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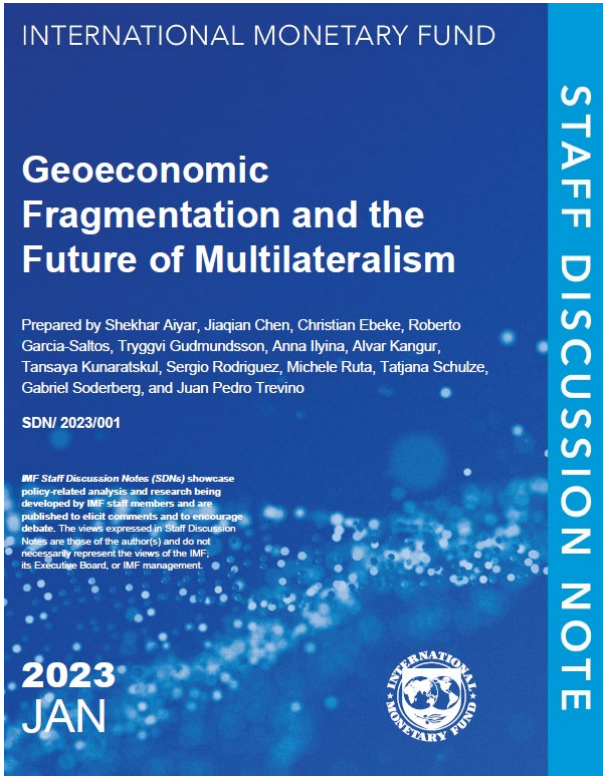
The impact of geopolitical developments on energy security, environment, supply chains and green transformation

15th Japan-Europe Forum, Wuppertal

Professor Andreas C. Goldthau
Franz Haniel Chair for Public Policy, Brandt School


McKinsey&Company
MCKINSEY GLOBAL INSTITUTE
GLOBALIZATION IN TRANSITION: THE FUTURE OF TRADE AND VALUE CHAINS
JANUARY 2019


Deloitte.
Rewiring globalization
Five geoeconomic trends transforming the business environment
MAKING AN IMPACT THAT MATTERS


INTERNATIONAL MONETARY FUND
Geoeconomic Fragmentation and the Future of Multilateralism
Prepared by Shekhar Aiyar, Jiaqian Chen, Christian Ebeke, Roberto Garcia-Saltos, Tryggvi Gudmundsson, Anna Ilyina, Alvar Kangur, Tansaya Kunaratskul, Sergio Rodriguez, Michele Ruta, Tatjana Schulze, Gabriel Soderberg, and Juan Pedro Trevino
SDN/ 2023/001
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2023
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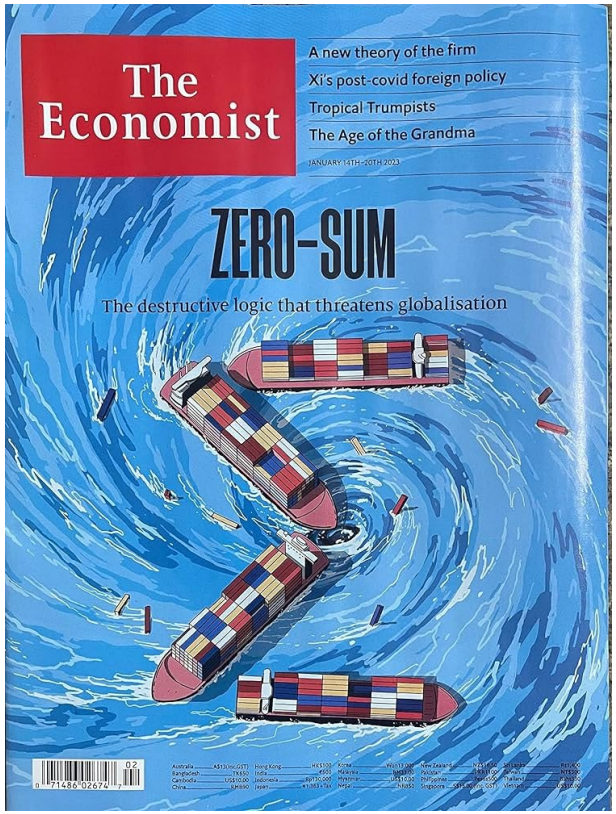
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Trade openness moved sideways for a decade. Since 2017 it is in retreat

