

# The Transatlantic Petrochemical Trade is Undermining Europe's Climate & Plastics Policies

The transatlantic trade in petrochemicals — the fossil fuel-derived building blocks of plastic pollution — is booming. In the midst of a mounting climate emergency, this is not the kind of economic cooperation the world needs. As the European Union (EU) claims to step up its climate commitments, its pivot to fracked gas produced in the United States as a source of feedstocks for its plastic industry threatens to undermine emissions reductions objectives and exacerbate plastic pollution.

*Outsourcing* the production of plastic feedstocks beyond Europe's borders cannot mean putting the impacts of that feedstock production *out of sight* or *out of mind*. Neither regulators nor plastics producers in Europe should be allowed to hide behind the anonymity of imported feedstocks while banning fracking within their own borders. There are real people harmed and real places polluted by the upstream oil and gas extraction that feeds Europe's plastic addiction.

This document summarizes some key facts and features of the flows of natural gas liquids (NGLs) from the United States to Europe (including to Norway and the United Kingdom) and the broader context of such flows both in the United States and in Europe. It puts this developing trade in the context of current and ongoing climate and health policy developments in the EU and clarifies why such policies must be designed to include petrochemicals and full supply chain emissions.

## Key Messages

- **Plastics production in Europe fueled by fossil feedstocks from the United States is jeopardizing European climate and plastic reduction goals.** The EU has set out ambitious goals for curbing carbon dioxide emissions to mitigate the climate crisis, in addition to its goals to protect human and environmental health through limits on pollutants and regulation of single-use plastics. Regulations in the US are nowhere near as protective. A handful of companies have been using US gas liquids to make plastics in Europe, threatening to undermine the EU's climate and health policies.
- **EU countries cannot satisfy their existing climate commitments, let alone do their fair share to address the climate crisis, without curtailing upstream and downstream emissions in industry supply chains.** Offshoring emissions generation to upstream and downstream producers in other countries does not offload responsibility or let EU regulators off the hook. Nor does pushing emissions outside a state's boundaries and off its territorial ledger eliminate them from the atmosphere. Climate change recognizes no borders. Especially as some portion of feedstocks for European plastics production comes from outside of Europe, the upstream emissions from the production and transport of these feedstocks should be included in EU monitoring and regulatory schema.
  - **The upcoming EU methane regulation must cover the full supply chain, including fossil fuel imports, and must apply fully to petrochemicals:** The regulation should account for petrochemicals both as feedstock and energy source in accordance with the recently adopted resolution of the European Parliament to reduce methane emissions.
  - **The climate impacts of plastics production must be counted in emissions trading and carbon tax systems:** The production and manufacture of plastic is an incredibly heat- and carbon-intensive process. Considering this significant climate impact, the production of plastics should be better regulated under the EU Emissions Trading System (ETS) and should be included under the corresponding Carbon Border Adjustment Mechanism. Moreover, the ETS should be improved to eliminate the distribution of free allowances that permit a continuation of unpriced industrial greenhouse gas emissions.

## Background and Context

Almost all plastic is made from fossil fuels, primarily from byproducts of oil and gas production. Most plastics made in Europe are derived from an oil refining byproduct called naphtha. In the United States, plastic is made primarily from natural gas liquids (NGLs), molecules lighter than most oil but heavier than methane. The primary NGL used for plastics production is ethane, followed by propane — commonly referred to as “liquid petroleum gas” or LPG in Europe.<sup>1</sup> Ethane has few uses other than as a petrochemical feedstock, whereas propane is used as a combustible fuel for heating, transportation, and other non-petrochemical applications in addition to its growing role as a feedstock for plastics production.

The shale and fracking boom in the United States produced a corresponding boom in gas liquids, especially ethane. Ethane did not have a large preexisting market, but the supply glut of ethane led to a massive investment in and construction of new facilities to turn ethane into ethylene, and ultimately plastic. With the construction of new crackers in 14 locations, US steam cracking capacity increased from 26 million tons per year (tpy) in 2005 to 45 million tpy in 2021.<sup>2</sup> As of October 2021, plans are underway to build another five crackers, adding an additional 9.1 million tpy of capacity, a further increase in US ethane cracking capacity by at least 20%. Still, the ethane glut remains, and producers have turned to export markets. In 2014, producers in the United States began exporting ethane by pipeline to Canada and began shipping across oceans in 2016. With the exception of 2020, exports from the US have increased every year, spiking sharply to a new maximum in August 2021, the most recent month for which data are available.<sup>3</sup>

