Online appendix: Moving on to not fall behind. Technological sovereignty and the 'geo-dirigiste' turn in EU industrial policy.

Not that all code used to scrape the data as well as all the code and data necessary to replicate our analysis are provided in the online supplementary materials. The zip folder contains an R project with a data folder, a Quarto (.qmd) file that contains all the code in R and Python code used for the paper as well as instructions for how to setup the respective environments and perform the analysis. As we talk about in more detail in the Quarto file, some of the analysis can effectively only be run with access to a GPU (Graphical Processing Unit). Google Colab gives relatively cheap access to GPUs, but we cannot provide a completely free way to replicate our analysis given the computation costs involved.

1. Interviews

Between March 2022 and January 2023, we have conducted 11 online interviews with EU Commission policy officials, member state officials, and experts. All interviews were recorded and transcribed on the condition of anonymity, for which we obtained prior written consent. We have selected our interview participants on the basis of their direct involvement with or expertise on the EU’s (digital) industrial policies. Each interview was semi-structured and guided by a questionnaire. The interviews lasted between 30 and 60 minutes. Table 1 gives an overview of the interviews conducted.

Table 1: Interviews

|  |  |  |
| --- | --- | --- |
| Interview | Description | Date of Interview |
| Interview 1 | Senior official, European External Action Service | May 2021 |
| Interview 2 | Senior Commission official, DG Comp | March 2022 |
| Interview 3 | Senior Commission official, DG GROW | March 2022 |
| Interview 4 | US digital policy expert | March 2022 |
| Interview 5 | Policy official European Commission | March 2022 |
| Interview 6 | Policy official European Commission | April 2022 |
| Interview 7 | Former senior executive, BMWE | November 2022 |
| Interview 8 | Former senior executive, BMWE | December 2022 |
| Interview 9 | EU Commission official | January 2023 |
| Interview 10 | Former Commission official & expert | January 2023 |
| Interview 11 | EU Commission official | January 2023 |

1. Data collection

We scraped all documents in the categories ‘press release’, ‘speech’ and ‘statement’ from the Commission’s press corner (<https://ec.europa.eu/commission/presscorner/home/en>), resulting in 66.548 documents from January 7, 1985 to July 4, 2023. For simplicity, we only retained documents in English, although transformer-based models work very well with multilingual data (Licht, 2023). Fig 1 gives an overview of the distribution of these documents, which closely resembles the distribution in Rauh (2022), who, however, only collected press releases and only until 2020.

Figure

A graph with different colored lines

Description automatically generated

1. BERTopic

BERTopic identifies topics in text corpora through a sequence of steps . It first generates document embeddings with pre-trained transformer-based language models; we specifically used the all-MiniLM-L12-v2 sentence transformer model from Hugging Face; having mapped our sentences to a 384-dimensional dense vector space, we used Uniform Manifold Approximation and Projection (UMAP) to reduce the dimensionality of this numerical representation; we then use a density-based clustering technique, HDBSCAN, to identify clusters of documents that are near each other in the now 5-dimensional vector space; finally, for topic representation we use class-based term-frequency-inverse-document-frequencies (c-TF-IDF). This allows us to understand what makes one topic different from another based on its cluster- word distribution; in other words, to represent topics as distributions of words that are relatively common for a document cluster but relatively rare in the overall corpus.

A key parameter for BERTopic is the minimum cluster size as this has a strong influence on the number of topics and thus how fine-grained they are. After running the model several times with different specifications, we settled on a minimum cluster size of 150. This means that each cluster needs to contain at least 150 documents, which resulted in 398 topics. As can be seen from the figure with all the topics and top 8 topic keywords in the html reproduction file, this produced very sensible topics that neatly match different policy (sub-)areas of EU policymaking. This allowed us to manually identify those that we considered – in the broad sense – relevant for industrial policy area, resulting in 259.865 out of a total of 690.207 sentence triplets.

We needed broadly relevant documents to efficiently hand-code a training sample, so it made little sense to include, for example, topics related to infringement procedures. We could have defined our sample even more narrowly, but this should not be a problem given that we rely on our third ‘other’ category to detect statements that are neither about market-creating nor about market-directing. While we only used BERTopic for corpus selection, we want to note that it might prove a very useful tool to detect patterns in large text corpora in its own right, as the quality of topic representation is – at least from ‘eye-balling’ them – very high.

