

FRANCE'S TOP 50 CARBON-INTENSIVE INDUSTRIAL SITES

Time for a reckoning

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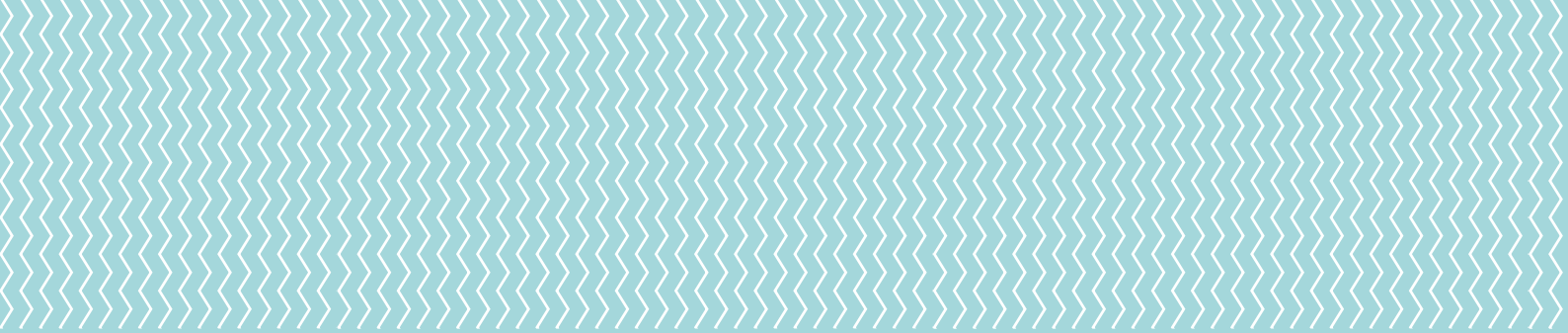


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INTRODUCTION



THE CHALLENGE OF DECARBONIZATION



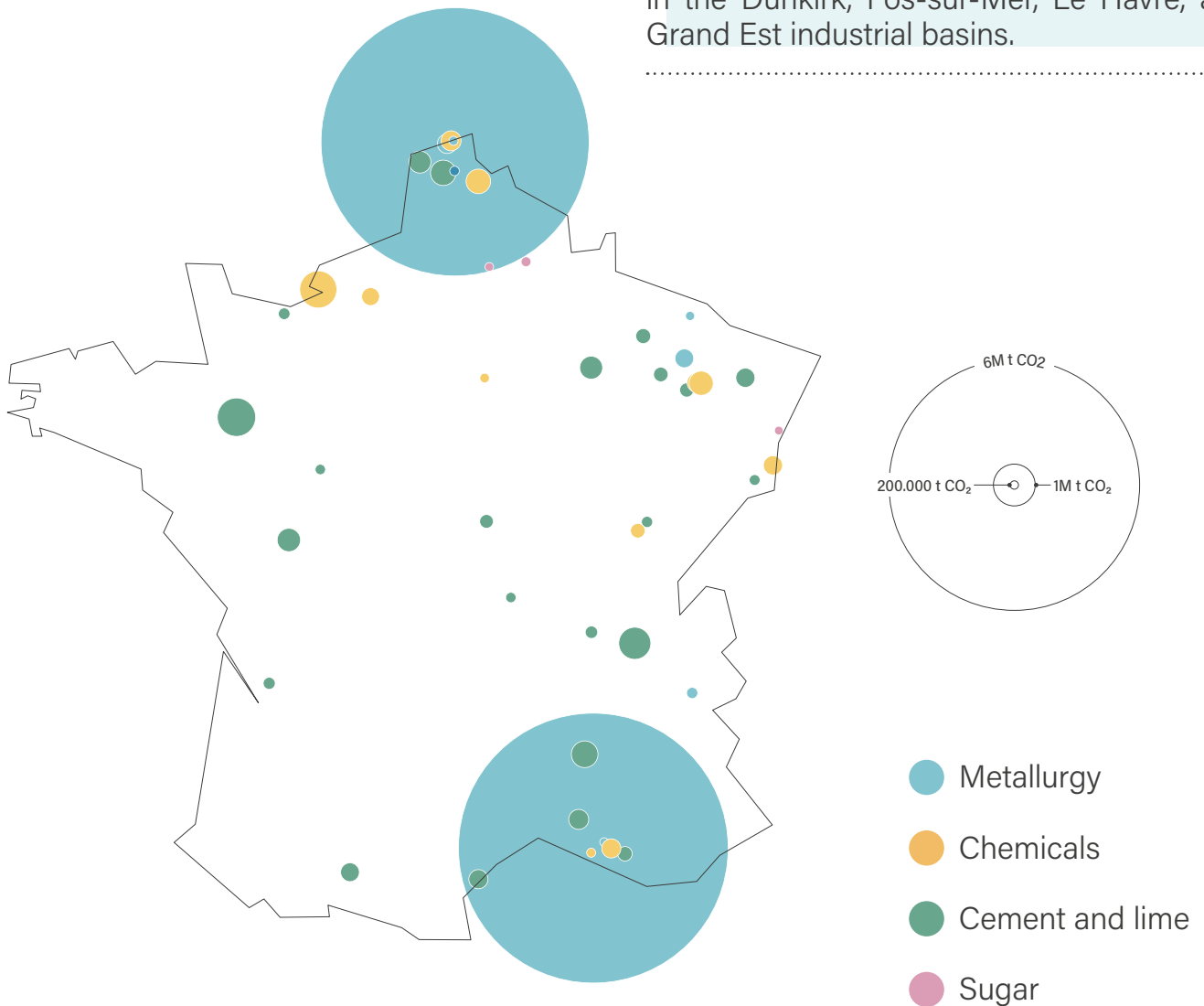
10%

Share of emissions from the 50 highest-emitting sites in national emissions.

In France, industry accounts for 20% of national CO₂ emissions. A significant proportion of these industrial emissions comes from heavy industry (metallurgy, chemicals and building materials), whose activities are based on highly energy-intensive processes and the use of fossil resources.

The 50 highest-emitting sites in CO₂¹ account for 10% of national emissions and nearly 60% of industrial emissions. Given this pronounced impact on France's carbon footprint, it is crucial that these French industrial firms decarbonize their activities.

→ Most of these sites are concentrated in the Dunkirk, Fos-sur-Mer, Le Havre, and Grand Est industrial basins.



¹ In this report, "CO₂" includes greenhouse gases (GHGs) reported to the EU ETS (European Union Emissions Trading System), and includes carbon dioxide (CO₂), nitrous oxide (N₂O) and perfluorocarbons (PFCs).