Prior to 2016, European plastics production had been either stagnant or declining for at least a decade.<sup>4</sup> Since then, however, European plastics producers have increasingly imported fracked NGLs from the US to increase plastics production. One company, INEOS, is seeking to build the first new plastics plant in Europe in 20 years<sup>5</sup> — although those plans may still be stopped.<sup>6</sup> Notably, since the US shale gas boom began, seven European countries have banned or placed moratoria on fracking, namely France, Bulgaria, The Netherlands, Germany, Ireland, the United Kingdom, and Spain.<sup>7</sup> As will be explained below, many of the facilities

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<sup>1</sup> See Center for International Environmental Law, [Fueling Plastics: How Fracked Gas, Cheap Oil, and Unburnable Coal are Driving the Plastics Boom](#) (2017).

<sup>2</sup> Beyond Plastics, [The New Coal: Plastics & Climate Change](#) 12 (2021).

<sup>3</sup> See [U.S. Exports of Ethane](#), U.S. Energy Information Administration, (last visited Nov. 9, 2021).

<sup>4</sup> See [European Market Overview](#), Petrochemicals Europe (last visited Nov. 9, 2021).

<sup>5</sup> Press Release, INEOS, [INEOS, Europe's largest petrochemicals company, announces Antwerp as the location for its new ground breaking 3 billion Euro petrochemical investment](#) (Jan. 14, 2019).

<sup>6</sup> See Press Release, ClientEarth, [€3bn Ineos plastics project in doubt as company drops inadequate permit](#) (Mar. 29, 2021).

<sup>7</sup> AFP, [France bans fracking and oil extraction in all of its territories](#), The Guardian (Dec. 20, 2017); AFP, [Bulgaria bans shale gas drilling with 'fracking' method](#), BBC (Jan. 19, 2012); [Dutch minister confirms ban on drilling, shale gas 'not an option'](#), DutchNews.nl (Feb. 16, 2018); AFP, [Germany largely bans fracking with new laws](#), DW (Feb. 11, 2017); Marie O'Halloran, [Ireland joins France, Germany, and Bulgaria in banning fracking](#), The Irish Times (June 28, 2017); Jillian

using US ethane and propane to make plastic are in countries with some form of fracking restriction.

The fracking, plastic, and petrochemical industries are extremely opaque. They provide little public disclosure of production volumes and corporate customers, and the diversity of resins, chemical precursors, and product names makes it even more difficult to draw industry-wide comparisons and conclusions with limited data. The lack of transparency from the US wellhead to the European warehouse is further evidence of the need for strong regulation, applied across the petrochemical and plastics supply chain.

## Tracing Flows from the US to Europe

To turn US fracked gas into European plastic pellets, molecules of ethane and propane go through a long supply chain. First, oil and gas are produced at fracking wells. Gas liquids are then separated from the heavier oil and the lighter methane, as well as cleaned of impurities, and transported via pipeline to fractionators. Fractionators further separate the gas liquids into their individual components — ethane, propane, butane, pentane, etc. While some are inland, many fractionators are located at ports, where separated NGLs are directly loaded onto ships for international transport. Once at European ports, the NGLs are offloaded and either used at cracker plants located near the port or transported again by pipeline to other petrochemical facilities.

### Overview

#### EXTRACTION

Most US NGLs going to Europe are drilled in the Permian (Texas and New Mexico), Eagle Ford (Texas), and Appalachian (Pennsylvania, Ohio, West Virginia) basins.

#### TRANSPORTATION

NGLs move to ports primarily by pipeline. There are several NGL pipelines feeding the Texas ports of Houston-Galveston, Port Arthur, and Freeport — ATEX Express, Chaparral System, Shin Oak System, Seminole System, TE Products, and South Texas System pipelines. The Mariner East pipeline is the main source feeding the Pennsylvania port, Marcus Hook.

#### SHIPPING

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Ambrose, [Fracking halted in England in major government U-turn](#), The Guardian (Nov. 1, 2019) (noting that Scotland, Northern Ireland, and Wales had already halted fracking); Cristina Brooks, [Spain becomes fourth EU country slapping ban on new fossil fuel production](#), IHS Markit (May 21, 2021).