1. Supervised Learning

Our approach strongly builds on recent suggestions for using deep transfer learning for social science applications, described in detail in Laurer et al. (2022). We will therefore not reiterate the underlying ideas here in detail, not least because we make all the code itself available. Overall, we hand-coded 960 documents. More information on the coding scheme as well as example codes can be found below. We had 385 documents classified as market-creating, 192 as market-directing, and 383 as other. Our training set included 768 documents; our test set 192 documents (80-20 split). What our approach essentially involved however, was creating a data frame with a text column (the sentence triplet), a hypothesis (see below), and a column indicating whether the hypothesis was true or false (which we knew from the hand-coded documents). We paired each document with the true and a randomly chosen false hypothesis. For example, if a document was about market-creation, we paired it with the market-creation hypothesis (see below) and set the label to true, and randomly either the market-directing or the other hypothesis and set the label to not-true. This not only essentially doubled our training data, it also allows us to draw not only on the language knowledge of the pretrained model, but also on its task knowledge (Laurer et al., 2022). We formulated our hypothesis in quite a detailed manner, trying to give the model as much natural language information as possible, in much the same way as human coders would also have.

Our hypothesis looked as follows:

*"Market-Creation": "The document is about acts by the state that allow markets to emerge and make possible their (continued) functioning. This is about using industrial and competition policy to make sure markets function smoothly but leaving it to market actors to decide where to invest and where economic activity should take place. Market creation is very skeptical about vertical industrial policies and state aid and tries to restrict governments' role in the economy to the creation of framework conditions framework conditions for undistorted competition. It relies on market mechanisms to address transformations such as the green and digital transitions or structural change, instead of industrial policy instruments such as public funding. Market creation also involves a positive attitude towards free trade and free trade agreements."*

*"Market-Direction": "The document is about acts by the state that seek to direct markets towards certain desired longer-term outcomes and purposes by steering the accumulation process itself. This is about using industrial and competition policy to steer investments into certain sectors or technologies that are considered important for political or geopolitical reasons. Market direction is comfortable with using industrial policy including state aid, trade defense instruments, or investment funds to direct economic activities towards certain sectors or technologies deemed important for strategic autonomy or technological sovereignty, such as green or digital technologies. Market direction also involves using public investment banks, public incubators, or public venture capital funds to support innovation in critical technologies or sectors as markets often fail in providing innovation. Market direction is also about encouraging skill formation, education, and research and innovation in critical or strategic areas sectors such as artificial intelligence"*

*"Other": "The document is not explicitly or clearly about Market-Creation or about Market-Direction."*

Following the suggestions of Laurer et al. (2022), we used standard hyperparameters as they have been shown to work very well and that hyperparameter search is usually not worth the computation cost. Our precise hyperparameter choices are document in the reproduction file. Below we report the evaluation metrics for our model, both the aggregate metrics (Table 2) and the detailed metrics for each category (Table 3). Overall, our model very clearly outperforms a baseline model. Using generally used best-practice metrics, our model is on par with or outperforms similar models (Laurer et al., 2022; Licht, 2023).

**Table 2:** Aggregate model evaluation metrics

|  |  |  |  |
| --- | --- | --- | --- |
|  | **F1 Macro** | **Balanced Accuracy** | **F1 Micro** |
|  | 0.74 | 0.76 | 0.75 |

**Table 3:** Model evaluation metrics by category

|  |  |  |  |
| --- | --- | --- | --- |
| **Category** | **Precision** | **Recall** | **F1-score** |
| Market-creation | 0.76 | 0.68 | 0.72 |
| Market-direction | 0.66 | 0.79 | 0.72 |
| Other | 0.79 | 0.80 | 0.79 |

1. **Coding scheme**

Our coding scheme contains three categories: market-creation, market-direction, and other. The basic definitions for these categories can be found in the above hypothesis. For some edge cases, we had to disambiguate the coding schemes in several ways: i) documents that contained a very factual discussion of programs or state aid clearance but did not convey a broader political or normative statement or assessment on market-creation or market-direction were coded as ‘other’; ii) statements that talked about market-correction, i.e. ‘acts by the state that correct market outcomes and constrain market forces on a durable basis’ (van Apeldoorn & de Graaff, 2022, p. 309), such as digital content moderation or data protection were also coded as ‘other’ as they are neither about market-creation nor market-direction. Table 4 below gives some examples of market-creating and market-directing statements.

