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EU Industrial Strategy: bound to fail?

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Summary

The EU's industrial strategy has become more active and interventionist in recent years. This is motivated by China's rise to prominence in a number of industries, backed by large state subsidies and protectionist measures; large new research, development and production subsidies in the US, and the perception that European firms have been unable to keep up with the competition. The EU has responded by creating new rules and instruments to level the playing field between EU and non-EU firms by initiating cooperation between firms and other stakeholders, called industrial alliances, and by subsidizing 'important projects of common European interest' (IPCEI) in what are seen as strategic industries.

A closer look at some of the 'offensive' elements of the strategy – those which seek to strengthen EU industry such as the industrial alliances and IPCEIs for semiconductors and batteries – indicates that it may fail. Semiconductor production must achieve massive scale to become competitive, and producers in the US and South-East Asia are ahead in terms of scale as well as technology and planned investments. Support to battery technology and European production may create a surplus: the planned increase in production to 2030 far exceeds projected demand.

French and German firms are likely to benefit the most from this new state support. France and Germany have pushed for an active industrial strategy whereas several smaller member states are against subsidies to production and related commercial activities, which they see as putting their firms at an unfair disadvantage.

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The opinions expressed in the publication are those of the author.

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1. The 2020 industrial strategy

The EU Commission published what it called a new industrial strategy on 10 March 2020 – the day before the World Health Organization classified the outbreak of COVID-19 as a pandemic.[1]
The strategy was in fact not so new. Its main objective – to make EU industry stronger and more competitive in world markets – and many of its measures were the same as in previous strategy documents, published between 2005 and 2017.
The 2020 strategy contains both offensive measures, which seek to strengthen European industry, and defensive measures, which seek to create a level playing field between EU and non-EU firms.

> 'Seen in a longer perspective, it is clear that changes in the geopolitical world order have influenced the content of these strategies.'

Seen in a longer perspective, it is clear that changes in the geopolitical world order have influenced the content of these strategies. China has grown into a political, economic and military world power. It is the EU's largest trading partner and the EU is China's largest export market. The EU leadership has come to see it as necessary to seek cooperation with China where possible, but also to create instruments and take measures to ensure that European and Chinese firms compete on equal terms.[2]

Much of the 2020 strategy aims to improve the workings of the single market, for example by removing barriers to the free movement of goods, services, labour and capital, and by fostering increased regulatory compliance. Competition rules and guidelines for state subsidies are to be re-assessed, reviewed and adjusted; rules on intellectual property are to be reviewed and potentially tightened, and digital services will be further regulated. Other measures seek to make European industry more globally competitive, for example through increased co-operation – so-called *industrial alliances* – between different stakeholders in what are seen as strategic industries, and support for *important projects of common European interest* (IPCEI) in those same industries or other sectors.
It should be noted that the creation of industrial alliances is not new: alliances for plastics in a circular economy and for batteries were set up in 2017, and for hydrogen and rare earth metals in 2020.

Industrial alliances, that is, instances of cooperation between firms, state actors, labour unions and other stakeholders, are initiated and led by the Commission.[3] The aim is to strengthen competitiveness and sustainability in certain industries or value chains. Alliances do not take binding decisions and do not receive financial support from the EU or member states.

These industrial alliances should not be confused with IPCEIs.[4] The latter are set up by member states and receive state subsidies by exemption from the state subsidy rules. At present, IPCEIs exist for a road and rail link between Denmark and Germany (2015); for research and innovation in microelectronics between France, Germany, Italy and UK (2019)[5], and for batteries (2019 and 2021). IPCEIs are potentially more important for advancing research, development and production than industrial alliances since they are set up and subsidized by member states with a clear interest in their success.

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1 EU Commission, https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1593086905382&uri=CELEX:52020DC0102
Previous strategies were published in 2005, 2010, 2012, 2014 and 2017.

