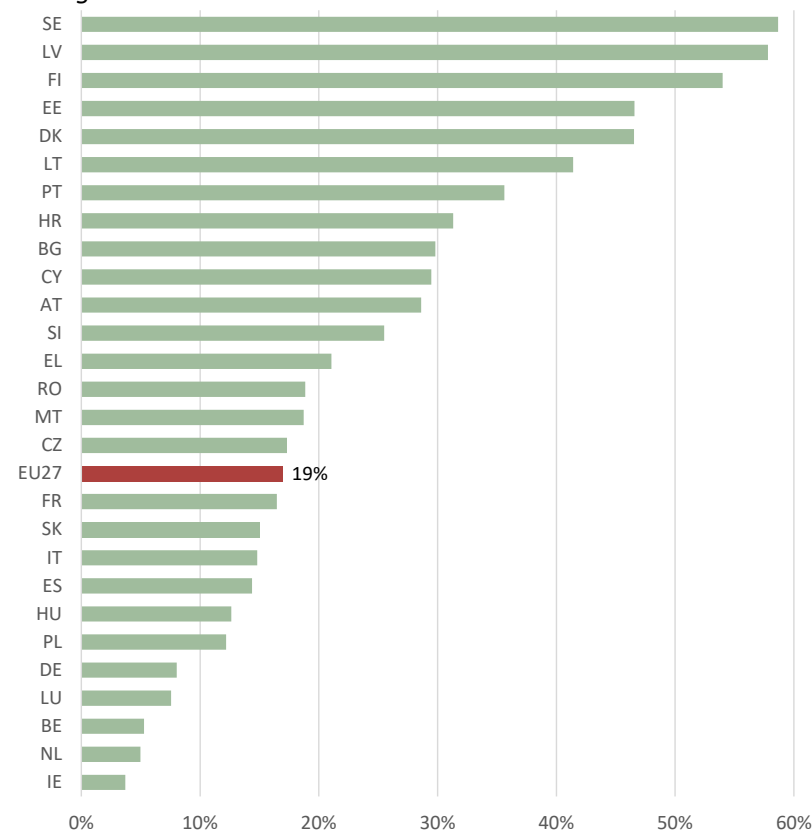
Source: Bioenergy Europe and Eurostat

in rural areas as a substitute to heating oil. In addition, homes and commercial buildings in many cities are warmed by district heat networks fired by biomass.

The use of solid biomass to generate industrial process heat is also growing and is seen as having an important role in the future decarbonisation of industries such as steel, cement and chemicals.

The importance of bioheat varies across the region. It is particularly important in Scandinavian and Nordic countries. In Sweden, Latvia and Finland over 50% of all heating is provided by bioenergy, much of it from wood chips.

Bioenergy as a proportion of total final consumption of heating and cooling in EU27 member states in 2019



Source: Bioenergy Europe and Eurostat, SHARES



Sources of solid biomass

The wood that is used for energy is derived from three principal sources: directly from forests (primary biomass), as a residue from sawmills and other wood processing industries (secondary biomass), and as a post-consumer waste material (tertiary biomass¹).

Note that the term "primary biomass" is not synonymous with high-value sawlogs. The definition also includes lower-value feedstocks used for bioenergy, such as are pictured on the cover of this report.

Removals of roundwood from the EU27's forests in 2020 totalled 375Mm³ underbark. Most of these removals will have been sawlogs that were processed into sawnwood (lumber) for construction and furniture manufacture, for example.

A relatively small portion of the removals will comprise low quality roundwood logs. These may be either too small for sawing, or they will be twisted, damaged or diseased. Such logs, together with forestry residues (e.g. tree tops and branches), are suitable only for pulp or, for the lowest quality materials, for bioenergy (including domestic firewood).