**Table 4:** Examples of market-creating (1) and market-directing (2) statements

|  |  |
| --- | --- |
| **Sentence triplet** | **Code** |
| the major problem in europe is the high price of internet access, which acts as a barrier.\_if we want more citizens and smes to be on-line, we have to reduce internet prices.\_this is something we can only achieve through greater competition in local access markets, by liberalising the "last mile" - or "unbundling of the local loop". | 1 |
| the main principles of the effects-based approach to article 82 are the following: fair and undistorted competition is the best way to make markets work better for the benefit of eu business and consumers.\_healthy competition, including by dominant undertakings, should be encouraged the focus of the commission's enforcement policy should be on protecting consumers, on protecting the process of competition and not on protecting individual competitors the commission does not need to establish that the dominant undertaking's conduct actually harmed competition, only that there is convincing evidence that harm is likely since the focus of the commission's enforcement policy is on conduct that harms the competitive process rather than individual competitors, for pricing conduct the commission examines whether the conduct is likely to prevent competitors that are as efficient as the dominant undertaking from expanding on or entering the market and that can be expected to be most relevant to consumer welfare. since the focus of the commission's enforcement policy is on the likely effects of a dominant undertaking's conduct on consumers, the commission will examine claims put forward by dominant undertakings that their conduct is justified on efficiency grounds – as is already the case under article 81 and for merger control.\_the commission will fully apply the approach set out above to future cases. | 1 |
| the compensation of further losses of dm 66.9 million (35 mecu) by the tha, which had been proposed by the german government as further restructuring aid, has been declared incompatible and disallowed by the commission.\_in its view this aid would be disproportionate to the restructuring expenses and would have no regional justification.\_such aid would therefore have the character of an operating aid which, under the rules of the framework, can under no circumstances be allowed. | 1 |
| the communication identifies two main objectives: removing barriers to the finalisation of individual cross-border transactions and removing any competitive distortions that prevent market forces from delivering a more efficient infrastructure for cross-border activity.\_the current cross-border arrangements in the eu are complex and fragmented, imposing costs, risks and inefficiency on investors, institutions and issuers.\_as a result the costs of cross-border clearing and settlement in europe are much higher than in the united states. | 1 |
| the commission believes that the union can play an important and complementary role to that of the member states.\_together with the member states, we seek to create the right environment for competitiveness and help enterprises cope with the changing environment.\_the third multiannual programme incorporates concrete actions which helps to exploit smes' full potential for job creation. | 1 |
| under the community guidelines, there is therefore no need for a cutback in activity.\_however, the refocusing of the company on profitable activities will result in a reduction in its industrial capacity and total sales and the shrinking of its market share in an expanding european market.\_the reorganization of the company will therefore have a beneficial effect on competitors. | 1 |
| it is 20 years since the deadline for completion of the single market, and yet there are still numerous barriers to completely free trade within and between eu member states; artificial barriers maintained because of the intransigence of a handful of countries, defending a particular interest or sector of importance to them at the national level.\_all the evidence, not least in the report on the single market by the then former commissioner and current italian pm mario monti drafted in 2009 at the request of president barroso, showed that completing the single market would give a massive boost to the european economy.\_and yet it was not until europe was teetering on the brink of economic and financial meltdown that the political momentum finally shifted in favour of taking the necessary final steps to fully open up the eu market. | 1 |
| however, what we are seeing in all of these dialogues is that many of the issues we face are in fact very similar.\_but regulatory barriers to trade and investment are crucial as emerging countries develop more and more sophisticated regulatory regimes.\_europe and the united states have a common agenda here – to promote the core principles of transparency and predictability so as to facilitate smooth operation of our companies' global supply chains. | 1 |
| consequently, it is evident that europe has to pursue its structural change by capitalising on the global economy.\_it is not least the challenge – but even more the opportunities – from trade and global competition that calls for economic reforms and puts pressure on rent-seeking societies.\_that the trade negotiations with the us can now be opened is of paramount importance from this standpoint. | 1 |
| background while services represent two thirds of the eu economy and account for some 90% of job creation, the services sector is underperforming.\_productivity growth in the sector is particularly low in comparison with the rest of the world.\_to reverse this trend and create additional jobs and growth, member states need to stimulate the development of the services economy and make better use of the potential of the single market for services. | 1 |
