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DSG 2023-2027 DIPARTIMENTO DI ECCELLENZA MUR

Ravenna Conference on Critical Minerals

Looking for Resilient and Responsible Supply Chains for Critical Minerals: The Contribution of International Economic Law

Thursday 19 November 2026 h. 09:00 – 16:30
Aula Magna, School of Law, *Alma Mater Studiorum* - Università di Bologna
Via Oberdan 1, Ravenna

Scientific Committee:	**Elisa Baroncini, Isha Das, Ilaria Espa, Lukasz Gruszczynski, Sunayana Sasmal**
Secretariat:	*Giulio Siepi*

The Italian Strategy on Critical Raw Materials – Actions Implemented by the Ministry of Environment and Energy Security

Nunzia Bernardo, Italian Ministry of Environment and Energy Security

Abstract

The presentation outlines the activities of the Ministry of Environment and Energy Security (MASE) regarding the development of an Italian strategy for critical raw materials, in line with the EU Critical Raw Materials Act and Decree-Law 84/2024.

MASE's initiatives are focused on supporting the supply side of the critical raw materials value chain, specifically in the areas of extraction and recycling. Strategic projects, a National Exploration Program, and funding mechanisms established by the Ministry—such as those under the National Recovery and Resilience Plan (PNRR) and the "Mission Innovation" initiative—are designed to bolster domestic production capacity, both in Italy and across Europe. Recognizing its dependence on certain critical raw materials and the inherent vulnerabilities within supply chains, Italy has entered into various bilateral and multilateral cooperation agreements—including those within the G7 and G20 frameworks—to strengthen its position

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on the external dimension with strategic partners. Finally, specific attention will be given to the "Mattei Plan" for Africa.

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Nunzia Bernardo is a Geologist and Eurogeologist with a Master's degree in Applied Geology and a professional background in georesources management and the sustainability and resilience of energy systems, including the resilience towards natural geological hazards. Having previously worked at the Ministry of Economic Development and subsequently at RSE (Ricerca sul Sistema Energetico), she currently serves at the Italian Ministry of the Environment and Energy Security (MASE), she is now responsible for analysis, coordination, and technical-strategic support within the Technical Secretariat of the Minister, focusing on energy and economic security, critical raw materials, energy and environmental policies and international cooperation.

She serves as the Italian Representative on the European Board for Critical Raw Materials, established under the Critical Raw Materials Act, and as the MASE Representative on the Italian Committee for Critical Raw Materials and the Strategic Committee of the National Fund for Made in Italy (Fondo Nazionale per il Made in Italy), both established pursuant to Decree-Law No. 84/2024.

In these institutional capacities, she contributes to national and international strategic dialogue and policy development, focusing on critical raw materials, resource security, industrial competitiveness, strategic autonomy, and the enhancement of Italy's industrial and technological capabilities, in line with the objectives of the European energy and green transitions.

Session One

Critical Minerals and International Trade Law: the WTO, and the EU, US and China's Approaches

Critical Minerals in the WTO System and Beyond: From *China – Raw Materials* to the US Initiative for a Plurilateral Agreement on Trade in Critical Minerals

Elisa Baroncini, *Alma Mater Studiorum* - Università di Bologna

Abstract

The Chinese leadership in mining and refining critical minerals, their growing relevance for strategic industrial sectors (from the military to the automotive industries) and the green and digital transitions, the concentration of these natural resources especially in developing countries, the rising set of binding disciplines and informal arrangements, and the use of critical minerals as a powerful tool of economic coercion widen the intersection with WTO rules of domestic, bilateral, and plurilateral practices and

measures concerning raw materials. Our report will first analyze the relevant WTO case law, from the earlier *China – Raw Materials* and *China – Rare Earths* disputes through the more recent *Indonesia – Raw Materials* and *EU - CVD/AD on Stainless Steel Cold-Rolled Flat Products (Indonesia)* panel reports. It will subsequently explore the contribution the multilateral trading system is providing to consider -and smooth- the tensions provoked by the monopolies and disruptions of the critical minerals supply chains and the unilateral measures on the energy transition, also reconstructing the debate on trade concerns within the WTO common bodies regarding several aspects of the governance of critical minerals. The final part of the paper will then examine the many efforts at the international level to rebalance the global trade in raw materials through new rules providing stability, predictability, fairness and security to the regimes governing critical minerals, concentrating the analysis on the recent US Initiative for a Plurilateral Agreement on Trade in Critical Minerals, and considering its compatibility with, or possibility of formal inclusion in, the WTO system.

