The External Dimension of the Green Deal, between Cooperation and Competition

by Pier Paolo Raimondi, Margherita Bianchi, Nicolò Sartori, Maria Lelli

IAI

Paper produced in the framework of the IAI-Enel Foundation project "European Green Deal: Reaching Beyond Borders", October 2022.

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ISBN 978-88-9368-272-5

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Introduction

Climate policy has taken centre stage in the political debate since the 1990s mainly driven by scientific awareness, rising socio-political pressure and clearer perception of the cost of inaction.[1] The Paris Agreement has raised the global consensus on climate to a whole new level – in such a powerful way that Daniel Yergin affirmed we can define two eras: "before Paris" and "after Paris".[2] Differently from the Kyoto Protocol's top-down architecture, Paris offers greater flexibility, with nationally and internationally determined elements that can be combined in many ways, making it easier to sit at the table. The important milestone reached in Paris illustrates the positive benefits of cooperation among major economic superpowers, such as the European Union, USA and China, within the international climate framework, starting from the United Nations Framework Convention on Climate Change (UNFCCC) arena. The Paris Agreement also served as a compass for government action and the engagement of financial institutions in the wake of the Covid-19 pandemic – in Europe, NextGenerationEU is conceived as a tool to support the political vision of the Green Deal. A further steep acceleration has occurred in the past three years. An increasing number of countries have been announcing carbon

1 Implementing mitigation measures makes sense in financial terms, as investing toward that global goal of net-zero by 2050 is estimated to be by far outweighed by the related economic benefits. See Natalie Marchant, "This Is How Climate Change Could Impact the Global Economy", in *World Economic Forum Articles*, 28 June 2021, https://www.weforum.org/agenda/2021/06/impact-climate-change-global-gdp; and Andrea Januta, "Economists Support 'Immediate and Drastic Action' against Climate Change", in *World Economic Forum Articles*, 1 April 2021, https://www.weforum.org/agenda/2021/04/economists-global-action-climate-change-natural-disasters.

2 Daniel Yergin, *The New Map. Energy, Climate and the Clash of Nations*, New York, Penguin Press, 2020.

neutrality targets by and around mid-century[3] and have committed public and private spending in low-carbon energy sectors.

The EU has increasingly taken the lead in global climate ambitions with the European Green Deal (EGD) as major institutional mover in this field. The EU aims to become the first climate-neutral continent by 2050 – a goal enshrined into legislation with the European Climate Law.[4] In 2021, the European Commission turned the net-zero vision into real-world policy proposals by releasing its strategy (the Fit for 55 package[5]) to accelerate the transition in the 2020s. The EGD is evidently a decarbonisation strategy – but also much more than that: the EU has elevated it to its normative vision, a new economic growth paradigm, a fresh narrative for the revitalisation of the European integration project and a potential route to a political Union.

What is clear is that, besides internal transformations, the EGD will have a significant external impact in a globalised and connected world. Amongst the most obvious consequences is that the EGD might trigger effects on hydrocarbon-producing countries, for which the EU is and has been a key destination market; or it might have implications on trade, which should increasingly need to consider the carbon component of its products.[6] The EU will need to elevate its foreign policy to the challenge and engage with other countries, manage the direct and indirect geopolitical repercussions of its EGD, foster its green leadership and a "global just transition", and recognise that decarbonisation efforts build upon very different bases around the world. In general, the EGD will need to guide the changes of the transition. With a wider uptake of renewable energy sources, the very concept of security of supply will gain new connotations[7] and the map of energy geopolitics will change as some old dependencies will be reduced (yet not vanished) while new ones will likely

3 136 countries have set, or are formally considering, net-zero targets. See Net Zero Tracker website: https://zerotracker.net.

4 European Parliament and Council of the European Union, *Regulation (EU) 2021/1119 of 30 June 2021 Establishing the Framework for Achieving Climate Neutrality and Amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ("European Climate Law")*, http://data.europa.eu/eli/reg/2021/1119/oj.

5 Simone Tagliapietra, "Fit for 55 Marks Europe's Climate Moment of Truth", in *Bruegel Blog*, 14 July 2021, https://www.bruegel.org/node/6497.

6 Jean Pisani-Ferry et al., "The EU Can't Separate Climate Policy from Its Foreign Policy", in *Bruegel Comments*, 5 March 2021, https://www.bruegel.org/node/7258.

7 Luca Franza, Margherita Bianchi and Luca Bergamaschi, "Geopolitics and Italian Foreign Policy in the Age of Renewable Energy", in *IAI Papers*, No. 20|13 (June 2020), https://www.iai.it/en/node/11696.

rise.[8] While traditional security concerns on fossil fuel supply are expected to remain relevant in 2030, countries might start to compete for control of supply chains for critical raw materials (CRMs) which are crucial components for the manufacturing of several low-carbon technologies.[9] The EU policies need to consider these changes.

Current circumstances add another layer of complexity to the picture. Since 2021, climate policy has apparently been put in the shade by security concerns and high energy prices, further exacerbated by Russia's war in Ukraine. With the aim of weaning itself off Russia's energy imports and reducing the burden for consumers, governments have considered several contingency and structural measures that potentially sideline climate policies (e.g., stronger coal use, investments in gas infrastructure and new contracts for non-Russian gas, among others). Luckily, European governments have also expressed their commitment to deliver their climate promises, which in some cases have been further expanded. Moreover, the energy transition has been granted a newfound relevance for energy security as well. With REPowerEU,[10] the EU executive presents its energy security priorities within Green Deal boundaries by actually strengthening its key pillars. Through higher renewable share and energy efficiency,[11] the EU aims to cut gas use more quickly and reduce its strategic vulnerabilities related to fossil fuel imports.

Alongside the EU, the US and China have emerged as key players in the global energy transition over the past years. The US re-joined the Paris Agreement in 2021 and has set updated nationally determined contributions to reach 50–52 per cent emission reductions below 2005 levels by 2030 and a 100 per cent carbon-free power sector by 2035. In 2020, China announced its aim to have its CO_2 emissions peak before 2030 and achieve carbon neutrality before 2060.

8 Jason Bordoff and Meghan L. O'Sullivan, "Green Upheaval", in *Foreign Affairs*, Vol. 101, No. 1 (January/February 2022), p. 68-84, https://www.foreignaffairs.com/node/1128122.

9 Dolf Gielen and Carlo Papa, *Materials for the Energy Transition*, Abu Dhabi, International Renewable Energy Agency (IRENA) and Rome, Enel Foundation, November 2021, https://www.enelfoundation.org/all-news/news/2021/11/materials-for-the-energy-transition.

10 The REPowerEU plan is the EU's vision to rapidly reduce dependence on Russian fossil fuels and fast-forward the green transition. The plan was unveiled on 18 May 2022.

11 The strategy proposes a higher 45 per cent target for renewables' share of the EU energy mix in 2030, up from the 40 per cent goal proposed less than one year ago. The Commission also suggests cutting energy demand 13 per cent by 2030, instead of the current 9 per cent, recognising the key role played by efficiency in this phase and the years to come.

