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A carbon bomb in the heart of Europe

Photo: Schkopau power plant, Germany

Will the EU biomass loophole give a lifeline to energy giant EPH's coal power plants?

SUMMARY

In the summer of 2022, wildfires raged across European forests "like a carbon bomb exploding".[1] But the carbon dioxide (CO2) released from these wildfires was the same gas, and only about 5% of the volume, as that which is released every year in Europe when forests are logged and burned in a power station. Despite this, the European Union's (EU) Renewable Energy Directive (RED) considers energy produced from burning wood ("biomass") as "carbon neutral" (as the trees might regrow), and allows Member States to support it both directly and indirectly, to the tune of at least 22 billion Euros in 2021.

This support has been mainly reaped by energy companies looking for alternatives to coal in their power stations. But while the transition from coal is essential for our survival on this planet, moving back to wood burning could do more harm than good.

This briefing zooms in on Czech multinational corporation Energetický a Průmyslový Holding (EPH), a rapidly growing energy corporation which is ideally placed to exploit biomass subsidies to extend the life of its coal assets, thereby dangerously delaying the energy sector's decarbonisation.

Our research shows that in 2022 alone, EPH and its subsidiaries are likely to burn about 4.2 million tonnes of wood in their biomass and coal power plants. This represents, for the sake of comparison, more than 75 per cent of Czechia's 2015 wood harvest (before a bad bark beetle outbreak). This would lead to a carbon bomb of as much as 6.2 million tonnes of CO2 being released into the air: more than the country's 2015 land sink. But all this tree burning only supplied a paltry amount of electricity: 4.5 GWh, representing a little more than 5% of the electricity Czechia consumed in 2015.

If the revised RED (expected at the end of 2022) continues to allow public support for burning wood for energy production, the conversion of coal plants to woody burning, or the building of new biomass installations, EPH would be incentivised to pursue the biomass projects it is already considering, worth at least 320 MW of extra capacity. This would cause an extra 1.4 million tonnes of wood to be burned, releasing 2.38 million tonnes more of CO2. But EPH's coal assets today represent a whopping 12 GW of energy generation capacity, so much more could be converted to wood burning if the biomass industry's lobbyists have their way.

1 - https://www.france24.com/en/europe/20220719-as-france-battles-wildfires-experts-call-for-a-rethink-of-forest-management

1. INTRODUCTION

Czech billionaire investor Daniel Křetínský created the Czech energy corporation Energetický a Průmyslový Holding (EPH) in 2009. He is still the majority shareholder, but now also has large stakes in famous UK brands such as Royal Mail, the supermarket giant Sainsbury's; prominent football clubs like West Ham and Sparta Prague, various Czech media; and the leading French newspaper Le Monde. For several years, EPH was the biggest single transporter of gas from Russia to the EU via Ukraine through the Eustream gas pipeline. It also bought numerous coal power plants and other energy assets (often at a low price) from Uniper, E.ON, RWE and Vatenfall thanks to billions in loans from major European banks. EPH is now the third largest CO2-emitting energy utility in Europe.

A recent academic analysis dubbed EPH's investment strategy as "transition scavenger", stating that it "speculates on the prolonged transition from fossil fuel sources to low-carbon technologies", and that it thereby "simultaneously contributes to the transition and compromises the goal of decarbonization" by targeting assets enabling it to extract rent from transition policies.[2] For instance, EPH owns or co-owns some of the largest and dirtiest lignite power plants in Germany, where it benefits from capacity remuneration mechanisms designed to prolong the life of these assets in order to ensure supply security.

Gas is an essential part of EPH's business and current tensions around Russian gas imports could be crucial to the company's fate. But even if Russia does turn off the taps, EPH could benefit: Germany is re-expanding coal power production and France has asked EPH to reopen a coal plant they closed in March 2022. Although these are only temporary measures (the EU remains focussed on expanding renewables), these coal plants could soon be supported to burn wood if the RED revamp does not discriminate between renewable energy sources. EPH has recently acquired three biomass power plants in Italy, and has started burning wood in four former coal-fired power plants or units in France, the UK and Czechia.

EPH presents itself as the "leading EU player in decarbonisation of conventional power plants", and publicly stated that converting one former coal plant in Gardanne, near Marseille, was going to be "an energy transition example from coal to low-carbon energy production". Křetínský himself wrote in 2021 that EPH's energy mix "will be shaped by our current investments in refurbishments of existing boilers to enable partial or full biomass combustion [. . .] By gradual transition towards fuels with lower carbon footprint such as biomass, communal waste, or natural gas, we aim to actively contribute to the ongoing energy transition and decarbonization in Europe."

The problem is that biomass is not low-carbon.

In 2006, the Intergovernmental Panel on Climate Change (IPCC) assessed the average emissions of wood burning at 112 tonnes CO2 per terajoule (TJ) of energy, more than almost all fuels. According to a May 2022 peer-reviewed scientific article following many others, "the first impact of wood bioenergy is to increase the carbon dioxide in the atmosphere, worsening climate change. Forest regrowth might eventually remove that extra carbon dioxide from the atmosphere, but regrowth is uncertain and takes time – decades to a century or more, depending on forest composition and climatic zone – time we do not have to cut emissions enough to avoid the worst harms from climate change."