Prof. **Elisa Baroncini**, cum laude Law Degree and PhD in EU Law, Certificate of the Centre for Studies and Research of The Hague Academy of International Law, Jean Monnet Chair, is Full Professor of International Law at the Department of Legal Studies of the University of Bologna, where she currently teaches International Law, International Economic Law, International Law on Sustainable Development, International Energy Law. Since October 2025, she is Member of the Permanent Court of Arbitration at The Hague. After having served for ten years (2012-2022) as Co-Chair of the ESIL Interest Group on International Economic Law, in 2019 Prof. Baroncini co-founded and served, until May 2025, as Coordinator of the Interest Group on International Economic Law of the Italian Society of International Law (DIEcon); and, in December 2023, she has been elected as Member of the Executive Council of the Society of International Economic Law (SIEL). She has been Visiting Professor at the China-EU School of Law, speaker and organizer of many international conferences, Visiting Researcher at the European University Institute. Prof. Baroncini coordinates and participates in international and national research projects. She has been awarded the Jean Monnet Module "Re-Globe - Reforming the Global Economic Governance: The EU for SDGs in International Economic Law" (2022-2025), the Jean Monnet Chair "SustainEUorPlanet - The EU as a Global Actor in the International Law for the Sustainable Development of the Planet – Advancing Fairness, Expanding Accountability and Promoting Security" (2025-2028), and the research funds by the Italian Ministry of Foreign Affairs for the projects on the WTO as major actor of sustainable development and the plurilateral agreements and initiatives for the governance of a new world economic order. Elisa Baroncini has been the Coordinator of two UNA Europa Seeds Research Projects: "WHC@50 - Forever Young: Celebrating 50 Years of the World Heritage Convention"; and "ImprovEUorGlobe - The UN 2030 Agenda in the EU Trade Policy: Improving Global Governance for a Sustainable New World". Member of the Scientific Committee of the "Centro Interuniversitario sul Diritto delle Organizzazioni Internazionali Economiche" (CIDOIE) and of the Scientific Committee of the Institute of Advanced Studies (ISA) of the University of Bologna, she has also been part of the Promoting Committee of the University of Bologna to honour the 1972 UNESCO Convention. In June 2022 Prof. Baroncini has been appointed by the European Commission TSD Expert for the dispute settlement mechanisms of the new generation of EU free trade

agreements. She has been Independent Non-executive Director of the Board of Eni S.p.A, appointed by the Italian Government (2023-2026), and in October 2026 has been appointed President of the Board of Directors of Ricerca sul Sistema Energetico, RSE S.p.A. Prof. Baroncini is Member of the Direction of the Review Diritto comunitario e degli scambi Internazionali, Member of the Editorial Board of "The Journal of World Investment & Trade", and the Editorial Board - Section of Bologna of "Diritto del commercio internazionale". Her fields of research include: the reform process of the WTO system; the relation between free trade and non-trade values; transparency and civil society in International Economic Law; the new generation of EU FTAs and their enforcement; the participation of the European Parliament and the Commission in the EU treaty-making power; the relation between free trade and investment protection and cultural heritage protection; renewable energies and International Economic Law; plurilateral tools for the governance of the global economy.

Some Reflections on the Critical Raw Materials Act (CRMA) in the Framework of the European Union's Most Recent Growth Strategies: Can the CRMA Still "Solidify" the Strategic Autonomy of the Union?

Celeste Pesce, Università degli Studi di Bari Aldo Moro

Abstract

The Critical Raw Materials Act (CRMA) – EU Regulation 2024/1252 (consolidated version) – responds to the need to reduce, already by 2030, the European Union's dependence on foreign markets for the supply of critical and strategic raw materials, such as lithium, cobalt and rare earths. Derived by Green Deal Industrial Plan for the Net-Zero Age, the act represents increasingly a crucial cornerstone of the geopolitical, industrial and security paradigm shift – set out in Readiness 2030 on security and defence challenges, RESourceEU on EU raw materials strategy and the European Commission's new economic security "doctrine" – to manage the supply of rare minerals needed for ecological, digital and military transitions. Indeed, the strategic plans and objectives of CRMA may overcome pure regulatory environmentalism by integrating geopolitics and defence into EU industrial policies and transforming the ecological transition into a matter of resilience and geopolitical autonomy.

Yet, CRMA policy, while theoretically enhancing strategic autonomy of Union, is in danger of entering a dead end as dependence on imports from third countries, particularly China, continues; export restrictions, trade tensions, international crises undermine EU supply chains, the competitiveness of EU industries and slowing investment in clean technologies; more generally, the ambitious objective of addressing the Union's geopolitical vulnerabilities, balancing the climate transition with industrial autonomy is far from being achieved. In other words, the implementation of CRMA continues to be complex, as normative aspect is intertwined with geopolitical implications, sometimes, different from those envisaged at the time of adoption.

Therefore, the paper, with brief introductory notes, delves into the main weaknesses of the Union's strategy. Indicatively, the gap between the CRMA objectives and current instruments; the weakness of

strategic projects selected, so far, by the European Commission; the non-binding political commitments of partnerships; the lack of attention to non-Union projects and projects dedicated to particularly critical raw materials; the functionality of public support and derogations from the ban on State aid. Without any claim of exhaustiveness, the aim of the study is to assess the effectiveness of the most significant CRMA measures/actions undertaken in the framework of the most recent EU strategies on economic development; to examine how the Union can strengthen the ideology of diversification of raw material supplies through specific diplomatic action for critical materials, which is still (probably) unprecedented.