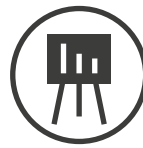


In-depth transformation

Heavy industry started its low-carbon transition in the early 1990s. This concerned primarily the chemical industry, which benefited from new production technologies that emit less nitrous oxide (N₂O). As for the other heavy industries, they have yet to start up their environmental transformations. Any reduction in their emissions can be attributed to site closures, relocations to other countries, and imports.

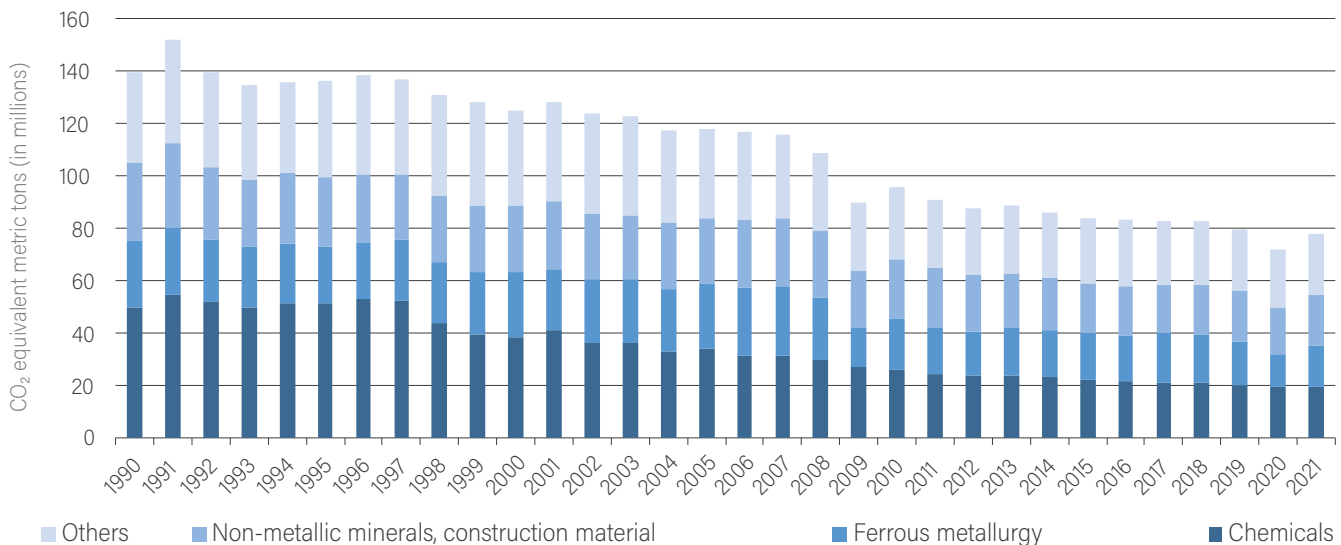
With the exception of emissions reductions due to decrease in production during the 2008 economic crisis, there has been hardly any reduction in the sector's emissions in recent years. France's National Low-Carbon Strategy (NLCS) allocated a "carbon budget" to the industry sector. This carbon budget was complied with only in 2020, due to the economic slowdown linked to the pandemic. It may also have been respected in 2022, a year which saw a forced policy of energy constraint.

Industry has thus not convincingly demonstrated that it has taken the steps required to engage in a continuous and sustainable reduction in its emissions. Whether or not it will be able to meet the NLCS's future targets, aligned with the more ambitious European "Fit for 55" package, remains unknown. These new targets could result in a reduction in industry emissions of 5% per year, between 2021 and 2030¹.



BREAKDOWN OF CO₂E EMISSIONS OF THE INDUSTRIAL MANUFACTURING AND CONSTRUCTION SECTORS IN FRANCE (MAINLAND AND EU OVERSEAS)

Source : CITEPA inventory edition 2023, in SECTEN format



¹ Data from the report "Investissements pour décarboner l'industrie lourde en France : quoi, combien et quand ?" by the I4CE Institute for Climate Economics, 2023.

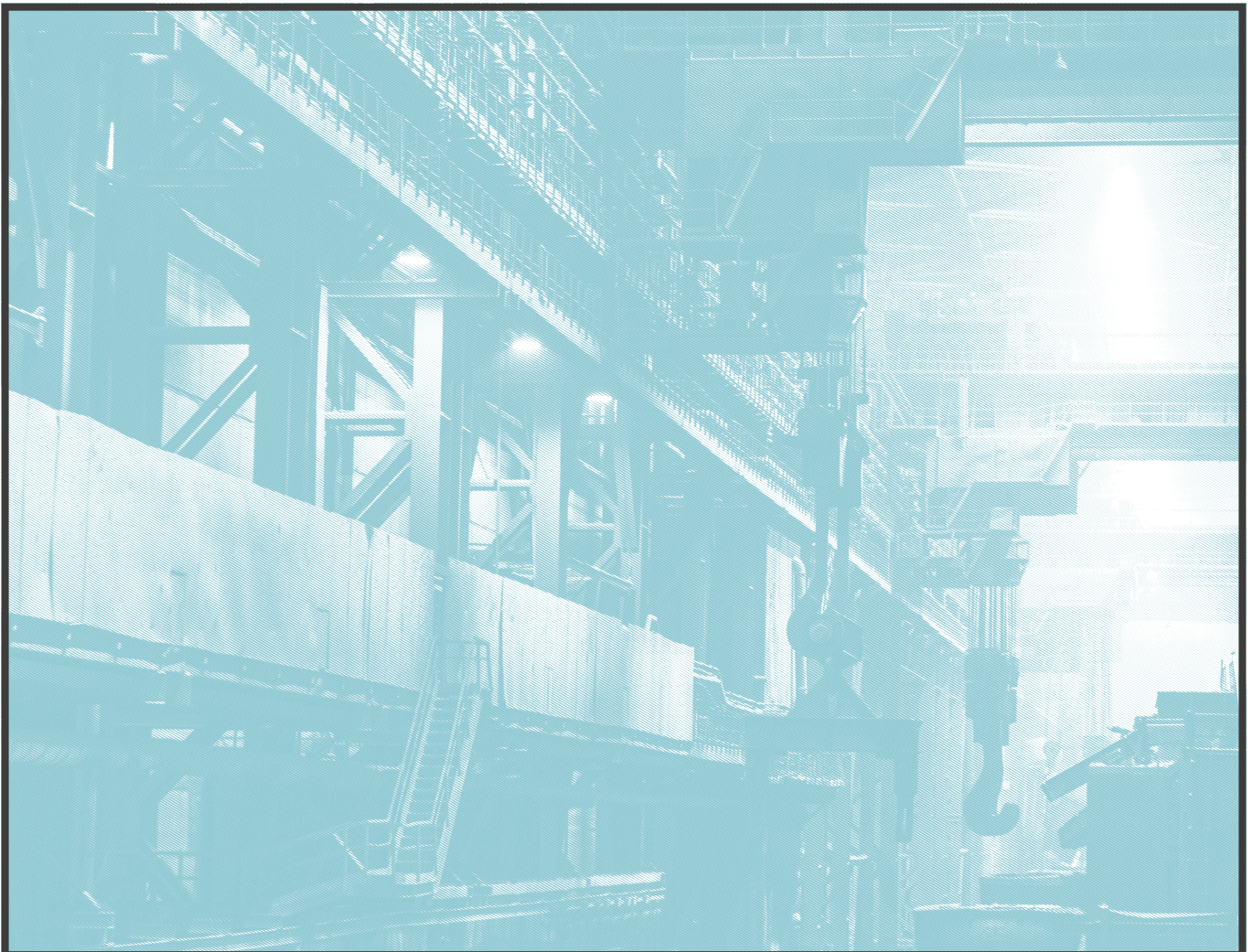
Both France and the EU have provided a great deal of support to heavy industries. Therefore, lack of public support for investment cannot be put forward as an explanation for the stagnation of industrial emissions and heavy industry's slowness to achieve its low-carbon transition.