Such shared commitment is encouraging due to the global effort required to fight climate change. Although the relations between the three have deteriorated in the recent past,[12] positive climate partnerships among them will be crucial to the success of the global decarbonisation.

Nonetheless, climate policy has also become a major political issue at a time when great power rivalry is escalating. The world is already facing major changes in both the political and the economic spheres, having gone through profound changes over recent years driven by the perceived decline in US power, the rise of China, the contraction of economic interdependence and the growing strategic rivalry between the US and China.[13] The global energy transition entails both opportunities and challenges for each of these superpowers. For the US, it is the opportunity to preserve its hegemonic power status politically and economically as the US seeks to remain the main superpower. However, the US–China rivalry has put in the spotlight the risk of overdependence and strategic vulnerability concerning China's green manufacturing capabilities and raw materials availability. President Biden did not change substantially the hard line toward China taken by his predecessor. On the other side China seems to be the largest beneficiary of the energy transition as it has developed manufacturing capabilities in several low-carbon technologies through government support and has encouraged their domestic use as part of its efforts to limit its dependence on fossil fuels. At the same time, by shifting towards a clean energy system the Chinese economy may incur higher costs given its overreliance on fossil fuels (especially coal) at least in the short and medium term. Its industrial sector has benefited from cheap labour and cheap coal feedstock. Coal also dominates China's power generation – leading to higher emissions vis-à-vis the other two blocs. In 2019 the average electricity generation in China produced 552 g of CO_2 per kWh – way higher than the US (376 g/kWh) or the EU-27 (242 g/kWh).[14]

12 Several tensions on trade, digital technology and climate change have held back deeper cooperation between the three in past years. In many aspects, this is still valid as the US still sees itself in "strategic competition" with China, while the European Commission has identified China as a "systemic rival". Please see more in: Pepijn Bergsen et al., "China and the Transatlantic Relationship", in *Chatham House Briefings*, 16 June 2022, https://www.chathamhouse.org/node/29299; and in Ryan Hass, "How China is Responding to Escalating Strategic Competition with the U.S.", in *China Leadership Monitor*, 1 March 2021, https://www.prcleader.org/hass.

13 Ryan Hass, "How China is Responding to Escalating Strategic Competition with the U.S.", cit.

14 Michel Noussan et al., "Towards the Decarbonization of the Power Sector – A Comparison of China,

This work seeks to provide a first analysis of such complex interactions. Section 1 focuses on the relevance of cooperation as an essential element for accelerating the energy transition as well as the risks of confrontation between the EU, US and China in climate policy driven by the impossibility and unwillingness to compartmentalise climate from other issues. Lastly, section 2 looks at ways the EU can engage with these two economic superpowers, presenting some tools it can use to spur the energy transition (climate clubs, interconnectivity investments and regulatory power) and how these can be applied to the redrawing of energy relations while satisfying the European technological/ industrial ambition to lead in selected fields (hydrogen and batteries).

1. Cooperation and competition in tackling climate change between the EU, the US and China

Climate policy needs a balanced mix of cooperation, competition and consistency[15] between the EU, the US and China. Their actions and consistency in decarbonising their own economies – as well as their willingness to act coherently in their foreign reach – will yield powerful consequences for the whole world. Indeed, the three economic superpowers are collectively responsible for about 60 per cent of global GDP, 28 per cent of the world's population and around 50 per cent of the world's CO_2 emissions, besides playing a pivotal role in innovation and technological advancement, global value chains and political leadership.

the EU and the US Based on Historical Data", in *Fondazione Eni Enrico Mattei Working Papers*, No. 24 (October 2021), https://www.feem.it/en/?p=38174.

15 Countries will need to cooperate to jointly achieve their goals. At the same time, some competition may spur technological developments. Lastly, governments need to deploy their capacity to remain constantly committed to their climate principles and their net-zero trajectory in implementing reforms and policies.

Another element to consider is the modus operandi in the energy arena, which will progressively change. The complexity of the challenge will imply the progressive integration of global energy and climate needs into a more effective and comprehensive governance architecture.[16] Countries will experience some transformation regarding their status as either energy consuming or producing countries. Thus, countries should improve, enhance and update international organisations to better manage the evolving energy landscape, and create new organisations as appropriate. For example, governments need to overcome challenges within the existing international climate framework, UNFCCC and Conference of Parties (COPs), through cooperation and dialogue. The EU, US and China have a very prominent role within the UNFCCC framework because of their weight in terms of emissions and their power to encourage greater ambitions.[17] This was particularly apparent with the success of the Paris Agreement. Yet, a united front from these major players will be necessary for successful implementation of the Agreement's objectives. These countries should increase exchanges of experiences gained and lessons learnt on the energy transition, at both the bilateral and the multilateral level, as a way to facilitate the development of viable transition strategies. Other existing frameworks and organisations, such as the International Energy Agency (IEA) and the International Renewable Energy Agency (IRENA), are particularly valuable to foster dialogue among countries on numerous energy-transition-related issues, such as IRENA's new Collaborative Framework on Critical Materials for the Energy Transition or the IEA's high-level discussions on supply chains for clean energy technologies.[18] These organisations can contribute to provide insightful recommendations on possible actions to foster decarbonisation, such as the case of the IEA's Energy Sector Roadmap to Carbon Neutrality in China or IRENA's China's Route to Carbon Neutrality.[19] These superpowers

16 Luca Franza, Margherita Bianchi and Luca Bergamaschi, "Geopolitics and Italian Foreign Policy…", cit.

17 Antony Froggatt and Daniel Quiggin, "China, EU and US Cooperation on Climate and Energy. An Ever-Changing Relationship", in *Chatham House Research Papers*, March 2021, https://www.chathamhouse.org/node/25551.

18 International Renewable Energy Agency (IRENA), *IRENA Members Pave Way for New Cooperation on Critical Materials*, 22 March 2022, https://www.irena.org/news/articles/2022/Mar/IRENA-Members-Pave-Way-for-New-Cooperation-on-Critical-Materials; International Energy Agency (IEA), *Global Energy and Climate Leaders Meet in Sydney to Strengthen Clean Energy Technology Supply Chains*, 12 July 2022, https://www.iea.org/news/global-energy-and-climate-leaders-meet-in-sydney-to-strengthen-clean-energy-technology-supply-chains.

19 IEA, "An Energy Sector Roadmap to Carbon Neutrality in China", in *IEA Country Reports*, September 2021, https://www.iea.org/reports/an-energy-sector-roadmap-to-carbon-neutrality-in-china; IRENA,

should also address climate and energy issues within other international fora such as the G20. There have been some positive recent developments at the G20 level where countries agree to new limits on financial support to coal-burning power plants abroad.[20]

Despite the obvious relevance of the relations among the three superpowers, it is equally important to consider potential consequences of their climate and political decisions on other countries, which often are overlooked. Potential competition between the US, EU and China may affect developing and poor countries. In this sense, the "just transition" concept becomes a crucial aspect of these countries' foreign policy – where a lack of common understanding of what a just transition actually means, let alone an adequate level of coordination on initiatives – is problematic and damaging. Here, the three superpowers are called upon to increase their financial support to transformation, mitigation and adaptation measures abroad, listening to the demands and concerns of developing countries, which often are the most exposed to climate change despite being poorly equipped.