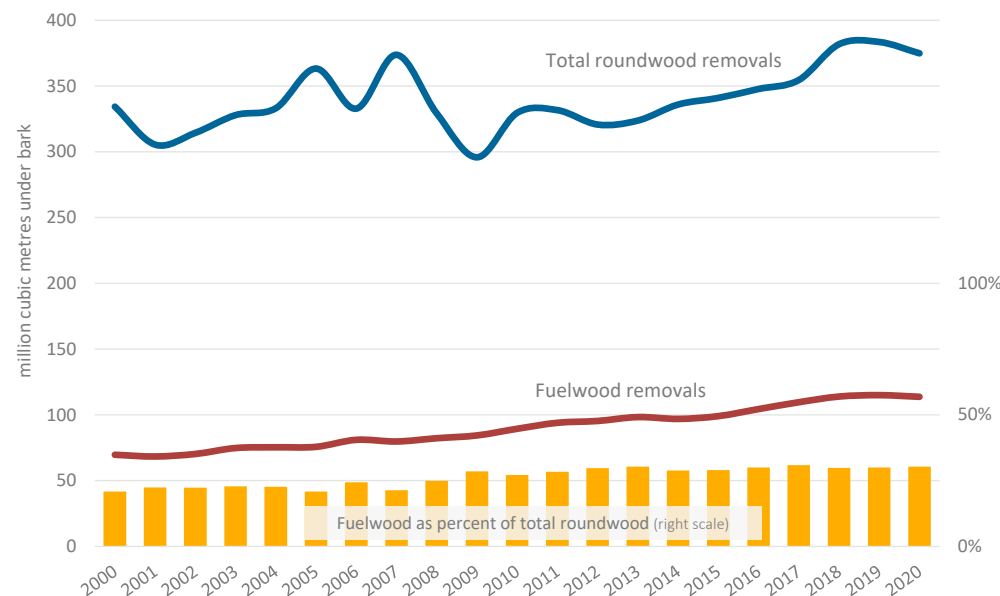
According to Eurostat data, 114Mm³ of wood that is subsequently used as fuel (fuelwood) was removed from EU27 forests in 2020. Statistically fuelwood removal is an imputed figure, back-calculated by statisticians using surveys and data on bioenergy generation. It is the use which defines the commodity as a fuel. No attempt is made to assess the production of fuelwood at the forest level.

The production of wood chips, particles and sawmill residues (i.e. secondary biomass) in the EU27 in 2020 totalled 111Mm³. This too is an imputed figure, based largely on the production of sawnwood (109Mm³ in 2020), of which wood chips and residues are the by-products. The yield of sawnwood from a sawlog is roughly 50%. This is a figure which can vary from year to year, but which ultimately constrains the supply of sawmill by-products.

The various flows of wood fibre move through complex and dynamic market-driven supply chains from multiple sources to numerous end-uses. Every forest basin is different but interactions between supply sources (pulpwood, residues and recovered wood) and end uses (pulp, panel board and bioenergy) are much the same everywhere. The existing market is an efficient mechanism for allocating wood fibre to its highest and best end-use.

Yet, beyond this general understanding of wood raw material flows, the origin of the wood used to generate energy, much of which occurs without the involvement of a commercial transaction, is more difficult to calculate and even more difficult to police, at a granular level.

EU27: Removals from forests of roundwood and fuelwood, 2000-2020



Source: Eurostat

1. In the proposed EU Parliament definition, Tertiary biomass is included with Secondary biomass



Sources of biomass feedstock used by members of the Sustainable Biomass Program (SBP)

The Sustainable Biomass Program (<https://sbp-cert.org>) is a non-profit certification system designed to certify the woody biomass – mostly wood pellets and wood chips – that is used for industrial-scale energy generation. In 2021, SBP certified 16.7Mt of biomass.

In Europe, almost all utility-scale users of wood chips or industrial wood pellets require their feedstock suppliers to be certified by SBP. With certification, utilities can demonstrate their compliance with EU and national regulations. Certification also aids trade. Mutual recognition of sustainability criteria allows sellers, buyers and traders to optimise their supply chains.

Independent bodies audit and certify the companies that supply biomass to utilities in Europe and elsewhere. The current list of certificate holders includes 220 producers and traders, excluding producers in Belarus and Russia whose certifications have been suspended as a consequence of the war in Ukraine.

