# In the name of COVID-19: is the ECB fuelling the climate crisis?

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## Abstract

We offer preliminary evidence drawing on a novel dataset of corporate bonds issued in the European energy sector since January 2020 in combination with the European Central Bank's (ECB) purchases under the Pandemic Emergency Purchase Programme (PEPP) in response to COVID-19. We show that the likelihood of an European energy company bond to be bought as part of the ECB's programme increases with the greenhouse gas (GHG) intensity of the bond issuing firm. We also find weaker evidence that the ECB's PEPP portfolio during the pandemic is likely to become tilted towards companies with anti-climate lobbying activities and companies with less transparent greenhouse gas (GHG) emissions disclosure. Our findings imply that, at later stages of the COVID-19 recovery, an in-depth analysis maybe necessary to understand if and if yes, why the ECB fuelled the climate crisis.

**Keywords:** green economic recovery, climate finance, fossil fuels, green central banking.

**JEL Codes:** Q50; Q58

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# 1 Introduction

> *"Where taxpayers' money is used to rescue businesses, it must be creating green jobs and sustainable and inclusive growth. It must not be bailing out outdated, polluting, carbon-intensive industries."*
>
> *António Guterres, Secretary-General of the United Nations* (The Guardian, 2020)

The current global greenhouse gas (GHG) emissions trajectory indicates that the world is likely to experience catastrophic consequences due to climate change, unless swift action is taken towards funding green solutions and the defunding of fossil fuel activities (IPCC, 2018). There is wide scientific consensus that achieving a net zero carbon economy by 2050 is the key to stabilising the rise in global temperatures under 1.5°C (Matthews and Caldeira, 2008; IPCC, 2018; UN, 2019). For this to be plausible, scholars have suggested that new financing of fossil fuel infrastructure needs to cease with immediate effect and up to 20% of existing infrastructure should be stranded (Pfeiffer *et al.*, 2018).

The COVID-19 crisis, which has already negatively impacted countless livelihoods and economies around the world, is also seen by many, including the UN Secretary General, as an opportunity to deal with the climate emergency, particularly through environmental, fiscal and monetary policies towards a green economic recovery (Matikainen, Campiglio and Zenghelis, 2017; van den Bijgaart and Smulders, 2018; Hepburn *et al.*, 2020).

Given the slow progress of traditional environmental policies to adequately address climate change, and recognising the substantial influence the fossil fuel sector has on the policy-making process (Böhringer, 1996; Eichner and Pethig, 2015; Zietsma, Ruebottom and Slade Shantz, 2018), greater pressure has been placed on the financial sector to defund fossil fuels and to use diverse financial instruments to ensure the timely progress towards the net-zero GHG emissions goal (Hoepner et al.,2020; Slevin et al., 2020).

While there is an extensive academic literature on the links between environmental and fiscal policies and the low carbon energy transition (Ambec *et al.*, 2013; Aghion *et al.*, 2016; Cojoianu *et al.*, 2020), as well as on optimal environmental policies in times of economic downturns (van den Bijgaart and Smulders, 2018), we know less about what the role of central banks is in promoting a green economic recovery and how monetary policy objectives interact with climate change mitigation objectives in the short and long term (Matikainen, Campiglio and Zenghelis, 2017; Battiston and Monasterolo, 2019).

The role of central banks is crucial in general, but even more so in periods of market downturns, where monetary policies are used to stimulate the economy. and asset purchasing policies are associated with a reduction of the default risk of targeted assets (Krishnamurthy, Nagel and Vissing-Jorgensen, 2018). Given the ambition of the European Union to become a net zero carbon economy by 2050 and the numerous calls to avoid the bailout and stimulus packages towards fossil fuel companies (Hepburn *et al.*, 2020), we examine whether the features of European Central Bank's (ECB) €1,350 billion Pandemic Emergency Purchase Programme (PEPP) encourages the resilience of the incumbent fossil fuel sector, or whether it promotes the growth of the emerging low carbon energy sector during the COVID-19 pandemic and beyond.

