

# EU competitiveness and resilience – current risks

## I. Context

Europe's competitiveness and resilience is in danger. As our industry has embarked on an unprecedented transformation, the energy crisis is adding to the challenge with an asymmetrical impact on prices compared to the rest of the world. Europe's response to the energy crisis also needs to prevent any possible fragmentation of the Single Market.

With its Inflation Reduction Act, the **US** is taking laudable steps to reduce inflation and fight climate change. But with a total support of 369 billion dollars - for CAPEX and OPEX - it is also building a new industrial ecosystem in the strategic clean energy sectors (wind, solar, batteries, hydrogen, automotive).

The uncapped subsidies that Washington distributes to the national industry, with guarantees for the next ten years, dangerously distort competition.

Every American citizen receives a bonus of 7,500 dollars if he or she buys a North American-made electric vehicle, including the battery components and related raw materials. This acts as an additional tax on European manufacturers exporting final electric vehicles to the US. We need to create a level playing field. If we do not resolve the conflict, the damage will be great for both sides. We have opened a channel of discussion with our US partners, through a dedicated Task Force which is progressing well.

But behind the discriminatory measures that the EU is trying to address lies a much greater risk: the competitive pressure stemming from IRA risks distorting existing and future investment decisions. A significant share of European firms is now considering relocating activities outside the EU, which may affect the whole supply chains and very worryingly our European SMEs. Even when investment is supported in Europe, it takes much longer to benefit from the funds, and the amount of support is only a fraction of what can be obtained by investing in the US. For instance, ENEL is benefiting from the EU Innovation Fund and from the Italian recovery and resilience plans to finance a new factory to manufacture solar photovoltaic panels. The overall amount corresponds to about 0,5 euro cents per watt. An equivalent investment in the US would benefit from support for about 4,6 euro cents per watt: nine times more!

A recent survey by the European Roundtable for Industry shows that the level of confidence recorded since H1 2020 is at the lowest ever and below the level at the onset of the COVID-19 pandemic. More than a third of CEOs and Chairs (34%) plan to temporarily either pause or decrease their investments in existing businesses. 15% intend to do this permanently. Even for German SMEs, the impacts are already significant. Price developments force around 40% of companies to withhold investment in the green and digital transformation. And almost one in four companies are considering (or are already in the process of) transferring shares, production or jobs abroad.

**China**, too, is encouraging energy-intensive companies to relocate all or part of their production with the promise of access to cheap electricity and less stringent regulatory environment, as confirmed by example by the announcement of German chemical multinational BASF that it will definitively reduce its activities in Europe and commit to investing huge sums (12 billion euros) in China. Besides, Volkswagen has joined Tesla in deciding to build electric vehicles in China for export back to Europe. VW's all-electric Tavascan will be made for the Cupra brand at a plant in Anhui province, with units shipped to Europe from 2024. Europe seems now on track to become a net importer of vehicles from China, while Europe has historically always been a net exporter, with a positive trade balance of

about 80 billion euros in 2021. At the same time, China restricts access to its market for EU companies. More generally, it is on average 35% cheaper to produce solar photovoltaic panels in China than it is in Europe, thanks to low energy costs and cheap labour, among other factors (see Annex).

While it remains beneficial for global players to invest at global level too, the risk of distortions of European supply chains is real, with a negative impact on our industrial fabric, including SMEs, and on employment and growth across European regions. Uncoordinated responses by European actors could also act to the detriment of the Single Market and create new distortions.

## II. Member States' feedback

Commissioner Thierry Breton sent a letter to MS after the 29 September COMPET Council asking for input on the impact of the current crisis on industrial ecosystems, disruptions of EU value chains, temporary crisis frameworks on state aid, and possible additional temporary and targeted relief. We have received feedback from the MS and below is a summary of the replies.

Most of the MS report severe **negative impact of the current crisis in Energy-Intensive Industries (EII)** as well as in SMEs caused by higher costs due to surging prices of energy and raw materials. The energy crisis is affecting the operating conditions of many sectors and individual companies, and the profitability of nearly all companies (cf. overview of plant closures in that sector further below). According to MS, the most affected sectors across the EU are chemical industries (especially fertilizers), metal, cement, aluminium, steel, ceramics, magnets, construction, glass, plastics, paper, wood processing, furniture industries, vehicles, electronics, transport sectors, food, restaurants, and hotels, etc.