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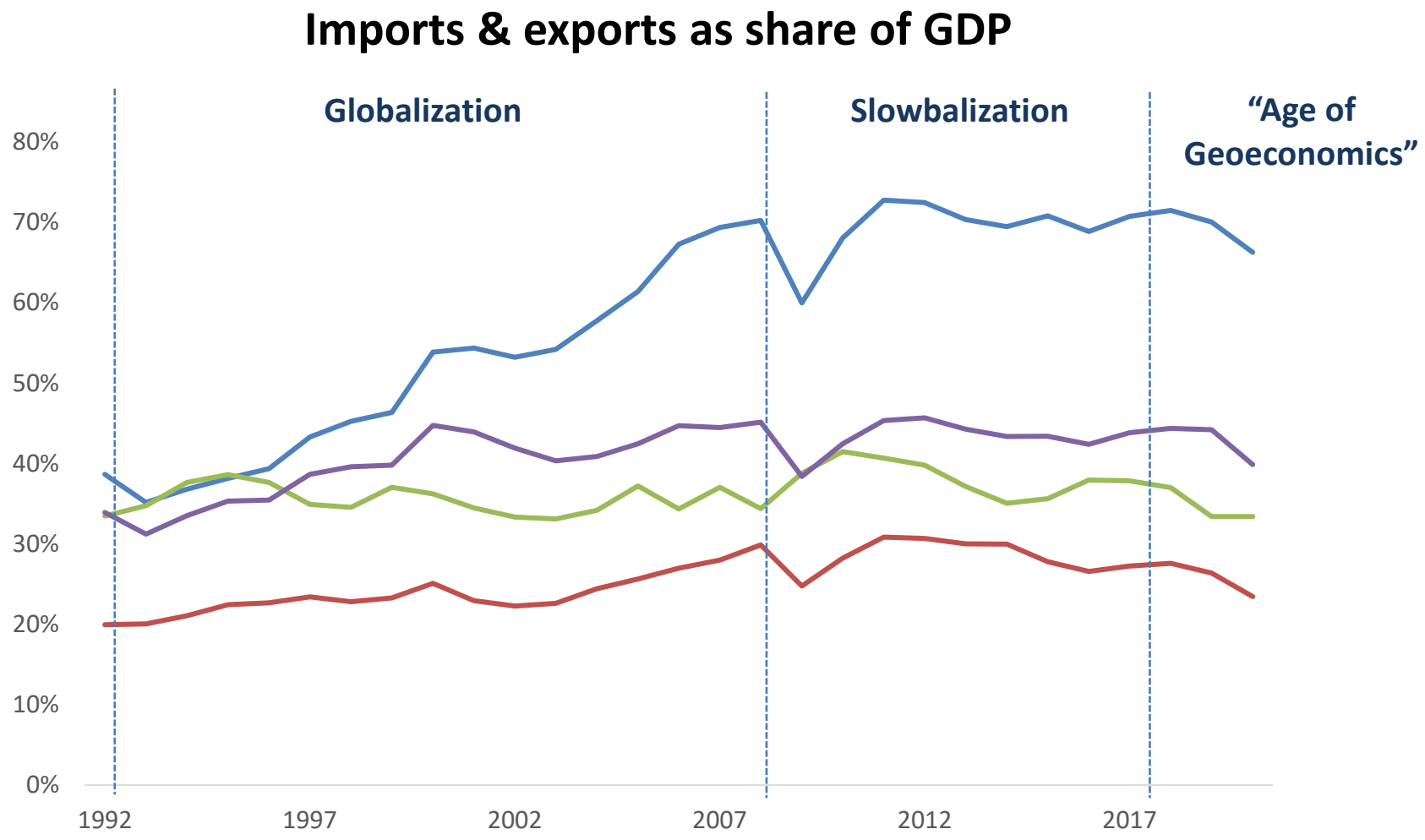
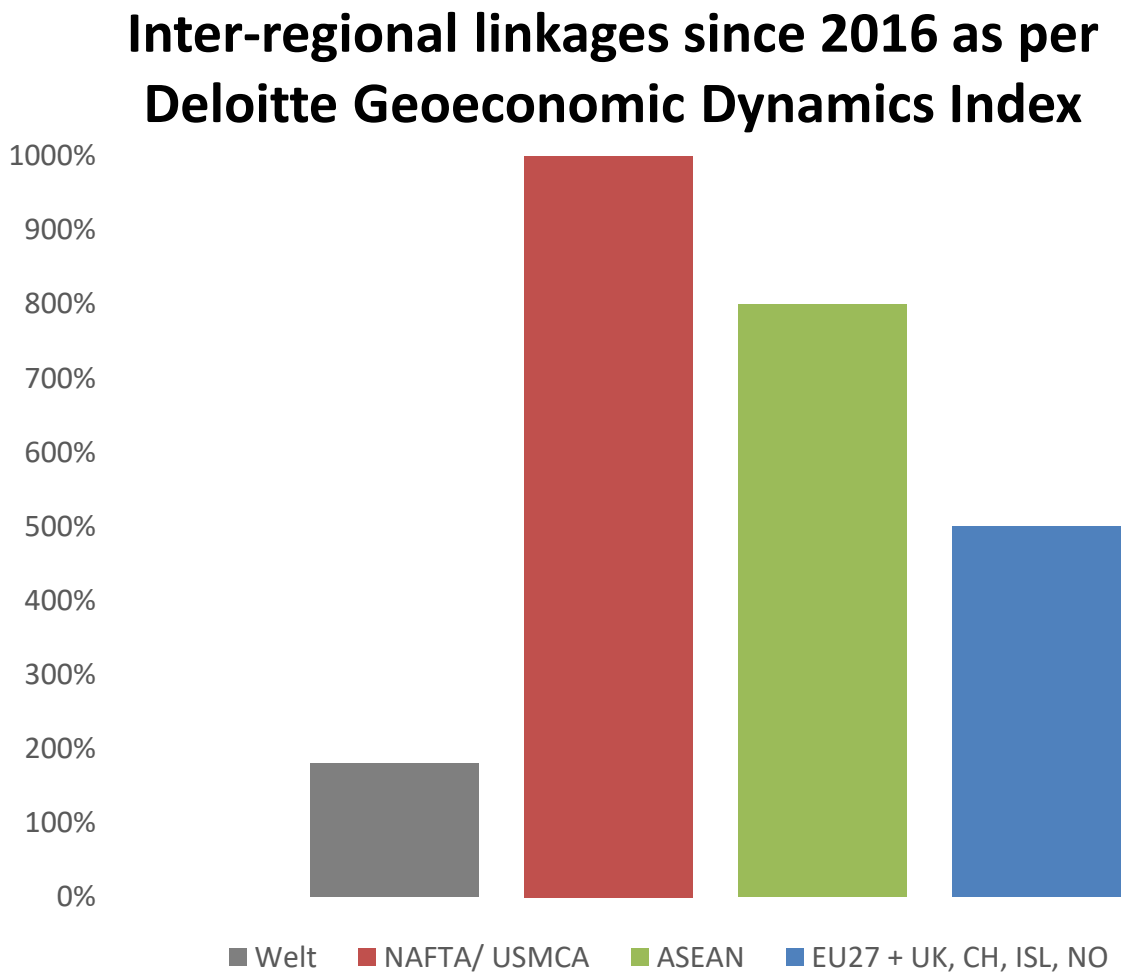