We draw on a novel dataset of corporate bonds issued in the European energy sector since January 2020 in combination with the European Central Bank's purchases under the Pandemic Emergency Purchase Programme (PEPP) in response to COVID-19. We show that the likelihood of an energy company bond to be bought as part of the ECB's programme increases with the greenhouse gas intensity of the bond issuing firm. We also find weaker evidence that the ECB's PEPP portfolio during the pandemic is likely to become tilted towards companies with anti-climate lobbying activities and companies with less transparent GHG emissions disclosure in the event of increased euro-denominated bond issuances in the following months, or re-denominations of non-euro bonds already issued by European energy companies.

Our findings imply that, at later stages of the COVID-19 recovery, an in-depth analysis may be necessary to understand whether and if yes, why and to what extent the ECB may have fuelled the climate crisis. While the COVID-19 crisis continues as we write, and hence our evidence is inevitably preliminary, early questions can be asked. Given Ms. Lagarde's explicit support of green quantitative easing, the question arises as to why are fossil fuel firms eligible for the PEPP? While the ambition to keep employees and their families financially secure is laudable, did their employers deserve the direct financial support? And if one accepts that fossil fuel companies were eligible for PEPP, then our preliminary evidence still raises the significant questions, why was the ECB more likely to directly finance those fossil fuel firms that are likely more harmful to the planet (i.e. have a higher GHG intensity)?

In the following sections, we provide the background of the ECB's PEPP and its climate implications (Section 2), we outline the data and model used for our empirical investigation (Section 3) and discuss our results (Section 4) and implications in light of our analysis (Section 5).

## 2 Policy background: climate change and the ECB

Climate change risks and opportunities have become of high interest to central banks and financial supervisors as of recently, particularly in relation to the physical and transition risks that climate change poses for financial markets and financial stability (Matikainen, Campiglio and Zenghelis, 2017; ECB, 2020). However, many central banks remain of the view that central bank interventions should be market-neutral and not discriminate between sectors in the low carbon energy transition (Matikainen, Campiglio and Zenghelis, 2017).

That does not mean however that the aim of central banks to remain sector neutral is achievable in practice, as the implementation of ECB's post-2008 quantitative easing shows that assets purchased by central banks to stimulate overall economic growth are benefitting more from the policy than assets which are not purchased by the bank (Haldane *et al.*, 2016; Matikainen, Campiglio and Zenghelis, 2017). Which means that the choice of asset class through which asset purchasing programs are implemented matters. This is particularly important in the low carbon economy context, as the fossil fuel energy sector is largely financed through bonds and syndicated bank loans (Cojoianu *et al.*, 2019), whereas much of the emerging clean technology companies are financed through private equity, equity issuances and asset financing (Gaddy *et al.*, 2017; Cojoianu *et al.*, 2020).

Given that the ECB has chosen to enact its asset purchasing program post-2008 crisis predominantly through bonds, this has been shown to favour the incumbent fossil fuel industry (Matikainen, Campiglio and Zenghelis, 2017; Battiston and Monasterolo, 2019), as 62% of ECB's corporate bond purchases (out of a total of €82 billion) are in GHG intensive sectors - though they make up only 18% of the Eurozone area economy and produce 59% of GHG emissions.

Has the ECB's response in the COVID-19 pandemic been any different? The main mechanism through which the ECB has responded to COVID-19 consequences is through its PEPP, in which the ECB deploys €750 billion to buy the debt of governments and corporations across the EU to improve their financing and re-financing conditions in this.[1] This is not really a new tool, as the bank has cumulatively deployed just over €2.78 trillion from 2015 to March 2020 through asset purchasing programmes (APPs)[2]. In the beginning of June 2020, the ECB announced to extend the PEPP by €600 billion to a total of €1,350 billion until at least the end of June 2021[3]. The criteria for the corporate

[1] https://www.ecb.europa.eu/mopo/implement/pepp/html/index.en.html
[2] https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html
[3] https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.mp200604~a307d3429c.en.html

bonds bought under the PEPP are that: i) the company must be incorporated in the Eurozone and its bond issuance denominated in Euro, ii) the firm cannot be a financial corporation (or a credit institution supervised by the ECB), iii) it cannot be a public entity, iv) the bond issuance has to be endorsed by one positive credit rating by an external credit assessment institution accepted within the Eurosystem credit assessment framework and v) have a maximum maturity of up to 31 years, and a minimum maturity of 6 months.