Ethane and propane are transported on ships. Large-scale ethane shipping is new and requires specialized ships for cooling and pressurization, while propane is easier to transport. The primary companies shipping ethane from the US to Europe are Ineos and Enterprise Products Partners. Propane is shipped by a wider variety of companies.

## IMPORT

Both ethane and propane are imported into several European ports. Antwerp is the only port identified that accepts both ethane and propane.

## PRODUCTION

The primary known users of US ethane in Europe are INEOS and Borealis; SABIC imported ethane for a few years but the facility is currently non-operational. The primary known petrochemical users of US propane in Europe are INEOS and Dow Chemical.

## Where Are the US NGLs Coming From?

### CLIMATE IMPACT OF EXTRACTION

Oil and gas production is one of the most greenhouse gas-intensive industrial processes.<sup>8</sup> This is especially true of fracking fields in the United States, which are rife with methane venting, flaring, and leaks from super-emitting wells.<sup>9</sup> Methane is a much more potent greenhouse gas than carbon dioxide — with approximately 83 times more warming potential over 20 years and 30 times more over 100 years<sup>10</sup> — and is increasingly being recognized as playing a major role in driving current warming.<sup>11</sup> Drilling wells requires significant energy and fuel, as does transporting large quantities of sand, water, and chemicals to fracking well sites. At oil wells — which also produce gas liquids used to make plastics — methane is often vented or flared, exacerbating the already significant climate impacts of the fracking process. After production, idle wells continue to leak methane until they are plugged. In the US, wells are increasingly left idle as fracking wells proliferate and companies either choose not to plug them or are unable to do so.<sup>12</sup>

Major shale deposits from which oil, gas, and gas liquids can be fracked are called “basins.” There are eight major basins in the United States, each producing various levels of oil, gas, and gas liquids. The Permian Basin (Texas and New Mexico), the Eagle Ford Basin (Texas), and

<sup>8</sup> See Center for International Environmental Law et al., [Plastic and Climate: The Hidden Cost of a Plastic Planet](#) (2019).

<sup>9</sup> Carol Rasmussen, [Study Identifies Methane 'Super-Emitters' in Largest US Oilfield](#), NASA (June 2, 2021).

<sup>10</sup> See IPCC, [Climate Change 2021: The Physical Science Basis](#) 7-125 (2021)

<sup>11</sup> See, e.g., Matt McGrath, [Climate change: Curbing methane emissions will 'buy us time'](#), BBC (Aug. 11, 2021).

<sup>12</sup> See Center for International Environmental Law, [Toxic Assets: Making Polluters Pay When Wells Run Dry and the Bill Comes Due](#) (2021).

the Marcellus Basin (West Virginia and Pennsylvania) are the primary sources of NGLs shipped to Europe.<sup>13</sup>

There are dozens of companies operating in these three basins, and it is not easy to ascertain which companies are responsible for producing all the ethane and propane heading to Europe. Available data make clear, however, that in the Permian Basin, NGLs from Chevron, EOG Resources, Cimarex Energy, Diamondback Energy, Shell, and WPX Energy have been shipped to Europe.<sup>14</sup> In the Marcellus Basin, Antero Resources and Range Resources, the two largest producers in the basin, are producing NGLs that are being shipped to Europe. Antero Resources sells to both INEOS and Borealis,<sup>15</sup> while Range Resources has an agreement with INEOS.<sup>16</sup> Another company, Rex Energy, signed an agreement to sell NGLs to INEOS in 2016,<sup>17</sup> though after a subsequent bankruptcy and acquisition by PennEnergy Resources in 2018,<sup>18</sup> it is unclear whether or not PennEnergy is still supplying INEOS. Further information is needed to identify which companies operating in the Eagle Ford are producing NGLs that end up in Europe, although it is likely that INEOS itself is one of those companies or will be soon; in 2020, the company bought land in Texas to begin fracking.<sup>19</sup>

## How Are NGLs Getting to the Ports?

### CLIMATE IMPACT OF PIPING AND PROCESSING

Processing, transportation, and fractionation of gas and gas liquids all add to the overall lifecycle emissions of ethane and propane. Gas processing requires great quantities of energy for cooling, and fractionation requires significant heat for separation. Moreover, the compression stations and other facilities that move the NGLs from processor to fractionator through pipelines require energy to run as well.