In addition, there is the foregone sequestration: when a tree is burned, it stops capturing CO2, and younger trees need many years to start capturing it at the same rate. Burning our main carbon sink combines the worst of both worlds: we reduce the sink while emitting more.

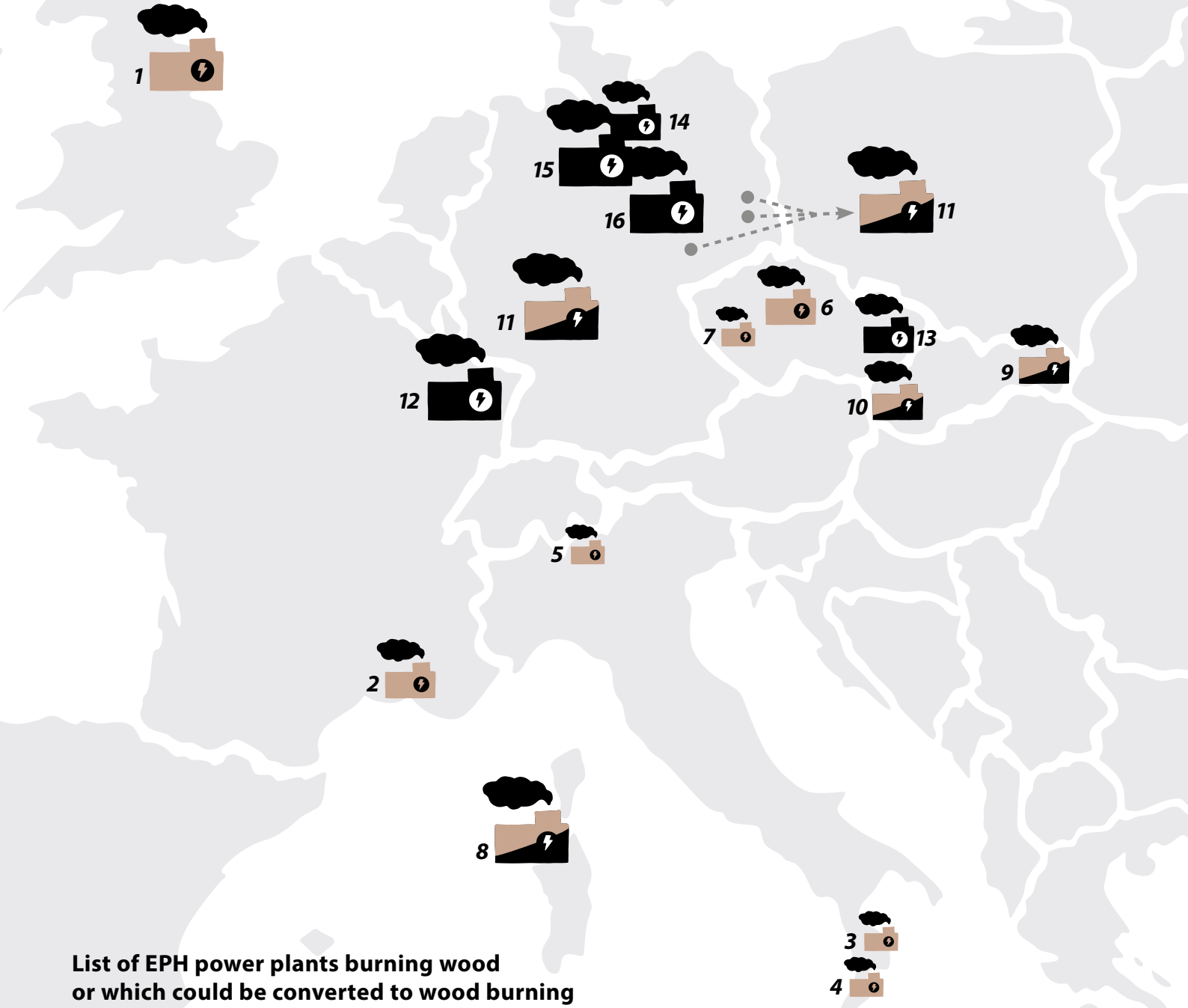
EPH can only claim to be a "leader in decarbonisation" because the EU's Emission Trading Scheme (EU ETS) considers that burning woody biomass releases zero emissions. The background to this peculiar approach is a policy agreement at the United Nations Framework Convention on Climate Change (UNFCCC), stipulating that the country that supplies the wood has to withdraw these emissions in their reports on land use accounting. Companies benefit from "carbon neutral" energy while countries see their land sink accounts. This means that EPH can keep releasing millions of tons of CO2 without buying carbon credits in the ETS. The company can also access 'green' finance as, after fierce lobbying by Sweden in particular, wood burning was accepted as an eligible activity to the EU Sustainable Finance Taxonomy.

But inappropriate carbon accounting can't hide the reality on the ground.

The huge incentives for wood burning have increased logging across the EU and decreased the carbon sink. Estonia's land sector for instance has become a net emitter of greenhouse gases despite being highly forested, due to companies such as Graanul, an Estonian company, and one of the EU's largest wood pellets producers.