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Celeste Pesce has been Associate Professor of European Union Law at the Department of Law of the University of Bari "Aldo Moro" (Italy), since 2022, where she teaches European Union Law. On November 2025, she obtained the National Scientific Qualification for Full Professor of European Union Law. She worked at the European Commission in Bruxelles (2009) and held a visiting research period at "Institut d'Études Européennes, Pôle Européen Jean Monnet", Bruxelles (2009). She has been a trainee at the Court of Justice of the EU, Luxembourg (2013). She is Coordinator of the Jean Monnet Module – "The participation of European citizens in the Union's climate strategy" (PECUCS), 2025-2028 and of the ADISU Research and Action Project – "Studenti pugliesi e strategia climatica dell'Unione europea" (SPESCUE), 2025-2026. She is also Chair holder of the Jean Monnet Chair – "Environmental Omnibus: RegulAtory simplifiCation as a soLution to EU (Green Deal) crises?" (ORACLE), 2026-2029. She regularly holds seminar lessons in PhD, participates in thematic conferences on sustainable development and she is a member of multidisciplinary PhD teaching panels. She participates in research projects of national and international importance such as the Jean Monnet Chair "Circular Economy for the Internal Market" (CE4INT) (2023-2026), University of Siena. From 2021, she is Member of the ENVIRONMENT, ENERGY AND SUSTAINABILITY (EES) Forum "AISDUE". She is the author of monographs and of scientific contributions that have appeared in legal journals and manuals of EU law. Many of her scientific works concern environmental issues, EU sustainable development.

Critical Minerals, New Trade Arrangements, and Development: Rethinking Supply Chains for the Energy Transition

Ilaria Espa, Università della Svizzera italiana, World Trade Institute (WTI) - University of Bern;
Swati Sharma, Independent Economic Policy Consultant

Abstract

Critical energy transition minerals (CETMs) are at the center of decarbonization efforts required to meet the Paris Agreement's temperature goals. Based on recent data by the International Energy Agency, more than 3 billion tons of minerals and metals will be needed to reach net-zero targets by 2050, with demand for CETMs such as lithium, copper, graphite, cobalt, and nickel expected to increase between 43 (lithium) and 19 times (nickel) by the end of the next decade. Combined with growing pressure to ensure security of supply through diversification of sources and reduction of excessive dependencies from single suppliers in

the context of increased geopolitical tensions, expansion of demand for CETMs is projected to reshape mineral supply chains (World Bank 2022). The energy transition can thus create new opportunities for economic transformation for commodity dependent developing countries (CDDCs) with large endowments of CETMs.

In the words of Simon Evenett and Johannes Fritz, 'the sharp predicted increase in demand for [CETMs] is too good an opportunity to miss for industrialization, upgrading, modernization, and higher level of employment' (Evenett and Fritz 2023, p. 49). Recent years have accordingly witnessed an upsurge of state interventionist measures in the critical raw materials sector, including via trade-based policies such as export restrictions. While latest research from the OECD suggests that the bulk of such measures may actually be used to counterbalance the market power of buyers of critical raw materials rather than exploit exporters' market powers, the beggar-thy-neighbour implications of export restrictions imposed by large exporters capable to thin the global markets of CETMs are well-known. This makes them prone to be subject to WTO legal challenges, as shown by the recent disputes targeting China's and Indonesia's export restrictions on rare earth elements and nickel ore, respectively. Irrespective of legal risks, a number of existing studies point to examples of successes in using export restrictions in promoting further processing and value addition. Uncertainties however remain in determining attribution, with recent analyses by the IMF, among others, underlining the importance of creating adequate enabling conditions for supporting investment and financing in the processing and downstream manufacturing sectors.

In this context, large economies interested in securing availability of CETMs, including but not limited to China, the United States (US) and the European Union (EU), have intensified efforts to conclude cooperative arrangements with largely endowed countries in the attempt to establish reliable supply chains for CETMs, battery cells and batteries in the context of energy transition policies (e.g. the EU's new strategic partnerships on sustainable raw materials value chains). When looked at more closely, such frameworks purport to respond to a variety of other policy concerns, including those related to the need for increased social and environmental sustainability of mineral supply chains, but also to the need for economic transformation of CETMs-rich partners. A lot of uncertainties remain, however, on what will be the concrete implications of such arrangements on the ground – that is, on the extent that they will be conducive to foster the development of processing and components' manufacturing industries (e.g. batteries and battery components for electric vehicles) in commodity dependent developing countries (CDDCs) to capture more value-added benefits.