| background to the commission decision a key message from the commission for the barcelona summit will be : 'the eu must manage change successfully'.\_central to this theme will be : how to strengthen the european employment strategy ; a planned commission action plan on new european labour markets and the present new decision on principles for anticipating and managing the social effects of corporate restructuring .\_for the record, the ultimate objective of the whole lisbon strategy is full employment in the eu. | 1 |
| you will find in the forecast document an updated simulation of the substantial growth effects that can be expected: up to 2% of gdp in the years of its active operation.\_moreover, nextgenerationeu will be a strong tool to counter the divergence between countries that i have mentioned, since most of the countries hardest hit according to our forecast are also part of the group of member states receiving the largest grant contributions, for example croatia, italy, portugal and spain and greece.\_so, it's essential that we see a swift agreement in the ongoing negotiations on nextgenerationeu so that this game-changing programme of investment and reform can get underway and start supporting the recovery and transformation of our economies. | 2 |
| the german measure germany notified to the commission its plan to support arcelormittal's project to partially decarbonise its steel production in hamburg.\_the aid, which will take the form of a direct grant of €55 million, will support the construction and installation of a demonstration production facility using 100% renewable hydrogen.\_the main objective of the project is to apply technology aimed at reducing greenhouse gas emissions in arcelormittal's green steel production processes. | 2 |
| the european investment bank (eib) group is joining forces with banco sabadell to support small and medium-sized enterprises (smes) – the businesses most affected by the economic impact of covid-19.\_with this goal in mind, the eib group – via the european investment fund (eif), its subsidiary specialising in venture capital for smes – has granted banco sabadell a €96 million guarantee for a loan securitisation portfolio, which will enable the spanish bank to increase its lending capacity to offer €576 million in financing for the projects of spanish companies, primarily the self-employed, smes and mid-caps.\_the agreement includes a commitment to direct part of the new banco sabadell financing to investments promoting climate action, which is key to a green recovery following the pandemic. | 2 |
| we need to create new jobs and thereby give people a new hope for the future.\_the restructuring efforts of the lignite industry in the new länder will result in significant gains in competitiveness, to the extent that the commission believes that the german lignite production will be a rational contributor to security of supply.\_however, i have to say that there will need to be significant improvements in the efficiency of the utilisation of this fuel and more efforts to keep it environmentally acceptable. | 2 |
| the centre and the network will pool resources from the eu, its member states and the industry to improve and strengthen technology and industrial cybersecurity capacities, enhancing the eu's open strategic autonomy.\_by managing the cybersecurity funds under the next long-term eu budget, the centre will source funding from the digital europe programme and horizon europe, as well as contributions from member states.\_margrethe vestager, executive vice-president for a europe fit for the digital age, said: "if we want people and businesses to make the most of digital services, they need to trust them. | 2 |
| other key areas / technologies (beyond energy storage) should benefit from this collaborative approach: cleantech, the circular economy, 5g, iot, supercomputing, 3d (metal) printing, to name but a few.\_focusing on scaling up support for high-risk projects within the next mff we are looking forward to continuing our work with the eib as our strategic partner to roll out our investment programme through: investeu and other instruments such as the innovation fund and the european innovation council.\_it is of utmost importance that we not only cover a strategic range of sectors but also the entire innovation cycle, from research and development to demonstration operations, the transfer and scale-up of innovation results to the market. | 2 |
| NA\_the european commission has approved, under eu state aid rules, a €259 million romanian scheme, made available in part through the recovery and resilience facility (‘rrf'), to support investments in the production, assembly and recycling of batteries, of photovoltaic cells and of panels.\_the scheme aims at supporting romania's regional development and fostering the eu's strategic objectives relating to the green transition. | 2 |
| under horizon 2020, for example, a €650 million initiative called 'industry 2020 in the circular economy' will support innovative, large-scale demonstration projects.\_we need to channel private sector funding towards these new opportunities.one very important support and funding tool is the european fund for strategic investments (efsi).\_especially in areas where commercial banking is still hesitant to get involved. | 2 |