2 The increasing focus on China is evident by several communications: EU-China 2020 Strategic Agenda for Cooperation, 2013; Joint Communication to the European Parliament and the Council – Elements for a new EU strategy on China, 22 June 2016; Council Conclusions on EU Strategy on China of 18 July 2016; EU-China: A Strategic Outlook 12 March 2019.

3 EU Commission, https://ec.europa.eu/growth/industry/strategy/industrial-alliances_en

4 EUR-Lex, https://eur-lex.europa.eu/legal-content/SV/TXT/HTML/?uri=CELEX:52020XC0708(01)&from=EN

5 This covers energy efficient semiconductors, semiconductors for the road vehicle industry, smart sensors, advanced optical equipment, and substitutes for silica in semiconductors.

Two new industrial alliances were started in 2021, one for processors and semiconductors and one for industrial data, edge and cloud computing.[6] This means that six industrial alliances exist today: for those two sectors; for rare earth metals (such as cobalt); batteries; hydrogen, and for plastics in a circular economy. The Commission is considering proposals for industrial alliances for the development and production of carbon-free launch rockets and aircraft.

On top of the industrial alliance and the IPCEI the European Commission has announced a very ambitious *Chips Act for Europe* by which a total of 43 billion euros will be invested in chips research and production in the EU. The Commission envisages that the EU global market share will increase from 10 to 20 per cent by 2030. If the plans are realized, 11 billion euros will be spent to build three pilot plants that can be freely used by companies to test new technologies and systems.[7] The Act provides for an exemption to state aid rules and needs to be approved by member states and the European parliament.

The Commission considers standard-setting to be of strategic importance: a given standard may favour or disfavour EU firms and industry relative to competitors in other countries. It plans to present a strategy for standards set by the EU to achieve greater global influence. China and the US have similar and competing strategies.

Some proposals in the industrial strategy are less concrete and it is not clear how or by whom they are to be realized. Examples are strategies for built-up areas; for sustainable and smart mobility; a so-called pact for skill development (which also is part of what the Commission calls 'the European skills agenda'), and a thorough analysis and assessment of the needs of industry to find out which industrial ecosystems need tailor-made measures.

2. The 2021 industrial strategy update

The pandemic and the adoption of the *United States Innovation and Competition Act* (USICA) by the US Congress in June 2021 compelled the Commission to update the 2020 strategy.[8] USICA provides for very large federal grants to research and development in strategic areas.

Another factor was the pandemic, for which the EU and its member states were not adequately prepared. The updated strategy proposes what is called a *Single Market Emergency Instrument* to ensure free movement of goods, services and labour in future crises, and greater coordination of relevant policies than was the case at the beginning of the pandemic.

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The Commission also undertakes to identify measures to be taken in strategic areas that can help industry to diversify supply by using a greater number of suppliers and by stockpiling. There are reasons to be sceptical here. What areas should be classified as strategic? Is the Commission able to collect the needed information and to keep it up to date? According to the European Roundtable (an interest group representing the leaders of the largest corporations in Europe), the largest and most important firm in a typical global supply chain has around 5 000 different suppliers.[9]

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[6] Edge computing means that computations are made by the end user, at the 'edge'. Network capacity limitations makes it necessary to carry out more computations by the end user. For example, self-driving cars require data gathering and computations in real time that can best be carried out by the end user, i.e. the self-driving car.

[7] European Commission communication 8 February 2022, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A45%3AFIN&qid=1644420068968, and Financial Times, 9 February 2022.

[8] EU Commission, https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1593086905382&uri=CELEX:52020DC0102.

[9] European Round Table, 'Making Open Strategic Autonomy work – European Trade in a Geopolitical World', July 2021 (citing research by McKinsey from March 2021).

3. The US Innovation and Competition Act

The industrial strategies of the US – as manifested in USICA – and the European Commission are quite similar. Both seek to boost research, development and production in what are regarded as strategic sectors, and to increase competitiveness and economic autonomy. Both assign an important role to government in terms of providing financing and guidance.