However, multilateralism and cooperation may be undermined by the intensification of competition and confrontation. Over the past years, the three economic superpowers have focused their efforts on reducing external vulnerabilities and enhancing domestic autonomy through different but comparable strategies (i.e., the US "Buy American" push, the EU's strategic autonomy[21] and China's dual circulation[22]). The core objective is to increase domestic resilience by developing or reshoring some critical industrial and technological capabilities, while preserving a certain degree of external interdependence. This risky development has been galvanised by the supply chains disruptions caused by the Covid-19 pandemic, which have emphasised existing and profound vulnerabilities caused by overdependence on China.

China's Route to Carbon Neutrality: Perspectives and the Role of Renewables, Abu Dhabi, IRENA, July 2022, https://irena.org/publications/2022/Jul/Chinas-Route-to-Carbon-Neutrality.

20 Somini Sengupta, Jason Horowitz and Jim Tankersley, "G20 Nations Agree to New Limits on Coal-Burning Power Plants", in *The New York Times*, 31 October 2021, https://www.nytimes.com/2021/10/31/climate/g20-coal.html.

21 Economist Intelligence Unit (EIU), "EU Unveils Strategy to Reduce Dependency on China", in *The EIU Update*, 18 May 2021, https://www.eiu.com/n/eu-unveils-strategy-to-reduce-dependency-on-china.

22 Alicia García-Herrero , "What Is Behind China's Dual Circulation Strategy?", in *China Leadership Monitor*, 1 September 2021, https://www.prcleader.org/herrero.

Thus, countries have started to evaluate their strategic vulnerabilities. This led to an accelerated and more critical scrutiny of China's dominant role in numerous strategic and low-carbon sectors and as well as to the adoption of a much more competitive approach by the EU and the US. Although in the last decades the rise of China as a manufacturing leader in renewables contributed to a dramatic fall in global costs creating the conditions for their mass deployment across the world, its activism in the sector was also fraught with commercial disputes and strategic concerns. Western governments have started to consider the possibility to (at least partially) decouple from China. Nonetheless, such increasing calls for stronger autonomy and decoupling from certain countries may hinder the positive evolution of the global energy transition. The remarkable decline in the costs of renewable technologies over the past decade has indeed been possible thanks to US and EU technologies coupled with China's economies of scale and large investments. If such a scheme is broken up, the development and deployment of low-cost clean technology may be disrupted. Lastly, the current blurred position of China over Russian's invasion in Ukraine and rising tensions between China and the US over Taiwan further complicate the framework, making cooperation scenarios less clear for the months and years to come.[23]

Growing competition also induced countries to reconsider their strategy in supporting third countries in the clean energy transition. Promoting and financing infrastructure projects abroad (especially in developing countries) is instrumental in boosting clean energy transition and in maintaining (or increasing) a geopolitical influence in critical regions. The EU and US, along with other G7 countries, have announced infrastructural programmes to contrast Beijing's reach and its Belt and Road Initiative – respectively through the Global Gateway Strategy and the Build Back Better World (B3W). All of this has yielded a more competitive approach to climate and especially towards China.

23 Yimou Lee and Sarah Wu (2022), "China Halts Military, Climate Dialogue with U.S. over Pelosi Taiwan Trip", in *Reuters*, 6 August 2022, https://www.reuters.com/world/asia-pacific/taiwan-premier-evil-neighbour-next-door-is-showing-off-her-power-our-door-2022-08-05.

2. Implications of the EGD for EU–US and EU–China political relations and beyond

For the abovementioned reasons, the EU cannot separate its climate ambitions and plans from its foreign policy, as the EGD will have significant external ramifications. Furthermore, the current energy and geopolitical crisis in Europe was a vibrant wakeup call for Europeans on the interdependence between energy security and decarbonisation. The EU has several tools it can use to push the energy transition both in and beyond its European borders, such climate clubs, interconnectivity investments and its ability to set regulatory standards. Moreover, the EGD is set also to cause major implications in the political relations between the EU, the US and China as well as other geographical areas, regarding a variety of issues, such as security of supply (both fossil and clean energy) or industrial and technological solutions (e.g., green hydrogen, batteries).

2.1 Tools for climate diplomacy

The EU has several tools to use in promoting its climate diplomacy, establishing a foreign (energy and climate) policy and encouraging decarbonisation across the world. This section outlines some of these tools.

a) Governing international climate relations and climate clubs

The EU has deeply committed to multilateralism as valuable tool to implement the global energy transition, as highlighted in the previous section. Brussels is eager to work actively with its strategic partners to foster the transition. Governing international climate relations has become a pressing issue as the window is rapidly closing to keep global warming below 1.5°C.[24] Therefore, the EU needs to find additional solutions to induce other countries to accelerate

24 Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2022. Mitigation of Climate Change, Working Group III contribution to the Sixth Assessment Report*, 2022, https://www.ipcc.ch/?p=20872.

decarbonisation in parallel to the international climate framework. A useful tool would be the creation of the so-called climate clubs.[25] The climate club concept was initially proposed by W. Nordhaus with the specific goal of avoiding free-riding.[26] These climate clubs could provoke a boost for the energy transition through a positive competition among economies because they would inevitably incentivise other countries to follow the lead. In doing so, countries would find practicable and feasible ways to implement their climate targets working on a smaller level of the multilateral.

Climate clubs are no alternative to the multilateralism and the international framework, but countries could use them as a useful tool to tackle specific issues aligning international goals and strategies to their climate clubs' objectives. The political shift at the US federal level that occurred in 2021 has set the right conditions for the creation of a transatlantic climate club to some extent[27] after four difficult years for multilateralism and the transatlantic relationship. President Biden has elevated climate policy as a top priority at the federal level, contributing to putting climate and energy issues as a key pillar of transatlantic relations as the US has re-joined the Paris Agreement. This belief has further been reinforced by the energy and geopolitical crisis that has erupted in Europe since 2021. Remaining committed to their net-zero targets, the transatlantic relations have been instrumental to also address short-term security issues as the EU expressed its political will to wean itself off Russian gas overdependence with the US having become the largest LNG supplier to Europe. Higher US LNG imports to the EU have been instrumental to offset potential disruptions and partially limit additional price spikes. Despite the precious contribution to European energy security, big questions arise about the suitability of LNG cooperation to the EGD since unabated natural gas should be replaced by cleaner solutions. In a Joint Statement in January 2022, President Biden and President von der Leyen affirmed that LNG can enhance European security of supply in the short term while continuing to enable the transition to net zero emissions.[28] Moreover, higher LNG imports to Europe may