Once drilled, the hydrocarbon stream is processed to remove impurities, gas liquids are separated from the lighter gas, and transported elsewhere via pipelines. These pipelines lead to fractionation plants — facilities that further separate the NGL stream into ethane, propane, butane, isobutane, and natural gasoline. Many of these fractionators are co-located at export terminals, where NGLs are loaded onto ships.

<sup>13</sup> Conclusion drawn by Stand Research Group.

<sup>14</sup> Conclusion drawn by Stand Research Group.

<sup>15</sup> Antero Resources, [Company Presentation: January 2019](#) 5 (2019).

<sup>16</sup> [Range Resources, Dragons & Mariner East: Exporting Gas Across the Globe](#), www.rangeresources.com (Sept. 10, 2015).

<sup>17</sup> Jamison Cocklin, [Rex Energy Signs Deal to Sell INEOS More Appalachian NatGas Liquids](#), www.naturalgasintel.com (Apr. 11, 2016).

<sup>18</sup> [PennEnergy Resources to buy Rex Energy for \\$600.5m](#), www.hydrocarbons-technology.com (Sept. 3, 2018).

<sup>19</sup> Sergio Chapa, [Drilling Down: British petrochemical giant Ineos plans to begin fracking in Texas](#), Houston Chronicle (May 4, 2020).

Ethane and propane primarily leave the United States for Europe through two ports, Houston-Galveston in Texas and Marcus Hook in Pennsylvania. Smaller quantities of propane are also exported via two additional ports, Port Arthur and Freeport, both in Texas.<sup>20</sup>

Much of the Houston-Galveston port is owned and operated by Enterprise Products Partners (EPP) and is fed by EPP's NGL pipelines. These include the Chaparral, Shin Oak, and Seminole pipelines bringing NGLs from the Permian Basin; the South Texas system, which abuts the Eagle Ford Basin; and the ATEX and TE Products pipelines, which carry NGLs from the Marcellus Basin.<sup>21</sup>

The Marcus Hook port is owned by Energy Transfer Partners (ETP), the company that owns Sunoco and is behind the Dakota Access Pipeline. ETP also owns the Mariner East pipeline system, three pipelines running from western Pennsylvania or Ohio and West Virginia to Marcus Hook on the eastern coast of Pennsylvania.<sup>22</sup> In October 2021, a Pennsylvania grand jury indicted ETP with 48 criminal charges, primarily for illegally releasing industrial waste at 22 locations in the state.<sup>23</sup>

### TRANSATLANTIC TOXICITY — PLASTIC POLLUTES AT EVERY STAGE

In addition to its significant climate impacts, plastic introduces risks of severe toxic exposure and environmental contamination throughout its life cycle.<sup>24</sup> Oil and gas extraction, transport, processing, and plastics production all threaten those in the surrounding communities with possible toxic exposure. In the United States, residents of Texas and Appalachia suffer the harms of fracking. Pipelines cut across land and displace those nearby or put them at risk. Coastal communities breathe the emissions from fractionators — in addition to emissions from other petrochemical facilities nearby. In Europe, communities around Antwerp and Grangemouth, among others, are exposed to high levels of pollution from their own chemical facilities.<sup>25</sup> Before they can become products, hundreds of thousands of tons of plastic pellets, routinely lost after production and during transportation, pollute coastlines across Europe.<sup>26</sup> Finally, incineration — a common destination for plastic waste in Europe — further releases toxic pollution.<sup>27</sup>

<sup>20</sup> Export data compiled by Stand Research Group.

<sup>21</sup> See [System Map](http://www.enterpriseproducts.com), www.enterpriseproducts.com (last visited Nov. 9, 2021).

<sup>22</sup> See [Major Projects](http://www.energytransfer.com), www.energytransfer.com (last visited Nov. 9, 2021).

<sup>23</sup> See Michael Rubinkam, [Pipeline developer charged over systematic contamination](#), AP (Oct. 5, 2021).

<sup>24</sup> See Center for International Environmental Law et al., [Plastic and Health: The Hidden Costs of a Plastic Planet](#) (2019).

<sup>25</sup> See, e.g., Rob Edwards, [Ineos damned as “very poor” for pollution at Grangemouth](#), The Ferret (May 6, 2021); [Antwerp is one of the world’s nitrogen dioxide pollution hotspots](#), VRT NWS (Oct. 29, 2019).

<sup>26</sup> See Surfrider Foundation Europe, [Plastic Giants Polluting Through the Backdoor: The Case for a Regulatory Supply-Chain Approach to Pellet Pollution](#) (2020).