2 - The "coal villain" of the European Union? Path dependence, profiteering and the role of the Energetický a průmyslový holding (EPH) company in the energy transition, F. Černoch, J. Osička, S. Mariňák, Energy Research & Social Science, June 2021

MAP OF EPH BIOMASS AND COAL ASSETS



List of EPH power plants burning wood or which could be converted to wood burning

Biomass plants or units (brown), mainly burning wood

1. Lynemouth (UK) – 407 MW
(100% owned by EPH or one of its subsidiaries)
2. Provence 4 (Gardanne) (France) – 150 MW (100%)
3. Crotone (Italy) – 27 MW (100%)
4. Strongoli (Italy) – 46 MW (100%)
5. Fusine (Italy) – 7 MW (100%)
6. Komořany (Czech Republic) – 81 MW (100%) – ongoing conversion of other units
7. Plzeňská teplárenská (Czech Republic) – 10MW (35%) – conversion project for other units

EPH coal power plants co-firing with wood

8. Fiume Santo (Italy) – 600MW (100%) – conversion project
9. Vojany (Slovakia) – 220MW (33%) – further conversion project
10. Nováky (Slovakia) – 266 MW (33%)

11. LEAG coal power plants (Eastern Germany): 9000 MW in total
- Boxberg (Germany) – 2575 MW (50%)
- Jänschwalde (Germany) – 3000 MW (50%)
- Lippendorf (Germany) – 1840 MW (50%)
- Schwartze Pumpe (Germany) – 1600 MW (50%)

Other EPH coal power plants

12. St Avold/Émile Huchet (France) – 600MW – conversion project for 20 MW
13. Opatovice (Czech Republic) – 363 MW – conversion project (biomass not confirmed)
14. Buschhaus (Germany) – 390 MW (100%)
15. Mehrum (Germany) – 690 MW (100%)
16. Schkopau (Germany) – 900 MW (100%)

2. METHODOLOGY

This factsheet is based on desk research, interviews and questions sent to EPH in July 2022. EPH responded with their 2021 sustainability report, which answered some queries but does not outline the amount of public money they receive for burning biomass. We followed-up with specific questions, which EPH partly replied to, while withholding information pertaining to "financial implications as this is not publicly available".

To estimate the CO2 emissions of the EPH biomass plants burning or planning to burn wood pellets (Lynemouth, Fiume Santo), we assumed a 10 per cent moisture content, to be deducted from the total wood weight, a 50 per cent carbon content in what was left, before applying the standard Carbon to CO2 multiplier, 3.67. For power stations burning or planning to burn wood chips, we used the same approach but with a 30 per cent moisture content. For power plants burning both pellets and chips and without information on the proportions, we assumed a mean 20 per cent moisture content.

As Gardanne uses 13.7 per cent coal, we deducted this so as to present wood burning emissions only. Because the plant started operations in April 2022, we did a projection for nine months. For other plants we used the most recent reported numbers, either 2020 or 2021, assuming similar fuels, efficiency and operating time for 2022 to obtain a 2022 projection.

For all plants, we only estimated the emissions from combustion, not from the supply chain (logging, transport, pelleting…), nor from the impact on the source forest (foregone sequestration: the CO2 that the forest will no longer capture because of the logged trees).

This is a very conservative approach that largely underestimates total emissions, due to the variety of situations and difficulty to find reliable data: a recent Chatham House report calculating the climate impact of burning wood pellets in Europe that have been imported from North America – like EPH is using in its UK Lynemouth plant – assessed these additional emissions at about 25-30% on top of combustion.

For companies where EPH owns a minority of the shares or has no management control (Plzeňská teplárenská, Slovenské elektrárne, LEAG), we attributed to EPH the same share of emissions as its capital shares.

For LEAG, the lack of reliable data made it impossible to precisely estimate the amount of electricity generated with the wood burning, we assumed a production of 1500 GWh for the (up to) 2 million tons of wood burned in co-firing coal power plants.

This methodology is intended only as an estimate because it does not take into account varying efficiency rates among plants, humidity rates, running time etc. A projection based on past independent direct measurements would have been preferable.

For estimating direct public support, we used 2020 numbers when publicly available (only in the UK) and the 31 December 2022 conversion rate for sterling to Euros.

For Italy, we also used the figures obtained through FOI by Italian investigative journalist Ludovica Jona. But besides that accessing this information was not possible within the timeframe of this report – and EPH would not disclose it.

Photo: Gardanne power plant, France

3. EPH'S CURRENT BIOMASS POWER PLANTS

Projection of EPH biomass plants' wood use, annual power output and CO2 stack emissions in 2022

EPH biomass power plants or units (2022)	Plant type	Woody biomass fuel type	Capacity (MW)	Wood use (x1000 tons)	Annual output (GWh)	Estimated direct public support (x1000€) (2020)	Estimated stack emissions for wood (x1000 tons CO2)
Lynemouth	power only	pellets	407.0	1,600.0	2,300.0	195,536.9	2,642.4
Provence 4 (Gardanne) (estimation for 9 months in 2022)	power only	wood chips (86.3%), coal (13.7%)	150.0	641.3	843.8	?	823.7
Crotone	power only	wood chips	27.0	300.0	220.0	?	385.4
Strongoli	power only	wood chips	46.0	400.0	360.0	?	513.8
Fusine	power only	wood chips	7.0	82.0	41.0	?	105.3
Komořany	heat & power	wood chips	81.0	120.0		?	154.1
Plzeňská teplárenská (35% participation)	heat & power	chips & pellets	10.0	241.0		?	353.8
EPH coal power plants co-firing biomass							
Fiume Santo (up to 5%)	power only	wood chips	600.0	2.0			2.6
Slovenské elektrárne (EPH 33% participation)							
Vojany (7 and 22% in 2 units)	power only	wood chips	220.0	146.0			187.5
Nováky	heat & power	wood chips	266.0				0.0
LEAG (EPH 50% participation)	heat & power	unknown (assumption: wood chips & pellets)		2,000.0	1,500.0		2,936.0
Total				5,532.3	5,264.8		8,104.6
Total attributable to EPH				*4,277.8*	*4,514.8*		*6,281.0*