25 William Nordhaus, "Climate Clubs: Overcoming Free-riding in International Climate Policy", in *American Economic Review*, Vol. 105, No. 4 (2015), p. 1339-1370, https://doi.org/10.1257/aer.15000001.
26 Ibid.
27 Ana Palacio and Simone Tagliapietra, "A Transatlantic Climate Alliance", in *Project Syndicate*, 3 June 2021, https://prosyn.org/lwPWU7p.
28 European Union and US, *Joint Statement by President von der Leyen and President Biden on U.S.-EU*

generate competition with Asian buyers. Particularly, it could also sustain high gas prices for a long period, given the current tight market, which is negatively affecting developing countries' climate transition (discouraging a coal-to-gas switch where this is an option).[29] Therefore, the EU will need to work on a scheme to receive additional LNG imports only for the necessary time and then encourage the redirection of these volumes to Asia to replace coal consumption and boost the energy transition.[30] Besides this current EU-US rapprochement, some analysts in general advocate for the formation of climate clubs in order to increase competition and further incentivise China and other countries to respect their climate targets.[31] A number of positive signals – such as the pledge to carbon-neutrality by 2060 – are a good starting point. Nonetheless, critics point out the incoherence of China's continued heavy reliance on coal-fired power plants: in stark contrast with the rest of the world, net coal-fired power generation capacity grew by about 30 gigawatts in China in 2020. Chinese investments abroad include finance for renewable energy sources – although Chinese companies are involved in the construction or ownership of around 16 per cent of all coal-fired power plants under development outside of China.

Moreover, the EU should increase its efforts to develop strong bilateral alliances and partnerships on different sectors to enlarge its climate standards and foster the transition. For example, it has already established a Green Alliance with Japan[32] and launched the Just Energy Transition Partnership with South Africa[33] among others. Yet, the EU needs to avoid a narrow focus and non-transparent criteria for future similar initiatives; otherwise, such initiatives may end up

Cooperation on Energy Security, 28 January 2022, https://ec.europa.eu/commission/presscorner/detail/en/statement_22_664.

29 Faseeh Mangi and Stephen Stapczynski, "Pakistan's Energy Crunch Spurs 'Barter' Trade for Afghani Coal", in *Bloomberg Europe*, 28 March 2022, https://www.bloomberg.com/news/articles/2022-03-28/pakistan-s-energy-crunch-spurs-barter-trade-for-afghani-coal.

30 Nikos Tsafos, "How U.S. LNG Could Help Europe and Climate", in *CSIS Commentaries*, 4 March 2022, https://www.csis.org/node/64252.

31 Andrew S. Erickson and Gabriel Collins, "Competition with China Can Save the Planet", in *Foreign Affairs*, Vol. 100, No. 3 (May/June 2021), p. 136-149, https://www.foreignaffairs.com/node/1127323; Roedrick Kefferpütz, "It's Time for Climate Competition with China", in *Heinrich Böll Foundation Comments*, 17 January 2022, https://www.boell.de/en/node/71477.

32 European Commission, *The EU and Japan Commit to a New Green Alliance to Work Towards Climate Neutrality*, 27 May 2021, https://europa.eu/!B3XvTt.

33 European Commission, *France, Germany, UK, US and EU Launch Ground-Breaking International Just Energy Transition Partnership with South Africa*, 2 November 2021, https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5768.

being counterproductive. Furthermore, ahead of the G20 summit in 2021 held in Rome, the EU and US announced their commitment to negotiate the world's first carbon-based sectoral arrangement on steel and aluminium trade by 2024. This agreement was also a clear message to the world's producers and especially China as it envisages cooperation to restrict access to their markets for dirty steel and limit access to countries that dump steel in their markets.[34]

For many years, cooperation was the only approach that the EU was determined to use with China on climate change. Although this approach has brought some relevant results (i.e., China's signature of climate agreements and the 2060 target), a more competitive approach might be prioritised as political relations experience some downs. In this sense, the EU has started to announce and work on legislative proposals that have a strong geopolitical and external dimension, like the carbon board adjustment mechanism (CBAM).

b) Interconnectivity and international influence

Given the EU's relatively minor direct contribution to emissions (i.e., 8 per cent of global CO_2 emissions), Brussels needs to devote growing efforts to engage positively and directly with other countries in order to have a greater impact on the global decarbonisation. Through its Global Gateway, the EU aims to mobilise up to 300 billion euro between 2021 and 2027 in several sectors (climate and energy, digital, transport, health as well as education and research) in order to deliver sustainable and high-quality projects.[35] Although this does not consider new funds, it can benefit from the Neighbourhood, Development and International Cooperation Instrument (NDICI) – Global Europe Instrument,[36] while the proposed creation of an export credit facility could play a strategic role to mitigate the risks of emerging markets. The EU has identified the European Fund for Sustainable Development Plus as the main

34 James Politi, Katrina Manson and Andy Bounds, "US and EU Agree Deal to Ease Tariffs on Steel and Aluminium", in *Financial Times*, 30 October 2021, https://www.ft.com/content/ad1c1ebb-24ab-40e9-9e01-db6e193c2e1d.

35 European Commission, *The Global Gateway* (JOIN/2021/30), 1 December 2021, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52021JC0030.

36 European Commission website: *Global Europe: Neighbourhood, Development and International Cooperation Instrument*, https://europa.eu/!kk6BpV.

financial tool for mobilising investments under the Global Gateway.[37] Within the Global Gateway, the EU also envisages coordination with like-minded partners to better channel the efforts on connectivity. The EU has already concluded "Connectivity Partnerships" with Japan and India and it will seek further collaboration with the US, Canada, the Republic of Korea and other like-minded partners.

The decision to address the infrastructure issue, coupled with the green transition, is an important step for the EU to project its climate and geopolitical stance abroad. At a time when China has increased its international influence thanks to its infrastructure projects under the Belt and Road Initiative umbrella, the EU needs to propose alternative solutions to countries. Furthermore, the EU could use part of its CBAM revenues to increase its financial assistance to developing countries, reduce any regressive effects of the CBAM and strengthen its role in the global climate finance.

The EU should prioritise its "green deal diplomacy" especially in its neighbouring geographical areas, notably the Mediterranean Sea and the Balkans. Concerning the Mediterranean region, in February 2021 the Commission proposed its "Renewed Partnership with Southern Neighbourhood – A New Agenda for the Mediterranean" which aims for a green, digital, resilient and just recovery, guided by the 2030 Agenda for Sustainable Development, the Paris Agreement and the EGD.[38] The EU holds some favourable advantages, such as being the largest donor of development aid in the world,[39] having long historical relations and energy linkages with Southern countries, and technical knowledge for managing a large share of renewables in the energy system. In this region, the EU has better chances to project its geopolitical presence and climate diplomacy, while fostering decarbonisation and energy transition policies.

37 Ibid.

38 European Commission, *Renewed Partnership with Southern Neighborhood. A New Agenda for the Mediterranean* (JOIN/2021/2), 9 February 2021 https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52021JC0002.

39 Organisation for Economic Cooperation and Development (OECD), "European Union Institutions", in *Development Co-operation Profiles*, Paris, OECD Publishing, July 2022, https://doi.org/10.1787/c0ad1f0d-en.

