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ARTICLE

Climate, energy and trade in EU–China relations: synergy or conflict?

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Abstract This article aims at assessing the state of Sino–European energy relations in light of the common challenges they face in the areas of energy security and sustainability, while providing some insight on whether international trade rules are well-equipped to encourage and facilitate cooperation, on the one hand, and defuse potential conflicts, on the other, between China and the EU. Section 1 introduces the topic. Section 2 gives an account of the climate and energy profiles of both China and the EU with a view to highlighting their shared interests in the field and the potential for synergies in the areas of energy security and energy sustainability. Section 3 illustrates how energy cooperation between China and the EU has evolved over the years and identifies its main strengths and weaknesses. Section 4 discusses the role that international trade rules can play in fostering China–EU energy cooperation and provides a case study on the how World Trade Organization (WTO) rules on export restrictions could enhance energy security. This is followed by some conclusions on the potential of the WTO system to advance Sino–EU energy relations and, more generally, global energy governance.

Keywords China · EU · Energy security · Energy sustainability · WTO · Export restrictions

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1 Introduction

China and the European Union (EU) are global energy players facing similar strategic and practical challenges. As large energy consumers with limited resources endowment, they are experiencing growing foreign dependency on imports of fossil fuel sources, which makes them vulnerable to energy security problems.[1] At the same time, they rank first and third, respectively, in terms of carbon dioxide (CO_2) emissions produced worldwide, cumulatively accounting for more than one third of global energy-related CO_2 emissions.[2] Accordingly, they have both strongly committed to ambitious renewable energy (RE) targets in an attempt to decarbonise their energy portfolios and fight climate change.[3] While confronted with basic common concerns such as energy security and sustainability, China and the EU also compete at different levels in the energy field. On the one hand, they are major net importers of primary energy commodities that often rely on the same suppliers and very limitedly trade energy commodities between each other.[4] This circumstance carries the risk of turning them into 'rivals', which compete to secure access to key energy resources around the world.[5] On the other hand, they both heavily invest in RE projects and have large and rapidly growing clean energy markets.[6] This could lead to the potential emergence of trade tensions as they strive to gain a leading position in the world production and exportation of key RE technologies and equipment.

This ambivalence could affect the trade relations between China and the EU in the field of energy despite the great potential for mutually beneficial cooperation in fostering climate-driven energy transition patterns.[7] Against this backdrop, this article aims at assessing the state of Sino–European energy relations in light of the common challenges they face in the areas of energy security and sustainability, while providing some insight on whether international trade rules are well-equipped to encourage and facilitate cooperation, on the one hand, and defuse potential conflicts, on the other, between China and the EU. Section 2 gives an account of the climate and energy profiles of both China and the EU with a view to highlighting their shared interests in the field and the potential for synergies in the areas of energy security and energy sustainability. Section 3 illustrates how energy cooperation between China and the EU has evolved over the years and identifies its main strengths and weaknesses. Section 4 discusses the role that international trade rules can play in fostering China–EU energy cooperation and provides a case study on the how World Trade Organization (WTO) rules on export restrictions could enhance energy security. This is followed by some conclusions on the

[1] Europe-China Clean Energy Centre (2015), p. 27.

[2] European Commission (2016), p. 14; International Energy Agency (2015), p. 26.

[3] See European Commission (2014) and U.S. Energy Information Administration (2015).

[4] Europe-China Clean Energy Centre (2015), p. 27 and Europe-China Clean Energy Centre (2015), p. 17. See also Daojioing (2013), p. 2.

[5] Robinson (2013), p. 20.

[6] See Ghosh and Gangania (2012).

[7] Europe-China Clean Energy Centre (2015), pp. 10–11.

potential of the WTO system to advance Sino–EU energy relations and, more generally, global energy governance.

2 China and the EU as global energy players

China and the EU are important players in the global energy landscape. They account for around one-third of the world's entire energy consumption and more than one-third of global energy-related CO_2 emissions.[8] Due to their strong foreign dependence on fossil energy supply and the heavy carbon footprint of their energy sector, energy security and sustainability have figured prominently in the agenda of both China and the EU.[9] While this may suggest that they share a common interest in cooperating on issues of global energy governance, increasing imbalances of energy supply and demand and current geopolitical tensions on energy could lead to increasing energy competition between them.

2.1 Energy portfolios and foreign fossil fuel dependency

China and the EU are among the world's largest energy consumers. China is the world's largest energy consumer since 2011, and accounted alone for 22.4% of the world's final energy consumption in 2014.[10] The EU is the world's third greatest energy consumer after China and the United States, and accounted for 11.4% of global final energy consumption in 2014.[11] Both actors are increasingly dependent on imported fossil fuels, which remain the main source of energy in their consumption portfolios.