In the next sections, we investigate whether the PEPP design has resulted in the ECB buying the debt of more GHG intensive energy companies to the detriment of the low carbon energy sector.

# 3 Data and methodology

In order to understand whether ECB's bond buying activity during the COVID-19 pandemic has been tilted towards less transparent, more fossil fuel intensive as well as anti-climate lobbying European energy companies, we undertake the following steps. First, we collect all the bonds issued by European energy companies during the period 1st January 2020 to 31st of May 2020 from Bloomberg. These span the following energy subsectors as classified by BICS (Bloomberg Industry Classification System): power generation, renewable energy, integrated oil & gas companies, oil & gas exploration and production, oil & gas services and utilities. This results in 133 bonds. We then match each bond with ECB's bondholding portfolio[4], the borrower's record on pro / anti-climate lobbying from InfluenceMap, the GHG intensity of the borrower (collected from Bloomberg and measured as thousands tCO2-e / million EUR revenue) and the GHG reporting completeness of the borrower (which is assessed by Bloomberg and quantified as 1 if the company is transparent about the organisational boundary it chooses to quantify its GHG emissions and 0 otherwise, Bloomberg terminal code ES074). We further collect the borrower's revenue (million EUR), bond amount issued (million EUR) and coupon rate for each bond, also from Bloomberg. Our resulting dataset with complete data across all variables of interest is comprised of a cross-section of 64 bonds issued across several currencies, and 44 euro-denominated bonds.

Our ***dependent variable*** quantifies the likelihood that the bond of a European energy company is bought by the ECB during the first five months of 2020 and coded as 1 if it has been bought by the ECB, and 0 if it has not.

[4] https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html

For our model, we employ a binary logistic regression model with robust standard errors. The full model specification is the following, where $\varepsilon_i$ is the stochastic error:

$$ECB\ Bond\ = \beta_0 + \beta_1 * \text{Pro} - \text{Climate Lobbying Activities Score} + \beta_2\ * GHG\ Emissions\ Intensity +$$

$$\beta_3\ * GHG\ Reporting\ Completeness + \beta_4\ * Borrower\ Revenue + \beta_5\ * Bond\ Issuance\ Amount +$$

$$\beta_6\ * Bond\ Coupon\ Rate + \varepsilon_i$$

# 4 Results

In this section, we explore the capital demand of EU energy companies viewed through the lens of their bond issuances during the January 2020 – May 2020 period and seek to understand how the likelihood of these bonds to be bought by the ECB is related to the GHG intensity, GHG disclosure completeness and climate lobbying record of the issuer.

The European energy sector fundraised over €94 billion from bond investors during the January to May 2020 period. Over 50% of this amount went to the oil & gas sector, 34% to utilities, 8% to power generation and only 6% to renewable energy companies (see Fig. 1). A large proportion of this debt has been issued in April and May 2020, when perhaps companies expected the liquidity gain and the lowering of their credit risk if their bonds are bought by the ECB, who made the PEPP public on 18th of March 2020.

For the oil and gas sector, the largest proportion of its newly issued debt matures between 2030 and 2040 (c. €22 billion), with the 2020 -2030 and beyond 2040 periods accounting for c. €18 billion and €6.5 billion respectively (see Fig. 2). This is very important as none of this debt, part of which was bought by the ECB, is contingent on the energy companies reducing their GHG footprint, ceasing their anti- climate lobbying activities or reporting their GHG emissions more accurately.

Moving on to our empirical model, we show that after controlling for the revenue of the issuer, the bond amount raised and the rate of the coupon, the ECB is statistically significantly more likely to buy the bonds of more greenhouse gas intensive European energy companies (Models 1-4, Table 1). On average, a one standard deviation increase in the GHG intensity of an energy company results in a 177% increase in the likelihood that its bonds are bought by the ECB ($\beta$=1.020, $p<0.01$, odds ratio: 2.77, Model 3).