However, the EU needs to better streamline its funding instruments to be more efficient and more effective in assisting Southern countries through their energy transition. In March 2021, the Commission formed the abovementioned "Global Europe", endowed with an overall budget of 79.5 billion euro for the next Multiannual Financial Framework period (2021–2027).[40] Of this sum, however, the EU allocates only 19.3 billion euro to the whole Neighbourhood.[41] To support green transition in the Neighbourhood, the use of the EU's Projects of Common Interest could help achieve multiple goals: improving energy connectivity infrastructure across the Mediterranean as well as promoting climate diplomacy and energy transition in the area. Once considered eligible, projects can apply for grant funding under the Connecting Europe Facility. The global energy transition will also alter and reshape foreign direct investment (FDI) flows.[42] European FDIs are expected to follow a similar pattern, as better addressed in the second paper of this series.

Europe's climate ambitions and the need to project its geopolitical presence where it can benefit the most, in its neighbourhood, could be intertwined in the hydrogen sector. Despite the high ambition – reiterated in REPowerEU – to produce hydrogen within the European borders, the EU may need to import hydrogen to some extent because of limited land availability and renewable resources, particularly in Northern Europe. North Africa holds favourable conditions to produce green hydrogen for its own local sustainable development, and send extra supply to Europe. Hydrogen could help decarbonise industries like fertilisers, cement and steel, which are three significant outputs of North African economies, avoiding the risk of being targeted by the upcoming European CBAM. In this context, the EU should necessarily avoid a green colonialism approach that would undermine the climate partnership.[43] The EU should focus on incentivising the deployment

40 European Commission, *European Commission Welcomes the Endorsement of the New €79.5 Billion NDICI-Global Europe Instrument to Support EU's External Action*, 19 March 2021, https://ec.europa.eu/commission/presscorner/detail/en/ip_21_1267.

41 Amine Bennis, "North Africa's Energy Transition: A Key Asset in the War?", in *ISPI Commentaries*, 4 April 2022, https://www.ispionline.it/en/node/32916.

42 Jacopo Dettoni, Carlo Papa and Nicolò Sartori (eds), *The Switch Report 2022*, London, The Financial Times, 2022, https://www.enelfoundation.org/content/dam/enel-foundation/news/2022/05/fdi/The%20Switch%20Report%202022.pdf. A second paper on the geo-economic aspects of the transition will be published as part of the project "European Green Deal: Reaching Beyond Borders".

43 Luca Franza, "Greening the Mediterranean: Pathways for Sustainable Energy and Climate Cooperation", in Andrea Dessì, Daniele Fattibene and Flavia Fusco (eds), *Climate Change and*

of renewables for the decarbonisation of North Africa countries and then importing additional clean energy to Europe. It should also encourage the local component of its investments as the global energy transition represents an opportunity for sustainable socio-economic development of these countries.

c) Using its regulatory power wisely

The EU can lead the global decarbonisation benefitting from an important dimension of its power that has remained unaffected by previous crises: its ability to regulate global markets (the so-called "Brussels Effect"). The European institutions produce and promulgate regulations that influence which products are built and how business is conducted beyond their European borders.[44] In the decarbonisation race, the EU could benefit from its regulatory power.[45]

The Brussels Effect may be applied to several crucial political and economic issues related to the fight against climate change, such as the role of coal, carbon pricing and the taxonomy. Here it is clear that the establishment of credible and effective standards contributes to elevating the EU as an example for other economies that seek decarbonisation. For example, the European Trading System (ETS) has provided valuable lessons to other countries (e.g., China's carbon market) – and could continue to do so to others that are looking at setting some form of carbon pricing. The EU proved that technical and regulatory cooperation can yield positive outcomes for the fight against climate change: currently, the Chinese ETS is the largest in the world although it covers only a small portion of industries.

The Brussels Effect may manifest itself especially with the introduction of the carbon border adjustment mechanism (CBAM), proposed in July 2021 within the "Fit for 55" package. The main objective of this climate tool is to prevent and avoid carbon leakage, while encouraging third countries to establish carbon

Sustainability: Mediterranean Perspectives, Rome, Nuova Cultura, 2021, p. 113-135, https://www.iai.it/en/node/13843.

44 Anu Bradford, *The Brussels Effect. How the European Union Rules the World*, New York, Oxford University Press, 2020.

45 Andreas Goldthau, "Widening the EU's Geoeconomic and Regulatory Approach to Climate Policy", in Olivia Lazard and Richard Youngs (eds), *The EU and Climate Security: Toward Ecological Diplomacy*, Brussels, Carnegie Europe, 2021, p. 33-39, https://carnegieendowment.org/publications/84877.

pricing policies to fight climate change. A compelling example was Turkey's ratification of the Paris Agreement in November 2021 ahead of COP26, partially motivated by the risk of being affected by EU CBAM.[46] Currently, 48 per cent of Turkey's exports go to the EU.

Nonetheless, CBAM has received harsh opposition from both the US and China. The US believes that such a tool should be used as "the last resort"[47] and China has called on developed countries to refrain from creating green trade barriers as it would be one of the most affected countries.[48] Indeed, any of those countries that could be affected by CBAM could choose to challenge the mechanism under World Trade Organization laws. However, as net-zero targets are pursued around the world, similar measures could be inevitable also for other countries in order to assure domestic producers and citizens that their effort and sacrifice will not simply be lost to imports.[49] Therefore, the EU needs to convince other countries that more serious abatement efforts in the high-emission sectors targeted are inevitable or accept CBAM *et similia* to maintain domestic political support for achieving global climate goals.

Despite their common opposition to the CBAM, the US and China are in different situations. In the US, carbon pricing has been discussed extensively with very modest results, while China has established its own national ETS, which could provide a good starting point although, as mentioned above, it is differently structured and considerably limited compared to the EU's.

Another crucial aspect where the EU could apply its Brussels Effect is in sustainable finance. Through the Taxonomy for Sustainable Activities, the EU aims to create a classification system on environmentally sustainable economic activities in order to scale up sustainable investment in the EU and implement the EGD. After prolonged and harsh negotiations, the EU included

46 Zia Weise, "EU's Looming Carbon Tax Nudged Turkey toward Paris Climate Accord, Envoy Says", in *Politico*, 6 November 2021, https://www.politico.eu/article/eu-carbon-border-adjustment-mechanism-turkey-paris-accord-climate-change.
47 Leslie Hook, "John Kerry Warns EU against Carbon Border Tax", in *Financial Times*, 12 March 2021, https://www.ft.com/content/3d00d3c8-202d-4765-b0ae-e2b212bbca98.
48 Mirela Petkova, "Weekly Data: EU's CBAM to Impact Russia, China and the UK the Most", in *Energy Monitor*, 7 February 2022, https://www.energymonitor.ai/?p=74473.
49 Peter Chase and Rose Pinkert, "The EU's Triangular Dilemma on Climate and Trade", in *GMF Policy Briefs*, September 2021, https://www.gmfus.org/node/19653.