The availability of these products also **heavily affects downstream sectors**. Some MS report that the effects are even harsher for SMEs as it is harder for SMEs to transfer costs to the clients. Smaller companies generally do not have a large liquidity basis to ensure access to immediate increases in raw materials, so many are being priced out of the market. The level of effects on MS differs depending on the level of dependence on the Russian gas. However, the drastic increase in electricity prices has affected the majority of MS.

When considering the **appropriate responses**, most of the MS stress that it is important to draft support measures in such a way that they are temporary and targeted to match the problems in specific value chains while giving perspective on long-term competitiveness and sustainability. The majority of MS supports the proposed extension of the temporary crisis framework (TCF) until 31 December 2023. Most of the MS stressed that TCF should provide the necessary flexibilities to allow MS to support enterprises, but it should also ensure that the level playing field is maintained. Multiple MS stressed that the amount of granted aid should consider the difference of MS capacities and that a subsidy race should be avoided. There is also a general understanding that the TCF should be used as a momentum to support the acceleration of the clean energy transition and ensure Europe's energy independence.

In general, MS note that it is important to keep the balance between short-term measures and the long-term perspective with respect to giving a temporary and targeted relief to EU businesses. MS stressed that caution should be exercised. When increasing regulatory burden in times of crises, a slower pace of implementation should be chosen and all new requirements must be proportionate.

MS fear that increased costs would drive some manufacturing and processing companies to **relocate outside the Union** to countries with lower energy costs and/or more direct support measures such as the US Inflation Reduction Act. Other implications for industrial ecosystems include the restricted ability of industry, due to uncertainty, to invest in research and development, therefore compromising future development and competitiveness.

## Annex: Table with Energy-Intensive Industries plant closures

Country	Company / Plant name	Capacity (tonnes/year)	Status	% of EU production	EU production vs imports	Jobs	Other
Aluminium							
NL	Aldel	110,000	Fully curtailed from Oct 2021	About 5% of EU annual production (exl. EFTA)	EU tot production of primary aluminium: 2 milllion tonnes per year  EU imports: 4 mln tonnes (mainly RU and NO)  EU import dependency: 50%	100 layoffs	Only primary smelter in NL. New owner plans to restart, providing that CO2 comp is granted (State aid)
RO	ALRO	265,000	Reduced production by 60% from Jan 22. Aluminum production shut down from August 22	About 8% of EU annual production		800 layoffs (smelter + alumina plant)	Only primary smelter in RO.
SK	Slovalco	175,000	Closure from Sept 22	8.7% of EU production		300 layoffs	Reasons: lack of ETS indirect cost compensation and the power contract
ES	Alcoa San Ciprián	228,000	Curtailed from Jan 2022	11% of EU production		No layoffs announced	Commitment to restart in 2024
FR	Aluminium Dunkirk	285,000	Cut output by 22%	About 3% of EU production			Biggest smelter in the EU
DE	Trimet		Reduced production by 30%				
	SPERIA – Rheinwerk	70,000	Cut by 50%				
SL	Talum	114,581	Reduced to one third from Nov 2021	4% of EU production			
Zinc							
NL	Nyrstar’s Budel	315,000	Closure- care and maintenance since 16 August	15-20% of European zinc production		No layoffs announced	Operating at reduced capacity since Q4 2021.

FR	Nyrstar Auby		Reduced production up to 50% since Jan 22				
BE	Nyrstar Balen		Reduced production				
IT	Glencore Portovesme	150,000	Closure			400 layoffs	
ES	Glencore – Asturiana de Zinc	510,000	Reduced production				
BG	KCM Plovdiv		Curtailed since summer 2021				
DE	Glencore - Nordenham	165,000	Closure- on care and maintenance from Nov 1				
SK	OFZ	136,000	Reduced production by 50%, then closed		EEA production covers about 60% of consumption. Imports are increasing from China, India, Malaysia	150 layoffs	No State aid from SK government
PL	HUTA LAZISKA	4 furnaces	Stopped production				
ES	Ferroglobe	10 furnaces	All Silicon furnaces stopped/ Mn alloys cut by 50%				
FR	Befesa Valera	1 furnace	Stopped production until Nov/ Dec 2022				
<b>Steel</b>							
DE	ArcelorMittal	Flat steel site in Bremen & DRI plant in	Bremen: 1 out of 2 Blast Furnaces shut down from				ArcelorMittal has curtailed more than 7 million tonnes/yr of crude steel capacity