When we consider only Euro denominated bonds (Models 2 and 3), which are directly under the remit of the ECB, GHG disclosure completeness and pro-climate lobbying are statistically insignificant, yet negative, which suggests that the ECB may be likely to tilt its portfolio towards companies with poorer GHG emission disclosures and less responsible climate lobbying activities.

When we include the bonds issued by European energy companies in denominations other than euro, to potentially account for a selection bias due to the choice of energy companies to issue non-euro denominated bonds prior to the PEPP announcement (Model 4). When we do so, it emerges that considering the entire universe of bonds issued by European energy companies, the ECB's portfolio is tilted not only to those energy companies that are more GHG intensive, but also to companies which are less transparent on their GHG Performance as well as those companies who are more likely to oppose progressive climate action.

# 5 Discussion and conclusions

Drawing on a novel dataset of corporate bonds issued in the European energy sector since January 2020 and the database of ECB's purchases under the PEPP in response to COVID-19, this paper evaluates whether and how the likelihood of EU energy bonds to be bought by the ECB is related to the GHG intensity, GHG disclosure completeness and climate lobbying record of the issuer.

Controlling for bond size, coupon and revenue, we find evidence that the likelihood for a bond to be bought by the ECB increases with the greenhouse gas intensity of the bond issuing firm. In our model, a one standard deviation increase in the GHG intensity of an energy company results in a 177% increase in the likelihood that its bonds are bought by the ECB. We also find weaker evidence that the ECB's PEPP portfolio during the pandemic is likely to become tilted towards companies with anti-climate lobbying activities and companies with less transparent GHG emissions disclosure.

The ECB's past and recent purchases stand in stark contrast to the European Commission's recovery plans as stated in the announcement of the new recovery instrument 'Next Generation EU', where the European Green Deal is explicitly listed as a policy fundamental of the recovery, with special emphasis put on renewable energy and clean transport and logistics.

Overall, we recognize that monetary policy cannot be a substitute for environmental policy, however, monetary policymakers must consider the implications for asset pricing, including risks to market efficiency and financial stability.

Our findings imply that, at later stages of the COVID-19 recovery, an in-depth analysis maybe necessary to understand if, and if yes, why the ECB fuelled the climate crisis. While the COVID-19 crisis is still continuing as we write and hence our evidence is inevitably preliminary, early questions can be asked. Given Ms. Lagarde's explicit support of green quantitative easing (The Guardian, 2019), the question arises as to why fossil fuel firms are eligible for the PEPP. While the ambition to keep employees and their families financially secure is laudable, did their employers deserve the direct financial support? And if one accepts that fossil fuel companies were eligible for PEPP, then our