→ In this report, Climate Action Network France provides an overview of trends in emissions from these 50 industrial sites and trends in public support received by the sector over the last two decades.

This initial review focuses on the amounts committed in EU funds and French calls for projects, from among the multiple financing schemes for industry.

Theme-based fact sheets also take a close look at the highest-emitting sites and at firms that have not yet started to reduce their emissions.

An update of this review will be made each year.





SUMMARY OF PUBLIC SUPPORT



6.8Md€

Amount of national subsidies dedicated to industry since 2020.

Free carbon allowances: surplus and speculation courtesy of the carbon market

The EU Emissions Trading System (ETS) was introduced in 2005 to limit GHG emissions from the highest-emitting economic sectors and encourage their gradual decarbonization.

During Phases I and II of this carbon market, from 2005 to 2012, the vast majority of carbon allowances were granted free of charge in order to test the functioning of the carbon market and familiarize firms without imposing additional costs on them. This measure also had the advantage of maintaining the competitiveness of European industries faced with global competition benefiting from lower carbon costs. The free carbon allowances were distributed to the Member States, which were then responsible for dividing them up among the various industrial sites. However, this process lacked transparency.

In 2013, auctioning became the default allocation method (in order to implement the "polluter pays" principle), with an exception made for heavy industry, which continued to receive free allowances. However, between 2008 and 2012 the free allowances were allocated on the basis of emissions prior to the economic crisis and to the fall in production of most industries. With their "rights to pollute" surpassing their real emissions, industries found themselves with a surplus of allowances, which they were able to keep or sell on the market.

Free allowances have thus had the opposite effect than intended, as they have given the emitting industries the opportunity to avoid efforts to achieve the expected decarbonization and made those allowances an object of speculation. For example, the steel giant ArcelorMittal seems to have made a profit of 1.9 billion euros from this speculation between 2005 and 2019 according to *Le Monde*¹. In the cement sector, LafargeHolcim similarly seems to have made 986 million euros.

According to the Jacques Delors Institute², 94% of industrial emissions were still covered by free allowances in 2022, further delaying the impact of carbon costs on industrial activities and their real carbon transition.

In the future, this scheme designed to protect industry competitiveness is to be gradually replaced by the Carbon Border Adjustment Mechanism, thereby increasing the price of certain products (iron, steel, cement, fertilizer, aluminum, electricity, and hydrogen) imported from countries outside the EU where carbon prices are lower. The free allowances will thus be distributed degressively until 2034.

1 "Comment les entreprises polluantes ont transformé les quotas gratuits de CO₂ en un marché de plusieurs milliards d'euros", *Le Monde*, May 30, 2023.

2 "No more free lunch. Ending free allowances in the EU ETS to the benefit of innovation", Jacques Delors Institute, February 2022.

The return of economic interventionism

France has many support schemes for industry, and these have increased in recent years, particularly following the economic crisis caused by COVID-19. However, they have often favored big companies over SMEs and micro-enterprises¹.

The main public support schemes are as follows:

- ▶ The **Research Tax Credit** (*crédit d'impôt recherche – CIR*).
- ▶ The **Investment Programs for the Future** (*programmes d'investissement d'avenir*), whose fourth component dedicated to the ecological transition is included in the France Recovery and France 2030 plans.
- ▶ The **Heat Fund** (*fonds chaleur*) to support the production of renewable heat with a budget of 520 million euros in 2022.
- ▶ Aid to reduce energy consumption under the **white certificates** scheme.
- ▶ The **national strategy for the development of decarbonized hydrogen**, which includes a component for industry decarbonization (particularly of industrial hydrogen based on fossil fuels) and the creation of a French electrolysis sector.
- ▶ The **France Recovery** (*France Relance*) plan (2020-2022) set up to address the COVID-19 crisis includes a decarbonization fund of 1.2 billion euros to speed up the transformation of French industry into the industry of

the future. Many of the 50 highest-emitting sites have been awarded calls for projects on the themes "Energy efficiency and process decarbonization," "Support for industrial investment in regions," "Biomass heat," and "Support for low-carbon heat." The details of the sites concerned are available in the summary table on page 12.

▶ The **France 2030** plan is a five-year investment plan launched in 2021. Its purpose is to make up for French industry's delay in decarbonization via a budget of 5.6 billion euros earmarked to its decarbonization. The goal of this plan is to finance the industrial transition so that France can meet its commitment to reduce industrial emissions by 35% by 2030 (objectives of the National Low-Carbon Strategy). Of these **5.6 billion** euros, 4 billion are dedicated to the highest-emitting industrial sites, some of which had already been awarded the first calls for projects:

- Low-carbon industrial zones (*zones industrielles bas carbone – ZIBAC*): this call for projects seeks to support regions wishing to accelerate the ecological transformation of their industrial zones. Three major industrial zones won this call for projects:
 - Fos-sur-Mer, via the Syrius project ;
 - Dunkirk, via the Dkarbonation project ;
 - Le Havre, via the Axe Seine project.
- DECARB-IND call for projects, with the "Zero Fossil Industry" component
- Calls for projects on the themes "Resilience-relocation" and "Innovative solutions and technologies for batteries."