		Hamburg	end September Hamburg: reduced production by 80%				
ES	ArcelorMittal Asturia	2 blast furnaces producing heavy plate, wire rod and rails	1 of 2 Blast Furnaces shut down from end September				
BE	Aperam, Genk		Reduced production by 60%			Temporary layoffs for several hundred	
FR	ArcelorMittal Dunkerque	3 Blast furnaces – total capacity 7 million tonnes	1.2 million tonnes temporary idled				
SK	US Steel, Kosice	4.5 million	1 out of 2 blast furnaces idled for 60 days				
HU	Dunaferr		Idled two blast furnaces for 60 days > than 550,000 tonnes				
<b>Fertilisers</b>							
RO	Azomures	1.6 million	Curtailed since 22 June	Provides 75% of RO fertiliser supply			Owned by Swiss group Ameropa
HU	Nitrogénművek	63,630	Curtailed since 9 March				70% reduction in production, from 91,250 tons to 27,620 tons
AT	Borealis/Linz, AT (unconfirmed)	unknown					
FR	Borealis/Grand- Quevilly (Le Havre)	400,000	Curtailed announced on 8 September	Biggest of Borealis's three ammonia plants in FR			
IT	Yara/Ferrera	600,000 tonnes of	On 25 August Yara	The			

		ammonia, 600,000 tonnes of urea	announced further production cuts. Now at 35% of total production capacity	production cuts announced amount to 36% of EU nitrous fertiliser needs			
BE	Yara/Tertra	420,000 tonnes of ammonia					
NL	Yara/Sluiskill	1.3 million tonnes of urea, 1.7 millions tonnes ammonia					
DE	Yara/Brunsbuettel	750,000 tonnes ammonia	On 25 August Yara announced further production cuts. Now at 35% of total production capacity				
FR	Yara/Gonfreville	400,000 tonnes ammonia	On 25 August Yara announced further production cuts. Now at 35% of total production capacity				
HR	Petrokemija	500,000 tonnes urea	Production stopped since 5 March				
LT	Achema/Rukla, LT (unconfirmed)	1.3 million tonnes UAN; 1.1 million tonnes ammonia; 785,000 tonnes urea; 540,000 tonnes CAN	Estimated 50% reduction in production				
PL	Grupa Azoty/Pulawy, PL	524,000 tonnes ammonia; 375,000 urea; 1 millions tonnes NPK	Production cuts announced, but unclear by what amounts				

BE	BASF/Antwerp, BE	unknown	Curtailment announced 27 July				
NL	OCI	550,000 tonnes ammonia	Curtailment of 50% (unconfirmed)				
<b>Ceramics</b>							
DE	V&B Fliesen (part of the Turkish Eczacibasi Group since 2007)		Phase out and transfer to Turkey				Site security agreement, which applies until March 2023
BE	Briqueteries Ploegsteert/ Tournai		Alternating closure of 2 of its 3 furnaces				-10% production capacity
PT	7 ceramics companies /central region		Work stoppage				1,000 workers affected
PL	Cerrad	ceramic tiles	Stop 3 out of 7 production lines				350 lay-offs
<b>Glass</b>							
FR	Duralex /La Chapelle-Saint-Mesmin	Tableware	Furnaces on standby				Short-time working measures as of 1 November for a minimum period of 4 months
FR	Arc International /Saint-Omer	Tableware	Furnaces on standby				Short-time working measures for up to 3000 employees from 1 September
IT	Bormioli	Tableware	Furnace stopped in July will not restart				Lay-offs announced
BE	AGC Glass Europe /Mol	Flatglass	Flat glass plant put on hot hold				Temporary hot hold, plant not irreversibly damaged, 60% of its normal gas consumption for zero production. 50 staff on temporary unemployment
LU	Guardian	Flatglass	Flat glass furnace put on hot hold				Oven kept warm (temperature reduced from 1600 to 1100°C)