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## Figures and tables

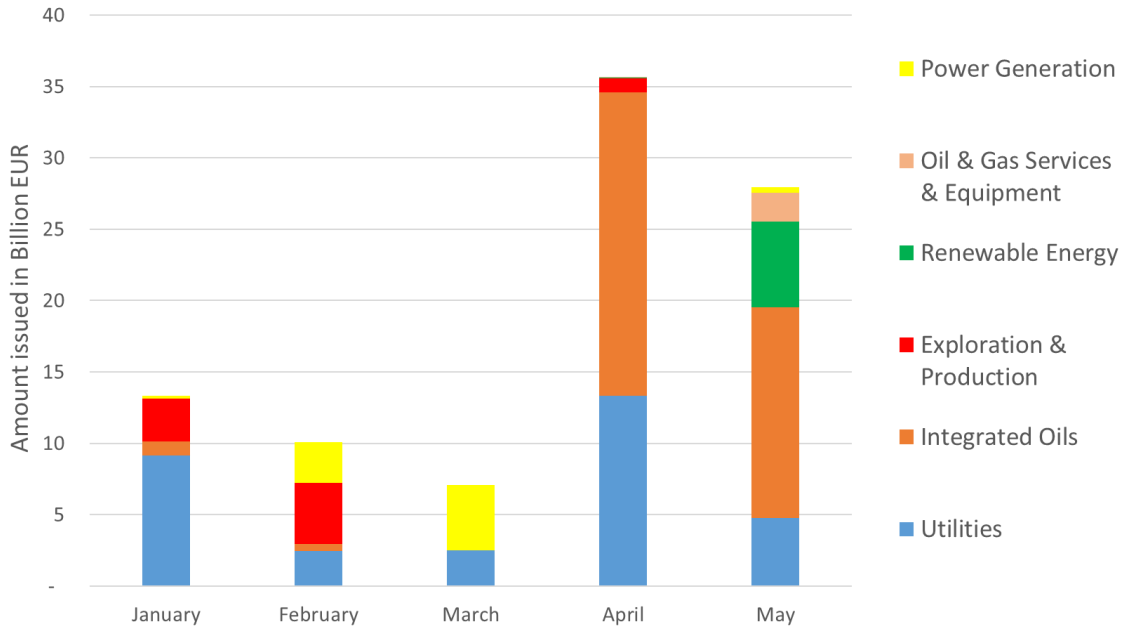


**Figure 1:** Bond issuance by European energy companies Jan – May 2020. Data from Bloomberg. Source: Authors.

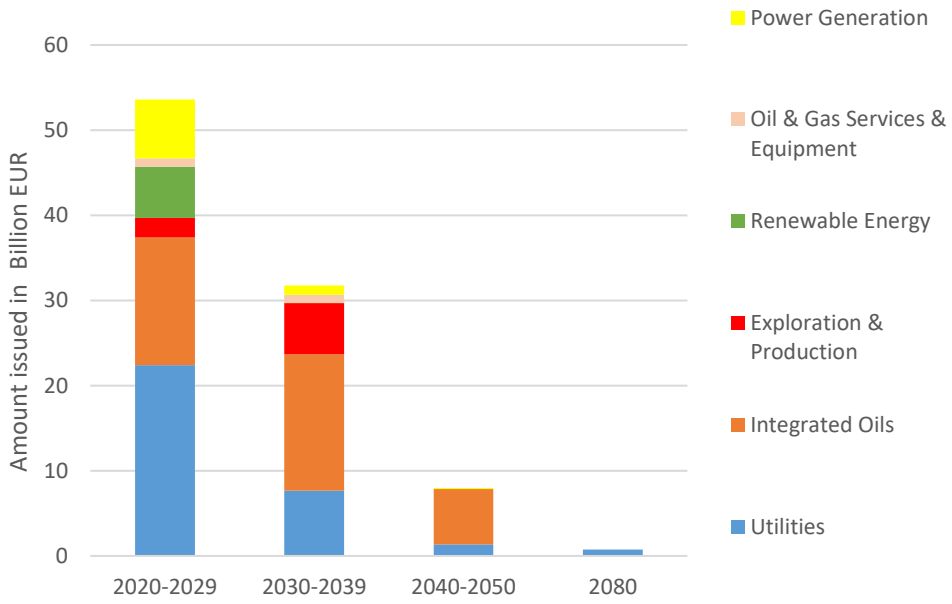


**Figure 2:** Maturities of European energy company bonds issued between Jan – May 2020. Data from Bloomberg. Source: Authors.

**Table 1:** Main statistical models. Likelihood of bond issuance to be bought by ECB. Data from Bloomberg, ECB & InfluenceMap.

| Dependent variable:<br>ECB = 1 (if bond is purchased by ECB)<br>ECB = 0 (otherwise) | Model 1<br>Bond Denomination<br>EUR | Model 2<br>Bond Denomination<br>EUR | Model 3<br>Bond Denomination<br>EUR | Model 4<br>Bond Denomination<br>All currencies |
|---|---|---|---|---|
| Pro-Climate Lobbying Activities Score | | | -0.319 | -0.915** |
| | | | (0.408) | (0.463) |
| GHG Disclosure Completeness | | -0.465 | -0.629 | -1.698*** |
| | | (0.921) | (1.005) | (0.630) |
| GHG Intensity | 0.989*** | 1.072*** | 1.020*** | 1.045*** |
| | (0.302) | (0.383) | (0.360) | (0.313) |
| Revenue | -1.048*** | -1.041*** | -1.123*** | -0.881*** |
| | (0.381) | (0.383) | (0.419) | (0.259) |
| Bond Issuance Amount | -0.057 | -0.008 | -0.085 | -0.293 |
| | (0.594) | (0.635) | (0.654) | (0.422) |
| Bond Issuance Coupon Rate | 0.428 | 0.385 | 0.234 | -0.982** |
| | (0.595) | (0.595) | (0.623) | (0.393) |
| Constant | 0.821 | 0.900 | 0.846 | 0.102 |
| | (0.513) | (0.606) | (0.625) | (0.378) |
| Observations | 44 | 44 | 44 | 63 |
| Pseudo R-squared | 0.167 | 0.170 | 0.181 | 0.313 |
| Log-likelihood | -23.52 | -23.44 | -23.13 | -29.86 |

