Interview with Dr. Alberto Prina Cerai, Research Fellow at the Italian Institute for International Political Studies (ISPI)

Industrial Policy Coordination Needed in Struggle for Economic Security Between EU & Japan

By *Japan SPOTLIGHT*

Economic security is a common concern worldwide. We interviewed an Italian expert on economic security in global supply chains, Dr. Alberto Prina Cerai, research fellow at the Italian Institute for International Political Studies (ISPI). Pursuit of EU-Japan industrial policy collaboration will take place against the background of growing intricacy among technology, geopolitics, and the global environment.

Introduction

JS: Economic security is an important concern today against the background of rising geopolitical risks. I'd like to ask you some questions about how we can guarantee economic security, but first could you briefly introduce yourself as an expert on supply chains for critical minerals and economic security?



Dr. Alberto Prina Cerai

Cerai: Thank you. I had been researching critical minerals and related supply chains, starting with independent consultancy work, before moving to Fondazione Eni Enrico Mattei (FEEM), which is an academic institution in Italy. Then I moved to the Italian Institute for International Political Studies (ISPI), where I integrated the geoeconomic perspective. I also have certification from the International Roundtable on Materials Criticality (IRTC) as a "Raw Materials Risk Manager" capable of identifying and taking action to mitigate specific company supply chain risks. This certification is conducted in accordance with the International Organization for Standardization (ISO). I'm particularly interested in rare earths, battery minerals, and electro-tech industries, because I think these sectors are experiencing material convergence and demand competition, especially for a range of minerals like lithium, rare earths, and other critical materials. In general, I try to deploy a multidisciplinary approach, because I think that criticality is an inherently complex topic, and take into account different perspectives.

Overview of Economic Security Worldwide of Critical Minerals

JS: Thank you. What is your overall view of the economic security question for critical minerals in the world? You are an expert on lithium, but what else do you think would be critical in terms of global economic security? In what context would economic coercion by superpowers be more harmful for the rest of the world regarding these products?

Cerai: Generally speaking, in my research I approach critical minerals in what I call the geography of control. I think the key question is not simply where a mineral is extracted, but also who controls the different stages through which it becomes an industrial input that could be deployed, for example in batteries when you talk about lithium. Lithium is extracted from different minerals, and you need to have chemical conversion and specialized technology to transform usable lithium chemicals for batteries. This distinction is important because it means that supply diversification, especially when pursued through the lens of economic security, does not necessarily mean supply chain diversification. For example, Europe may import a mineral from one country, while that supplier still relies on Chinese processing technology or intermediate products.

From my perspective, therefore, economic security requires a clear understanding of vulnerabilities at each stage of the value chain, be it geographically leveraged (chokepoints) or technologically leveraged (export controls). However, many of these industries consolidated during the high point of globalization, when

specialization was the dominant principle. Of course, we cannot realistically or magically reverse this process, because it consolidated over decades, but we can identify where the pursuit of efficiency has created or could create strategic dependence, and decide which vulnerabilities need to be mitigated. Economic security, thus, requires a trade-off: making the cost of prevention part of the strategic planning. Especially when the deliberated denial of these crucial inputs has both geopolitical and economic consequences.

And besides lithium and rare earths, I would also highlight other very important materials, for example, helium, which has been in short supply since the war broke out in the Gulf. Also, gallium, germanium, indium, tungsten, and antimony, which have been in short supply from the war in Ukraine. In this sense, criticality is always application-specific; the same mineral can be marginal in one sector but irreplaceable in another industry This means that criticality is also subjective, because there is no shared methodology across the G7 countries that perform criticality assessments.

The most serious coercive leverage, I would say, could therefore be from controlling a narrow processing or manufacturing bottleneck and not necessarily the mine itself. This is why we must move from the geography of deposits, just mapping out what resources are in the ground, and start thinking about the geography of industrial-technological control, which means specialized refining capacity. Think, for example, about the latest export restrictions that were announced by China in October 2025, then postponed until November this year. They refer to extraterritoriality control and processing equipment that will be needed, and requests for export licenses. These are potentially coercive measures because they are features of production networks. You can't take a mineral without considering all the technology and all the specialized input that is needed for providing the technical-grade material to the end users.

Criticality of Security Evolves as Innovation Goes On

JS: Thank you for your detailed explanation. This tells us that perhaps you cannot judge criticality without some expertise in specific technologies. However, as our economy evolves with new technologies like artificial intelligence, perhaps the criticality question will change or evolve in light of technological development and new innovation?