<sup>27</sup> See Zero Waste Europe, [Air Pollution from Waste Disposal: Not for Public Breath](#) (2015). See also [5 reasons why Europe’s garbage burning is a big problem](#), GAIA (last visited Nov. 9, 2021).

## How Are NGLs Getting to Europe?

### CLIMATE IMPACT OF SHIPPING

Shipping further increases the greenhouse gas profile of propane and especially ethane, which requires even greater cooling to be transported. Shipping is often understood as a source of greenhouse gas emissions because of the fuel required to move the ships themselves, and this is true for ethane and propane carriers as well.<sup>28</sup> However, because shipping liquid NGLs requires high pressure and refrigeration, it consumes additional energy and produces additional emissions.<sup>29</sup> This energy penalty associated with the petrochemical cargo compounds the emissions resulting from the transport of the products themselves.

NGLs get from the United States to Europe by ship. Large-scale ethane shipping is relatively new; most ethane produced has historically been consumed on-site or transported to destinations in relative proximity to the source. Ethane shipping requires refrigeration to low temperatures, significant pressurization, or both, and as such, consumes fuel for energy production in addition to generating transport emissions.

The company shipping (or trading) the ethane or propane can be the seller (e.g., Enterprise Products Partners), the buyer (e.g., INEOS), or a third party (e.g., Diamond Green Diesel). INEOS, Enterprise Products Partners, Diamond Green Diesel, and Dow are known to ship ethane to Europe. A larger number of companies are known to trade propane, including Equinor, Total, Vitol, Enterprise Products Partners, Petredec, LoneStar NGL, and BP.<sup>30</sup>

As ethane shipping is so new, only a small handful of very large ethane carriers (VLECs) exist, and only a few companies build them. Navigator Holdings, for example, had to build a new ethane carrier specifically to fulfill its delivery contract between Antero Resources and Borealis.<sup>31</sup> The major expansion in ethane shipping, however, was driven by Ineos. The company contracted with Danish shipping company Evergas and Chinese company Sinopacific Offshore Engineering to construct eight massive ethane carriers called “Dragon Ships.”<sup>32</sup> Outside of China, Korean companies Samsung Heavy Industries (SHI) and Hyundai Heavy Industries (HHI) operate the shipyards producing the majority of VLECs.<sup>33</sup>

<sup>28</sup> See YCC Team, [Maritime shipping causes more greenhouse gases than airlines](#), Yale Climate Connections (Aug. 2, 2021).

<sup>29</sup> See Patrick Janssens & William Sember, [Ethane Transport & Technology](#), Maritime Professional (2015).

<sup>30</sup> Conclusion of Stand Research Group.

<sup>31</sup> Media Release, Borealis, [Borealis signs long-term ethane supply contract with Antero Resources](#) (Aug. 7, 2014).

<sup>32</sup> Press Release, INEOS, [INEOS Names World's first two ships built to take shale gas from the USA to Europe](#) (July 14, 2015).

<sup>33</sup> See, e.g., Jin Min-Ji, [Two \\$220 million VLEC orders booked by local shipbuilders](#), Korea JoongAng Daily (Aug. 25, 2020); Jason Jiang, [Zhejiang Satellite Petrochemical in negotiations for more VLECs at Korean yards](#), Splash247.com (July 9, 2020).

## Where Are NGLs Going?

### CLIMATE IMPACT OF IMPORT

Unloading NGLs is not the most greenhouse-gas intensive part of the supply chain, but no stage in the plastics life cycle is emissions-free. Especially where ethane or propane (or ethylene or propylene) are transported by pipeline within Europe, additional energy is required and additional emissions are released.

Ethane from the United States has been imported to at least seven ports in five countries — Teesport and Grangemouth, the United Kingdom; Rafnes, Norway; Stenungsund and Gothenburg, Sweden; Marghera, Italy; and Antwerp, Belgium.<sup>34</sup>

Propane has similarly been imported to at least seven ports in five countries, although most of the ships, companies, and routes are different. Propane has been imported into Terneuzen and Vlissingen, the Netherlands; Lavéra and Le Havre, France; Tarragona, Spain; Antwerp, Belgium; and Sines, Portugal.<sup>35</sup>

Antwerp, Europe's major petrochemicals hub, is the one port identified that imports both ethane and propane from the United States.