¹ French Economic Social and Environmental Council (EESC) report "TPE-PME, comment réussir le passage à la neutralité carbone ?", 2018.

The amount of the France 2030 plan dedicated to the highest-emitting industrial sites could be doubled to **10 billion** euros if the decarbonization roadmaps for these sites achieve the reduction targets set by the French government.

There are many State-financed schemes, and many of the highest-emitting sites have been able to benefit from them. These various support schemes come in addition to those from the European Union, whose main ones are:

▶ The **Innovation Fund**: the money collected by the EU via the ETS carbon market is reinvested in this fund, whose aim is to finance the development of low-carbon technologies. Some big industrial firms have benefited from the Innovation Fund for very specific projects:

- Eqiom has received **63 million** euros as part of the K6 carbon-neutral cement program ;
- Chaux et Dolomies du Boulonnais received **25 million** euros to decarbonize its Réty site.

▶ The **European Regional Development Fund (ERDF)** (2014–2020) totaled 8.4 billion euros, of which 30% was allocated to climate commitments.

▶ The **Just Transition Fund (JTF)** was designed to finance the energy and industrial transition of regions affected by high CO₂ emissions. The JTF is directly dedicated to the decarbonization of the industries of its beneficiary regions. Six just transition plans have been approved by the European Commission, including the following regions with significant industrial basins:

- Auvergne Rhône-Alpes: **78 million** euros
- Grand Est: **112 million** euros
- Hauts-de-France: **228 million** euros
- Normandy: **103 million** euros
- Pays de la Loire: **48 million** euros
- Southern Provence-Alpes-Côte d'Azur (Sud-PACA): **142 million** euros

➔ The highest-emitting industries in CO₂ have thus received tens of billions of euros in aid from the European Union and France. They have also benefited from the advantages of an overly lax European carbon market.



© Ibrahim Boran / Unsplash

THE 50 HIGHEST-EMITTING SITES IN CO₂

	Company	Site	Sector	2022 emissions ¹	2019*2022 emissions ²	Ave. number of employees	Public aid
1	ArcelorMittal	Fos, Provence-Alpes-Côte d'Azur, Bouches-du-Rhône (13)	Meta.	6.446	-15,8%	2000-4999	A / B / C / D + ³
2	ArcelorMittal	Dunkerque, Hauts-de-France, Nord (59)	Meta.	6.410	-14,2%	2000-4999	C / D + ⁴
3	Naphtachimie	Lavéra, Provence-Alpes-Côte d'Azur, Bouches-du-Rhône (13)	Chem.	1.421	0,5%	200-499	C / D
4	TotalEnergies ⁵	Gonfreville, Normandie, Manche (76)	Chem.	877	-12,8%	Not known	A / C / D
5	Lafarge Ciments	Saint Pierre La Cour, Pays de la Loire, Mayenne (53)	Chem.	832	-4,5%	100-199	A / D
6	Vicat	Montalieu, Auvergne-Rhône-Alpes, Isère (38)	Chem.	754	-0,8%	500-999	A / D
7	Yara France	Le Havre, Normandie, Seine-Maritime (76)	Chem.	752	36,5%	100-199	A / B / D
8	Lafarge Ciments	Teil, Auvergne-Rhône-Alpes, Ardèche (07)	Cem.	625	13,3%	100-199	D
9	EQIOM	Lumbres, Hauts-de-France, Pas-de-Calais (62)	Cem.	592	-1,0%	100-199	D + ⁶
10	Roquette Frères SA	Lestrem, Hauts-de-France, Pas-de-Calais (62)	Chem.	579	2,2%	2000-4999	A / D
11	Solvay	Dombasle, Grand Est, Meurthe-et-Moselle (54)	Chem.	559	-6,3%	250-499	B / D
12	Ciments Calcia	Airvault, Nouvelle-Aquitaine, Deux-Sèvres (79)	Cem.	549	-0,2%	100-199	A
13	Ciments Calcia	Couvrot, Grand Est, Marne (51)	Cem.	533	-29,1%	100-199	D
14	Chaux et dolomies du bouloonnais	Réty, Hauts-de-France, Pas-de-Calais (62)	Cem.	516	-16,4%	50-99	D / E
15	Vicat	Peille, Provence-Alpes-Côte d'Azur, Alpes-Maritimes (06)	Cem.	500	42,7%	Not known	D
16	Versalis France	Mardyck, Hauts-de-France, Nord (59)	Chem.	467	-23,4%	250-499	C / D
17	Ciments Calcia	Beaucaire, Occitanie, Gard (30)	Cem.	461	-11,2%	100-199	B
18	Aluminium Dunkerque	Dunkerque, Hauts-de-France, Nord (59)	Meta.	459	-11,5%	500-999	C / D
19	Novacarb	Laneuveville-devant-Nancy, Grand Est, Meurthe-et-Moselle (54)	Chem.	456	-7,0%	250-499	A / D
20	Borealis PEC-Rhin	Ottmarsheim, Grand Est, Haut-Rhin (68)	Chem.	447	-3,4%	199-249	D
21	Usine chimique de l'Aubette ⁷	Berre (Usine chimique de l'Aubette), Provence-Alpes-Côte d'Azur, Bouches-du-Rhône (13)	Chem.	444	-50,6%	500-999	C / D
22	Lafarge Ciments	Port La Nouvelle, Occitanie, Aude (11)	Cem.	443	-11,2%	100-1999	A
23	EQIOM	Heming, Grand Est, Lorraine (57)	Cem.	441	-15,2%	100-199	D / E
24	Saint-Gobain PAM	Pont-à-Mousson, Grand Est, Meurthe-et-Moselle (54)	Meta.	437	5,9%	199-249	A / D
25	Lafarge Ciments	Martres Tolosane, Occitanie, Haute-Garonne (31)	Cem.	431	-6,3%	100-199	A

1 In metric tons of CO₂. The GHGs tracked here are reported to the ETS (EU Emissions Trading System) and include carbon dioxide (CO₂), nitrous oxide (N₂O) and perfluorocarbons (PFCs).

2 Trend in CO₂ emissions between 2019 and 2022. For sites for which reported 2022 emissions are not yet available, 2021 emissions were considered for this calculation.

3 State and EU participation (ongoing negotiations as part of an Important Project of Common European Interest - IPCEI) in the company's investment plan to develop "green" steel, amounting to €1.7 billion.