Economic interconnectedness still increases, but regionally not internationally



- *Regionalization:* WTO → FTAs
- *Re-politicization:* markets and tech → 'strategic industries'
- *Reorientation:* „trading with friends"

Source: Deloitte 2024

Economic security and ‚nation first' policies increasingly trump Ricardo

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Clean tech: United States policy measures (2011-2022)

Year	Initiative/Policy	Types of initiative/policy	Targeted countries
2011	SunShot Initiative	Industrial policy I	Not specified
2011	National Offshore Wind Strategy	Industrial policy I	Not specified
2011	2011 Strategic Plan	Industrial policy I	Not specified
2011	Blueprint for a Secure Energy Future	Industrial policy I	Several countries mentioned as possible energy par
2012	American Energy Manufacturing Technical Corrections Act	Industrial policy I	Not specified
2013	Clean Energy Manufacturing Initiative	Industrial policy I	Not specified
2013	Climate Action Plan	Industrial policy I	Not specified
2014	Presidential Make It in America Awards Act of 2014 (introduced)	Industrial policy I	Not specified
2014	All-of-the-Above Energy Strategy as a Path to Sustainable Economic Growth	Industrial policy I	Not specified
2015	North American Energy Security and Infrastructure Act of 2016	Industrial policy II/diversification	Mexico, Canada
2015	Clean Energy Investment Initiative	Industrial policy I	Not specified
2017	Solar and Wind Energy Rule	Industrial policy I	Not specified
2017	Department of Energy Research and Innovation Act	Industrial policy I	Not specified
2017	Bipartisan Budget Act of 2018	Industrial policy I	Not specified
2017	Executive order on Promoting Energy Independence and Economic Growth (revoke	Industrial policy II	Not specified
2017	Executive order on Implementing an America-First Offshore Energy Strategy (revoke	Industrial policy II	Not specified
2018	2018 Trade tariffs on solar modules	Industrial policy II	China
2019	Executive order on Promoting Energy Infrastructure and Economic Growth	Industrial policy I	Not specified
2020	Global Economic Activity and Recovery (GEAR) strategy	Industrial policy I	Not specified
2020	Economic Prosperity Network	Diversification	China
2020	RAM Act of 2020 (introduced)	Reshoring	China
2020	America LEADS Act (introduced)	Industrial policy I	China
2021	Endless Frontier Act (introduced)	Industrial policy I & II (mostly I)	China (mentioned in Sections 9, 10, 11)
2021	Strategic Competition Act of 2021 (introduced)	Diversification	China
2021	National Manufacturing Guard Act of 2021 (introduced)	Industrial policy II	Not specified
2021	To ensure that goods made with forced labor in the Xinjiang Uyghur Autonomous Region of the People's Republic of China do not enterthe United States market,	Diversification	China
2021	William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021	Industrial policy II	Not specified
2021	Readout of the White House CEO Summit on Semiconductor and Supply Chain Resilience	Industrial policy II	Not specified
2021	Readout of the White House Convening on Expanding Federal EV Infrastructure	Industrial policy I	Not specified
2021	The American Jobs Plan	Industrial policy I	China