Based on previous years and recent news, EPH is likely to burn 4.2 million tonnes of wood in its power plants in 2022. This will likely release 6.3 million tonnes CO2. If EPH were a country, this would be equivalent to more than 75 per cent of[3] the 2015 wood harvest of Czechia, and a little more than 100% of the whole country's land carbon sink that year.[4] Remarkably, only one of EPH's biomass plants, Lynemouth in the UK, is relatively large (407 MW) – but co-firing wood in EPH subsidiary LEAG's enormous coal plants in Germany has a very significant impact too. Despite the huge amount of wood burning and CO2 emissions, in total, these plants will probably produce around 4.5 GWh of electricity, representing only 5.3 per cent of Czechia's estimated 2015 power consumption (83.89 GWh). If EPH had needed to purchase carbon credits from the EU ETS to cover these emissions, it would have cost about €502 million in 2022.[5]

3 - This would be 55.6 per cent of the 2015 roundwood harvest in Czechia, before the catastrophic bark beetle outbreak (14.38 million cubic meters or 5.75 million tonnes, assuming a 400kg/m3 conversion factor). The effects of climate change (warmer temperatures, severe droughts) triggered a massive outbreak of bark beetles in Czech forests from 2016 onwards; spruce stands in particular were massively damaged and had to be removed, causing more than a doubling of the usual logging rate (32.6 million cubic meters in 2019!) and crashing the timber market in the country.

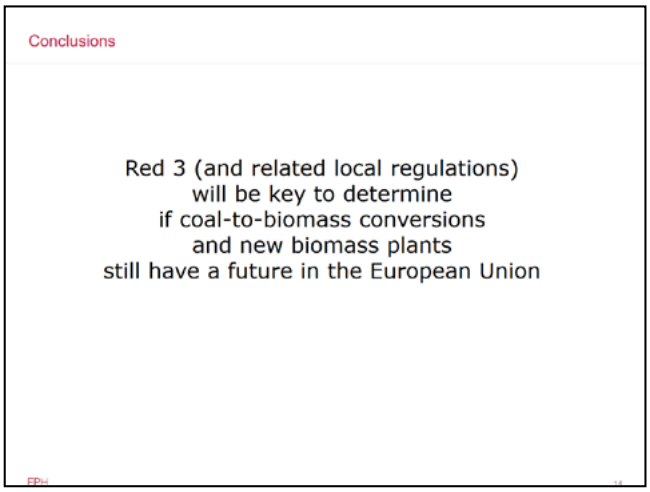
4 - A land sink is the country's forests and agriculture's absorption of atmospheric CO2. In 2015, Czechia's was -6 million tonnes CO2, so the 5.124 million tonnes we project EPH will emit in 2022 represent 85 per cent of Czechia's land sink that year.

5 - Assuming a mean price of 80€/ton of CO2 for 2022.

POLITICAL CONTEXT - LOBBYING IN THE RED: THE BIOMASS INDUSTRY AND ITS ALLIES

In a January 2022 presentation, Bioenergy Europe, the main trade association made no mystery about the "high profitability of bioelectricity production" in Europe. The whole bioenergy industry is lobbying to defend the considerable benefits they receive thanks to the current version of the Renewable Energy Directive (RED), enabling Member States to support them.

Since EPH acknowledges that the RED revision is key to the fate of a substantial section of their business, it is highly likely that they are also directly lobbying to defend their interests in Brussels, Prague and the other national capitals. They are described as having positioned themselves as "an essential part of the energy system, providing services critical for its functioning" in most countries in which they operate. That, in addition to owning prestigious football clubs and media, can easily give them access to national decision-makers.



Concluding slide from a January 2022 EPH presentation outlining how they were planning on converting some of their coal assets to biomass

EPH is a member of Bioenergy Europe through its subsidiary EP Power Europe, and it paid the lobbying consultancy FIPRA in 2019. EPH is not registered in the EU lobby register, and although Bioenergy Europe is registered, it is legally a non-profit organisation which means it no longer has to declare a lobbying budget under revised EU lobbying transparency rules. Its last declared lobbying budget in 2019 was half a million Euro, employing a team of 21. This does not include the money spent by its members for the same purpose.