4 European project Horizon 2020 for financing the carbon capture and storage module.

5 Usine de Gonfreville (UGO).

6 The company received €63 million from the European Innovation Fund within the framework of the K6 program (carbon-neutral cement).

7 Compagnie pétrochimique de Berre.

	Company	Site	Sector	2022 emissions ¹	2019*2022 emissions ²	Ave. number of employees	Public aid
26	Borealis	Grand-Quevilly, Normandie, Seine-Maritime (76)	Chem.	411	-28,2%	250-499	C / D
27	Carrières et fours à chaux de Dugny	Dugny, Ile-de-France, Seine-Saint-Denis (93)	Cem.	341	-3,9%	50-99	
28	Lafarge Ciments	La Malle, Provence-Alpes-Côte d'Azur, Bouches-du-Rhône (13)	Cem.	339	-23,6%	100-199	A / C / D
29	Société des fours à chaux de Sorcy	Sorcy, Grand Est, Meuse (55)	Cem.	334	-4,0%	100-199	D
30	Solvay	Tavaux, Bourgogne-Franche-Comté, Jura (39)	Chem.	332	-19,8%	50-99	
31	Vicat	Xeuilley, Grand Est, Meurthe-et-Moselle (54)	Cem.	325	20,18%	50-99	A / D
32	Alsachimie	Chalampé, Grand Est, Haut-Rhin (68)	Chem.	317	-14,2%	500-999	D
33	Ciments Calcia	Beffes, Centre-Val de Loire, Cher (18)	Cem.	310	-14,3%	50-99	
34	Lafarge Ciments	Val d'Azergues, Auvergne-Rhône-Alpes, Rhône (69)	Cem.	283	9,9%	50-99	D
35	Ciments Calcia	Bussac-Forêt, Nouvelle-Aquitaine, Charente-Maritime (17)	Cem.	277	-37,1%	100-199	
36	Ciments Calcia	Ranville, Normandie, Calvados (14)	Cem.	269	-6,7%	50-99	D
37	Trimet	Saint Jean de Maurienne, Auvergne-Rhône-Alpes, Savoie (73)	Meta.	258	-8,8%	500-999	A / D
38	EQIOM	Rochefort-sur-Nenon, Bourgogne-Franche-Comté, Jura (39)	Cem.	257	-8,8%	50-99	
39	HOLCIM	Altkirch, Grand Est, Haut-Rhin (68)	Cem.	244	0,1%	100-199	D
40	Vicat	Crechy, Auvergne-Rhône-Alpes, Allier (03)	Cem.	231	1,6%	50-99	
41	Ciments Calcia	Villiers-au-Bouin, Centre-Val de Loire, Indre-et-Loire (37)	Cem.	231	-13,0%	50-99	
42	Tereos	Origny, Hauts-de-France, Aisne (02)	Sug.	224	-8,4%	250-499	D
43	Borealis	Grandpuits, Ile-de-France, Seine-et-Marne (77)	Chem.	213	-66,3%	100-199	
44	Verrerie d'Arques	Arques, Hauts-de-France, Pas-de-Calais (62)	Ver	210	-15,4%	Not known	D
45	ArcelorMittal	Florange, Grand Est, Moselle (57)	Meta.	209	-35,4%	2000-4999	D
46	Lyondell Chimie France SAS	Fos-sur-Mer, Provence-Alpes-Côte d'Azur, Bouches-du-Rhône (13)	Chem.	205	-4,4%	250-499	C / D
47	Ferroglobe Manganese France	Grande-Synthe, Hauts-de-France, Nord (59)	Meta.	205	1,7%	50-99	C / D
48	LyondellBasell Services France SAS	Berre-l'Etang, Provence-Alpes-Côte d'Azur, Bouches-du-Rhône (13)	Meta.	192	5,8%	500-999	C / D
49	Tereos Starch & Sweeteners Europe	Mesnil-Sainte-Nicaise, Hauts-de-France, Somme (80)	Sug.	190	-11,7%	250-499	A / D
50	Tereos Starch & Sweeteners Europe	Marckolsheim, Grand Est, Bas-Rhin (67)	Sug.	190	34,5%	500-999	D

Winner of the France Recovery call for projects (CFP)	A
Winner of the France 2030 call for projects (CFP)	B
Site located in a France 2030 low-carbon industrial zone (ZIBAC)	C
Site located in a beneficiary region of the European Just Transition Fund	D
European Innovation Fund	E

THE HIGHEST-EMITTING SITES

ArcelorMittal, Fos-sur-Mer site
ArcelorMittal, Dunkerque site



ArcelorMittal is the top steel manufacturer in France. It produced 9.5 million tons of liquid steel in 2021. The company employs 15,000 people in France.

ArcelorMittal seeks to be the leader in decarbonized steel, especially through its decarbonization program at the Fos-sur-Mer and Dunkirk sites, whose future investments come to 1.7 billion euros. The only condition for developing this "green" steel is that the State must participate in the investments.

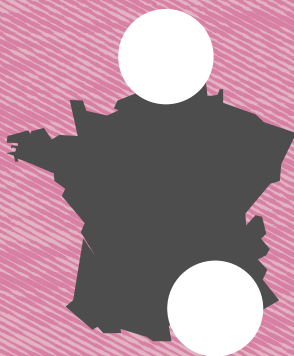
→ The Dunkirk and Fos-sur-Mer sites account for **25% of the GHG emissions** of French industry.

↓ COMMITMENTS

- ▶ In France: **40% reduction in CO₂ emissions between 2018 and 2030**, representing a reduction of 7.8 million metric tons each year, which would thus put the French steel industry on a path aligned with the Paris Agreement.
- ▶ Carbon Neutrality in 2050.

↓ TRANSFORMATIONS UNDERTAKEN

- ▶ **Closure of three blast furnaces** (out of the five existing at these two sites), for replacement by electric furnaces for the production of recycled steel.
- ▶ In Dunkirk, construction of a **plant for direct reduction of iron ore**, where coal will be replaced by hydrogen.
- ▶ **Capture and storage of residual CO₂** (pilot project at the Dunkirk site).



Steel

↓ FINANCING OBTAINED

France Recovery:

- ▶ Call for projects on energy efficiency and industrial process transformation for Fos-sur-Mer ;
- ▶ Support for industrial investment in the regions (Fos-sur-Mer).

France 2030 :

- ▶ DECARB-IND calls for projects ;
- ▶ ZIBAC calls for projects.

Negotiations underway with the European Commission for public participation in the massive investment of 1.7 billion euros to produce "green" steel.

Financing of the carbon capture and storage module by the European project Horizon 2020.