## Where Do NGLs End Up?

### CLIMATE IMPACT OF PLASTIC PRODUCTION

Steam cracking and plastic polymerization are some of the most energy- and emissions-intensive industrial processes and the largest single source of emissions in the plastics supply chain. Steam cracking, in particular, requires huge amounts of heat and power, typically provided on-site by captive power plants relying on methane as the energy source. Plastics production is very hard to decarbonize, as the process does not rely on the energy grid, and simply switching to renewable electricity will not affect the majority of on-site emissions. Moreover, the cracking process itself produces methane as a byproduct, another source of greenhouse gases that could not be eliminated even if the power source for the process were zero-carbon.

Once ethane arrives at a port in Europe, it is most often fed to a combined steam cracker and plastic polymerization plant on site. This includes INEOS plants in Grangemouth and Rafnes

<sup>34</sup> Conclusion of Stand Research Group.

<sup>35</sup> Conclusion of Stand Research Group.

and a Borealis plant in Stenungsund.<sup>36</sup> INEOS also supplies the nearby Exxon and Shell-owned Fife Ethylene Plant with ethane imported to Grangemouth.<sup>37</sup> The Wilton cracker plant, owned by the Saudi Arabian Basic Industries Corporation (SABIC), was also a recipient of US ethane, although as of writing, that plant is inactive.<sup>38</sup>

In addition to supplying the co-located plastics plants next to its cracker plants, INEOS also sends ethylene via ship from Grangemouth and from Rafnes to its deep-sea ethylene terminal in Antwerp. This terminal supplies crackers in Antwerp directly and Köln (Cologne), Germany, via ARG's ethylene pipeline.<sup>39</sup>

Propane shipments have a wider array of destinations, and not all appear to be for petrochemical applications. It does appear, however, that INEOS and Dow import propane to their Grangemouth and Terneuzen facilities, respectively.<sup>40</sup>

## EU Policy Context

### METHANE REGULATION

In October 2020, the European Commission presented a strategy to address methane emissions in the EU.<sup>41</sup> The strategy covers the energy, waste, and agricultural sectors, with specific proposals for legislation addressing each sector to be developed separately.<sup>42</sup> The legislative proposal for the energy sector is expected in December 2021.<sup>43</sup>

The primary components of the original strategy for the energy sector included five pillars, three required and two optional.

Required:

- Measurement, reporting, and verification (MRV) of methane emissions
- Leak detection and repair (LDAR)
- A ban on routine venting and flaring

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<sup>36</sup> Conclusion of Stand Research Group.

<sup>37</sup> Press Release, INEOS, [INEOS signs agreement with ExxonMobil Chemical Limited and Shell Chemicals Europe BV to supply ethane from US shale gas from Grangemouth to the Fife Ethylene Plant in Scotland](#) (Nov. 9, 2015).

<sup>38</sup> Gavin Havery, [Saudi millions could reopen Wilton 'cracker' plant](#), Northern Echo (Oct. 18, 2021).

<sup>39</sup> Conclusion of Stand Research Group.

<sup>40</sup> Conclusion of Stand Research Group.

<sup>41</sup> Press Release, European Commission, [Reducing greenhouse gas emissions: Commission adopts EU Methane Strategy as part of European Green Deal](#) (Oct. 14, 2020).

<sup>42</sup> See [Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on an EU strategy to reduce methane emissions](#), COM (2020) 663 final (Oct. 14, 2020).

<sup>43</sup> See *id.* at 11.

Optional:

- Extension to the petrochemical sector
- Full supply chain coverage

In October 2021, the European Parliament voted overwhelmingly to approve a resolution asking the Commission to propose strong legislation.<sup>44</sup> Among several other elements, the European Parliament:

“[W]elcomes the consideration of rules covering the whole supply chain to ban routine venting and flaring in the energy sector up until the point of production ... considers that feedstock uses of fossil gas and oil, including for non-energy purposes such as to produce petrochemicals, should be included in such a proposal[.]”<sup>45</sup>

The European Parliament also:

“Notes that fossil gas and oil are used in the energy and petrochemical sectors and that both sectors therefore contribute to the methane emitted at fossil gas and oil well pads and processing plants; notes that according to the International Energy Agency, petrochemicals account for 8% and 14% of total primary demand for fossil gas and oil and that these shares are bound to increase; calls on the Commission to ensure that MRV and LDAR obligations and routine venting and flaring rules apply equally to fossil gas and oil used in the petrochemical sector[.]”<sup>46</sup>