As part of the process of certifying an SBP supplier, the applicant's feedstock supply is audited annually. This includes identifying all sources of the raw biomass feedstock, broken down by primary, secondary and tertiary sources. The SBP data for 2021 is summarised in the tables. The main points to note are:

- Primary feedstock accounted for **51%** of the woody biomass used by SBP-certified suppliers in Europe and **57%** of the feedstock used by US suppliers.
- Certified European wood chip suppliers are more dependent on primary biomass than are pellet producers, with **89%** of the wood chip feedstock coming from primary sources. Certified wood chips are most likely to be used by utility-scale CHP/DH plants such as those operated by Ørsted and Høfor in Denmark and by Fortum and Stockholm Exergi in Sweden. Primary feedstock is also predominant in the supply of wood chips to the hundreds of smaller biomass CHP/DH plants and to the thousands of chip-fired commercial and residential boilers across Europe.
- Primary biomass comprises **42%** of the feedstock used by SBP-certified pellet producers in Europe. Note that these producers are mostly supplying industrial grade pellets to utilities. Heating grade pellets will contain less primary and more secondary feedstocks.
- In the US, primary biomass accounts for 57% of the feedstock used by SBP-certified industrial pellet producers, those exporting pellets to the European market. This feedstock includes thinnings and residues from working forests which cannot be manufactured into solid wood products.

The sources of biomass feedstock used by European and US members of the Sustainable Biomass Program (SBP), 2021

<u>Europe</u>	<i>thou. dry tonnes</i>	
Primary feedstock	4,785	51.1%
Secondary feedstock	4,434	47.4%
Tertiary feedstock	141	1.5%
TOTAL	9,361	100.0%

<u>United States</u>	<i>thou. dry tonnes</i>	
Primary feedstock	5,455	57.4%
Secondary feedstock	2,924	30.8%
Tertiary feedstock	1,127	11.9%
TOTAL	9,506	100.0%

<u>Europe</u>	<i>thou. dry tonnes</i>	
Chip producer		
Primary feedstock	1,661	88.6%
Secondary feedstock	214	11.4%
TOTAL	1,875	100.0%
Pellet producer		
Primary feedstock	3,124	41.7%
Secondary feedstock	4,220	56.4%
Tertiary feedstock	141	1.9%
TOTAL	7,486	100.0%

<u>United States</u>	<i>thou. dry tonnes</i>	
Pellet producer		
Primary feedstock	5,455	57.2%
Secondary feedstock	2,924	30.7%
Tertiary feedstock	1,157	12.1%
TOTAL	9,536	100.0%

*Note: Europe includes SBP members in the EU27, the UK, Norway and Belarus (but not Russia). The data includes all the biomass production by each member, including production that is not certified. US production of wood chips is not shown as the production of chips by US members is not significant.
Source: SBP (personal correspondence)*



Excluding all primary biomass would remove 15%-20% of the RE supply in the EU27

A study published in 2021 by the EU's Joint Research Centre (JRC)¹, estimated that the use of woody biomass for energy in the EU in 2015 was around 451Mm³ (expressed in terms of green solid wood equivalent (SWE)). Of this, 37% (166Mm³) was judged to be primary biomass.

A further 14% (63Mm³) was categorised by the JRC as wood of "unknown origin", some of which (or perhaps all of which) may have been primary biomass. Primary biomass may therefore have comprised 37%-51% (166-229Mm³) of the woody biomass used for energy in 2015.

Given the industry's subsequent growth, it is reasonable to assume that the annual figure for total woody biomass energy use in 2020 was around 485Mm³ SWE, of which primary biomass was most likely in the range 178-247Mm³ (assuming the JRC's 37%-51% estimate of the primary biomass share).

As stated earlier, bioenergy is Europe's greatest source of renewable energy by far. The adjacent chart shows final consumption of renewable energy² in the EU27 in 2019, by source or technology. Solid biomass, overwhelmingly from forests and woodlands, accounted for 40% of total final renewable energy consumption, more than wind, hydro and solar energy combined.