In July 2021, this joint statement criticising the (insufficient) legislative proposal by the European Commission shows that the biomass industry is supported by very powerful allies, including the forestry lobby (CEPF), the land owners lobby (European Land Owners (ELO), particularly rich and well-connected), the farming lobby (COPA-COGECA, which has managed to derail most reforms of the Common Agricultural Policy), the paper lobby (CEPI), and even the organisation representing state forests (Eustafor). All benefit from the RED woody biomass incentives and the currently very weak sustainability criteria. All can count on the support of their national members – the Swedish Forest Industries Federation for instance has its own active Brussels bureau, in front of the European Parliament.

USA companies shipping ever-increasing amounts of wood pellets to Europe for energy, like Enviva or their trade association USIPA, are also lobbying EU decision-makers, sometimes with the support of members of Congress from the States where they operate. Since the EU was the first public authority to publicly incentivise wood burning for energy, other countries are tempted to imitate it (or have already done so like Japan or South Korea) so the stakes of the RED revision are truly global: the director of the World Bioenergy Association (WBA) had an angry exchange with the European Advisory Science Academies Council (EASAC) after they debunked industry misrepresentation of IPCC views on bioenergy. WBA also paid for several op-eds in Brussels media.

The industry's most powerful allies are, however, some Member State governments, as this letter from ten ministers from Sweden, Finland, Poland, Hungary, Czechia, Slovenia, Bulgaria, Lithuania, Estonia and Latvia to the European Commission indicates.[11] The General Approach on the RED revision adopted by the Council of the EU on June 2022 clearly reflects the views of the majority of national governments: support the biomass industry's profits rather than forests, the climate, biodiversity and public health.

11 - NGOs like Fern also try to defend their views with EU policy-makers, pointing out that in a climate crisis it is better to not add huge amounts of CO2 to the atmosphere. We do not, however have the same level of financial reserves to rely on.

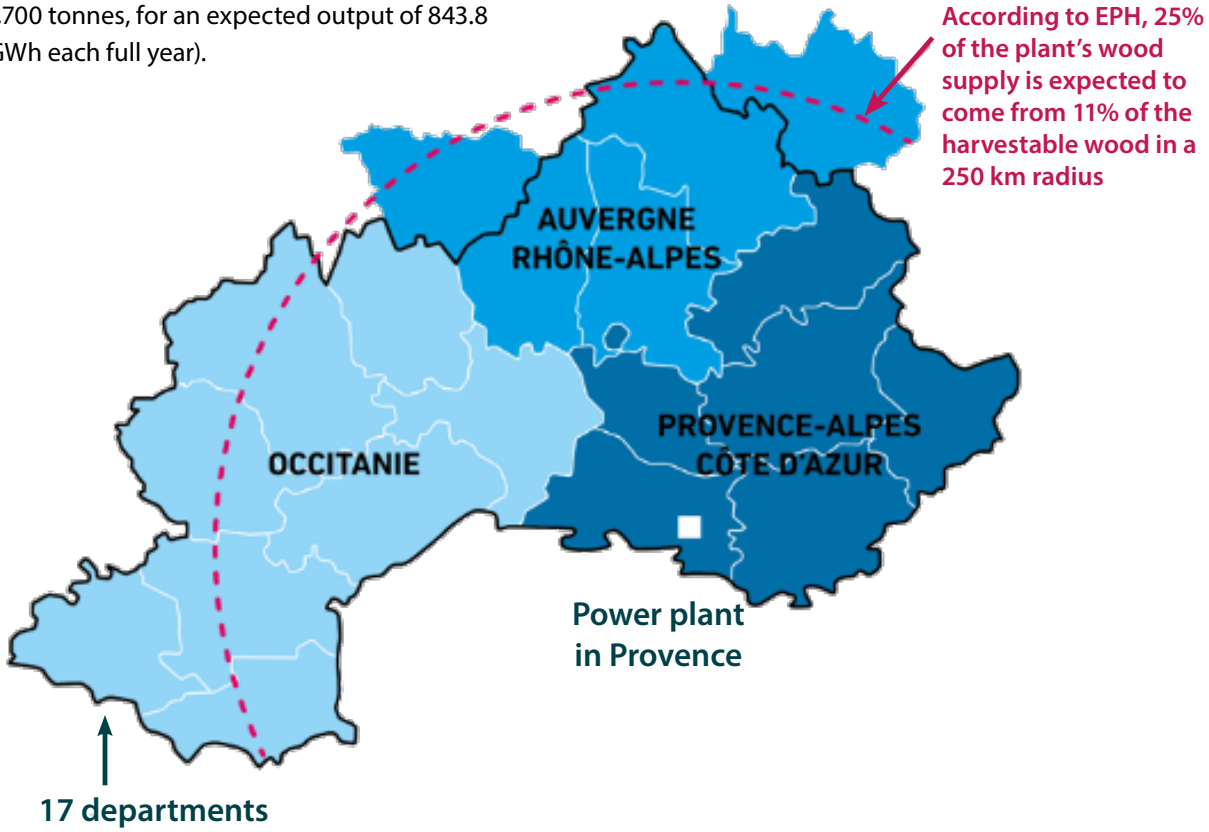
4. CASE STUDIES

4.1 - FRANCE - GARDANNE

Provence 4 Biomasse is a 150 MW biomass power plant located in Gardanne-Meyeuil, near Marseille, France. It was converted from coal power between 2014 and 2016, and EPH bought it from German energy company Uniper in July 2019 (together with the other energy assets of the German company in France). The plant has a contract with the French State guaranteeing a fixed electricity price purchase until 2035. The contract is confidential, but the regional section of French environmental NGO France Nature Environment claimed the contract would guarantee a price three times higher than market price (around 50€/MWh in December 2020).