Against this backdrop, this paper looks into the evolving landscape of cooperative CETMs arrangements with CDDCs (Section II). It further explores the emerging practice developing on the ground within the framework of such arrangements, illustrating the different forms of emerging cooperation and discussing the main differences in the relevant arrangements and their implications for local transformation opportunities in CDDCs (Section III). The analysis shows that, in some notable examples, new cooperative arrangements were conducive to bring value addition and local transformation opportunities through mobilizing FDI investment for projects and joint ventures in mineral processing facilities and in midstream battery production plants, among others. At the same time, however, it also shows that successes have

been invariably linked to fertile ground in terms of the domestic frame surrounding FDI, e.g. the priorities, strategies and productive capacities of CDDCs. Building on selected case studies, the paper identifies some key parameters to take into account when assessing the potential of CETMs arrangements to be conducive to CDDCs' local transformation, namely local value addition, environmentally and socially sustainable CETMs value chains, and transparency (Section IV). It concludes that bringing the discussion on the intersection between such parameters and trade to the multilateral trading system may contribute enhancing security, reliability and sustainability of CETMs value chains in a mutually beneficial way for both resource-producing and resource-consuming countries, including via discussing the terms of a potential new plurilateral agreement on critical minerals (Section V).

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Ilaria Espa is Associate Professor of International Economic Law at the Università della Svizzera italiana (USI), Fellow at the World Trade Institute (WTI), Associate Member of the Oeschger Centre for Climate Change Research (OCCR), and Adjunct Professor at the Law Faculty of the Università Cattolica del Sacro Cuore. She is furthermore Lead Counsel of the Natural Resources Programme of the Centre for International Sustainable Development Law (CISDL) and Member of its Board of Governors. Ilaria's areas of expertise include international economic law, with a focus on trade regulation, international environmental law, and EU law. She has published extensively on issues at the intersection of trade and sustainability, mainly in the areas of climate change, energy and commodities, as well as on the law governing the sustainable management of natural resources, always from a multi-layered governance perspective. Ilaria is the co-rapporteur of the Committee of the International Law Association (ILA) on 'the Contributions of International Law to the Global Sustainable Development Goals and the Post-2030'. She is furthermore the co-convenor of the 'Energy and International Law' Interest Group of the European Society of International Law (ESIL); co-chair of the Sustainable Development Law and Governance Association (SDGLA) – Switzerland; co-convenor of the 'International Economic Law' Interest Group of the Italian Society of International Law (SIDI); elected Secretary-General of the Swiss Energy Law Association (SELA) and member of the Scientific Committee of the European Association of Energy Law Associations (EFELA); and, member of the Steering Committee of the NRP87 'Deglobalisation and Supply Chain Resilience' funded by the Swiss National Science Foundation.

Swati Sharma is an international economic lawyer and trade policy consultant based in Geneva. Her work focuses on trade and development, primarily in least developed countries (LDCs) and small island developing States (SIDS), and on how trade rules shape the supply chains behind the energy transition. Her current research examines how new critical minerals arrangements address climate, human rights, due diligence and local value addition, and how forced-labour trade measures affect supply chains.

Through her work with UNCTAD, the WTO, UNECE and in international consulting, she has advised governments in Africa, Asia, Oceania and Europe on trade in services, investment, tariffs and non-tariff measures, and provided technical assistance and training for trade negotiators and policymakers. She has also supported free trade agreement and plurilateral negotiations.

She holds an LL.M. in International Trade and Investment Law from the World Trade Institute, University of Bern, where her thesis examined fossil fuel subsidy reform and the role of the WTO.

Different Means, Same Ends: A Comparative Analysis of US and EU Critical Minerals Strategies.

Lukasz Gruszczynski, Kozminski University - Warsaw, ELTE CSS; **Marcin Menkes**, Warsaw School of Economics, Vrije Universiteit Brussel

Abstract

This article compares the critical minerals strategies of the European Union (EU) and the United States toward African exporting countries. Although the EU generally frames its approach through partnership, regulatory cooperation, and development instruments, while the United States more readily combines partnership with security-based conditionality or strategic leverage, both approaches converge in their underlying function. Both seek to secure access to critical minerals in wider framework of economic, developmental, public-health, and security cooperation.

We conceptualise this pattern as: reciprocal but asymmetrical relationship that preserve access to strategic resources while reducing the importing actor's vulnerability to supply disruption. Rather than simply diversifying supply chains, both the US and the EU connect mineral cooperation with investment, development finance, health assistance, and security cooperation. This article argues that different instruments can serve the same end: reducing strategic vulnerability by reshaping dependency relations with resource-rich developing countries through cross-sectoral cooperation.