If, as above, we assume that 37%-51% of solid biomass final energy originates from sources of primary forest biomass, **we can conclude that at least 15% (40% x 0.37), or as much as 20% (40% x 0.51) of the EU's final renewable energy consumption is derived from primary biomass.**

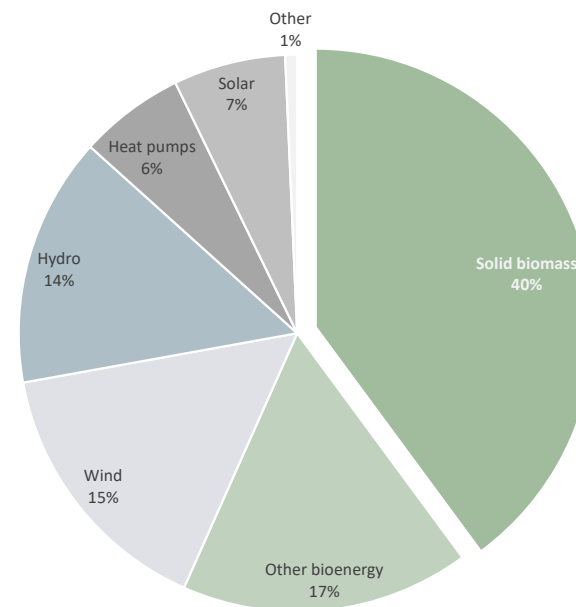
So, as a point of comparison, if the EU prohibited the use of primary biomass, its withdrawal would – at a minimum – be akin to shutting down every wind turbine that was operating in the EU27 in 2019.

It would take years of needless investment in replacement renewable energy sources to fill the hole in Europe's energy supply, raising the costs of decarbonisation and pushing back the Net Zero target, possibly by decades.

In the meantime, additional sources of fossil energy would be required. If coal or natural gas were substituted for the rejected primary biomass energy, **the EU's annual consumption of fossil energy would rise by between 1.7EJ and 2.4EJ.**³ (An EJ, or exajoule, is 1 billion gigajoules of energy.) As points of reference, France consumed a total of 1.6EJ of natural gas in 2021, while Poland consumed 1.9EJ of coal⁴.

Also, if natural gas is used in place the primary forest biomass that was used in 2019, we calculate that **the GHG emissions of the EU27 would rise by 80-111MtCO₂/year. If coal was the substitute fuel, GHG emissions would rise by 160-220MtCO₂/year, or by 4.6%-6.3% of the EU's total GHG emissions in that year.**⁵

Gross final renewable energy consumption, by source, in the EU27 in 2019



Source: Bioenergy Europe, Statistical report 2021 (based on SHARES 2019 & Eurostat)

1. Camia A., Giuntoli, J., Jonsson, R., Robert, N., Cazzaniga, N.E., Jasinevičius, G., Avitabile, V., Grassi, G., Barredo, J.I., Mubareka, S., The use of woody biomass for energy purposes in the EU,

2. Final consumption of energy is the basis upon which the EU's renewable energy targets are defined and measured.

3. This estimate assumes that primary woody biomass, with an average moisture content of 40%, has a net calorific value of 9.67GJ/m³.

4. Source: BP Statistical Review of World Energy 2022.

5. EU27 GHG emissions in 2019 were 3,497MtCO₂. (Source EEA.) Our calculations assume that LCA greenhouse gas emissions of natural gas and coal combustion are respectively 46.6kgCO₂/GJ and 93.0kgCO₂/GJ greater than those of forestry residue combustion. Source: Bioenergy Europe citing Edwards R, Marelli L. Calculated according to the methodology set in COM(2016) 767, EUR 27215 EN.



Excluding primary biomass would be a supply shock that would raise the costs of bioenergy

Regulatory measures that raise the cost of biomass feedstock will see the higher costs quickly passed through to the end users of energy, whether these are industrial and commercial businesses, or the hundreds of thousands of households that rely on biomass energy to warm their homes.

The post-pandemic supply and demand imbalance, coupled with Russia's war with Ukraine, is a case study of what might happen should primary biomass be excluded from the EU renewable energy market.