also natural gas and nuclear within its list, igniting a massive pushback from NGOs, environmental institutions, several companies and financial actors. The inclusion of natural gas and nuclear is considered a move which could undermine the credibility of the taxonomy itself, and potentially its chance to become a global standard in the field.[50] Usually, a taxonomy is tailored to a national or regional context, which means that investors may encounter discrepancies among different taxonomies, delaying the pace of the mobilisation of capital. The EU and China have therefore started to work together through a comparison exercise of their respective taxonomies to identify commonalities and differences. The Common Ground Taxonomy (CGT) is the first phase under this initiative. The CGT does not create a common or single taxonomy and it does not have legal effect; its goal is simply to assist capital providers in determining which asset/project would or would not be accepted as a green investment in both China and the EU.[51]

A drawback of the inclusion of natural gas in the EU Taxonomy could be leaving some room for China to take the lead in upholding credible green energy financial standards. Since China's pledge to net-zero by 2060, the country has developed a more strategic view on green finance and its contribution to the achievement of decarbonisation. This shift indicates that China could be ready to take the reins from the EU and compete for global green capital, weakening European leverage in the international arena.

2.2 Case studies

Key tools to accelerate climate ambitions and policies were outlined in section 2.1. In section 2.2, we analyse two pressing issues, among the many that the EU will face, that could be addressed through the use of such tools. The first one refers to the EU's need to redraw its energy relations in light of energy security throughout the transition. As a second case study, the EU has declared its ambition to become stronger from a technological point of view

50 Eurosif, *The Inclusion of Gas and Nuclear Brings Major Challenges for the Credibility and Adoption of the EU Taxonomy*, 24 November 2021, https://www.eurosif.org/?p=55308; Simone Tagliapietra, "The EU's Green Taxonomy Is a Missed Opportunity", in *Financial Times*, 7 February 2022, https://www.ft.com/content/00f1f852-856a-4cb4-8429-26f80848a93c.

51 Zia Weise, "EU's Looming Carbon Tax Nudged Turkey toward Paris Climate Accord, Envoy Says", cit.

as the continent decarbonises. The European push in the green hydrogen and batteries sectors is expected to change energy relations further.

a) Redrawing existing relations

The EGD is not immune to concerns over security of supply and other security issues. Indeed, the EU could find itself shifting from an overdependence on Russia's gas to new overdependence on several aspects (CRMs, low-carbon materials and technologies).

If not properly addressed, security supply concerns will shift from supply of fossil fuel to supply of CRMs, which are crucial components of several low-carbon technologies, such as solar panels, wind turbines, electric vehicles, batteries and so on.[52] Creating a decarbonised system is expected to drastically increase global CRM demand. According to the IEA, clean energy technologies' share of total demand will rise significantly over the next two decades to over 40 per cent for copper and rare earth elements, 60–70 per cent for nickel and cobalt, and almost 90 per cent for lithium, in a scenario that meets the Paris Agreement goals. Electric vehicles and battery storage have already displaced consumer electronics to become the largest consumer of lithium and are set to take over from stainless steel as the largest end user of nickel by 2040.[53]

Table 1 | Current supply and projected 2050 demand for a 1.5°C scenario

Critical raw material	2020 (Mt/year)	2050 (Mt/year)
Copper	30	50-70
Nickel	2.54	5-8
Lithium	0.41	2-4
Cobalt	0.14	0.5-0.6
Neodymium	0.03	0.2-0.5

Source: Authors' elaboration on IRENA.

52 Dolf Gielen and Carlo *Papa, Materials for the Energy Transition*, cit.
53 IEA, "The Role of Critical Minerals in Clean Energy Transitions", in *World Energy Outlook Special Reports*, May 2021, https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions.

While IRENA provided an estimate for the need to ramp up to 2050 mining volumes of critical materials in a 1.5°C pathway (Table 1), it rightly pointed out that the assessment of demand growth is complex as these materials are not utilised only for energy transition but in a variety of markets.[54] For example, a large share of copper is used for information cables and water pipes. Despite some uncertainty over demand projection, the relevance of and expected demand growth for CRMs put resource-rich countries under the geopolitical spotlight, creating potentially geopolitical competition.

Growing concerns are also caused by higher geographical concentration of raw materials and processing compared to fossil fuels. For lithium, cobalt and rare earth elements, the world's top three producing nations control well over three-quarters of global output. These minerals are highly geographically concentrated, but the major producers differ by commodity. Latin American countries like Chile and Peru are among the largest cooper producers (40 per cent and 11 per cent of the total, respectively) before China (9 per cent). Australia is the leading lithium producer, accounting for half of the global output, followed by Chile (22 per cent) and China (17 per cent). Other countries like Indonesia, the Philippines and Russia are major nickel producers with 30 per cent, 13 per cent and 11 per cent of global output, respectively.[55] The concentration level is even higher for processing operations, with the leading role played by China. However, it is also important to notice that the economic value of global markets for critical materials, as well as the income for individual countries derived from their export, is significantly lower than for oil and for many individual oil-exporting countries. For this reason, most of these materials are less likely to provide producers with political leverage and bargaining power.[56]

Security risks come from the fact Europe has no significant mining and processing capacities for these critical raw materials. For example, Europe

54 Dolf Gielen, "Critical Materials for the Energy Transition", in *IRENA Technical Papers*, No. 5/2021, https://www.irena.org/Technical-Papers/Critical-Materials-For-The-Energy-Transition.
55 Nikos Tsafos, "Safeguarding Critical Minerals for the Energy Transition", in *CSIS Commentaries*, 13 January 2022, https://www.csis.org/node/63621.
56 André Månberger and Bengt Johansson, "The Geopolitics of Metals and Metalloids Used for the Renewable Energy Transition", in *Energy Strategy Reviews*, Vol. 26 (November 2019), Article 100394, https://doi.org/10.1016/j.esr.2019.100394.

produces only around 3 per cent of the overall raw materials required in Li-ion batteries and fuel cells.[57] Since 2011, the Commission has created and updated its list of CRMs, which currently includes 27 materials considered critical due to their relevance for low-carbon and high-tech industries, their scarcity and/or the risk of supply disruption.[58] For example, countries became aware of the dominant role that China had obtained in 2010, when Beijing halted its exports of rare earth elements to Japan following political disputes. At the time, China held almost a monopoly in the export of these elements.

Since then, countries have extensively worked to find and create alternative production hubs, notably in Australia and Africa. A complete decouple seems unlikely given the strong Chinese position in the entire value chain. Yet, the quest for diversification is set to remain a high priority for Western countries. It seems reasonable to think also that China will need to increase its imports of CRMs in the foreseeable future given its climate ambitions, exacerbating the need to find new reserves around the world. Moreover, the EU, along with the other Western countries, needs to address also the overdependence on China in the midstream of CRMs. On this path, Europe should partner with other countries to both expand its production base around the world and work also on the processing side of the supply chains.