Cerai: Well, criticality is a methodology that evolved over the past 10 to 15 years, and of course in these last few years priorities have changed with technology, which is inherently difficult to anticipate. For example, you mentioned AI. There is this increasing and forecasted demand, for example, for rare earth magnets for robotics, for humanoids. Unless we develop different magnets, this emerging sector will add pressure for rare earths also demanded from more mature sectors like EVs and wind turbines. Technology itself is also going to reshape how we perform these assessments.

Semiconductors are certainly among the most critical products, because they support a lot of modern technology and industries. But we also know that we need to make distinctions. For example, there are the leading-edge semiconductors that are required for advanced computing for AI data centers, but there are also major nodes of semiconductors that are less known but are very important for industrial ecosystems. For example, power semiconductors used for high voltage equipment, which rely on compounds materials like gallium arsenide (GaS) or silicon carbide (SiC). If you think about the list of critical materials that the US compiled in 2023, they list uniquely silicon carbide as a potential critical material.

It depends on what technology you are prioritizing in your assessment. You also mentioned the criticality of some technology linked to the green transition. Of course, these are very important in terms of decarbonization, but they represent different forms of risk compared with fossil fuel systems and the need to import fossil fuels. Once you install renewables like solar panels or wind turbines, basically the dependence shifts to controlling your assets, managing the grids, instead of controlling hydrocarbon flows that are subject to a very different set of risks. This does not eliminate geopolitical leverage, because if you have industrial capacity for manufacturing this technology, of course you have some leverage at the international level.

JS: This means that the expansionary use of new technologies in things like green and digital technology is basically a very good thing that can encourage economic growth. On the other hand, my understanding is that criticality or the question of economic security will face very serious challenges as technology evolves. Is that correct?

Cerai: Yes, I think that encouraging technological adoption and innovation also brings a very different kind of potential economic security risk. For example, permanent magnets based on rare earths were developed to create a better, reliable product than samarium-cobalt magnets in the 1970s because there was a shortage of cobalt. That kind of technological innovation, later spurred by globalization and with a different geopolitical stage, was not perceived as a potential risk because it helped to solve a problem. But now, with China increasingly controlling the manufacturing capacity for rare earth magnets and these assets being so crucial, it's posing a challenge in terms of economic security. From my perspective, innovation is a solution for reducing criticality, but it is not a silver

bullet. As mentioned, criticality is a perspective that helps identify and rank potential priorities, while innovation follows as one of the possible responses to address them.

Dual Use of Products Under Review as Military Security Evolves

JS: Thank you. Military security is another very serious question related to this rising geopolitical risk. And in talking about military risk and security, we have to think about the dual use of many ordinary products. Will that complicate this criticality further?

Cerai: I'm not a military expert, but taking your question from the criticality perspective, especially thinking about dual-use application and dual-use materials, there are a lot of critical minerals that are very important, for example for a green transition, but are also very important and greatly used in different grades for military or dual-use applications. Drones, for example, require very important technological inputs like batteries and electric motors, which are also important for decarbonization. This creates a competition in demand between different kinds of technologies requiring similar materials. I think the red line is fluid, especially with artificial intelligence applications, since electrification is making a convergence of industries. I think your question is very important, and that it's also very difficult to foresee technological innovation in this sense.

Solutions for Supply Chain Resilience

JS: Let's move to solutions. How do we strengthen supply chain resilience for these critical products? Could you refer to the EU's policy in this regard?

Cerai: From the EU perspective, especially talking about critical raw materials, one of the first tools that was deployed was trade policy. I think that while trade policy, especially signing free trade agreements or strategic partnerships, is good and can facilitate diversification of supply, it cannot ensure it. Opening markets or reaching out to potential research-rich countries does not automatically create mines, refineries, or qualified industrial suppliers. Trade flows are lagging indicators in this sense, because before a new trade flow appears in our statistics, someone must finance a project, build the processing capacity or sign an offtake agreement for a specific and qualified material. This is why I distinguish market access from supply creation. And the Critical Raw Materials Act, which was signed in 2023 and brought into law in 2024, was an important step because it recognized that different stages had to be addressed, from extraction, processing, and recycling, as a more integrated strategy for addressing the supply chain risk.

But the real challenge from an European perspective, now that we have set a clear benchmark and objectives, is the bankability of projects. The EU needs to collect strategic capital, including bringing in public entities to finance these projects, because without industrial capacity, especially at the refining level, we cannot ensure that diversification from trade partners will ensure supply security.

JS: Yes, it's sort of a collaboration of industrial policies among different partners, and I think that's a very important point. But people talk about another aspect of industrial policy, strategic indispensability for mitigating this risk on your own, the Buy American Act for example. Some people argue that Japan should adopt a similar policy.