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Lukasz Gruszczynski is Professor and Head of the Department of Public International and EU Law at Kozminski University (Warsaw) and External Research Fellow at the Institute for Legal Studies of the ELTE CSS. In the past he acted as Chairman of the EUI High Council (2024); currently he serves as a member of the Advisory Legal Committee to the Polish MFA. Lukasz specializes in international economic law and global health governance. His scientific portfolio includes three monographs with OUP and two edited volumes with EE and Routledge. He is Managing Editor of the Polish Yearbook of International Law.

Marcin J. Menkes is Associate Professor at the Warsaw School of Economics (SGH) (Warsaw), where he heads the Postgraduate Studies in Law and Economics of the Capital Market, and Adjunct Professor at Vrije Universiteit Brussel. His research focuses on international economic law, with particular emphasis on foreign investment, economic security, and sanctions. Alongside his academic work, he practises as counsel and arbitrator in international disputes. He is admitted to the Warsaw and Brussels Bars.

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Between Rule-Taker and Rule-Shaper: China's Multifaceted Responses to the Critical Minerals–Supply Chain Nexus

Wenhua Ji, University of International Business and Economics, China

Abstract

Critical minerals have emerged at the intersection of great-power strategic competition, economic security agendas, and shifts in the international trade and investment legal order. Intensifying geopolitical rivalry, the securitisation of economic policy, and the growing dependence of emerging industries on critical minerals have prompted major economies to deploy trade, investment, and industrial measures to strengthen the resilience and security of critical mineral supply chains. This trend is reshaping international economic rules in two directions: departures from, and challenges to, existing multilateral platforms and disciplines on the one hand, and the creation of new cooperative mechanisms and rules on the other. China occupies multiple positions in this transformation—as a resource supplier, a processing and refining hub, an import-dependent consumer of certain critical minerals, and a participant in rule-making—and its responses, rather than being consolidated in a single strategic instrument, are dispersed across multilateral, regional, bilateral, and unilateral domestic levels. Adopting a rule-shaping perspective, this article systematically examines China's legal and policy measures concerning critical minerals and supply chain resilience, analyses their multifaceted effects—preserving, deviating from, and reconstructing existing international economic rules—and assesses China's evolving position between rule-taker and rule-shaper. It concludes with recommendations on how China might balance economic security with the preservation of the multilateral trading system and engage constructively in the formation of international rules on critical minerals.

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Dr. **Wenhua Ji** is Professor of Law at the School of Law, University of International Business and Economics (UIBE), Beijing, China. His research focuses on international trade law, trade and environmental governance, WTO law and dispute settlement, regional trade agreements, and global economic governance. He has published extensively on these issues in both Chinese and English. Dr. Ji currently holds several academic and professional positions, including Co-Chair of the WTO Chairs Programme at UIBE, UNIDROIT Correspondent for China, Vice-President of the WTO Law Research Society of the Chinese Law Society, and a member of the Executive Council of the Society of International Economic Law (SIEL). He has participated extensively in academic and policy discussions on trade, sustainable development, and international economic governance, and has contributed to the development of China's trade and investment legislation.

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Session Two

Critical Minerals and National/Economic Security

What's in a Name? Critical Minerals Supply Chains and the Rise of Economic Security in International Investment Law

Nicolette Butler, University of Manchester; **Isha Das**, Universität Passau

Abstract

As competition for accessing critical minerals intensifies, States are increasingly invoking economic security to justify new forms of economic cooperation and control over supply chains. Against this background of new forms of critical minerals cooperations, this paper discusses a "security paradox" in International Investment Law, whereby efforts to enhance resilience contribute to normative fragmentation and uncertainty. It examines how this dynamic unfolds for technology-poor resource-rich ('TPRR') developing countries by examining treaties with investment provisions ('TIPs'), alignment provisions precluding greater cooperation with third States perceived as security threats, and specifically negotiated bespoke state–investor contracts ('SNICs').

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Dr **Nicolette Butler** is a Senior Lecturer in Law at the University of Manchester and Co-Director of the Manchester Centre for Law and Business. Her research focuses on international economic law, particularly international investment law, international trade law and international arbitration. She has published widely on investment protection, dispute settlement reform, regulatory sovereignty, national security and the relationship between international economic law and broader public policy objectives, including environmental protection and sustainable development. Her work explores how international economic rules interact with evolving regulatory priorities and the challenges facing states in an increasingly complex global economy. Alongside her academic research, she has contributed to policy discussions on international trade and investment, including through engagement with the UK government and the WTO.

Isha Das is an emerging scholar in the field of international trade law, with a focus on international trade and environmental law. She is currently undertaking her doctoral research at the University of Passau and holds the German National Study Foundation scholarship for her doctoral studies. Her doctoral research addresses WTO law issues confronted by technology-poor resource-rich countries in downstream industrialization in critical minerals value chains. Her research has been accepted at the Journal of World Investment and Trade and the Journal of International Economic Law. She has also been awarded the DAAD Excellent International Students Award for 2024 by the University of Passau. Prior to her time in Passau, she worked at the World Trade Organization and takes inspiration for her research work from her experiences there. She holds an LL.M from the University College London.