## Annex: Announcements of FDI flows & possible divestment from EU to US/North America & China<sup>1</sup>

Company	Sector	Employment figures in Europe	Employment figures in the world	Latest Announcements	Sources
<b>ABB</b>	EV Chargers	50,000 employees in Europe	110,000 employees worldwide	<ul style="list-style-type: none"> <li>On 14/09/2022, <b>announced a multi-million-dollar investment will increase production of electric vehicle chargers</b>, including Buy America Act compliant ones, and create over 100 jobs.</li> </ul>	<a href="#">ABB expands US manufacturing footprint with investment in new EV charger facility</a>
<b>Air Liquide</b>	Energy	Figure not found	66,400 employees worldwide	<ul style="list-style-type: none"> <li>On 19/10/2022, Air Liquide, Chevron, LyondellBasell, and Uniper have announced their intention <b>to pursue lower carbon hydrogen and ammonia projects (and production facilities) along the U.S. Gulf Coast</b>. Announced that <b>US “ammonia infrastructure could support exports to both Europe and the Asia Pacific region”</b>.</li> </ul>	<a href="#">Air Liquide, Chevron, LyondellBasell, and Uniper to pursue lower carbon hydrogen and ammonia project along the U.S. Gulf Coast</a>
<b>ArcelorMittal SA.</b>	Steel	Figure not found	158,000 employees worldwide	<ul style="list-style-type: none"> <li>13/10/2022, <b>ArcelorMittal will be investing CAD\$1.8 billion to decarbonise the ArcelorMittal Dofasco plant and produce cleaner and greener steel</b></li> <li>11/10/2022, <b>ArcelorMittal México will invest US\$15 million for its plant in Escobedo, Nuevo Leon.</b></li> </ul>	<a href="#">ArcelorMittal breaks ground on first transformational low-carbon emissions steelmaking project</a>  <a href="#">ArcelorMittal invests US\$15 million in its new plant</a>
<b>BASF</b>	Chemicals	67,532 employees in Europe	Around 111,000 employees worldwide in 2022	<ul style="list-style-type: none"> <li>On 21/10/2022, <b>BASF announced that it will reduce annual costs by €500 million euros (\$485 million) in Europe up to 2024</b> (including job cuts), as group took a 740-million-euro write-down linked to the Nord Stream 1 pipeline</li> <li>On 07/03/2022, <b>BASF announced it would build cathode material plant in Québec</b> “to further expanding its production of cathode materials in North America and complementing its existing production sites”</li> </ul>	<a href="#">BASF to cut costs, jobs in Europe, takes write-down on Nord Stream 1 - Reuters</a>  <a href="#">BASF to build cathode material plant in Québec</a>  <a href="#">BASF is currently building a €10bn chemical complex in Guangdong</a>

<sup>1</sup> This table includes the list of possible divestments from the EU to the US/North America and China based on publicly available information from media as well as companies' press releases (and for some cases, evidence come from bilateral discussions between DG GROW and industry). Although most new projects in the US have been announced following the adoption of the IRA on 16/08/2022, announcements of investment and further production a few months prior the IRA have also been included (as companies may have started to reflect on potential investment strategies during the IRA legislative debate and will still benefit from IRA subsidies). As companies do not explicitly reference that new investments/industrial projects in the US are specifically related to the IRA, we cannot confirm with certainty that all these announcements are a direct consequent of the IRA. Moreover, we cannot confirm that these announcements would potentially lead to divestment in Europe (i.e., companies may increase their investment in the US but keep their industrial activities in Europe). Nevertheless, many announcements are recent and therefore there is a good reason to believe that, at least of most of them, that there is a link with the IRA.



				<ul style="list-style-type: none"> <li>BASF is currently building a new Verbund site in Zhanjiang, Guangdong province. The project would be BASF's largest investment with up to €8 - €10 billion upon completion. The site would ultimately be the third-largest BASF site worldwide, following Ludwigshafen, DE, and Antwerp, BE.</li> </ul>	
<b>BMW</b>	EVs	Figure not found	118,909 employees worldwide in 2021	<ul style="list-style-type: none"> <li>BMW will pay 3.7 billion euros (\$4.2 billion) to take majority control of its Chinese joint venture after securing the necessary licence from Beijing</li> <li>BMW increased its stake in the venture with Brilliance Auto Group to 75% from 50%, as announced in 2018 when China said it would start relaxing ownership rules in the auto industry.</li> <li>"Olive Zipse, chairman of the board of management of BMW Group, said the German premium carmaker is convinced in the long-term potential of the Chinese market and will continue its investment in the country."</li> </ul>	<a href="#">BMW pays \$4.2 bln to take control of Chinese JV   Reuters</a> <a href="#">BMW to expand investment in China</a>
<b>BP pulse</b>	Batteries, Chargers and Energy	Figure not found	More than 60,000 employees worldwide	<ul style="list-style-type: none"> <li>On 26/10/2022, bp pulse <b>announced plans to establish series of large EV fast-charging hubs designed to serve ride-hail and taxi fleets near U.S. airports</b> and high-demand locations across the nation.</li> <li>On 19/10/2022, bp <b>announced that it will invest \$6 million in all-electric ride-hailing business Freebee</b> (start-up based in Miami)</li> <li>On 27/09/2022, Hertz and bp <b>signed a MoU for the development of a national network of EV charging solutions for Hertz and its customers in North America</b></li> </ul>	<a href="#">bp pulse to launch Gigahub EV fast-charging hubs for ride-hail fleet charging near airports and other high-demand US locations</a> <a href="#">bp invests in free local electric transit business Freebee</a> <a href="#">Hertz, bp collaborate to accelerate EV charging in North America</a>
<b>Daimler Truck</b>	Trucks	Figure not found	100,000 employees worldwide in 2019	<ul style="list-style-type: none"> <li>On 26/09/2022, Daimler Truck started production of Mercedes-Benz trucks in China (at a plant of Daimler's joint venture Beijing Foton Daimler Automotive Co in Beijing)</li> </ul>	<a href="#">Daimler starts production of Mercedes trucks in China</a> <a href="#">Daimler Truck reaches major milestone in China by starting local production of Mercedes-Benz trucks for Chinese market</a>