2021	Chair's Statement on Principles for Supply Chain Resilience	Diversification	Not specified
2021	US-EU Trade and Technology Council Inaugural Joint Statement	Diversification	Not specified
2021	Executive order on Addressing the Threat from Securities Investments that Finance Certain Companies of the People's Republic of China	Diversification	China
2021	Up to $30 mn investment in research related to domestic supply chains of clean energy tech	Industrial policy II	China, DR Congo
2021	Solar Supply Chain Traceability Protocol	Diversification	China (not explicitly mentioned)
2021	Executive order on America's supply chains	Industrial policy II/diversification	Not specified
2021	Executive order on Strengthening American Leadership in Clean Cars and Trucks	Industrial policy I	Not specified
2021	Securing Semiconductor Supply Chains Act of 2021	Reshoring	Not specified
2021	Reshoring American Manufacturing Act of 2021	Reshoring	China
2021	Inflation Reduction Act of 2022	Industrial policy I	Not specified
2021	Infrastructure Investment and Jobs Act	Industrial policy I	Not specified
2021	Solar Energy Manufacturing for America Act (introduced)	Industrial policy II	Not specified
2021	Supreme Court Security Funding Act of 2022	Industrial policy II	China "or any other foreign country of concern"
2021	RAM Act of 2021 (introduced)	Reshoring	China
2021	To establish an expansion awards pilot program as a part of the Hollings Manufacturing Extension Partnership, and for other purposes	Industrial policy I	Not specified
2021	Innovative Energy Manufacturing Act of 2021 (introduced)	Industrial policy I	Not specified
2021	National Institute of Standards and Technology for the Future Act of 2021	Industrial policy I	Not specified
2021	United States Innovation and Competition Act of 2021 (passed Senate)	Industrial policy II	China mentioned throughout, Russia
2021	Executive order on Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability	Industrial policy I	Not specified
2022	Securing Semiconductor Supply Chains Act of 2022 (introduced)	Reshoring	Not specified
2022	SBIR and STTR Extension Act of 2022	Diversification	China, Iran, Russia, North Korea
2022	Facilitating the Reshoring of Energy Grid Component Manufacturing Act of 2022 (introduced)	Industrial policy I	Not specified
2022	CHIPS and Science Act	Industrial policy II	China "or any other foreign country of concern"
2022	Executive order on the Implementation of the Energy and Infrastructure Provisions of the Inflation Reduction Act	Industrial policy I	Not specified
2022	Executive order on Ensuring Robust Consideration of Evolving National Security Risks by the Committee on Foreign Investment in the United States	Diversification	"A country of special concern that has demonstrated or declared strategic goal of
2022	Declaration of Emergency and Authorization for Temporary Extensions of Time and Duty-Free Importation of Solar Cells and Modules from Southeast Asia	Diversification	Cambodia, Thailand, Malaysia, Vietnam
2022	Executive Order on the Implementation of the CHIPS Act of 2022	Industrial policy II	China
2022	America's Strategy to Secure the Supply Chain for a Robust Clean Energy Transition	Diversification	China
2022	National Strategy for Advanced Manufacturing	Industrial policy I	Not specified