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Back to the Future? Security, Commodity Governance, and Supply-Chain Security in Critical Minerals

Sunayana Sasmal, University of Sussex Business School

Abstract

Contemporary critical mineral strategies are commonly presented as a novel response to the security challenges arising from the energy transition, geopolitical rivalry, and concentrated supply chains. Yet concerns over access to strategically important minerals have long shaped state practice. During the Cold War, governments relied on a range of instruments including strategic stockpiles, long-term procurement arrangements, and international commodity agreements, to secure access to materials considered essential for economic and national security. This article argues that while the underlying security objectives of strategic mineral governance have remained remarkably consistent, the instruments through which they are pursued have changed significantly.

Through a historical comparison of Cold War strategic resource governance and contemporary critical mineral strategies, the article examines how changing economic structures and conceptions of vulnerability have shaped the design and selection of governance instruments. Whereas earlier approaches were largely oriented towards the management and stabilization of commodity markets, contemporary strategies emphasize supply-chain resilience, strategic autonomy, diversification, industrial policy, investment screening, and export controls. The article argues that this transformation reflects a shift from governing strategic commodities to governing strategic production networks.

Recent policy proposals, however, suggest that contemporary policymakers are increasingly rediscovering concerns that earlier commodity-governance arrangements sought to address, including price volatility, investment coordination, and long-term supply adequacy. Rather than representing a complete departure from earlier approaches, emerging critical mineral strategies reveal a growing convergence between commodity-governance and supply-chain-governance logics. The article therefore proposes a framework for understanding critical mineral governance as the pursuit of enduring security objectives through evolving institutional forms. It argues that while contemporary efforts increasingly combine commodity-governance and supply-chain-governance instruments, both approaches remain predominantly oriented toward the security concerns of consuming economies, leaving the developmental and sustainability dimensions of mineral governance only partially integrated into the design of contemporary strategies.

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Sunayana Sasmal is a Research Fellow in International Trade Law at the UK Trade Policy Observatory, University of Sussex. Her work engages with the intersections of international trade, law, and policy, with a particular focus on the evolving architecture of global economic governance and sustainability. She brings extensive experience across international organizations, academia, and government, having previously

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held positions at the World Trade Organization, the Columbia Center on Sustainable Investment, the World Bank, Tulip Consulting, and the Centre for WTO Studies.

Currently, Sunayana is particularly interested in understanding how trade policy in critical minerals can be effectively deployed for the "economic security" of developed and developing, resource-rich countries alike. She also conducts research on general international trade law and policy issues to critically examine the future direction of global trade governance architecture.

Sunayana holds an LL.M. from Columbia Law School, where she was a James Kent Scholar and Jagdish Bhagwati Fellow, and a B.A., LL.B. (International Trade and Investment Law Hons.) from National Law University, Jodhpur. Her scholarship has appeared in leading publications in the field, on issues at the intersection of trade, development, and sustainability, and she frequently presents her work in academic and policy forums internationally.

Critical Raw Materials and the Proposed Industrial Accelerator Act: Aligning EU Trade and Industrial Policy under a 'Made in EU' approach to Manufacturing.

Diana Wade, Deloitte Legal

Abstract

As the EU Commission and political bodies look to strengthen the competitiveness of European industry they turn to the origin of inputs used to make key products, such as batteries for electric vehicles and net-zero technologies. These inputs are produced with critical raw materials (CRM), many not sourced in the European Union. This paper looks at the proposed Industrial Accelerator Act's (IAA) 'Union origin' and 'content equivalent to Union origin' requirements in relation to EU trade and industrial policy developments on CRMs.

The IAA aims to boost demand for products and net-zero technologies made in the EU through requirements for public procurement, public intervention and other forms of public support. To qualify for such schemes, the origin of the product must be the EU. However, content originating in a third country will be deemed of EU origin if the third country has concluded a Free Trade Agreement or Customs Union with the EU, or the third country is a party to the WTO's Agreement on Government Procurement (with limitations). This is conditioned on the third party upholding its duty to provide market access to EU goods. The IAA references the Critical Raw Materials Act (CRMA) only in relation to providing a platform to exchange information.

The CRMA establishes sourcing and recycling conditions for critical raw materials (CRMs). EU trade agreements and strategic partnerships both support the sourcing of CRMs in ways that advance the EU's circularity objectives. Producers of goods with inputs with CRM that meet circularity requirements will also be required to demonstrate 'Union origin' to qualify for EU public procurement schemes. This results in the

need to make several determinations based on the source of the CRM: is there an FTA or strategic partnership that covers the trade in the CRM used in the product, are the CRMA sourcing and recycling criteria met, and is the 'Union origin' criteria met. The impact on enterprises includes balancing additional tracing cost with any gains from securing a public contract. Given the momentum in the EU for a 'Made in Europe' approach to manufacturing, this example points to interconnecting trade and industrial policy that is not so smoothly interconnected through legal texts.