The US federal government will spend nearly 200 billion dollars through USICA in 2022–2026.[10] The aim is to catch up, outpace, or remain ahead of China in strategic areas and thereby to counter China's increasing economic and political power. A total of 52 billion dollars are earmarked for the development and production of semiconductors, and more than a billion dollars for development of wireless broadband. The Act creates a new section for technology and innovation within the National Science Foundation, charged with supporting research, development and commercialization in key fields such as artificial intelligence, new energy sources, biotechnology and drones.

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Substantial support is given to reducing and countering China's economic and political influence around the world. This will be done through grants and loans to public projects in Latin America, the Caribbean, Africa, and South-East Asia, and by promoting international industrial standards which favour American firms.

USICA contains some protectionist elements as well. For example, federally funded infrastructure investments may only use iron, steel, building materials and other inputs that are made in the US. Furthermore, federal agencies may not buy drones that are manufactured or assembled by firms controlled by or under the influence of China.

A new program administered by the Department of Commerce will identify supply chain problems and propose solutions in cooperation with private industry. The first priority will be the supply chain for semiconductors.

4. EU investment in semiconductors

The *Chips Act for Europe* can be seen as a response to the investment in semiconductor research, development and manufacturing made by the US and China, the emerging scarcity of chips in 2021, and Europe´s dependence on imported chips. The new industrial alliance for semiconductors and the existing IPCEI for microelectronics are apparently seen as insufficient. The 43 billion euro action plan seeks to reduce dependence on a single jurisdiction (Taiwan with 60 percent of world production) or region (Asia with 85 percent of world production).[11]

The ambitions of the EU Commission should be compared to the investment by China, the US and individual firms. Congress has as mentioned decided to invest 52 billion dollars in semiconductor research, design and manufacturing. China produces only 17 percent of its needs for semiconductors, but plans to increase the share to 70 percent by 2025,[12] which would require huge state subsidies.[13] The world's largest manufacturer of semiconductors, Taiwanese TSMC, with a world market share of 50 percent, plans to invest 100 billion dollars by 2030. It is evident that very large investments are necessary to establish manufacturing

[10] For a summary of the legislation, see Tom Lee and Juan Londoño, 'United States Innovation and Competition Act (USICA): A Primer', American Action Forum, 9 June 2021.
[11] Niclas Frederic Poitiers and Pauline Weil, 'A new direction for the European Union's half-hearted semiconductor strategy', Bruegel, 17/2021.
[12] The plan seems to be in jeopardy since, among other things, the leading Chinese manufacturer has been denied crucial technology imports from the US, see 'China's chip self-sufficiency ambitions suffer a big blow', *Financial Times*, 25 January 2022.
[13] Mathieu Duchâtel, 'The weak links in China's drive for semiconductors', Institute Montaigne, January 2021.

of semiconductors.[14] Also, it is probably necessary to continue to subsidize production once it is established; manufacturers in the US and China are dependent on state subsidies.[15]

> 'It is therefore not realistic to aim for self-sufficiency in semiconductors, even if the EU were to invest much larger sums than those proposed.'

It is therefore not realistic to aim for self-sufficiency in semiconductors, even if the EU were to invest the large sums envisaged by the Commission. No country is self-sufficient. Even Taiwan is dependent on special lithographic printers and chemicals produced overseas: the Dutch firm ASML has a virtual world monopoly in the most advanced lithographic printers and the German firm Aix tron has a dominant market position in chemicals.

One additional factor speaks against large investments in semiconductor manufacturing in Europe: the region has a small share of world demand. Semiconductors are predominantly used by Asian manufacturers of of communications equipment, computers, and consumer electronics. Production must take place on a very large scale to be competitive. This means that competitive production in the EU requires that much of the output is exported to other regions. European chips makers have to develop new export markets in competition with existing suppliers. Furthermore, a large share of demand for semiconductors in Europe derives from manufacturers of cars and other vehicles. They do not use the most advanced and expensive chips that the Commission wants to promote. Low cost is more important for vehicle manufacturers.