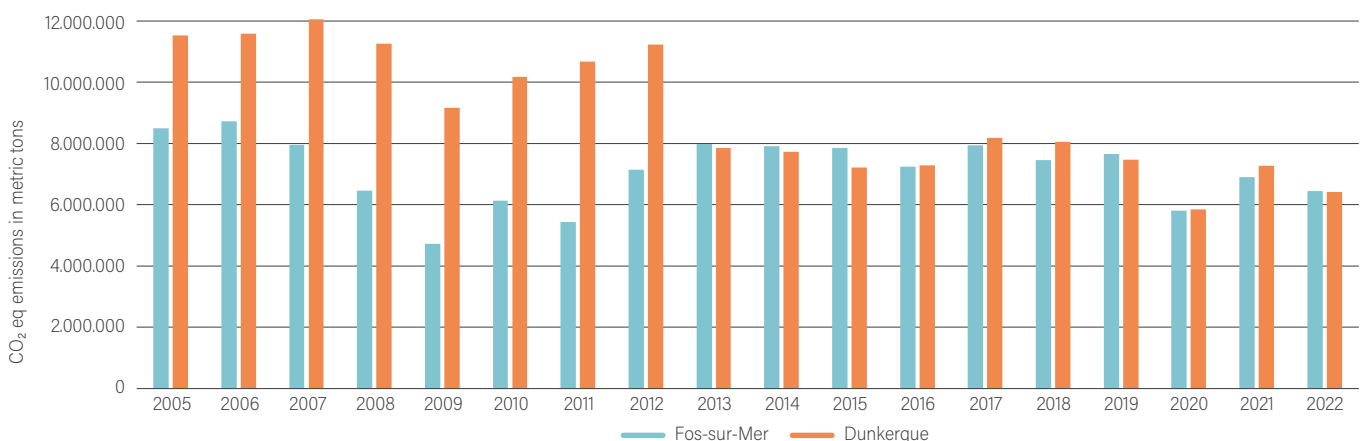
The media outlet Disclose¹ estimates that ArcelorMittal's French subsidiary may have received up to **364 million euros in public aid since 2013**, in addition to 28 million from the ERDF.

The company may have earned between **1.5 and 5.2 billion euros²** from speculation on surplus free carbon allowances following the 2008 economic crisis and the crisis at the Florange site in 2011.

↓ TREND IN EMISSIONS SINCE 2005

At the Fos-sur-Mer site, emission trends are mainly cyclical: reductions are correlated with the decreases in production caused by the economic crisis of 2008 and the COVID crisis in 2020. The decrease in emissions from the Dunkirk site in 2013 can be explained by the decrease in global steel demand for 2012 and by the shutdown of the No.2 blast furnace for maintenance, which was then extended as part of the company's decarbonization policy.

Despite the many types of aid received and the lax rules of the European carbon market, the two highest-emitting industrial sites in France have not managed to significantly reduce their GHG emissions. The reduction in these emissions is due more to the economic situation than to real transformation efforts. ArcelorMittal is promising to develop "green" steel but once again requires financial aid from France and the EU to at last make the decarbonization efforts needed to reduce France's carbon footprint.



1 "ArcelorMittal : un champion des émissions de CO₂ biberonné aux aides publiques", Disclose, 10 March 2023.

2 Sources: *Le Monde* and Disclose sources mentioned above.

3 Source of the emission data mentioned in this report: <https://www.euets.info/installations>

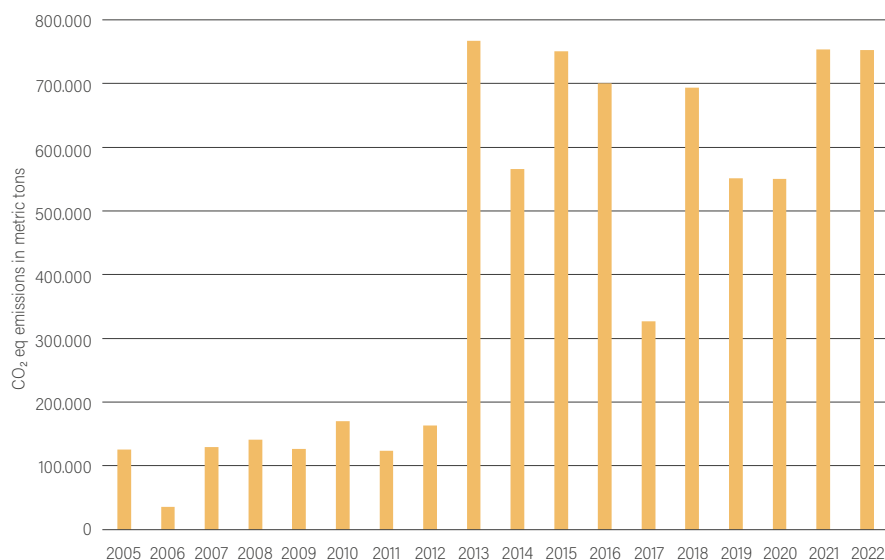
YARA IN LE HAVRE: EMISSIONS ON THE RISE



The Yara site in Le Havre, ranked 7th among the 50 most polluting sites in France, saw an alarming 36.5% increase in emissions between 2019 and 2022. Efforts to decarbonize the site are still pending.

Yara is a leading Norwegian chemical firm producing fertilizers. The Le Havre site specializes in the production of urea, ammonia, and additives for diesel engines.

The Le Havre site was the **7th** highest-emitting French industrial site in CO₂ in 2022. It stands out from other sites by the **36% increase** in its emissions since 2019. After a drop in emissions caused by the economic slowdown linked to the COVID crisis, emissions are back on the rise, and the industrial site does not seem to have begun its decarbonization process:



Chemicals

The abrupt increase in emissions in 2013 is due to the ETS mechanism having added nitrous oxide (N₂O), which is a major GHG from the chemical industry. It is therefore difficult to compare emission levels before and after 2013.

↓ COMMITMENTS COMMUNICATED FOR THE SITE

- ▶ -45%¹ GHG emissions in 2030 ;
- ▶ Carbon neutrality in 2050.

↓ TRANSFORMATIONS UNDERTAKEN

- ▶ Production of "green" ammonia based on blue hydrogen², in order to reduce the carbon footprint of mineral nitrogen fertilizers by 80 to 90% ;
- ▶ Replacement of turbines by electric motors ;
- ▶ Connection of the site to a heating network ;
- ▶ Green hydrogen production³ ;
- ▶ Carbon capture and storage.