| NA\_european commission press release brussels, 19 november 2012 digital agenda: tech ceos and leaders kickstart new eu cloud computing board the steering board of the new european cloud partnership (ecp) met for the first time in brussels today, kicking-off a process where public authorities and industry work together to help building the eu digital single market for cloud computing pursuant to the european cloud computing strategy.\_specifically, the ecp aims at leveraging the public sector's buying power to shape the growing and maturing market for cloud computing services. | 2 |
| making sure that the green bonds are used for green objectives today's framework demonstrates to the investor community how the funds raised by the nextgenerationeu green bond issuance will be used for green objectives.\_more concretely, the nextgenerationeu green bond proceeds will finance the share of climate-relevant expenditure in the rrf.\_every member state has to dedicate at least 37% of their national recovery and resilience plan – the roadmap to spending the funds under the recovery and resilience facility – to climate-relevant investments and reforms, with many member states planning to do more than required. | 2 |
| like micro- and nano-electronics: let's cut the fragmented landscape, pool our excellence in r&d, and connect the industry that supplies innovation with those who demand it.\_let's become world leaders in that key enabling technology.\_and, beyond research and development, let's remember that good ideas often can't prosper, can't spread, can't create jobs, without the right infrastructure: digital infrastructure. | 2 |
| having the relevant skills empowers people to successfully navigate labour market changes and to fully engage in society and democracy.\_this will ensure that nobody is left behind and the economic recovery as well as the green and digital transitions are socially fair and just.\_a workforce with the skills that are in demand also contributes to sustainable growth, leads to more innovation and improves companies' competitiveness. | 2 |
| for instance, applying for the first time its new rules of procedure for expediting structural cases, the commission recently approved, in less than three months, the plan to set up a cooperative joint venture between philips, thomson and sagem.\_the joint venture was to develop liquid-crystal displays.\_on account of its strategic importance for the community in the face of world competition, the commission decided to give this scheme the go-ahead, despite the near-monopoly that the joint venture would enjoy in europe on the relevant market. | 2 |
| for example, military mobility benefits from the improvement of our railway systems.\_but also the investing in cyber-security; new power grids; artificial intelligence; data protection; of course the digital infrastructure like 5g, 6g is very important for europe's economic development.\_but of course, it is also a key to mitigate possible threats, such as those threats in hybrid warfare. | 2 |
| with regards to investment we can do it through the support of eu funds, also the investment plan for europe.\_however, we all agreed that more is needed to make europe more inclusive and competitive.\_it means enhancing investment in key sectors, such as disruptive innovation, and helping smes to get finance for business growth. | 2 |
| to register for the conference or awards ceremony, email [events@sciencebusiness.net.\_european](mailto:events@sciencebusiness.net._european) institute of innovation and technology (eit) the core mission of the eit, which was established in 2008 as an autonomous eu body, is to promote the competitiveness of member states by bringing together excellent higher education institutions, research centres and businesses to focus on major societal challenges.\_it aims to achieve its objective through the kics, a pioneering concept of cross-border public-private-partnerships. | 2 |
| among the priorities which we have to aim at: kets and those technologies linked to green economy which are playing a crucial role in addressing social challenges, such as ageing population, resource scarcity and climate change.such technologies have spectacular both actual and potential growth rates: only concerning products based on nanotechnologies, it is expected that profits will go from the 254 billions of 2009 to 2500 in 2015, with a substantial percentage of eu gdp and remarkable effects on employment.it is indeed in this field that europe's future as a global economic and industrial power is at stake.\_from what emerges from the report adopted last month by the kets focus group, cina, the usa and south korea invest way more than us in applied research and development - respectively 90% for china and 76% for the usa and korea – compared to limited resources destined to basic research of the eu (approximately 2/3 of total investments).\_thus, whereas the eu invests 27% of the total for nanotechnologies at the global level, and 33% of all publications in the sector are european, our percentage of licenses is only the 17% compared to 40% in the usa; and the amount of production of 15% compared to 53% of the usa. | 2 |
| with a budget of nearly €3 billion, which represents an increase of almost €600 million compared to the current funding period, the eit will drive the recovery of the economy as well as the green and digital transition in order to build a more sustainable and resilient society.\_the eit will boost innovation by involving 750 higher-education institutions in its activities, supporting 30,000 students, bringing 4,000 innovations to the market and promoting 700 start-ups.\_the eit operates through its knowledge and innovation communities that bring together companies, universities and research centres across europe. | 2 |