Local environmental groups managed to have the plant temporarily closed in 2017 due to concerns about pollution, but, in February 2022, the plant started feeding into the grid, having only produced electricity for about 20 days in three years. It properly started operations again in April 2022, with plans to annually burn about 855,000 tonnes of wood chips, together with 137,000 tonnes of fossil fuels (essentially coal), representing 13.7 per cent of the total fuel. Direct CO2 emissions produced by wood burning in 2022 are expected to reach 823,700 tonnes, for an expected output of 843.8 GWh (1,125 GWh each full year).

After giving up on an initial plan to import of 400,000 tonnes of wood from Brazil because of opposition from local green groups and politicians, Gazel Energie told local authorities that about 75 per cent of the fuel would be forest biomass, of which 50 per cent would be wood chips from undisclosed European locations and 25 per cent sourced from within a 250 kilometre (km) radius. Two reports commissioned by the company estimate that this would represent about 11 per cent of the harvestable wood in that area (assessments by local courts mentioned a figure of 35 per cent). The remaining fuels are meant to be sourced from organic waste and post-consumer wood. Future plans include the building of a sawmill, the development of hydrogen and biofuels production, and the construction of a heat network supplying the neighbouring city.



Area for the sourcing of the local woody biomass at Gardanne (25 per cent of the fuel supply)
(Source: Unité biomasse Provence 4 de Gardanne-Meyreuil (13), Plan d'approvisionnement, Synthèse publique)

4.2 - UK - LYNEMOUTH POWER

A former coal plant whose spectacular smokestack on the Northumbrian sea shore features in the film Billy Elliot, 407 MW Lynemouth is the UK's second biggest biomass plant after Drax. EPH acquired the plant in 2016, a year after it stopped burning coal. It benefitted from UK government renewable energy subsidies, via a Contract for Difference (CfD) which guarantees EPH's income through paying the difference between the market price and an agreed price (currently £124.35/MWh). According to the independent energy thinktank Ember, in 2020 alone, Lynemouth received £175 million in subsidies – rising to £223 million when indirect subsidies are included. The UK left the EU in 2021, but its national legislation is inherited from the RED (and Lynemouth is exempt from the UK ETS).

Lynemouth burns around 1.6 million tonnes of wood pellets a year, with a claimed efficiency of up to 40 per cent, and releases 2.64 million tonnes of CO2 in the operation. Its annual output was declared to be 2.3 terawatt hours (TWh).[6]

The company has a long-term wood pellet contract with Pinnacle Renewable Energy (recently acquired by the Drax group), from British Columbia, and also imports pellets from the Baltic States, Sweden, Finland, Russia and Portugal (the UK government banned wood imports from Russia on 21 April 2022). Bioenergy is increasing wood demand in Estonia to such high levels that the country's land sector has become a net greenhouse gas emitter for the past two years. Production of wood pellets in Estonia has been shown to severely damage even Natura 2000 areas.

More than half of Lynemouth's pellets are supplied by Enviva, a company from the United States of America (USA), and the world's largest industrial wood pellets producer. Lynemouth entered into a long-term contract with them in 2016. Enviva produces its wood pellets in South-East USA, and is regularly exposed in the media for clear-cutting vast swathes of forests, and using whole trees for its operations (the air pollution caused by pellet production also damages the health of local communities).

Lynemouth is currently expected to run until March 2027, when the CfD contract runs out (the UK government was advised by its climate advisers to 'move away' from large-scale biomass in 2018). The company is considering installing a Bioenergy Carbon Capture and Storage (BECCS) facility at the plant to extend the life of its operations.

4.3 - ITALY – STRONGOLI, CROTONE AND FUSINE

In 2017, EPH consolidated its efforts to become a European biomass "pioneer" by acquiring the capital of Biomasse Italia and Biomasse Crotone, including the Strongoli and Crotone biomass-fired power plants in Calabria, southern Italy. In 2019 it acquired Fusine's biomass power plant in the province of Sondrio (Northern Italy), from Holcim Italia Group. All these assets are managed by EPH's subsidiary EP Power Europe.

Strongoli

The 46 MW plant burns around 400,000 tonnes of wood a year, which EPH says is "derived from forest maintenance and agro-food residuals coming from local and national markets". The annual electricity production at full capacity is reported to be 360 GWh, which represents direct annual CO2 emissions of a little more than 513,800 tonnes. The plant received about €35 million in subsidies in 2020, representing around 60% of its revenue.

Crotone

Nearby is Crotone, a biomass-fired power plant with a capacity of 27 MW, annually burning around 300,000 tonnes of wood chips, sourced locally and from abroad. According to a local newspaper, three hectares (ha) of 20-years old Aleppo pines from a wood that had received public funds for restoration were illegally logged and burned in the plants. The annual electricity production at full capacity is reported to be 220 GWh, representing annual CO2 emissions of about 385,400 tonnes. The plant received about €27.5 million in subsidies in 2020, representing around 60% of its revenue.