The EU should work with other countries to make CRMs a global issue, strengthening political partnership with resource-rich countries to increase production, while reducing concerns over security of supply. Furthermore, the EU should also work with resource-poor countries to increase investments in R&D, recycling and efficiency solutions to reduce reliance from these materials.[59] The formation of clubs and the use of European regulatory power could contribute to securing an adequate and sustainable supply of CRMs. For example, the EU and Canada have set up a strategic partnership on raw materials with a focus on the integration of EU-Canada raw material value chains while specifically enhancing collaboration on science, technology and innovation as well as environmental, social and corporate governance criteria

57 Cynthia El Latunussa et al., *Study on the EU's List of Critical Raw Materials. Critical Raw Materials Factsheets*, Luxembourg, Publications Office of the European Union, 2020, https://doi.org/10.2873/92480.
58 Mark Leonard et al., "The Gepopolitics of the European Green Deal", in *ECFR/Bruegel Policy Briefs*, February 2021, https://ecfr.eu/?p=66950.
59 Luca Franza, Margherita Bianchi and Luca Bergamaschi, "Geopolitics and Italian Foreign Policy…", cit.

and standards.[60]

The EU should particularly consider also the direct consequences on hydrocarbon-producing countries of reducing its fossil fuel imports. Depending on the exact scenario, the Commission expects to reduce its fossil fuels dependency rate substantially and progressively in the run-up to 2050.[61] The EU imports of coal are expected to drop by 71–77 per cent between 2015 and 2030, while collapsing to almost zero after 2030. Oil imports are expected to decline by 23–25 per cent up to 2030 and 78–79 per cent after 2030, while natural gas seems to enjoy a rosier future. Gas imports are expected to decline by 13–19 per cent between 2015 and 2030 and 58–67 per cent after 2030.

Table 2 | Reduction of fossil fuel imports in the EU in line with EGD targets

	2015-2030	After 2030 compared to 2015
Coal	71-77%	Zero
Oil	23-25%	78-79%
Natural gas	13-19%	58-67%

Source: Authors' elaboration on European Commission.

As a result, hydrocarbon producing and exporting countries are expected to see their main revenue source fading. Because of the high fiscal and budget dependence on hydrocarbon revenues in these countries (i.e., rentier states in the Middle East and North Africa, MENA), this scenario could lead to socio-political instability, which could undermine European security and clean energy processes. Particularly, North African oil producers face some additional challenges compared to their peers in the Middle East. For example, North African countries are more reliant on the European energy markets compared to Middle Eastern countries. Furthermore, Gulf countries have traditionally larger financial reserves and sovereign wealth funds to invest in the transformation of the domestic economy. Despite some challenges, MENA countries (North Africa in particular) can benefit in the short and medium term

60 European Commission, *EU and Canada Set Up a Strategic Partnership on Raw Materials*, 21 June 2021, https://europa.eu/!48JMgB.

61 Mark Leonard et al., "The Gepopolitics of the European Green Deal", cit.

from the political urgency to cut Europe's overdependence on Russian gas given their vast hydrocarbon resources, geographical proximity and existing relations. Yet, despite some temporary windfall from high energy prices, MENA hydrocarbon-producing countries need to overcome their chronic challenges (regulatory, infrastructure, market and financial) to fully and finally harness their great renewable potential and possible hydrogen exports in order to find a new place in a clean energy future. While the EU could certainly play a role in supporting these countries along their energy transition, global cooperation is essential as other countries, the US and China for example, are crucial to spur energy transition in the region. On its side, the EU could entangle its security needs with climate ambitions ensuring that enough investment is allocated to the development of renewables in those countries.

b) Enhancing technological capabilities

As climate policies come with industrial policies, the EU seeks to enhance its technological capabilities which will become a crucial component of the new energy geopolitical landscape. Throughout the years, the EU has seen technological leadership in key technologies moving to other countries such as solar panels, batteries and electric vehicles. Through the aforementioned tools, the EU could enhance, protect and foster technological capabilities in the field of green hydrogen and batteries.

Brussels sees some major opportunities in green hydrogen.[62] Green hydrogen has witnessed a new momentum thanks to its feasibility to decarbonise those sectors where electrification has limited potential – such as in the "hard-to-abate" sectors.[63] The EU seeks to achieve a technological leadership in the field after having experienced the loss of its industrial lead in photovoltaics vis-à-vis China. Under its Hydrogen Strategy,[64] the EU seeks to produce up to 1 million

62 Green hydrogen is produced by electrolysers supplied by renewable electricity. Today it represents one of the cleanest options to have hydrogen. Other types of hydrogen are: a) brown hydrogen, produced by fossil fuels and releasing CO_2 emissions; b) blue hydrogen, produced by the combination of brown hydrogen and carbon capture and storage to avoid most of the GHG emissions of the process; c) yellow/pink hydrogen, produced by electrolysers supplied by electricity from nuclear power plants.

63 Traditionally heavy industry, long-haul transportation where electricity and batteries cannot be fully deployed.

64 European Commission, *A Hydrogen Strategy for a Climate-Neutral Europe* (COM/2020/301), 8 July

tonnes of renewable hydrogen and install at least 6 GW of renewable hydrogen electrolysers in the EU by 2024. Between 2025 and 2030, the production should amount to 10 million tonnes and the installed renewable hydrogen electrolysers at least 40 GW, while from 2030 onwards green hydrogen will be deployed at a large scale across all hard-to-abate sectors. Regarding hydrogen trade, the EU is in a different position compared to the US and China. While the other two blocs' hydrogen production could satisfy their domestic consumption, the EU seems to prefer (and need) a different approach considering that EU internal demand might not be necessarily satisfied by internal supply and given the potential role of hydrogen imports. The EU may need to turn to hydrogen imports to meet its decarbonisation targets given its limited land and renewable resources availability. The EU would need to work with the producers on the regulatory side regarding the certification of clean hydrogen imports in line with its climate targets.

Green hydrogen production within the EU, coupled with some hydrogen imports, could become a precious tool to reduce Europe's overdependence on Russian gas as REPowerEU seeks to boost hydrogen production and imports (10 Mt for both) to further accelerate energy transition and wean the EU off Russian gas imports. The current war in Ukraine has changed the energy and political paradigm in Europe, redrawing the green hydrogen geopolitical map. With Russia basically excluded from any potential[65] hydrogen trade scheme towards the EU in the foreseeable future, the relevance of the Southern neighbourhood is expected to grow – with the potential contribution of Persian Gulf countries.[66]

While Europe is currently at the forefront of the global hydrogen race, it will need to foster closer coordination between policy, technology, capital and society in order to maintain its leadership and avoid falling into the traps and inefficiencies of the past.[67] The EU has developed a strong position in the

2020, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52020DC0301.

65 Prior to Russia's invasion of Ukraine, a hydrogen trade scheme between Russia and Europe held potential given existing energy interconnections, long-lasting energy relations as well as climate and energy targets. Therefore, Russia set hydrogen production targets. Political confrontation and international sanctions undermine future hydrogen trade towards Europe.

66 European Commission and EEAS, *A Strategic Partnership with the Gulf* (JOIN/2022/13), 18 May 2022, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52022JC0013.