Significance levels: p <0.01***, p <0.05**, p<0.1*.

# 6 Online appendix

**InfluenceMap Climate Lobbying Scores**

The lobbying scores as used in the model were calculated by InfluenceMap using the following methodology, also outlined on the InfluenceMap website.[5]

The top 100 of the Forbes Global 2000 (not including state owned enterprises and financial companies) were selected as well as external influencers identified. 'Influencers' are a selection of the most powerful organizations representing corporations around the world. Influence likely extends beyond the activities normally associated with the word "lobbying" (e.g. donations to clearly motivated political actors) and includes the domination of the public discourse on climate change science and policy via their hugely powerful and funded messaging tools (e.g. advertising, PR, social media, access to influential meetings) as well as the use of influencers like trade associations and advocacy groups. Climate-focused organizations were excluded to avoid preferential selection.

The process of climate change policy is broken down into four distinct categories as formulation of climate change policy commences with scientific research that then enters the policy arena, leading to the implementation of legislation, standards and fiscal measures. In parallel, many legislative and fiscal interventions are in place or are being proposed at various levels of government. Corporations have been interacting with policymakers at all levels and stages of the policy formulation process, using various methods to exert influence. The queries introduced by InfluenceMap cover all of these stages and are divided into two main categories:Transparency and performance.

In total, a series of twelve queries is applied across all data sources, constructing a matrix of queries against data sources for each organization. While this matrix presents an opportunity for a maximum of 96 - i.e. 12 x 8 - scoring opportunities per organization, in practice this will be less due to the NA (not applicable) and NS (not scored) cells for a particular organization's matrix. Only credible sources, that is direct company disclosures or respected third party sources, are eligible data sources – if no credible evidence is available a cell is marked NS. Data originating from the last two years is considered while priority is given to more recent evidence.

Relative weightings are assigned to each query/data cell relative to the overall organizational score. A generic weighting matrix is applied to all sectors, yet certain sectors will have a sector specific weighting matrix emphasizing its legislative priorities (e.g. the automotive sector will be weighted

[5] https://influencemap.org/site/data/000/286/Methodology.pdf

more for its influence over GHG emissions standards than energy policy). The weightings are devised from InfluenceMap's independent research and in consultation with  advisors and external experts.

The matrix of data source/query produces five possible outcomes with scores ranging from (-2) to (+2) depending on an organization's transparency around particular regulations, their expression of support (or non-support), and the corresponding strength of their engagement with this regulation.

As well as its organizational score, the final rating for a corporation will be impacted by the relationships(R1, R2, R3, etc.) it holds with external agents exerting influence over climate policy, such as trade associations, chambers of commerce and think tanks. Therefore, in addition to its organizational score, a corporation will have a relationship score which is defined as a reflection back onto the corporation on the influence exerted by its influencers. The influencers will themselves have organizational scores, computed in the same manner as for the corporations. To account for the nature of a corporation's relationship with an influencer a strength factor is applied to the relationship (1 = a weak relationship, 10 = a strong relationship).

The relative weighting as a metric of the level of influence exerted by the influencer with which the corporation holds a relationship is defined comparing to those of other influencers in the global policy arena. Levels of influence against each other are rated on a scale of 1 to 10 (with 10 being very important as an influencer of climate policy).

The overall rating is obtained by computingthe weighted average of the two individual scores, organizational and relationship score. The weighting factor is between 0 and 1 and determined using an algorithm that incorporates both strength and relative weight of the corporation and also the number of relationships. This avoids a small sample of relationships to unduly impact the overall rating for a corporation.