This paper explores several implications arising from the intersecting requirements of the IAA and the CRMA. First, generally, what would it mean to produce a battery or a net-zero technology product meeting both the CRMA and the IAA, and how would that support the EU's goals of boosting competitiveness and circularity? Second, how does EU legislation aimed at competitiveness take into consideration trade policy developments and is better alignment needed? And third, does broadening the scope of 'Union origin' to include select trade partners point to a new approach to legal texts – one that embeds adaptiveness to key terms to keep such texts resilient among changes in manufacturing and sourcing of materials for inputs?

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Session Three

Critical Minerals Frontiers and Sustainable Mining Funding

Mining the Final Frontier: The Legal Challenges of Mining Critical Minerals in Space

Rodrigo Polanco, World Trade Institute (WTI) - University of Bern, Swiss Institute of Comparative Law; **Merve Erdem Burger** Independent Space Law & Policy Consultant, co-founder of the Swiss Space Law Forum.

Abstract

The global race for critical minerals is bringing the extraction of extraterrestrial resources into sharper focus and exposing the tension between strategic competition and collective commitments to international space law. The 1967 Outer Space Treaty (OST) prohibits the national appropriation of space and stipulates

that its exploration and use should benefit all countries. The 1979 Moon Agreement expressly designates the Moon and its natural resources as the common heritage of humankind. However, it has limited signatories. Against this uneven treaty framework, efforts to secure minerals essential to clean energy and defense technologies intersect with the growing willingness of leading spacefaring states to advance resource governance through domestic legislation and mini-lateral arrangements. Examples of this shift include the U.S. Commercial Space Launch Competitiveness Act and the Artemis Accords' interpretation of non-appropriation under Article II of the OST. Resource governance is developing through instruments that operate alongside, and potentially in tension with, treaty-based multilateralism. This article argues that the convergence of critical minerals policy and space resource governance reflects a broader fragmentation of international law. It examines how domestic and minilateral initiatives may narrow the practical reach of collective-benefit commitments and marginalize the common heritage principle without formal treaty revision. Finally, it assesses the implications for the coherence, inclusiveness, and legitimacy of global commons governance.

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Rodrigo Polanco is Titular Professor and Academic Coordinator of Master's Programmes at the World Trade Institute (WTI), University of Bern, Legal Adviser for Spanish and Portuguese-speaking jurisdictions at the Swiss Institute of Comparative Law, and Visiting Professor at the University of Chile. Rodrigo holds a Bachelor's degree, a Diploma in Air and Space Law, and a Master of Law from the Universidad de Chile, an LL.M. in International Legal Studies from New York University (NYU), and a PhD in Law from the University of Bern, and a habilitation from the same University.

In addition, he served as a post-doctoral researcher at the University of Luzern ("The Governance of Big Data in Trade Agreements: Design, Diffusion and Implications – NFP 75") and as an assistant professor and director of international affairs at the University of Chile's Faculty of Law.

Rodrigo has published extensively as an author and editor with leading international academic publishers and international journals on investment law, trade law and comparative law. He has worked as a consultant for the World Bank, the United Nations, the International Trade Centre (ITC), Trade Impact B.V., and the Center for Economic and Social Research (CASE) on trade and investment issues.

He coordinated the WTI/SECO Project, which supported regional competence centres for trade law and policy in Peru, South Africa, Vietnam, Indonesia and Chile, and the SNIS Project "Diffusion of International Law: A Textual Analysis of International Investment Agreements".

Rodrigo is a co-founder of the Electronic Database of Investment Treaties (EDIT), and a co-founder and member of the board of Fiscalía del Medio Ambiente (FIMA), a Chilean non-profit environmental organisation, serving on the editorial board of their environmental law journal (Justicia Ambiental).

Dr. **Merve Erdem Burger** currently runs her independent space law & policy consultancy in Switzerland and Türkiye, and provides specialized training in space law for academic institutions and government agencies. Before establishing her consultancy, she completed her post-doctoral research at the Chair of

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Prior to her time in Neuchâtel, Dr. Erdem Burger served as a research assistant at the Chair of International Law, Faculty of Law, Ankara University, Türkiye, where she also earned both her M.A. and Ph.D. degrees from the Graduate School of Social Sciences. Her extensive research focuses on international space law, including the interpretation and implementation of space treaties, as well as more recent work on the role of national space law and policy in promoting space sustainability and the development of a circular space economy.