Fusine

EP Power Europe states that this 7 MW capacity plant annually consumes about 82,000 tonnes of wood chips "originating mainly from neighbouring regions", producing around 41,000 MWh. This represents 105,500 tonnes of CO2. The plant received about €5.5 million in subsidies in 2020.

6 - Number communicated at the time EPH bought the plant, but no more recent number is available.

4.4 - CZECHIA

Komořany

One of Czechia's oldest coal power plants, Komořany combines heat and power (10,000 TJ heat, 239 Megawatts electric (MWe)). EPH operates the plant through its subsidiary United Energy and in 2021 was authorised to convert it to gas and biomass. It has already converted one lignite boiler to a 81 MW biomass installation for both heat and electricity production. Between 100 and 120,000 tonnes of wood chips are to be burned every year in it, described as "waste from logging operations" in the Pilsen region and Krušné hory. In 2027, once the conversion of the other coal units has been completed, the plant is expected to burn 175,000 tonnes of biomass per year.

Plzeňská teplárenská

The cogeneration coal plant in Pilsen (814 Megawatt thermal (MWt), 274 Megawatt electricity (MWe)), belongs to the municipal company Plzeňská teplárenská (35 per cent belongs to EPH, 65 per cent to the city of Pilsen). It has been gradually replacing coal with biomass since 2004. In particular, a new boiler co-fired with biomass was started in 2010, with ten or 15 MW (depending on whether it is producing electricity or heat), reportedly burning 90,000 tonnes of wood a year (representing 82 per cent of the fuel mix today in the boiler, the rest still being coal and some municipal waste – coal still represented a majority of the fuel mix in 2020). The company also plans to build gas turbines. In 2020, Plzeňská teplárenská reported having burned 240,882 tonnes of wood.

5. EPH'S CURRENT COAL POWER PLANTS, AND THE BIOMASS CONVERSION RISK

EPH already co-fires biomass in some of its coal plants as a strategy to exploit the biomass accounting loophole, which enables it to artificially reduce its CO2 emissions so as to have to buy less carbon credits for the ETS. It is also considering converting some of these units to biomass burning.

EPH coal power plants	biomass fuel type	plant type	Wattage (MW)	Wattage (MW) of the biomass project	Estimated wood use (x1000 tonnes)	Estimated annual out-put (GWh)	Estimated emissions if converted to wood burning (x1000 tonnes CO2)
with evidence of conversion projects/perspectives							
Fiume Santo	pellets & chips	power	600	300.0	1,219.0	?	2,013.2
St. Avold	chips	power	600	20.0	222.2	?	367.0
Opatovice	unknown	heat & power	363	unknown	unknown	unknown	unknown
Wählitz	unknown	heat & power	37.0	unknown	unknown	unknown	unknown
Sub-total			1,600.0	320.0	1,441.2	0.0	2,380.1
No evidence of a conversion project yet							
Buschhaus**		power	390.0	unknown	unknown	unknown	unknown
Mehrum*		power	690.0	unknown	unknown	unknown	unknown
Schkopau		heat & power	900.0	unknown	unknown	unknown	unknown
Deuben*		heat & power	67.0	unknown	unknown	unknown	unknown
Sub-total			2,047.0				
LEAG coal power plants (50 per cent participation)							
Boxberg		heat & power	2,575.0	unknown	unknown	unknown	unknown
Jänschwalde*		heat & power	3,000.0	unknown	unknown	unknown	unknown
Lippendorf		heat & power	1,840.0	unknown	unknown	unknown	unknown
Schwartze Pumpe		heat & power	1,600.0	unknown	unknown	unknown	unknown
Sub-total			9,015.0				
TOTAL			12,662.0				

*: mothballed or partly mothballed, likely to be restarted following the German government's June 2022 decision **: decommissioned

5.1 - FIUME SANTO (SARDINIA, ITALY)

Fiume Santo SpA, on the Italian island of Sardinia, is a 600 MW coal fired power plant that EPH acquired in 2015 from E.ON, together with all the Italian coal and gas assets of the German energy conglomerate. The plant consisted of two 160 MW oil units built in the 1980s, and two 320 MW units built in the 1990s, which were fuelled by a thicker oil fuel (Orimulsion). In 2003, the latter two were converted to coal (executives of E.ON were placed under house arrest in 2015 for failing to report serious oil spills at the plant). Today the plant is run by EPH Italian subsidiary EP Produzione, and co-fires up to 5 per cent biomass in its two coal units (the plant burned 2,000 tonnes of wood chips in 2020). In 2020, the plant produced 3,498 GWh.

The coal plant is expected to run until 2025, the date that Italy will phase out coal by and also when its contract for guaranteeing baseload capacity is due to expire. EP Produzione is currently considering converting the plant to wood pellets and gas (only for power production, as there would be no local need for heat), with some solar and wind also added. Hydrogen production is mentioned as a future possibility, but there are no concrete plans. In a presentation of the project within the EU-funded research project BIOFIT[7] (whose Greek member CERTH, receives €182,125 from the project, for assisting EP Produzione to investigate the conversion), "is it is envisaged that smaller quantities [up to 5 per cent] of locally available wood chips will also be used alongside the wood pellets".

If such a conversion were to happen on a similar capacity level, with half the plant running on biomass, it can be estimated[8] that this 300 MW unit would burn in the range of 1.285 million tonnes of wood pellets a year (95 per cent imported), representing about two million tonnes of CO2.