↓ FINANCING OBTAINED

- ▶ France Recovery winner in the "Energy efficiency and decarbonization of processes and utilities" category ;
- ▶ France 2030 ZIBAC for Axe Seine (project involving the construction of CO₂ capture and storage infrastructure at the Le Havre site) ;
- ▶ Located in Normandy, a beneficiary region of the European JTF.

The decarbonization ambitions of the Yara site in Le Havre include many future industrial transformations whose financing is supported by France Recovery and France 2030. But for now the site's climate ambition remains theoretical and has not yet led to effective reduction in CO₂ emissions⁴.

1 No benchmark year specified in the source "Près du Havre, Yara veut diminuer de 45% ses émissions de GES", La Gazette Normandie, 5 January 2023.

2 Hydrogen produced from natural gas or coal and whose production process is coupled with a carbon capture and storage system.

3 Hydrogen from the electrolysis of water, with renewable energies.

4 A reminder that in this report "CO₂" includes carbon dioxide (CO₂); nitrous oxide (N₂O), a GHG emitted during the production and use of mineral nitrogen fertilizers; and perfluorocarbons (PFCs).

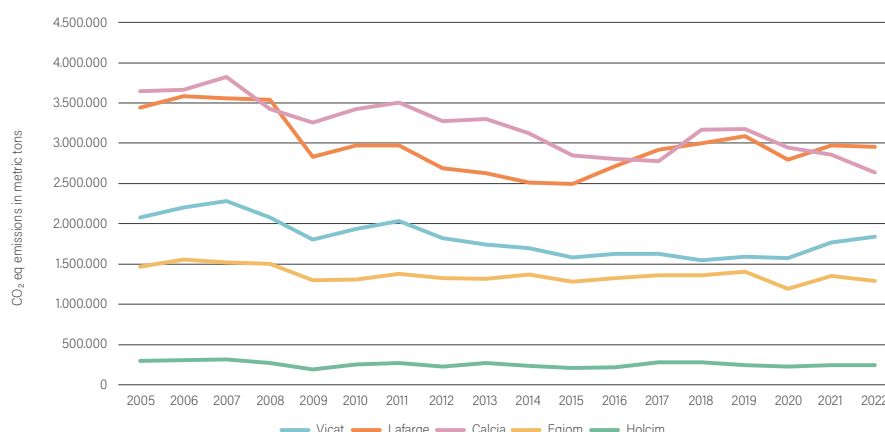
THE CASE OF CEMENT PRODUCTION



➔ **Cement production accounted for 12.5%¹ of the GHG emissions of French industry in 2019.** This industrial sector is overrepresented in the 50 highest-emitting sites, which include 24 sites producing cement and lime.

A study² has shown that the reduction in emissions from the sector between 1990 and 2012 in Europe is primarily due to a decrease in production (especially from 2008) and then attributable to technological improvements (low-carbon cement with reduced clinker³ ratio, use of alternative fuels).

In France, just five firms share 95%⁴ of the market: Lafarge-Holcim, Ciments Calcia (Heidelberg group), Eqiom, Vicat and Imerys Aluminates. Emission trends from the largest sites in France of these firms⁵ are shown below.



The emissions tracked in this graph correspond to those from among the 50 highest-emitting sites in France, see table on page 12.

1 French Agency for Ecological Transition (ADEME) data.
 2 F. Branger, P. Quirion, Reaping the carbon rent: Abatement and overallocation profits in the European cement industry, insights from an LMDI decomposition analysis, 2014.
 3 Clinker is a mix of limestone and other materials produced during the kilning stage. Its production process is highly emitting in CO₂.
 4 French National Institute of Statistics and Economic Studies (INSEE), 2018 data.
 5 Imerys Aluminates sites do not appear in the graph because they are not among the 50 industrial sites in France that are the highest-emitting in CO₂.



Ciments Calcia seems to have started reducing its overall emissions since 2019, but it remains to be confirmed that this is a sustainable ecological transformation and not a cyclical trend. On the other hand, emissions from the largest sites of Lafarge/Holcim, Vicat and Eqiom have stagnated on average since the early 2010s.

Vicat

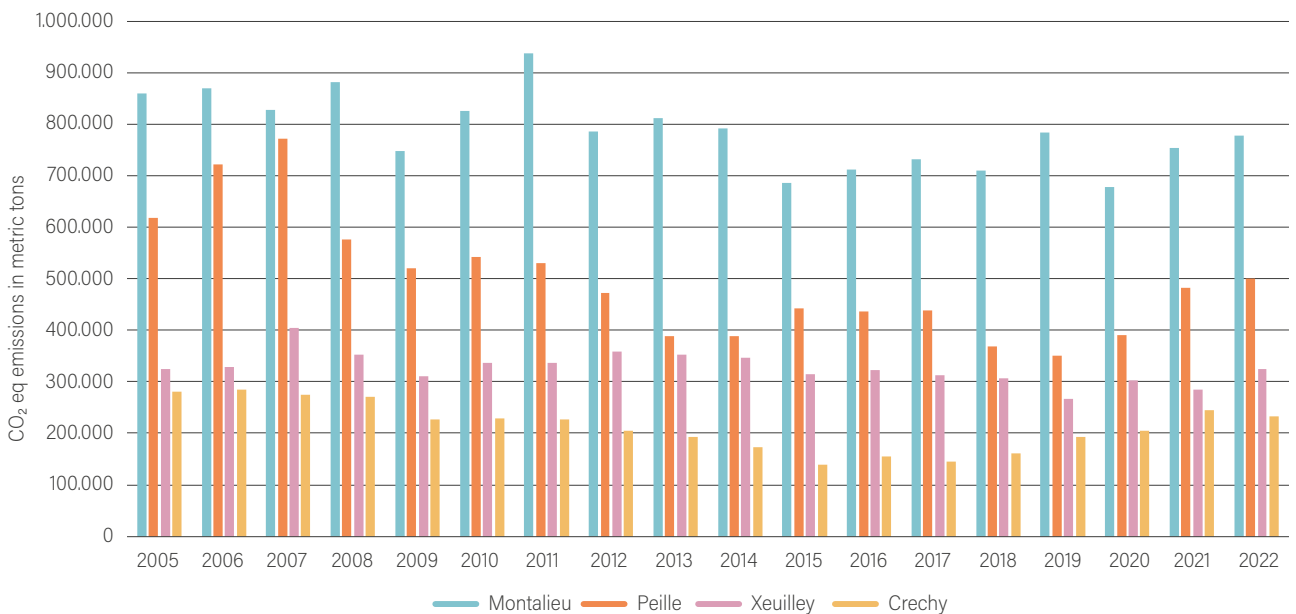
This section focuses on the firm Vicat, whose major production sites show no sign of reduction in their CO₂ emissions.