Source: Goldthau, Hughes & Nahm 2022

Industrialized nations have come to intervene in clean tech supply chains

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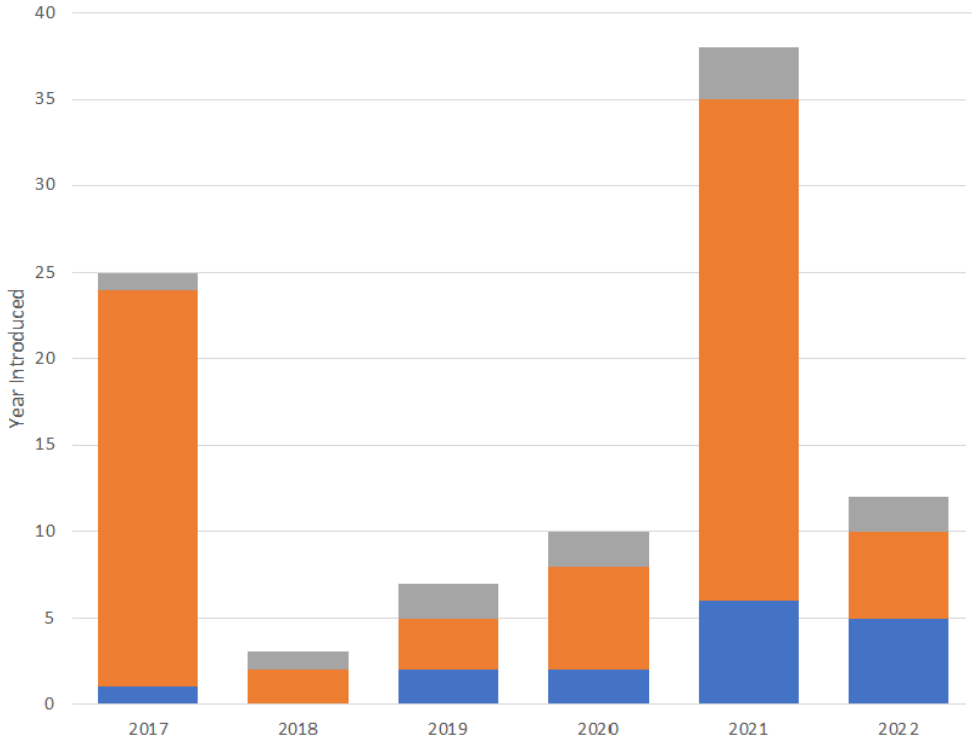
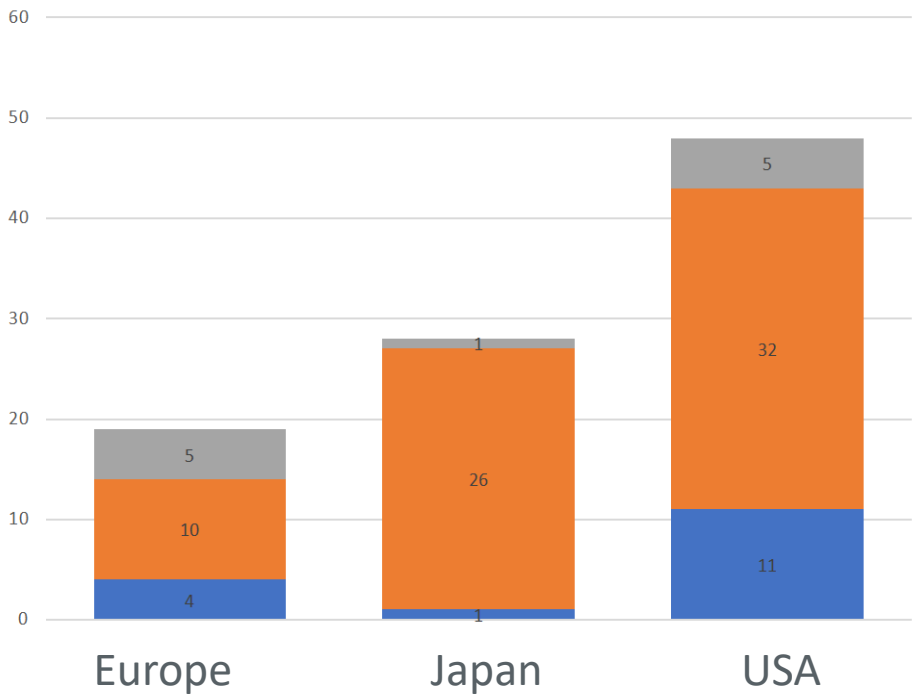
Frequency of industry, diversification, and reshoring policies 2017-2022, total



Frequency of industry, diversification, and reshoring policies 2017-2022, by region



Diversification Industry policy Reshoring

Source: Goldthau, Hughes & Nahm 2022

Geoeconomic fragmentation risk slowing the clean transition & increasing the costs