Cerai: I completely agree with you, because as critical raw materials are widely recognized as a common challenge across G7 countries and industries, there is this kind of proliferation of industrial policies with different ranges and scopes. The industrial policy that is basically deployed in the US is very different from what is currently being discussed at the European level, because the US has a degree of federal leverage and a very different architecture that can react to these geopolitical shocks. I think that industrial policy is a response that is emerging across different G7 countries to counter-balance the "China Shock 2.0". But as you mentioned, I think that to pursue "strategic indispensability" compared with strategic autonomy, you have to create common ground with your partners, because we are starting this discussion talking about how these industries have evolved during the last 20 years of hyper globalization. There are countries that are very specialized in very different industrial inputs, for instance Japan in electronics and chemicals. I think it would be very harmful for their economies if every G7 country started to pursue their own industrial policy for achieving strategic autonomy, without considering the opportunities and the convergence at the industrial level with other partners. I think industrial policies should be coordinated to some extent to identify specific bottlenecks across the G7 countries, and that countries should try to figure out how to mobilize collective capital and tools to address shared industrial chokepoints. The Pax Silica, in this sense, is a clear example of such needed coordination.

JS: I see. The exchange of critical information is very important in terms of industrial policy coordination, meaning we need to have trust among partners.

Cerai: I think that especially across G7 countries, with like-minded partners, we can put together a list of critical technologies that are

very important for our economies and think about ways to address specific vulnerabilities that are shared across our economies. It would also be interesting to see cooperation starting from a bottom-up approach, looking at shared dependencies across critical minerals and then seeing what kind of specializations are within the G7 to de-risk some critical steps, including midstream stages (for instance, cathodes in South Korea, rare earth metals in Japan). If we had this kind of shared "criticality thinking" across minerals, then what is the next step? What are the other industrial stages that are critical for our economies, and can they be addressed with collective action?

JS: How do you think we could make policy coordination or cooperation credible for counterbalancing economic coercion by superpowers?

Cerai: At this moment we have two main superpowers in terms of technological prowess, and they have already shown their willingness to coerce each other using economic statecraft. The US has deployed a lot of export controls, in semiconductors for example, and China has retaliated with similar measures on critical and other important strategic materials. I think there is an important role for "middle powers" to step in, trying to de-escalate this kind of economic weaponization from having harmful effects on other countries like EU members, Japan, South Korea or Canada. I think that collective action is essential. However, credible tools for economic retaliation should be reinforced because *"you cannot reason with a tiger when your head is in its mouth."* In the age of geoeconomics, the new reality is that economic relationships built on trust in distant times are now the source of leverage. We need to find our own sources of enforcement (be they regulatory or industrial) to preserve our economic security. .

EU-Japan Collaboration for Supply Chain Resilience

JS: Do you think the EU and Japan can achieve that kind of institutional framework for collaboration?

Cerai: I think the EU and Japan face similar structural problems, especially in the realm of critical materials and economic cooperation, because both have sophisticated downstream industries but very limited domestic mineral resources. But I think that they also possess complementary financial, technological, and industrial capabilities. For example, I think Japan's experience with the Japan Organization for Metals and Energy Security (JOGMEC) is very informative for the EU in terms of solutions and institutions to be developed to address resource security. Security, as I mentioned before, does not require geological self-sufficiency. You have to address that with different solutions. It can be also addressed through strategic investment and public-private partnerships.

There is a lot of potential collaboration in specific niches of the critical raw material industries. And as we discussed before, a lot of work is being done in terms of exchanges of economic intelligence, especially in supply chain mapping and collaboration from geological institutes for mapping resources. And of course, finance is very important here, especially for creating credible demand. For example, Japan has a clear understanding of its needs and vulnerabilities, and has been trying to resolve its independence, especially with China. And this kind of approach could also be shared with European institutions to address our vulnerabilities, especially through exchanges in technological and industrial know-how. I think it will be very important to move from an architectural strategy, which is being implemented with the Critical Raw Materials Act, to the execution phase, which is lacking to some extent. I think the execution phase will be very important and efficient if we can cooperate.

Future Research Plans

JS: Thank you for your very clear presentation. My last question, could you tell us about your future research plans?

Cerai: I will continue to examine the relationship between critical raw materials, electro-tech supply chain and their nexus with geoeconomics. This is the main framework of my research. I have done extensive research on lithium-ion battery supply chain, developing a database on entities and capacity. And as I mentioned before, I'm also interested in the role of strategic investors because I think there is a missing link between political ambition and making production capacity bankable: institutions can identify strategic projects but they also have to mobilize patient capital. I think these will be the two main issues and two main topics that I'll research going forward.

JS: Thank you very much for your time, we've learned a lot from you. JS

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