<b>Enel Green Power</b>	Wind Storage	Figure not found	9,000 employees worldwide	Earlier this year (2022), installed 350 MW of wind and 180 MWh of battery storage at its new Azure Sky facility in Throckmorton County.	<a href="#">U.S. wind-storage set to surge after tax credits unlock income</a>
<b>Enel SpA</b>	Solar Panels	Figure not found	66,279 employees worldwide	<ul style="list-style-type: none"> <li>On 17/11/2022, <b>planning a factory in the US that can initially produce 3 gigawatts</b>—and ultimately as much as 6 gigawatts of solar panels</li> <li><i>“Recent policy tailwinds from the Inflation Reduction Act have served as a catalyst for our solar manufacturing ambitions in the US, ushering in a new era of made-in-America energy,”</i> said Enrico Viale, head of Enel North America.</li> <li>Has not announced where the factory will be located but did say it expects it will employ 1,500 workers when it reaches full capacity in 2025.</li> <li>There is no evidence at the moment that these increased investments will lead to a lower engagement in the EU.</li> </ul>	<a href="#">Enel to Build Massive Solar Panel Factory in U.S.</a> DG ENER
<b>FREYR Battery</b>	Batteries	Figure not found	119 employees worldwide	<ul style="list-style-type: none"> <li>On 11/11/2022, <b>FREYR announced the development of the Giga America clean battery manufacturing developed by 24M Technologies Inc (“24M”)</b> in Boston, MA. preliminarily estimated capital investment of \$1.7 billion.</li> </ul>	<a href="#">FREYR Battery Announces Plans for U.S. Gigafactory in Georgia</a>
<b>Iberdrola</b>	Renewable Energy and Offshore Wind	15,435 employees in Spain and the UK (Most of its activities)	Around 40,000 employees worldwide	<ul style="list-style-type: none"> <li>On 20/11/2022, plans to invest <b>€47 billion in electricity networks and renewable energy</b> over the next three years</li> <li>On 12/10/2022, <b>Iberdrola (through its subsidiary Avangrid) and Sempra Infrastructure signed an agreement to develop hydrogen and green ammonia projects in the US</b></li> <li>On 04/08/2022, Iberdrola “reached an agreement to take over management of the assets and operation and maintenance of <b>Vineyard Wind 1</b>, the first commercial-scale <b>offshore project in the US</b>”. The construction will generate up to 3,600 full-time equivalent jobs</li> <li>On 02/06/2022, <b>Iberdrola announced plans to invest \$6 billion over the next 3 years in state of New York.</b></li> <li>Iberdrola is lifting US investment to almost half its global total from 2023-25, compared with 23% in the EU.</li> </ul>	<a href="#">U.S.-Europe Trade Booms as Old Allies Draw Closer</a>  <a href="#">Iberdrola and Sempra Infrastructure sign agreement to develop hydrogen and green ammonia projects in the United States</a>  <a href="#">Iberdrola plans to invest 6,000 million dollars in the State of New York (USA) over the next 3 years</a>  <a href="#">Iberdrola, a leading energy company in the US</a>  <a href="#">Iberdrola will take control of the</a>