These potential differences in coverage — whether or not petrochemicals are included in the regulation and whether those requirements apply to the full supply chain — will determine whether the Methane Strategy comprehensively deals with a dangerous source of greenhouse gases or whether it excludes some of the most rapidly growing sources of methane emissions. As the research summarized in this document makes clear, excluding the emissions from the petrochemical and plastics supply chain would create an enormous loophole in Europe’s climate policy.<sup>47</sup>

## EMISSIONS TRADING SYSTEM AND CARBON BORDER ADJUSTMENT MECHANISM

In July 2021, the European Commission launched its Fit-for-55 package, intended to reduce greenhouse gas emissions by 55%, compared to 1990 levels, by 2030.<sup>48</sup> Among the

<sup>44</sup> See [Resolution on an EU strategy to reduce methane emissions](#), Parl. Eur. Doc. P9\_TA(2021)0436.

<sup>45</sup> *Id.* at para. 20.

<sup>46</sup> *Id.* at para. 21.

<sup>47</sup> For more analysis of the ongoing developments around the Methane Strategy, see Andy Gheorghiu, [Exploring innovative ways to bring down methane emissions in the energy sector](#), Energy Transition (Oct. 26, 2021).

<sup>48</sup> Press Release, European Commission, [European Green Deal: Commission proposes transformation of EU economy and society to meet climate ambitions](#) (July 14, 2021).

components of the package are changes to the EU's Emissions Trading System (ETS), as well as the implementation of a Carbon Border Adjustment Mechanism (CBAM), both of which focus on reducing carbon dioxide emissions to the exclusion of methane. The provision of free allowances to the petrochemical sector and the exclusion of petrochemicals from the CBAM demonstrate some of the shortcomings of this approach.

The ETS provides free emissions allowances for many heavy-emitting industries perceived to be at high risk of “carbon leakage,” the offshoring of industrial production as a result of climate regulation.<sup>49</sup> All industries covered by the ETS get some free allowances through 2030. Those industries considered highly exposed to carbon leakage, however, will continue to receive free allowances equal to 100% of the benchmark rate (the rate of emissions based on the most efficient facilities). As such, these industries are largely exempt from the greenhouse gas emissions regulation under the ETS.

While natural gas extraction is not considered highly exposed to “carbon leakage,” extraction of crude petroleum, manufacture of refined petroleum products, and manufacture of plastic in primary forms are all considered highly exposed, and therefore receive free allowances.<sup>50</sup>

The CBAM is intended to address the risk of carbon leakage by harmonizing the cost of embedded carbon emissions in imports with those of products produced in the EU.<sup>51</sup> Plastics and some petrochemicals — as well as petroleum products — are notably excluded from the list of industries covered. Rather, the CBAM will only apply to cement, iron and steel, aluminum, fertilizers, and electricity.<sup>52</sup>

There are fundamental issues with the ETS and the CBAM as proposed.<sup>53</sup> Free allowances for high-emitting industries paradoxically protect some of the worst climate offenders from the regulation. While the CBAM does try to solve this problem, it also extends the availability of free allowances to 2035 for the industries to which it applies — essentially subsidizing carbon emissions for an *extra* five years.

While both the ETS and CBAM require strengthening, the exclusion of plastics and their precursors from the CBAM is a major oversight. Under the current proposal, plastics made in the EU remain eligible for free allowances, as does the production of their feedstocks from oil. Imports of feedstocks avoid the CBAM, as do imports of plastic itself.

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<sup>49</sup> [Carbon Border Adjustment Mechanism: Questions and Answers](#), European Commission (July 14, 2021).

<sup>50</sup> [Commission Delegated Decision \(EU\) 2019/708 of 15 February 2019 supplementing Directive 2003/87/EC of the European Parliament and of the Council concerning the determination of sectors and subsectors deemed at risk of carbon leakage for the period 2021 to 2030](#), Annex, 2019 O.J. (L120) 20, 24.

<sup>51</sup> [Carbon Leakage](#), European Commission (last visited Nov. 9, 2021).

<sup>52</sup> [Carbon Border Adjustment Mechanism: Questions and Answers](#), European Commission (July 14, 2021).

<sup>53</sup> See Press Release, Carbon Market Watch, [European carbon market does not move with the climate urgency of our times](#) (July 14, 2021).