In the past, the price of biomass in Europe has been relatively stable, more stable than that of fossil fuels. This is one of its attractions. However, over the past year, prices of biomass have soared. The main causes are twofold. First, wood products have been caught up in a post-pandemic surge in demand and in a supply chain crisis that has affected all commodity markets since the middle of last year. Second, Russia's invasion of Ukraine, and the sanctions applied to imports of wood products from Russia and Belarus, have constrained the supply of woody biomass to the EU market.

The effect on biomass prices of the consequent imbalance between demand and supply is illustrated in the chart.

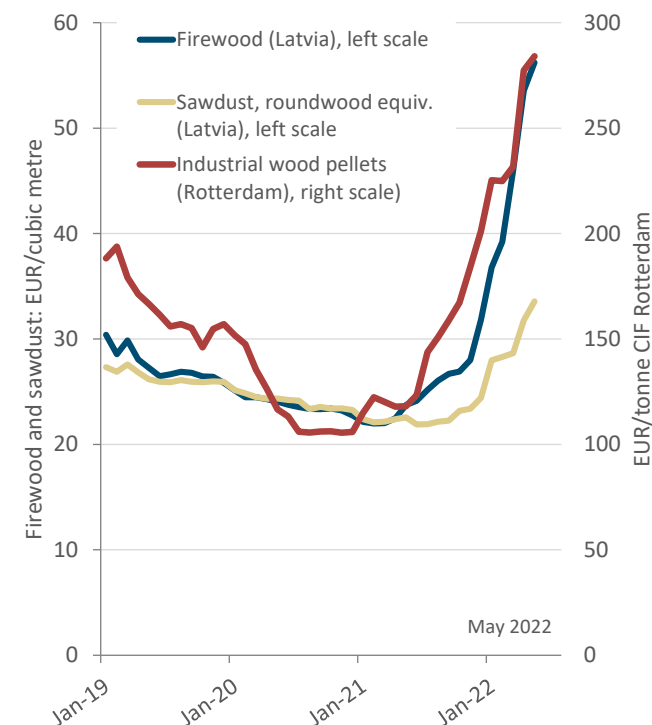
Since June 2021, prices of *firewood* – a category of low grade primary biomass used in the Baltic States in particular – have increased by **148%** in Latvia¹, for example. Over the same period, prices of *forest chips* – a form of low cost primary biomass used extensively by district heating plants – has risen by **147%**. Secondary biomass has not been immune from the price inflation. Sawdust prices in Latvia are **62%** higher than in June last year, while in Germany, for example, they are **290%** higher².

Wood pellet prices have also risen sharply. Heating grade pellets delivered to homeowners in Germany and Austria are respectively **95%** and **66%** higher than a year ago, while the price of industrial grade pellets has climbed by **137%**.

While we cannot state unequivocally that biomass energy prices would respond in the same way if the use of primary biomass was banned, neither is it possible to state unequivocally that they would not. When generating energy from biomass – whether this is electricity or heat – the cost of the fuel is the principal component of generation costs, and ultimately of the price of the energy.

Excluding the use of 178-247Mm³ of primary biomass, as is proposed, would represent a supply shock to the EU market that is orders of magnitude greater than it has experienced in 2021 and 2022. Biomass prices would inevitably rise sharply, to the disadvantage of EU consumers and businesses.

Prices of woody biomass and industrial grade wood pellets, January 2019 - May 2022



Note: Firewood is defined as low grade biomass (primary biomass) that is unsuitable for non-energy uses.

Source: Latvian Wood Products Research and Development Institute (firewood and sawdust prices). Hawkins Wright (Industrial wood pellet prices).

1. Source: Wood Products Research and Development Institute, Latvia. 2. Source: EUWID, Germany



The negative effects of the proposed policies on bioenergy supply

If Member States are prevented from granting State Aid support for renewable energy produced from primary biomass, and if energy from primary woody biomass fuels cannot be considered when calculating progress towards EU or Member States' renewable energy targets, two of the principal drivers of growth in the bioenergy industry will be removed.