Finally, it takes many years to establish large-scale and competitive production in semiconductors. Considering the large investments made in other parts of the world, there is a clear risk of excess supply once European production is up and running.

To summarize, the Commission wants the EU to have a stronger position in semiconductor research, design and production, and to make the supply chain less sensitive to developments in other parts of world. It is, however, unlikely that Europe will achieve greater autonomy for several reasons. It would take very large subsidies, take many years, and production would probably not reach sufficient scale to be competitive in view of the enormous investments that China, Taiwan and the US are making. Furthermore, demand for semiconductors in Europe is smaller than the scale of production that is necessary for competitiveness, and not directed towards the most advanced and expensive chips that the Commission wants Europe to produce, but less advanced and cheaper chips demanded by vehicle manufacturers.

5. EU investment in batteries

There is both an industrial alliance and an IPCEI for batteries. The IPCEI includes firms in 12 different member states. The Commission has in total granted 6 billion euros in subsidies to battery research and development.[16]

It is not clear where Europe stands when it comes to cutting edge battery technology, but it seems to be the case that Japan (Toyota and Panasonic), China (CATL), South Korea (LG and Samsung), and the US (QuantumScape, Solid Power, Tesla and others) are at least one step ahead. There is more specific information when it comes to European battery supply. At present, a total of 38 'gigafactories' – factories with a yearly capacity of more than one GWh – exist, are under construction or in the planning stage. Of these, 17 are fully and 10 are partially financed. The total planned investment amounts to about 40

[14] A representative of TSMC criticized the American investment of 52 billion dollars, saying '[i]f you want to re-establish a complete semiconductor supply chain in the U.S., you will not find it as a possible task [sic]. Even after you spend hundreds of billions of dollars, you will still find the supply chain to be incomplete, and you will find that it will be very high cost, much higher costs than what you currently have.' *Nikkei Asia*, 27 October 2021.

[15] 'EU should put the brakes on its chips strategy', *Financial Times*, 11 November 2021.

[16] EU Commission press releases 9 December 2019 and 26 January 2021.

Figure 1. Battery supply and demand in Europe (GWh)