In another January 2022 presentation within the BIOFIT project, EP Produzione made clear that the final decision essentially depended on regulatory and political support: "Red 3 (and related local regulations) will be key to determine if coal-to-biomass conversions and new biomass plants still have a future in the European Union".

5.2 - ST-AVOLD (FRANCE)

The French government recently announced that it wanted to restart operations for the winter 2022/2023 at the St-Avold/Emile Huchet power plant, an old 600 MW coal power plant bought by EPH from Uniper in 2019 and closed in March 2022.

But EPH, which operates the plant though its subsidiary GazelEnergie, had previously announced that it wanted to convert the plant to biomass with the aim to start energy production in 2024, and to have the first 'green' hydrogen activities between 2026 and 2029. This announcement was confirmed by the French government who said they wanted to inject 12 million Euro of public funds into the conversion. The announced capacity of the biomass project is 20 MW. If such a conversion were to happen with wood pellets, the plant would burn an estimated[9] 85,500 tonnes of pellets a year, representing at least 367,000 tonnes of CO2.

7 - The BIOFIT project, whose member are all energy companies and research organisations, is funded by the European Commission's DG Research and Development to the tune of €2.6 million to "support and initiate bioenergy retrofitting opportunities in five industry sectors, namely first-generation biofuels, pulp and paper, fossil refineries, fossil firing power and Combined Heat and Power (CHP)" plants." Project outcomes include a study on "Driving public acceptance (instead of skepticism) of technologies enabling bioenergy production" and policy recommendations to EU decision-makers on "Challenges to bioenergy retrofitting".
8 - Using the Lynemouth plant ratios as a reference for wood pellets use and annual output.
9 - Idem

5.3 - CZECHIA

Elektrárny Opatovice, a.s.

Opatovice is a 363 MW coal co-generation plant (annual production 1,800-2,100 GWh), producing both electricity and heat. It plans to gradually replace coal with "lower-emission alternatives" such as gas, biomass and municipal waste by 2030. "EPH told us that "For all our heating plants in the Czech Republic which are currently predominantly lignite-based, there is a conversion plan (in line with our commitment to phase out lignite by 2030) to develop a robust balanced mix of CCGT units, biomass units and waste-to-energy plants in order not to be reliant on one energy source. The exact sizes are difficult to estimate right now. The biomass would be locally sourced and would be represented by wood remainders from local forests (as is already the case for biomass combusted in other heating plants in the Czech Republic – Plzenska teplarenska a and United Energy).

5.4 - GERMANY

Germany's exit from coal is programmed for 2038, although the current government has made a commitment to bring this forward to 2030. EPH is therefore under less pressure to either close or convert the coal-fired power plants it owns in the country, in particular given the recent developments caused by the Ukraine war.[10] We found no concrete projects to convert these plants to biomass. EPH has said, however, that it is already thinking about converting "some" of these power plants to "zero or low-emission fuels, like gas or biomass, depending on the specific conditions of each site", and the 37 MW industrial power plant of Wählitz is listed by Central German regional authorities as a possible candidate for both expansion and conversion to bioenergy.

But co-firing is clearly an option: EPH subsidiary LEAG, managing some of the largest lignite coal power plants in Europe in Eastern Germany, has sent out mid-July 2022 an extensive market enquiry about possible wood supplies during the second quarter. The enquiries are for wood chips, sawdust, pellets and roundwood up to 2 million tonnes per year, clearly for co-firing the wood with the coal. LEAG manages around 9GW of capacity. At the beginning of April, for example, LEAG acquired all the shares in Holzkontor und Pelletierwerk Schwedt GmbH (HPS) from the Polish Stabos Group. US pellets group Enviva recently mentioned new clients in Germany, including one which would use the pellets for replacing lignite and gas: it could well be EPH's subsidiary (EPH told us they had "neither financial nor operational control over LEAG").

Beyond the short and medium term circumstances, decisions about the RED will be crucial to the fate of these plants as conversion investments are very substantial and need a long time period to be recouped.

5.5 - SLOVAKIA

EPH owns a 33 per cent stake in Slovenské elektrárne (Slovak Power Plants), the largest electricity producer in Slovakia. The other shareholders are the Italian energy company Enel and the Slovak State.

Vojany power plant

Slovenské elektrárne has been producing electricity by co-firing wood chips at the Vojany coal power plant in eastern Slovakia (two units of 110 MW each) since 2009, with a proportion of 7 per cent and up to 22 per cent in each unit. The company explains it burns about 400 tonnes of wood per day (146,000 tonnes per year), and that it hopes to increase the overall proportion of biomass to 20 per cent in the future.

Nováky power plant

The power plant started co-firing biomass with coal in 2011, with the objective to increase the proportion up to 20 per cent and to source the wood in the region from "private and public forestry companies. But this stopped, after the plant was brought under a special reserve regime prioritising coal. In June 2022, the plant was expected to be decommissioned soon."

10 - The Mehrum power plant had been taken off grid but kept as strategic reserve, and it was recently announced it would be brought back online to replace dwindling Russian gas supplies. Two units in Jänschwalde, due to be taken off grid next November, have also been maintained.

Photo: Boxberg power plant, Germany

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