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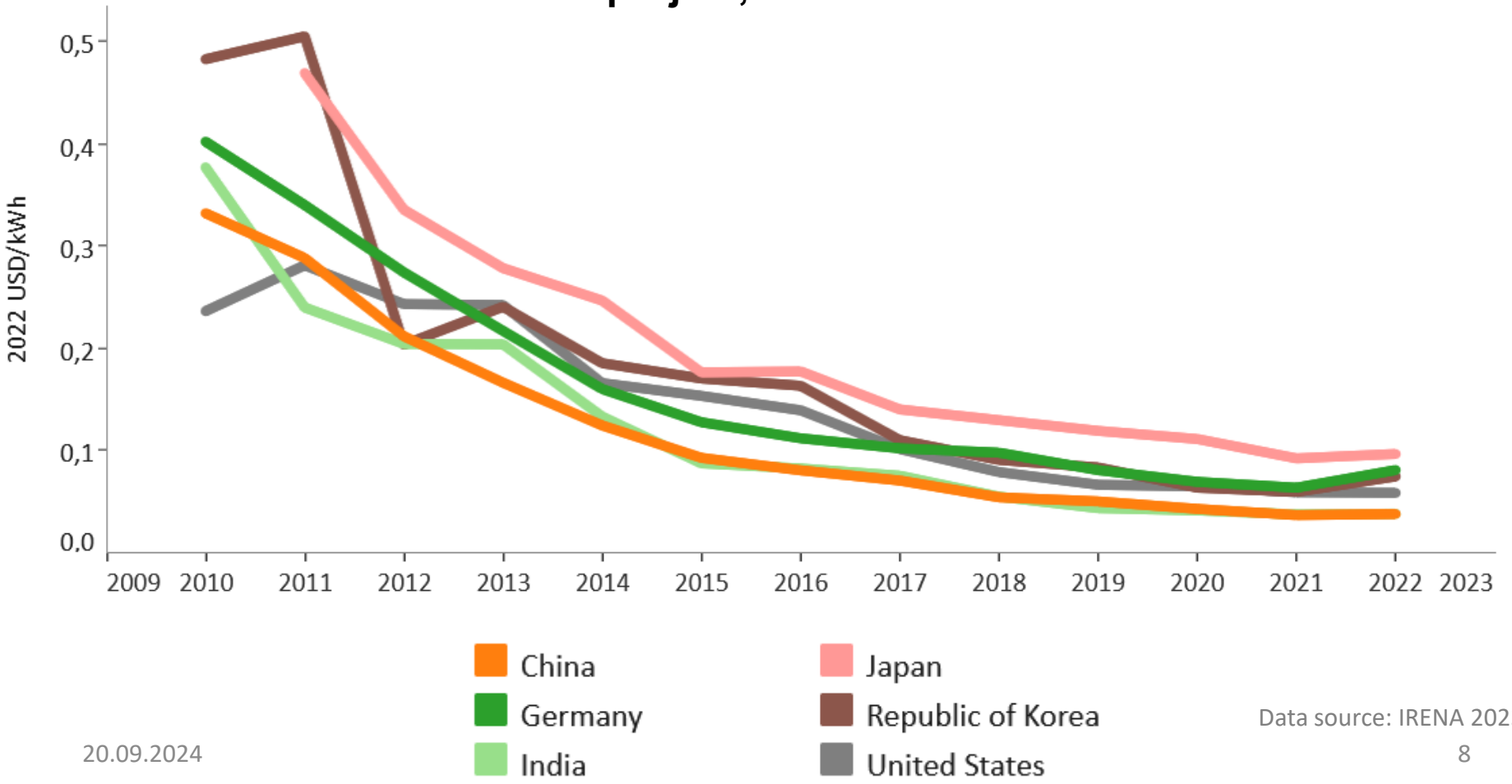
Weighted average LCOE from newly commissioned, utility-scale solar PV project, select countries



Data source: IRENA 2023

The policy imperative: carefully navigate geoeconomic complexity to protect global supply chains

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- Keep international clean tech trade networks intact to ensure these keep getting better and cheaper. Quick
- Calibrate interventions well: regulation, investment and subsidies should support start-ups and high-risk, high-return endeavours
- Focus green industrial strategies on developing innovations and bringing them to market, rather than replacing supply chains for mature technologies
- Avoid narrow-focused national policies eating up time that we don’t have

Setting the agenda in research

Comment

Solar panels being produced at a factory in Ningbo, China.