Until the precise mechanisms that will give effect to the proposed policies are set out, it is impossible to calculate the effect of the proposed sanctions on the supply of woody biomass fuels – wood chips and wood pellets – and the generation of biomass heat and power in the European Union. We can safely assume, however, that the effects will be negative.

Industrial wood pellets

In 2021, the European Union's consumption of industrial wood pellets for utility-scale heat and power generation, and for industrial heat, totalled **8.5Mt**. If we employ SBP data on the average primary/secondary feedstock mix of pellet producers in Europe and the United States (see page 5) we can conclude that approximately **3.8Mt** (or 45%) of the EU's industrial wood pellet consumption in 2021 was derived from primary biomass.

Unless industrial pellet producers can find an economic source of secondary biomass – which is improbable given that additional secondary biomass resources often do not exist – the supplies of industrial pellets offered to the EU market will shrink rapidly. Most likely, international suppliers of industrial wood pellets will exit the EU market entirely, concentrating their sales in the quickly growing Asian market.

Heating pellets

In 2021, EU consumption of heating grade pellets totalled **14.9Mt**, almost all of which was supplied by pellet manufacturers in the EU or in neighbouring countries (Russia, Belarus, Ukraine and the Balkans, for example.)

There is no pan-EU data on the feedstock mix of heating grade pellets, but secondary biomass is known to be the predominant resource. If we assume that primary biomass accounts for just 15% of the mix, on average, we can see that around **2.2Mt** of the heating grade pellets used in the EU in 2021 was derived from primary biomass.

Wood chips

Wood chips are the most widely consumed form of biomass in the EU, being burned in biomass CHP plants, in district heating plants and in industrial settings across the region. According to Eurostat data, **114Mm³** of the EU's forest removals are of fuelwood, which by definition constitute an entirely "primary" biomass resource. This primary biomass resource is understood to account for approximately 90% of the feedstock used by biomass CHP/heating plants. If this resource was to be excluded entirely, the majority of biomass CHP/heating plants would be forced to shut or, if technically possible, to switch to an alternative fuel, possibly waste-based, but more likely fossil-based.



Wood pellet suppliers would likely withdraw from the EU market if primary biomass is banned

Wood pellet imports by the EU27 totalled 5.4Mt in 2021, up from 4.8Mt the year before. Every EU member state, with the exception of Luxembourg, imported some pellets from beyond the borders of the EU in 2021. The biggest importers were the Netherlands (1.9Mt), Denmark (0.8Mt), Belgium (0.6Mt), Latvia (0.4Mt), Italy (0.4Mt) and France (0.2Mt).

Imported pellets provide renewable fuel to system-critical generators of electricity and heat. This includes companies such as **RWE**, **Uniper** and **Onyx Power** in the Netherlands, **Electrabel** in Belgium, **Ørsted** and **Hofor** in Denmark, and France's **Albioma** that operates biomass energy plants in several of France's Overseas Territories. Imports are also an important supplementary source of the pellets used for heating homes and commercial buildings throughout the EU.

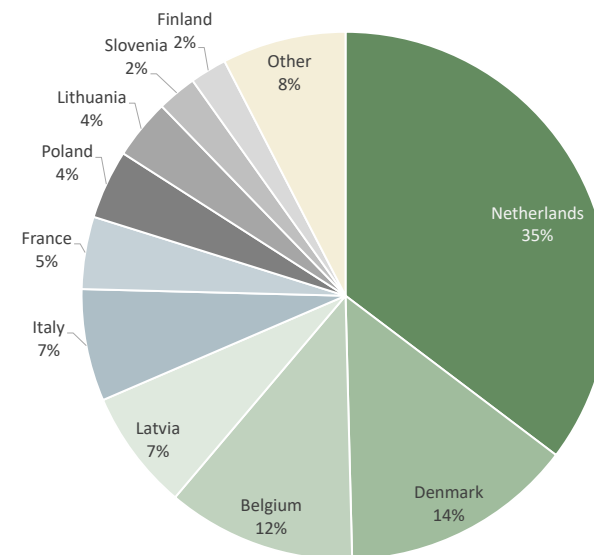
Eurostat data do not separate industrial pellets from heating pellets, so it is difficult to state precisely the split between imports of industrial versus heating pellets. Hawkins Wright estimates that the division is roughly 60% industrial and 40% heating grade pellets. Almost all the pellets imported from North America were industrial grade, as were about half the imports from Russia in 2021.