She is the co-founder of the Swiss Space Law Forum, a special interest group within the Swiss Society of International Law, where she organizes the Forum's annual conferences and smaller events on contemporary issues in space law. Dr. Erdem Burger is also a member of the International Institute of Space Law and serves as a board member of the Space Exploration Society of Türkiye

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Suing the Steward of the Common Heritage of Humankind: Critical Minerals, Corporate Claimants, and the Asymmetry of Accountability in the Area

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Abstract

The deep seabed belongs to humankind, yet in the race for critical minerals it is private companies that are taking its guardian to court. In *NORI v. ISA* and *TOML v. ISA*, two contractors invoked Article 187(c) of UNCLOS to challenge the International Seabed Authority's pause of their contract extensions and obtained interim relief. The ISA's recourse against contractors, however, is confined to contractual and administrative remedies; no avenue exists to hold a contractor itself internationally responsible for breaching UNCLOS Part XI. This article argues that the result is an accountability asymmetry: companies that are not, at least conventionally, regarded as subjects of international law, and whose obligations derive from their contracts and domestic law rather than directly from UNCLOS, may sue the trustee of the common heritage, while their own conduct escapes international accountability. The asymmetry largely mirrors investor-State arbitration, except that the respondent is an international organization rather than a sovereign. The burden of closing the gap therefore falls on States, which under Articles 139 and 153(4) must ensure contractor compliance or risk international responsibility themselves. As demand for critical minerals intensifies, the integrity of the deep seabed regime depends on States treating their control obligations as a genuine duty of supervision rather than a formality of sponsorship.

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Dr **Tibisay Morgandi** is Associate Professor of International Energy and Natural Resources Law at Queen Mary University of London's School of Law. She specialises in energy, environmental and climate law, investment and trade law, business and human rights, and the law of the sea. She has acted in disputes

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State and Market in Global Economic Governance: The Case of Critical Minerals Agreements

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Abstract

Amidst rising interest among large economies to secure control over the supply chains of 'critical minerals' such as copper, nickel, cobalt and lithium, the rapid unfolding of bilateral and plurilateral negotiations for critical minerals agreements highlights new shifts in the roles of the state and the market in global economic governance.

The agreements vary extensively in format and content: from short and succinct to more extensive and detailed; and from legally binding treaties to non-binding instruments that aim to shape public action through coordination, dialogue, financing and other institutional arrangements. Beyond the great diversity of approaches, however, the agreements reflect an increased emphasis on mobilising purposive state action to develop and integrate critical minerals supply chains.

Such an emphasis is exemplified by arrangements to promote investment in mining sector development (from extraction to processing), which connect to industrial strategies both in large economies looking to secure their supplies and in mineral-rich countries looking to maximise the economic benefits of their mineral resources.

At the same time, several critical minerals agreements rely on private sector-led approaches for addressing 'environmental, social and governance' (ESG) issues in mining-sector investments; envisage regulatory rollbacks to fast-track investment approval and permitting; and/or impose legal discipline on policy options for states to promote investment in mineral processing.

This paper explores these issues through an analysis of selected bilateral critical minerals agreements concluded by the EU and the US, respectively, with mineral-rich low and middle-income countries. The findings provide insights into the evolving, variable geometries of state and market configurations in global economic governance.

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Lorenzo Cotula is Head of Law, Economies and Justice at the International Institute for Environment and Development (IIED) and a Visiting Professor at Durham Law School. Lorenzo's research explores the place of law in strategies to promote fair, sustainable economies, cutting across international law, economic governance, human rights, environmental law, natural resource governance and sustainable development. Over the years, Lorenzo has worked with multilateral agencies, governments, civil society and research organisations to translate evidence into impact in wide-ranging contexts – from legal empowerment initiatives to national law reforms and global negotiations.

Critical Raw Materials and International Financial Law: Between Economic Cooperation and Strategic Autonomy

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Abstract

National and supranational strategic plans concerning the procurement, supply, and production of critical raw materials require significant public and private financial resources. In this context, international law may provide the legal framework through which such initiatives can be implemented, by facilitating the mobilization of capital, the management of geopolitical risks, the protection of investments, and the preservation of specific environmental and social standards.

To this end, the legal instruments offered by international economic law in the perspective of financial system are different and include framework agreements, strategic partnerships, cooperation agreements, sovereign loan agreements, and financing mechanisms provided by multilateral development banks.

This plurality of legal and financial tools is instrumental in ensuring that public intervention contributes to mobilizing capital, mitigating risks, and steering investments towards strategic value chains. In doing so, it seeks to favour the state's economic independence in a geopolitical context, as we know, dominated by globalization of trade and economic interdependence.

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Giulio Peroni is Full Professor of International Law at the University of Milan (School of Law) and Jean Monnet Chair Professor for the Project "The Future of Money and Finance: between Blockchain, Sustainability, and the EU Law – FutMoFin", financed by European Commission (EACEA). He was also Professor of EU Business Law at University of Milano Bicocca (Department of Statistics and Quantitative Methods) and Professor of International Economic and Trade Law in the framework of Erasmus Teaching

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The opinions expressed during the conference are those of the authors and do not necessarily represent the positions of the Ministry of Foreign Affairs and International Cooperation.