1. **Programs and policies justified for technological sovereignty and contributing to geo-dirigisme**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. **Program** | **Launch date** | **Contribution to digital / technological sovereignty** | **Geo-dirigiste characteristics** | **Status** | **Funding** |
| European Institute of Innovation & Technology  (EIT) | 2008 | ‘[R]einforcing the innovation capacity of the Union and Member States’ by ‘achieving Europe’s strategic autonomy’ | Focus on brokering alliances in specific value chains & sectors to bolster strategic autonomy. | Active | €3 billion from MFF between 2021-27 |
| Important Projects of Common European Interest (IPCEI) | 2014 | ‘IPCEIs (…) strengthen open strategic autonomy, by enabling breakthrough innovation and infrastructure projects’ | The use of state aid direct resources towards high-tech projects and sectors in which the EU is not (yet) or no longer globally competitive. | Active | State aid + private investment. Over €60 billion expected in current projects. |
| Industrial alliances | 2017 | ‘Build[ing] resilience and strategic autonomy’ for strategic value chains (…) ‘make European economies more resilient, ensure the global competitiveness of our industry’. | Similar to EIT, the EU Commission seeks to broker alliances in strategic value chains for geopolitical reasons. | Active | n/a |
| Chips Act | 2022 | ‘[T]his is not just a matter of our competitiveness. This is also a matter of tech sovereignty.’ The Chips Act aims to reduce ‘the extreme global dependency of the semiconductor value chain (…) in a complex geopolitical context’. | Sector-specific investment in critical value chain for geopolitical reasons. | Active | €43 billion from Chips for Europe Initiative, equity to business, and RRF + IPCEI funding |
| REPowerEU | 2022 | ‘In addition to strengthening the EU’s strategic autonomy in the energy sector, REPowerEU focuses on supporting the clean energy transition (…) for a more resilient energy system’ | De-risking energy supply in the face of geopolitical tensions. | Active | €225 billion through remaining RRF loans, €20 billion in grants from Innovation Fund (60%) and ETS allowances (40%). |
| Tech champions | 2023 | ‘ETCI will help plug financing gaps and thus reinforce Europe’s strategic autonomy and competitiveness.’ | Scaling up start-ups in high-tech areas where the EU competes with U.S. and Chinese firms. | Proposed | €3.75 billion through EIB and member state funds. |
| Green Deal Industrial Plan (GDIP) | 2023\* | ‘to secure the EU's industrial lead in the fast-growing net-zero technology sector’ | Providing a framework to boost EU initiatives in green and clean tech sectors, especially in the context of dependencies and global competition. Focus on funding (state aid relaxation), and regulation (raw material procurement, and EU-standard setting for technologies). | Active | Subsummation of different funds, including REPowerEU, ETS revenues, and Modernization Fund. |
| Temporary Crisis and Transition Framework (TCTF) | 2023 | ‘Our state aid frameworks exist to preserve our precious Single Market. But if investments in strategic sectors leak away from Europe, this would only undermine the Single Market. And that is why we are now reflecting on how to simplify and adapt our state aid rules’ | Uncapping state aid directed at green and clean tech sectors for strategically important sectors. | Active | Member state fiscal policy. |
| Strategic Technologies for Europe Platform (formerly sovereignty fund) | 2023 | ‘Preserve a European edge on critical and emerging technologies relevant to the green and digital transitions’ and ‘the development of a European “industrial sovereignty”, which is now part of EU’s “DNA”’ | Subsuming existing funding instruments for high-tech initiatives under a unified sovereignty logic. | Proposed | €110-160bn Leveraged from existing programs (Horizon Europe, InvestEU, etc.). |
| Economic security strategy | 2023 | ‘Risks presented by certain economic linkages are evolving quickly in the current geopolitical and technological environment and are increasingly merging with security concerns.’ Therefore, the strategy seeks to ‘further support EU technological sovereignty and resilience of EU value chains.’ | Directing (regulatory) resources to overcome risks and to increase security in high-tech areas, infrastructures, and trade relationships. | Proposed | n/a |

Sources

EIT: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021D0820>

IPCEI: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021XC1230(02>) (purpose); Di Carlo & Schmitz (2023) for funding

Alliances: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52023JC0020>

Global gateway: <https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7656>

Chips act: <https://www.linkedin.com/pulse/how-european-chips-act-put-europe-back-tech-race-thierry-breton/>.

REpowerEU: <https://www.consilium.europa.eu/en/policies/eu-recovery-plan/repowereu/>

Tech champions: <https://www.eib.org/en/press/all/2023-056-launch-of-new-fund-of-funds-to-support-european-tech-champions>

GDIP: <https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/green-deal-industrial-plan_en>

STEP: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52023PC0335> & <https://www.euractiv.com/section/economy-jobs/news/eus-breton-wants-sovereignty-fund-to-buy-out-firms-of-systemic-importance/>

Economic security strategy: <https://ec.europa.eu/commission/presscorner/detail/en/ip_23_3358>

State aid: <https://ec.europa.eu/commission/presscorner/detail/en/speech_22_7487>

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