Vicat is a long-standing French company whose major activity is cement production.

Several of the company's sites are included among France's 50 highest-emitting sites in CO₂:

- ▶ Montalieu (Auvergne-Rhône-Alpes) #6
- ▶ Peille (PACA) #15
- ▶ Xeuilley (Grand Est) #31
- ▶ Créchy (Auvergne-Rhône-Alpes) #40

Emission trends from these sites are shown below:



➔ None of the company's four major sites in France has begun its decarbonization.

↓ COMPANY COMMITMENTS

Vicat has not declared any decarbonization targets for its activities. However, it belongs to the French cement companies union, France Ciment, whose roadmap was updated in May 2023 to include the objective of reducing the sector's emissions by 50% by 2030 (compared to 24% announced in 2020). This reduction strategy is based on two levers:

- ▶ Reduction of the clinker ratio in cements ;
- ▶ Capture and storage of CO₂.

↓ TRANSFORMATIONS UNDERTAKEN

- ▶ Development of decarbonized products, for example a "carbon sink" binder or a cement with a reduced ratio of clinker, which is replaced by clay ;
- ▶ Pilot project in Montalieu for CO₂ capture by microalgae ;
- ▶ Future project in Montalieu for CO₂ capture and production of decarbonized methanol that could be financed by the European Commission as part of the "Important Project of Common European Interest" (IPCEI) calls for projects ;
- ▶ Use of alternative fuels with a high biomass content.

↓ FINANCING OBTAINED

France Recovery:

- ▶ 13.7 million euros for the development of low-carbon cements at the Xeuilley site ;
- ▶ 2 million euros for the project for CO₂ capture by microalgae.

The Montalieu, Peille and Xeuilley sites are located in regions that benefit from the European Just Transition Fund and are likely to have received financial aid as part of the industrial transition of these regions.

The French cement industry has just presented an ambitious decarbonization roadmap. This process is crucial because the sector has not yet started to reduce its GHG emissions and is far from meeting the targets set by the National Low-Carbon Strategy.

Vicat has undertaken several projects to decarbonize its production, but the effects are not yet visible—on the contrary, the largest sites emit an increasing amount of CO₂ each year.



LOTS OF PUBLIC MONEY FOR NOT MUCH DECARBONIZATION

30.3 Md€

Amount of investment to be mobilised in the medium term for the transition of industry, according to the Institut Rousseau.



This analysis reveals that despite the huge sums received thanks to public support over several decades, concrete results are few and far between. The industrial sector, because of its significant carbon footprint in France, is a key player in achieving the objectives of the National Low-Carbon Strategy and in meeting the commitments made under the Paris Agreement. Yet, despite the importance of its role, any concrete progress is slow in coming. The amounts of both public investment and the savings made by the industries are astronomical, but the impact on the reduction of CO₂ emissions remains limited.

Conditioning public aid

According to the I4CE Institute, the investments needed to decarbonize certain industrial sectors such as steel, cement, and some of the chemical sector by 2050 could reach up to 14 billion euros, depending on the scenario considered. The Institut Rousseau estimates the investment needs for deployment of mature low-carbon technologies at 7.8 billion euros by 2030¹ in addition to more than 22.5 billion euros of costly breakthrough technologies in the medium term.

If we consider the amounts already allocated to the decarbonization of industry and the meager results observed so far, it now seems essential to demand that firms give something back in return for the public aid granted.

This approach ensures greater efficiency and transparency in the use of public funds. This is done by combining public financial

support with contracts made with the firms, by which they commit to achieving concrete decarbonization objectives. In this way, the public funding released must be conditional on compliance with a trajectory compatible with a maximum temperature increase of 1.5°C. Accordingly, firms will have to publish an annual report on compliance with their climate obligations, a review of their direct and indirect GHG emissions, and a strategy for reducing these emissions, accompanied by an investment plan. Firms not complying with these commitments would be subject to financial penalties.

Moving away from the risky gamble of “all-technology”

Analysis of the changes taking place in the industry highlights the considerable use of “green” technologies such as hydrogen and carbon capture and storage (CCS) in big industrial sites, which is done to guarantee the same levels of production. However, this strategy is halfway between Scenario 3 “Green technologies” and Scenario 4 “Restoration gamble” of the French Agency for Ecological Transition (ADEME)², whose investment needs are estimated at 11 and 14 billion euros respectively by the I4CE Institute.

Moreover, CCS does not mean there is reduction of emissions at the source and therefore does not put into question the current production system. CCS also has limitations in that the technology is not yet fully mature and that carbon storage in the North Sea will require considerable investment and run a potential risk of leakage. In addition, CCS

¹ “2% pour 2°- Les investissements publics et privés nécessaires pour atteindre la neutralité carbone de la France en 2050”, Institut Rousseau, March 2022.

² Transitions(s) 2050 project.

is a costly and energy-intensive. It is important to emphasize that CCS is not a solution that can be put into widespread use for all the French industrial sites. **Industry should thus consider CCS a last resort for dealing with residual emissions that cannot be reduced, and CCS must not delay the in-depth transformation of industry.**

and reduce the consumption of virgin raw material.

Mainstreaming energy restraint and the circular economy

Reflection must be carried out on the level of production of raw materials needed to meet our needs, as well as on the issue of restraint in consumption. Industry must undergo a paradigm shift and produce what we need to consume, rather than produce more so that we consume more. This shift is critical according to several studies, which have shown that the National Low-Carbon Strategy objectives cannot be achieved without a change in demand and a reduction in production (Scenarios 1 and 2 of the ADEME "Transition 2050" project, the Shift Project's transformation plan for the French economy, the négaWATT scenarios). The IPCC estimates that the potential for a reduction in GHG emissions linked to reduction in demand (i.e., psychosocial, infrastructural, and technological factors) is 28.7%¹ for the industrial sector.

In this respect, the development of the circular economy is a crucial lever for the decarbonization of heavy industry. The reuse of recycled raw material in France, which has a low carbon footprint, would make it possible both to reduce dependence on imports



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1 IPCC AR6 WG 3, Chapter 5, Figure 5.7.

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Réseau Action Climat – France is an association under the French law of 1901 founded in 1996 and focused on climate change. It is the French representative of Climate Action Network International (CAN-I), a global network of more than 1,900 NGOs around the world. A federation of national and local associations (36 NGOs in total), it fights the causes of climate change, from the local to the international level, and aims to encourage governments and citizens to take action to limit the impact of human activities on the climate.