Industrial grade pellets always include some primary biomass within the mix of fibres. Producers already seek to maximise their use of secondary fibre, as it is usually cheaper to process, but it would be commercially unsustainable for primary biomass to be excluded from the industrial pellet producers' fibre mix entirely.

The business models of industrial wood pellet producers in North America are not designed to operate solely on secondary fibre, of which there is a limited supply and for which there is competition from other downstream industries. For reasons of supply security, industrial pellet producers cannot risk being dependent on a secondary fibre supply that is beyond their control. If the use of primary fibre is outlawed by the EU, the suppliers' most likely response would be to withdraw from the EU market, favouring instead the quickly growing Asian markets.

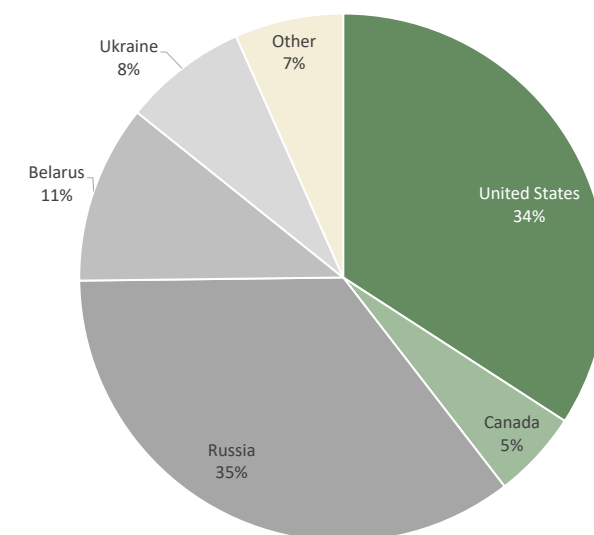
Absent supplies from the USA and Canada, EU importers of industrial pellets would be forced either to shut, or to compete with EU homeowners and businesses for the limited supply of heating pellets, or to rely more heavily on Russian suppliers, should these ever be permitted after the war in Ukraine. Meanwhile, all pellet prices would rise, raising heating costs and placing EU and national climate targets further out of reach.

EU27 imports of wood pellets by destination, 2021



Source: Eurostat

EU27 imports of wood pellets by origin, 2021



Source: Eurostat



Conclusions

There is no information on how – should the amendments to RED III be accepted – new regulations would be framed and implemented, but the clear intention of the amendments is to prohibit the use of primary biomass by some end-users. **This would have negative implications for forest owners, forest industries, homeowners and businesses and for the EU's climate ambitions.**

Absent from the amendments is an explanation of the fundamental principles that underlie them. Other than a desire to promote the cascading principle that governs resource use, what is the concern that the amendments' proposers seek to address? The cascading principle is already assured by a biomass market that efficiently allocates different qualities of biomass to their highest and best end-use, primary biomass included. Also, the well-regarded SBP collects verifiable data on the origins of all the biomass that it certifies as being sustainably managed.

Given the size of the EU market for solid biomass, one that contributes 40% of final renewable energy consumption, the potential effects will be profound. These effects will be felt not just in the EU but in North America and elsewhere too.