That European plastics industry is poised to expand just as the EU Commission is reshaping its climate regulation. This apparent conflict is only possible because the ETS fails to properly regulate the plastics industry, and the CBAM does not apply to plastics. The EU Commission should include plastics and petrochemical feedstocks in its carbon border adjustment mechanism and should curtail the free ETS allowances that permit and support continued carbon pollution.

## Conclusions and Needed Next Steps

The European Union is at a critical juncture. It has announced a relatively ambitious, if still incomplete, climate strategy in its Fit-for-55 initiative to reduce emissions by at least 55% by 2030, and is taking a firm approach to plastic pollution with its Single-Use Plastic Directive, which aims to reduce single-use plastics consumption.<sup>54</sup> It is also currently developing a methane strategy and preparing to develop a hydrogen strategy,<sup>55</sup> two regulatory frameworks that could heavily influence whether the EU meets its climate goals or falls short.

At the same time, Europe is increasingly relying on fracked gas from the United States and fracked gas liquids specifically for plastics production. US fracking fields are poorly regulated by laws that are underenforced; venting, flaring, and leaks are rampant, while transparency and oversight are extremely limited. By providing a market for US fracked gas, the EU is driving unchecked pollution in oil and gas fields and processing zones in the US, with dire impacts for the global climate and the frontline and fenceline communities overburdened by the toxic impacts of the fossil fuel and petrochemical industries.

Plastics production and incineration are driving the climate crisis. After two decades of decreasing plastics production in Europe, new facilities are being proposed and additional plastic is being produced due to the availability of new US feedstocks. But the low financial cost of US ethane and propane masks the significant costs borne by the communities exposed to fracking wells and transport infrastructure, as well as the climate costs of the whole plastics life cycle. Globally, petrochemicals remain the driving force behind growth in oil demand. As noted by the International Energy Agency in its most recent projections, “[t]he petrochemical industry remains a pillar of growth over the forecast period. Ethane, LPG and naphtha together account for 70% of the projected increase in oil product demand to 2026.”<sup>56</sup> At present, this burgeoning source of emissions is inadequately addressed by the major European regulatory efforts.

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<sup>54</sup> See [Directive \(EU\) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment](#), 2019 O.J. (L 155) 1.

<sup>55</sup> See [Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Hydrogen Strategy for a Climate-Neutral Europe](#), COM (2020) 301 final (July 8, 2020).

<sup>56</sup> International Energy Agency, [Oil 2021: Analysis and forecast to 2026](#) (2021).

Europe cannot simultaneously claim to be tackling the climate crisis while ratcheting up one of the most carbon-intensive industrial processes, which is itself a branch of the fossil fuel industry. Moreover, Europe cannot do its fair share to reduce emissions simply by moving them offshore.

To rectify such contradictions and enhance the ambition of European climate policy, the European Commission should ensure that the upcoming EU Methane Regulation applies to the petrochemical industry and to the full supply chain, including to imports of ethane, propane, and other feedstocks from beyond its borders. It should also ensure that its Emissions Trading System and Carbon Border Adjustment Mechanism adequately address plastics and petrochemicals. It must phase out free allowances under the ETS to ensure that legacy polluters and the status quo are not perversely entrenched. Plastics and NGLs should be included in the Carbon Border Adjustment Mechanism, and, as with the Methane Regulation, supply chain emissions should be incorporated as well. Finally, the EU, the United Kingdom, and Norway should all halt the buildout of additional plastics production facilities and continue implementing policies to reduce the use and consumption of plastic, in line with their circular economy and climate goals.

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Center for International Environmental Law (CIEL) uses the power of law to protect the environment, promote human rights, and ensure a just and sustainable society. CIEL seeks a world where the law reflects the interconnection between humans and the environment, respects the limits of the planet, protects the dignity and equality of each person, and encourages all of earth's inhabitants to live in balance with each other.



Rethink Plastic, part of the Break Free From Plastic movement, is an alliance of leading European NGOs working towards ambitious EU policies on plastics. It brings together the Center for International Environmental Law (CIEL), ClientEarth, Environmental Investigation Agency (EIA), European Environmental Bureau (EEB), European Environmental Citizen's Organisation for Standardisation (ECOS), Greenpeace, Seas At Risk, Surfrider Foundation Europe, and Zero Waste Europe. Together they represent thousands of active groups, supporters and citizens in every EU Member State working towards a future free from plastic pollution.