67 Alejandro Nuñez-Jimenez and Nicola De Blasio, "The Future of Renewable Hydrogen in the European Union Market and Geopolitical Implications", in *Belfer Center Reports*, March 2022, https://

electrolyser manufacturing industry, accounting for roughly half of all such manufacturers; and their component suppliers are mostly European.[68] In short, Europe has the largest manufacturing capacity. Yet, China, which has only recently presented its national hydrogen strategy, has emerged as the leader in electrolyser shipments, being able to produce vastly cheaper electrolysers than Europe.

Europe could face some competition also regarding to the currency used for hydrogen imports. The EU is seeking to denominate its future hydrogen in euros as the Commission believes that this would make the EU less susceptible to the effects of the extra-territorial application of unilateral sanctions by third countries.[69]

Another example is that of batteries, recognised to be a major new market and a strategic asset for the green transition. Indeed, batteries are expected to play a key role as a flexibility[70] source in the future energy system, characterised by higher electrification and a higher degree of penetration of non-dispatchable sources. Batteries will play also a pivotal role for decarbonisation of the road transport sector, which accounts for over 15 per cent of total energy-related CO_2 emission today. The EU approved ending the sale of vehicles with combustion engines by 2035 in the bloc – meaning a de facto halt to sales of petrol and diesel cars as well as light commercial vehicles. Despite its positive environmental benefits, such a measure poses major socioeconomic and geopolitical challenges for the EU's automotive industry[71] as it means a complete shift to electric engines, yet also a necessity in the face of competition from China and the US, which on the other side have bet on electric vehicles as the future of the industry. China in particular, as a result of years of policies to support the development of an integrated domestic supply chain as a strategic industrial sector, dominates the electric vehicle battery production at every stage of the supply chain, accounting for 76 per cent of global capacity in

www.belfercenter.org/node/136110.

68 IRENA, *Geopolitics of the Energy Transformation. The Hydrogen Factor*, Abu Dhabi, IRENA, January 2022, https://irena.org/publications/2022/Jan/Geopolitics-of-the-Energy-Transformation-Hydrogen.

69 Ibid.

70 Another important element for flexibility of energy systems with a high penetration of renewable energy will be robust and well integrated grids.

71 The automotive sector represents over 7 per cent of EU GDP, while providing direct and indirect jobs to 13.8 million Europeans, representing 6.1 per cent of total EU employment.

2021 compared to the EU's 7 per cent and the US's similar percentage.[72] To face such strategic challenges, the EU has a strategic focus on the development of domestic battery supply chain and decided to jointly work with the US. In March 2022, the European Battery Alliance and the US Li-Bridge Alliance announced a collaboration to accelerate the development of Li-ion and next-generation batteries, including CRMs.[73] Indeed, accelerating the uptake of electric vehicles goes hand-in-hand with a massive expansion in the supply of batteries, which will drive up demand for several critical minerals.

3. Key takeaways

1. *Climate spans over some areas where countries can be partners on global action but also others that entail a high level of competition*. Tackling climate change is a key priority of our time, and the current geopolitical crisis – which has shown how energy security and decarbonisation are intimately intertwined – only reinforces the need for a joint, strong and fast multilateral action. Yet, climate policy can yield confrontation as it will transform industrial capacity, power and technological leadership, especially of global economic powers such as the US, EU and China. At the same time, positive competition may contribute to an acceleration for technological solutions to some extent.

2. *All countries – including the three superpowers US, China and the EU – face both opportunities and challenges within the global energy transition*: The US sees the opportunity to lead globally in the fight against climate change, while it risks losing technological and power leadership against China. China has heavily invested in low-carbon technologies, earning a pivotal role in the supply chains. Yet, the competitiveness of China's economy, which is heavily dependent on fossil fuels, remains a concern in case of an ill-managed transition. The EU seeks to lead the transition and has embarked on its ambitious decarbonisation pathway with the adoption of the European Green Deal (EGD), but it must mitigate against possible negative spillovers that its transition might have, both

72 IEA, *Securing Clean Energy Technology Supply Chains*, Abu Dhabi, IEA, July 2022, https://www.iea.org/reports/securing-clean-energy-technology-supply-chains.
73 Ibid.

internally and externally, at the economic, social and political levels. Moreover, with the recent REPowerEU strategy, the EU intends to address the current challenges posed by the gas supply crisis by leveraging the importance of energy efficiency and accelerating the deployment of renewable energies, thus trying to reconcile the issue of energy security with ambitious climate goals. The three have focused their efforts on reducing external vulnerabilities and enhancing domestic autonomy through different but comparable strategies, and need to find an equilibrium between the objective to increase domestic resilience, while preserving a certain degree of external interdependence.

3. *Given their relevance, these three blocs need to work jointly as much as they can to boost a just decarbonisation both within and beyond their borders*. Despite the obvious relevance of the relations among these three superpowers for the success of global climate action, it is important to consider potential consequences of their climate and political decisions on other countries and regions, which often are overlooked. A coherent understanding and approach on a global just transition is needed, and is even more urgent in the context of the current energy crisis.

4. *The EU toolbox can push forward the energy transition globally*, through, among others, climate clubs, interconnectivity investments and its regulatory power. Aware of the high real cost of inaction, the EU has always favoured multilateralism, and climate policy requires global efforts and solutions, stemming also from multilateral frameworks already in place such as UNFCCC, IRENA and the IEA. In this context, the EU could use its regulatory power to encourage other countries to set common standards on clean energy sources or efficiency measures. Moreover, it needs to put in place interconnectivity investments, especially in its neighbourhood, to help support other countries' decarbonisation efforts. At the same time, the EU could work with its partners through climate clubs to accelerate energy transitions and technological developments as well as to induce other countries to implement their climate targets.

5. *The EU could apply its tools to redraw win-win energy relations, such as in the case of green hydrogen and batteries*: The energy transition and the EGD will redraw energy relations creating new interdependencies (such as in the case of CRMs) and altering old ones (such as in the case of oil and gas exporting

countries). In both cases, taking into account other global actors' positioning, the EU needs to create adequate frameworks and solutions to reduce potential risks and provide win-win solutions in order to encourage decarbonisation solutions in its partner countries.

The External Dimension of the Green Deal, between Cooperation and Competition

Over the past years, climate has gained a general consensus globally. Several actors, notably the European Union, the USA and China, have pledged to reach climate neutrality by and around mid-century. Simultaneously, climate has also become a major political issue at a time of escalating great power rivalry. Climate policy requires cooperation to tackle such a global issue, yet it entails a high level of competition over several areas. The EU has been at the front line with increasing climate ambitions, symbolised by its European Green Deal (EGD). The EGD will fundamentally reverberate beyond European borders. The EU could use several tools to push forward the energy transition globally, such as multilateralism and climate clubs, interconnectivity investments and its regulatory power among others. The EU could apply these tools to redraw energy relations, providing win-win solutions to its partners and neighbours, such as in the case of green hydrogen.

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ISBN 978-88-9368-272-5

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