Protect global supply chains for low-carbon technologies

Andreas Goldthau and Llewelyn Hughes

The COVID-19 economic crash threatens the international trade networks that make clean energy cheap – abandoning them puts the climate at risk.

COVID-19's effects have caused global supply chains to buckle and break. Of the many sectors affected, one is particularly worrying – low-carbon energy. Closed borders, silent factories and shortages of components are slowing the deployment of wind turbines, solar panels and electric vehicles worldwide, with little time left to avert dangerous climate change.

This year's growth in renewable electricity capacity is expected to fall short of last year's figure by 13%, owing to supply-chain and financing problems. Manufacturers face unpredictable times. In April, two of the world's largest turbine producers, Vestas, based in Aarhus, Denmark, and Siemens Gamesa in Zamudio, Spain, announced the economic uncertainties were so great that they could not guide investors on how they would perform in 2020.

Government incentives to bring home or 'reshore' manufacturing as part of economic-stimulus packages are making matters worse. In May, the US government floated the idea of using tax incentives and subsidies to lure US industries away from manufacturing in China. Japan is offering ¥240 billion (US$2.3 billion) to help domestic companies to produce more at home.

Such policies will backfire. Networks of cross-border trade and investment keep costs down and encourage learning and innovation.

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CLIMATE AND ENERGY

China's key role in scaling low-carbon energy technologies

Meeting the Paris goals will require collaboration with China

By John Helveston[1] and Jonas Nahm[2]

Meeting the goals of the Paris Agreements will require net zero greenhouse emissions by 2050 and substantial reductions before then. It will also require collaboration with China, which has emerged as the global leader in the mass production of low-carbon energy technologies (LCETs). In part because of China's investments in manufacturing, the LCETs required to meet climate targets have become increasingly cost-competitive with fossil fuel sources (1). But some attribute China's rapid rise in LCET sectors to unfair industrial policies—such as forced technology transfer requirements, massive subsidies, and outright intellectual property (IP) theft—aimed at strategically dominating the next generation of energy technologies (2). Trade relations between China and the world are currently unsettled, especially with the United States, a leading producer of both LCET research and development (R&D) and greenhouse gas (GHG) emissions. Against this backdrop, we outline why engaging with China is the more promising path to accelerate the global deployment of LCETs and to rapidly bring new technologies to mass production.

Chinese contributions to LCETs highlight key distinctions between invention and the complementary assets required to commercialize a product at scale, such as financial investment and competitive manufacturing capabilities (3). Since joining the World Trade Organization in 2001, China has gone from producing 1% to producing 66% of the world's solar panels (4), and Chinese wind turbine manufacturers now represent roughly one-third of global supply. China is also the largest supplier of (and market for) electric vehicles (5), and according to Bloomberg New Energy Finance, Chinese firms are set to increase their control of the world's supply of lithium-ion batteries from 69% to 76% in the near future. Plans are also under way to nearly double China's nuclear reactor fleets from 45 to 88 plants in the coming decade.

We suggest that it is unrealistic to expect that another nation will be able to rival China's capabilities in LCET scale-up in the time frame needed to limit climate change to below 2°C. The question is not whether to engage, but how, acknowledging that China has applied prosecutorial policies and has used government procurement directives to discriminate against foreign companies in domestic markets, including in LCET industries. Although it may be improbable that one nation can control all aspects of the innovation process—from invention to mass commercialization—in the global economy, it is just as unreasonable to ignore the importance of upholding IP rights and following international trade rules. Given the common goal of combating climate change, LCET in-

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