					<a href="#">operation of Vineyard Wind I</a> <a href="#">European industry pivots to US as Biden subsidy</a> - FT DG ENER
<b>Jervois</b>	Cobalt/Critical Minerals	Figure not found	At least 3,600 employees worldwide	<ul style="list-style-type: none"> <li>On 07/10/2022, <i><b>"Jervois is now in the process of cancelling its investment in Finland/Europe and planning to take the investment into the US"</b></i></li> <li><b>Invested \$200mn</b> to develop the Idaho mine (the first US cobalt mine to open in decades, buoyed by the carmakers' increasing demand for battery raw materials and legislation designed to foster a battery supply chain)</li> <li>Bryce Crocker (CEO of Jervois) said that <i>"the Inflation Reduction Act is going to change trade flows and capital flows in a way that isn't truly understood. It's a profound piece of legislation"</i></li> </ul>	Confirmed by Finnish Minerals group  <a href="#">US opens new cobalt mine as EV battery needs grow – FT</a>  <a href="#">First new cobalt mine in decades opens in Idaho; key component in electric vehicle batteries – the Washington Times</a>  <a href="#">Jervois's website</a>
<b>Lanxess AG</b>	Chemicals	Figure not found	Around 13,200 employees worldwide	<ul style="list-style-type: none"> <li>Focusing future investments in the U.S. and no longer plans to invest any money in the expansion of its German plants. CEO Matthias Zachert warned of the declining competitiveness of Germany, largely due to high energy prices.</li> </ul>	<a href="#">U.S.-Europe Trade Booms as Old Allies Draw Closer</a>
<b>Mercedes-Benz</b>	EVs	144,139 employees in Europe in 2021	173,000 employees worldwide in 2021	<ul style="list-style-type: none"> <li>On 20/10/2022, Mercedes-Benz <b>partners with Canadian mining company "Rock Tech Lithium" for CO2-neutral lithium hydroxide for EVs</b>. From 2026, Rock Tech Lithium will supply Mercedes-Benz AG an average of 10 000 tons of battery-grade lithium hydroxide per year, which is enough for around 150 000 electric vehicles.</li> </ul>	<a href="#">Tech Crunch article</a>  <a href="#">Mercedes-Benz website</a>
<b>NEL</b>	Hydrogen	Figure not found	437 employees worldwide	<ul style="list-style-type: none"> <li>Firstly, plans to expand capacities at existing US PEM factory to 200MW initially and then 500MW. Secondly, currently undergoing a site selection process for a new factory in the US (4GW factory, PEM and Alkaline). Decision foreseen for H1 2023.</li> </ul>	Confirmed by company to DG GROW I.1
<b>Northvolt</b>	Batteries	Figure not found	Expected to have 1000 employees worldwide by	<ul style="list-style-type: none"> <li>In 20/11/2022, estimated that a factory would benefit \$600-800 million from US subsidies and \$115 million German subsidies</li> </ul>	<a href="#">European industry pivots to US as Biden subsidy</a> <a href="#">Northvolt and Norsk Hydro to</a>

			2020	<ul style="list-style-type: none"> <li>On 16/05/2022, Northvolt and Norsk Hydro announced they would expand battery recycling JV in Europe, but however acknowledged that “the <b>US is becoming a more interesting market</b>” and Northvolt “<b>is now looking to expand into the US</b>”</li> </ul>	<a href="#">expand battery recycling JV in Europe - FT</a>
<b>Rec Solar</b>	Solar PV	Figure not found	4,200 employees worldwide	<ul style="list-style-type: none"> <li>Decision by Indian firm Rec Solar to <b>shift a solar panel project from Europe to the US</b> whereas they had been selected by the EU Climate Innovation Fund</li> </ul>	DG ENER
<b>Rio Tinto</b>	Refinery/Raw Materials	Figure not found	49,345 employees worldwide	<ul style="list-style-type: none"> <li>On 11/10/2022, Rio Tinto is <b>partnering with the Government of Canada to invest up to US\$537 million over the next 8 years to decarbonise its Rio Tinto Fer and Titane (RTFT) operations in Sorel-Tracy, Québec</b>. This aims to reinforce Rio Tinto’s <b>leadership as a North American supplier (Canada and USA) of critical minerals and metal value chains</b> for key growth sectors such as electric vehicles, 3D printing and aerospace.</li> <li>On the 27/09/2022, <b>Rio Tinto invested \$55 million to start underground mining and expand production at its Kennecott copper operations in Utah, US</b></li> <li>On the 13/07/2022, Rio Tinto announced that it will <b>invest US\$188 million to increase the production capacity for low-carbon and high value aluminium at its Alma smelter in Lac-Saint-Jean, Quebec</b>.</li> </ul>	<a href="#">Rio Tinto to start underground mining at Kennecott copper operations – Rio Tinto website</a> <a href="#">Rio Tinto Expands Low-carbon Billet Production in Canada – Rio Tinto website</a>  <a href="#">Rio Tinto partners with Government of Canada to decarbonise RTFT and boost critical minerals processing – Rio Tinto’s website</a>
<b>Safran</b>	Aircraft	Figure not found	76,800 employees worldwide	<ul style="list-style-type: none"> <li>On 20/11/2022, FT mentions that high energy costs make rethinking of investment in EU necessary</li> </ul>	<a href="#">European industry pivots to US as Biden subsidy</a>
<b>Several Norwegian hydrogen companies</b>	Hydrogen	n/a	n/a	<ul style="list-style-type: none"> <li>Statkraft, Equinor, Norwegian Hydrogen, Hydro Havrand, Nel Hydrogen, Hexagon Purus, the Norwegian Shipping Association, and the airline SAS agreed that the framework conditions for hydrogen in Norway are too poor. <b>Some companies are expanding in the USA due to the incentives of the Inflation Reduction Act.</b></li> </ul>	Info from EU delegation in Norway
<b>Solvay SA</b>	Chemicals	11,264 employees in Europe	24,100 employees worldwide	<ul style="list-style-type: none"> <li>On 15/11/2022, <b>unveiled an \$850 million investment to build battery-making facilities by 2026 in the southern U.S (Georgia)</b>, including in Georgia, aiming to benefit from booming electric-car sales.</li> </ul>	<a href="#">U.S.-Europe Trade Booms as Old Allies Draw Closer</a>  <a href="#">Billions flow to nascent US battery sector with push from climate law</a>