Forest management and environmental consequences

- There is no scientific evidence that the removal of low quality fuel grade primary biomass is environmentally damaging to a working forest. Quite the reverse; the management of working forests, including thinning and the removal of fuel grade wood fibre, is essential to the long term health of a forest, encouraging the efficient cultivation of high quality sawlogs, minimising the risks of diseases and forest fires, and maximising carbon sequestration.
- Forest thinning is vital to maintaining biodiversity. For example, many endemic plant and animal species in the US Southeast thrive in open pine forests. Forest thinning is a tool which can be used to help create a desired habitat for many declining and imperilled species.
- For thinning and maintenance to be commercially viable, there needs to be a market for the low-quality wood that is extracted. Absent such a market, and the income that it generates, it is more difficult for forest owners to justify the cost of the treatments. If thinning and maintenance are therefore reduced because a primary biomass market no longer exists, growth rates will suffer, sawlog quality will decline and the health of the forest will be impaired. Alternatively, thinnings and harvest residues will be left to rot or will be burned on site. (In British Columbia, for example, harvesting residuals are required to be burnt as a fire and pest control mechanism if they are not collected for biomass use.) A forest will then sequester less carbon during sequential forestry cycles than otherwise would be the case.
- Removing markets for forest products reduces the incentive to perform these sustainable forest management activities, or even to retain land as forest. Forest cover in Europe and in the southeast USA continues to grow, but is under pressure from deforestation and land conversion in areas where markets do not exist.

Socio-economic and climatic consequences of prohibiting the removal of primary biomass materials

- Any ban on the use of primary biomass will have an immediate effect on all utility-scale biomass power/CHP or district heating plants that have received, or may in the future receive, state aid. These plants would, in turn, need to require their suppliers of feedstock (mainly wood chips and pellets) to eliminate primary wood from their mix of feedstocks.

Continued...



Conclusions *continued*

- Most suppliers are already using as much secondary fibre as they can (as it is almost always cheaper than primary wood) but total reliance on secondary biomass would often be impossible without creating damaging market distortions. Remember that the supply of secondary biomass is limited by the output of sawmills and that, depending on local factors, there are often other industries that use secondary fibre too.
- Pellet and wood chip producers would have two choices; closedown or increase purchases of secondary fibre in competition with other off takers. With supply limited, increased competition would raise secondary feedstock prices, not just for industrial pellet/chip producers but for the many EU producers of heating pellets that rely exclusively on secondary fibre. As a result, individual households will pay more to heat their homes.
- Implementing bans on the use of primary biomass will be complex and costly, and would likely require the creation of national and sub-national monitoring systems operating on a more granular level than the existing (and effective) risk-based regional assessments and certifications.
- In the US South, wood pellet suppliers' business models will not support a switch to 100% secondary biomass as its availability in the South is inadequate. The supply of sawmill residues can also be uncertain given that it is heavily dependent on sawnwood (lumber) production which is, in turn, dependent on the sometimes erratic US house-building cycle. If the use of primary biomass in industrial pellets is banned, US producers would likely withdraw from the European market, directing their production to Asia instead.

There are long-term policy implications of excluding primary biomass

- Bioenergy has an important role to play in the future decarbonisation of the European economy, one that would be curtailed if the use of primary biomass disqualified innovative projects from state aid. Biomass is an essential component in the decarbonisation of hard-to-abate sectors such as aviation fuel and the production of bio-materials.
- One example is *Bioenergy with Carbon Capture and Storage (BECCS)* a technology being developed in several European countries which offers the prospect of negative carbon emissions. According to the EU's own analysis, up to 50GW of BECCS power generation will be necessary. To minimise the cost of carbon capture to consumers and taxpayers, BECCS power stations will need low cost feedstock, a need that would be jeopardised if their use primary biomass is excluded.
- Higher biomass prices will slow the adoption of renewable heating, resulting in greater consumption of fossil fuels and consequently higher emissions of greenhouse gases, hindering the EU from reaching its climate goals.
- If the more extreme RED III amendments are accepted (i.e. Amendments #650 & #653 that remove primary biomass from the definition of renewable energy for the purposes of EU and national targets) it is difficult to see how the EU's 2050 Net Zero ambition could be achieved. Arbitrarily redefining 178-247Mm³ (1.7-2.4EJ) of primary woody biomass energy as non-renewable would set back the EU's progress towards Net Zero by years if not decades. As points of comparison, the EU27's output of wind energy (both onshore and offshore) totalled 1.4EJ in 2020, while solar energy contributed 0.5EJ.



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