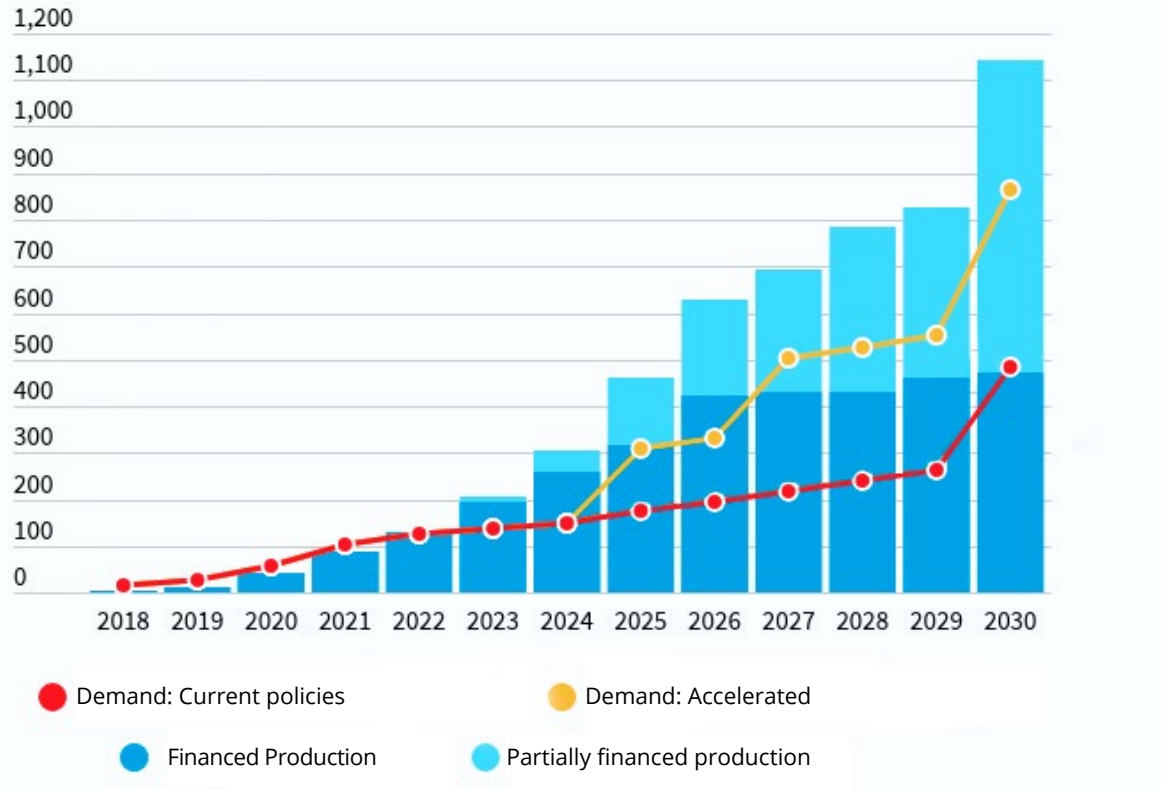

Figure 1 is reproduced from the policy briefing 'Weak climate rules put Europe's battery boom at risk', European Federation for Transport & Environment, May 2021.

billion euros. The actual and projected increase in European battery production up to 2030 is shown in figure 1. Only fully or partially financed investments are included. The darker blue part of the bars indicate fully financed and the lighter blue part partially financed capacity. The red curve indicates projected European demand for batteries under present emission regulation and the yellow curve projected demand under stricter regulation. It can be seen that planned capacity increases at a much higher rate than projected demand under present emission regulation. European capacity is projected to be more than double European demand already in 2025.

Looking at the projections of supply and demand of batteries up to 2030, it seems that both the industrial alliance and the IPCEI for batteries are superfluous or at least questionable. The huge investments being planned demonstrate that there is no shortage of capital or know-how when it comes to battery production in Europe.

6. Conclusion

This brief look at some of the offensive measures indicates that they will not be particularly successful. The subsidies to research, development and production of semiconductors will probably fail since established producers have a competitive advantage due to enormous economies of scale and a technological lead. The subsidies to research, development and production of vehicle batteries seem superfluous since the planned expansion of production in Europe exceeds the projected increase in demand and would probably do so without any subsidies. It is possible, however, that the industrial alliances and IPCEIs in other areas – rare earth metals, hydrogen, infrastructure for industrial data and edge and cloud computing, and plastics in a circular economy – will become more successful. Only time will tell.

France and Germany have been advocating a more offensive and interventionist industrial strategy. They and Italy will probably gain the most since they are the largest industrial countries in the

EU.[17] Several smaller member states suspect that state subsidies will tilt the playing field to their disadvantage. They are in favour subsidies to research and development but are against state subsidies to mass production and related commercial activities.[18] Our analysis here has shown that – at least when it comes to microchips and batteries – their suspicion of these 'offensive' aspects of EU industrial policy may be well founded.

[17] The battery IPCEI includes 21 firms in Italy, 20 in Germany, and 8 in Austria, see https://ec.europa.eu/commission/presscorner/detail/en/IP_21_226. The microelectronics IPCEI includes 20 firms in Germany, 12 in France, and 4 in Italy, see https://www.ipcei-me.eu/partners/ .

[18] Letter to the Commission from the governments of Denmark, Finland, Ireland, Netherlands, Romania and Sweden, 11 November 2021, https://www.government.nl/latest/news/2021/11/11/why-strong-eu-competition-and-state-aid-rules-matter