<b>Tesla</b>	EVs	Figure not found  8000 employees in Brandenburg, Germany	Over 99,000 employees worldwide	<ul style="list-style-type: none"> <li>Tesla is rumoured to have postponed its plans for battery production in Grünheide, Germany. Instead, corresponding projects in the USA are to be pushed ahead for the time being where <i>"the [IRA] has recently made high subsidies attractive"</i>.</li> <li>In a bilateral meeting with DG GROW, Tesla said that it continues to employ its 8000 workers in Brandenburg. <b>The factory will continue to produce some parts, but final assembly will happen in the US because of the IRA.</b></li> </ul>	<a href="#">Tesla rumoured to postpone battery production in Germany</a>
<b>ThyssenKrupp</b>	Steel	Figure not found	101,300 employees worldwide in 2021	<ul style="list-style-type: none"> <li>19/09/2022, ThyssenKrupp Materials Services <b>made more than \$100 million of investment in North America in the last 12 months</b> (and is planning to open a site in Mexico with \$37 million of investment).</li> </ul>	<a href="#">\$37 million investment in Mexico: ThyssenKrupp Materials Services continues growth in North America – ThyssenKrupp</a>
<b>Umicore</b>	Metals	7,185 employees in Europe	10,828 employees worldwide	<ul style="list-style-type: none"> <li>On 14/07/2022, Umicore is <b>investing C\$1.5 billion (\$1.2 billion) to build its first factory in 2023 and expand in North America for the mass production of cathode and precursor materials for EV batteries.</b></li> </ul>	<a href="#">Umicore invests \$1.2 in battery materials plant in Ontario</a>  <a href="#">Umicore prepares to construct first-of-its-kind battery materials production plant in Canada</a>
<b>Volkswagen Group</b>	EVs	359,781 employees in Europe 2021	668,000 employees worldwide in 2021	<ul style="list-style-type: none"> <li>On 5/12/2022, Volkswagen Group postpones decision to build a planned battery cell gigafactory in Eastern Europe. Volkswagen brand chief Thomas Schäfer said, <i>"If you have the option of building a battery plant in Europe, where electricity costs 15 cents per kilowatt hour, but you can get it in China or America for 2-3 cents, we are not in a position under stock corporation law to say we will do it here out of solidarity"</i>. The company has begun searching for sites for its first gigafactory outside Europe in Canada.</li> <li>On 23/08/2022, Volkswagen Group <b>signed MoU with Canada</b> (PM Justin Trudeau) <b>to strengthen and expand the "sustainable battery value chain" and raw material security in North America.</b></li> <li>On 26/07/2022, Volkswagen of America <b>started the production of electric vehicles in its new US plant in Chattanooga, Tennessee.</b> It has <b>"committed \$7.1 billion</b></li> </ul>	<a href="#">Volkswagen postpones decision on Eastern Europe gigafactory location</a>  <a href="#">Volkswagen Group and Canada aim to advance sustainable battery supply chain in North America</a>  <a href="#">Forbes article</a>  <a href="#">Volkswagen's website</a>  <a href="#">Volkswagen and Siemens invest in Electrify America's ambitious growth plans</a>  <a href="#">VW Will Join Tesla, BMW in Selling</a>

				<p><b>over the next five years in the North American</b> region to boost its product portfolio, regional R&amp;D and manufacturing capabilities”.</p> <ul style="list-style-type: none"> <li>On 02/12/2022, Volkswagen was mentioned to follow Tesla and BMW in addition to other automakers in exporting EVs from China to Europe, citing limited production capacity in its home market.</li> </ul>	<a href="#">China-Built Electric Cars in Europe - Bloomberg</a>
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## Annex: Main players of EU solar PV value chain

### 1. Wacker Chemie AG



- Manufactures hyper pure POLYSILICON for Solar Cells and Semiconductor Devices (biggest outside China). Unique in Europe and globally leading in quality high efficiency Solar Cells and Chips. Headquarter in Germany, production in **DE and in the US**. In Europe they produce 60.000 tons of polysilicon – equivalent to 20/25 GW
- Currently, more than 50% of their costs are from energy use (before the crisis 30%)
- *Likelihood of leaving to the US*: US is putting a lot of pressure on them saying they want to have announced projects by mid next year. Company says they have invested a lot in Bavaria and want to keep production there but “We receive monthly calls from the White House”.

### 2. Norwegian Crystals (NCR)



- Produces ingots, bricks and wafers for PV with ultra-low carbon footprint. One of few ingot manufacturers outside China where 99.9% of ingots production is made. Headquartered in Glomfjord in **Norway** (need easy access to hydropower).
- Investing EUR 350 million to build 6+ GWp of capacity in Norway which will be fully onstream in 2027. NCR has the ambition to develop additional capacity throughout Europe. NCR is currently securing EUR 180 million in private investment capital.
- *Likelihood of leaving to the US*: NCR has also been approached by the US very aggressively.

### 3. NEXWAFE



- Producing Green Solar Wafers with 70% lower Carbon footprint compared to China. 2023 Start construction of 250MW Pilot Factory in Bitterfeld, Germany, 2025 Expansion to 3 GW (CAPEX EUR 240 million required).
- More than 50% of their costs are for energy
- *Likelihood of leaving to the US*: Committed to keep production in Europe at this stage. But pressure from overseas is high

### 4. Meyer Burger



- Largest integrated PV cell and module manufacturer in Europe with ~1 GW annual capacity in DE. Also manufactures equipment for PV production which they sold to CN companies. Almost been crushed by Chinese competition in 2020. **Headquarters in CH, production in DE and US**.
- Expanding to 1.4 GW cell/module in DE by 2023 and to 3 GW with additional U.S. module site by 2024. Meyer Burger is ready to scale massively: 20GW by 2030 under the right conditions

- *Likelihood of leaving to the US:* Their US manufacturing plans were announced before IRA. But IRA helps a lot to realise the plans. “If I want to be honest about it, we would move everything to the US apart from the initial capacity that was already built here in EU “.

## 5. Enel Green Power



- Enel Green Power (EGP) develops and operates renewable energy plants worldwide. EGP founded solar PV modules 3Sun factory in **Catania, IT** in 2010, with a production capacity of 3 GW/year in July 2024, becoming Europe’s largest factory producing high-performance bifacial PV modules. The total investment amounts to around 600 million euros. EGP’s commitment will be coupled with EU funding in the amount of nearly 118 million euros.
- ENEL is the only solar manufacturing company which received support from the Innovation Fund. BUT, from project submission to award 2 years have passed, and the US offers 9 times more support than the joint support from IT + Innovation fund (0.5c/watt versus 4.6c/watt)
- *Likelihood of leaving to the US:* Thanks to the IRA, EGP announced mid-November a project in the US to build a factory of 3 GW capacity of modules and cells, a capacity which could even be doubled later.

## 6. REC SOLAR



- REC Solar is a Norwegian/Singaporean solar power company. REC produces silicon materials, wafers, as well as solar cells and modules in Norway, Singapore and Sweden
- It planned a solar PV modules manufacturing site in Hambach, Moselle, FR with an investment of 681 million euros. The project was advanced, having received necessary permits in December 2021
- *Likelihood of leaving to the US:* In December 2022, the project was suspended and they announced to transfer it now to the US due to unmatchable conditions offered through IRA.

## 7. ROSI



- Low-cost, low carbon footprint, and high purity raw materials (silicon, silver, copper, glass, aluminium) from recycling either production (wafer sawing waste) or product waste (end-of-life PV modules), Headquarter and industrial site in **Grenoble, FR**.
- Q1/2023: operation kick-off in France; Q3/2023: sites construction kick-off in Germany and Spain; 2024 on: expansion in rest of Europe, US, Asia
- *Likelihood of leaving to the US:* unclear at this stage. But in the process to re-evaluate comparable offers