China's overall energy consumption mix is heavily dominated by coal, which still accounts for 66% of total consumption based on 2012 data, whereas oil contributes to almost 20% of the country's overall energy consumption. Despite China's commitment to energy diversification, less carbon-intensive sources such as hydroelectric sources (8%), natural gas (5%), nuclear power (nearly 1%), and other renewables (more than 1%) continue to represent a minor share of China's total consumption.[12]

On a similar note, the EU relies on fossil fuels to meet around 72% of its total energy needs. According to 2014 figures, oil is the largest source, providing 34% of total energy consumption. The second-largest source is, however, natural gas (21%), followed by coal (17%).[13] Nuclear power accounts for a much larger share of EU's energy consumption compared to China (14%), as do renewable energy sources with a total share of 16%.[14]

[8] European Commission (2016), p. 14 and p. 18.

[9] Ibid., p. 10.

[10] U.S. Energy Information Administration (2015), p. 2.

[11] European Commission (2016), p. 13.

[12] U.S. Energy Information Administration (2015), p. 2.

[13] In 1995, oil accounted for 39% of the EU's overall energy consumption, followed by coal (22%) and natural gas (20%). European Commission (2016), p. 22.

[14] See Eurostat (2016).

The situation described above translates into a heavy dependence on imports of fossil fuel energy. Based on 2014 data, the EU imports more than 87% of the oil it consumes, 67% of its natural gas and 45% of its coal consumption. The Russian Federation is by far its greatest source of primary energy resources, providing 30% of total oil imports, 37.5% of overall natural gas imports, and 29% of global coal imports in 2014. Norway is the second-largest source of oil and natural gas supplies, accounting for 13% and almost 32% of total EU imports in 2014, respectively. Other major oil exporters to the EU are Nigeria (9%), Saudi Arabia (9%), Kazakhstan (6%), Iraq (5%), Azerbaijan (4%) and Algeria (4%). As to natural gas imports, other significant partners in addition to the Russian Federation and Norway are Algeria (12%), Qatar (7%), Libya (2%) and Nigeria (5%). With respect to coal imports, the EU also relies on Colombia (21%), the United States (20.5%), South Africa (10%), Australia (9%), Indonesia (3%) and Canada (2.5%).[15]

Despite being a net exporter of primary energy supplies until the 1990s, China transformed into the largest energy consumer economy at the beginning at the 2010s. China has been the world's second-largest oil consumer after the United States since 2009, and the largest net oil importer since 2014.[16] The three largest sources of China's oil imports are Saudi Arabia, Angola, and the Russian Federation, accounting for 16%, 13% and 11% of total oil imports, respectively. Other significant partners are Oman (10%), Iraq (9%), Iran (9%), Venezuela (4%), the United Arab Emirates (4%), and Kazakhstan (4%).[17] China's natural gas imports already account for almost one-third of its domestic consumption despite the relatively minor share in China's current energy consumption mix.[18] Half of China's gas imports are in the form of liquefied natural gas (LNG), mostly coming from Qatar (34%), Australia (24%), Malaysia (15%) and Indonesia (12%). Other LNG exporters are Yemen, Nigeria, Equatorial Guinea and Algeria, cumulatively accounting for 13% of total Chinese LNG imports. In addition, China imports natural gas via international pipelines mainly from Central Asia (Turkmenistan, Uzbekistan, and Kazakhstan) and Myanmar.[19] Moreover, China National Petroleum Corporation and Gazprom recently closed a landmark gas supply deal, according to which the Russian Federation will become a key natural gas supplier for China starting in 2018.[20] Finally, China is also the world's top coal producer, consumer and importer, and accounts for about half of global coal production and consumption.[21] China also became a net coal importer as from 2009 due to rising

[15] European Commission (2016), pp. 24–26.

[16] China's foreign oil dependence is almost 60%. Europe-China Clean Energy Centre (2015), p. 27.

[17] U.S. Energy Information Administration (2015), p. 11.

[18] Europe-China Clean Energy Centre (2015), p. 27.

[19] U.S. Energy Information Administration (2015), pp. 21–22.

[20] The US$400 billion gas supply deal was signed in May 2014 after a decade of negotiations between China's National Petroleum Corporation and the Russian national champion Gazprom. Under this agreement, Russia will start exporting 1.3 trillion cubic feet of natural gas per year to China for a span of thirty years starting in 2018. Ibid., p. 22.

[21] U.S. Energy Information Administration (2015), pp. 26–28.

domestic demand. Indonesia and Australia supply more than 65% of China's coal imports.[22]

2.2 The carbon footprint of the energy sector

China and the EU altogether account for more than one-third of global energy-related CO_2 emissions.[23] China, the world's largest energy-related CO_2 emitter, accounts alone for 27.4% of global CO_2 emissions according to 2013 data.[24] The EU ranks third among the top global polluters, contributing to almost 11% of CO_2 emissions worldwide.[25] Accordingly, both players have intensified efforts towards emissions abatement in the context of comprehensive policy frameworks for energy and climate change.

Under China's National Plan for Climate Change 2014–2020, released by the National Development and Reform Commission in late 2014, the Chinese government reiterated its commitment to stabilize CO_2 emissions in accordance with the key targets announced in the 12th Five-Year Plan (2011–2015). These include: (1) abating CO_2 emissions by at least 40% between 2005 and 2020; (2) increasing non-fossil fuel resources to 11.4% of primary energy consumption by 2015; (3) reducing energy intensity by 16% between 2010 and 2015; and (4) reducing carbon intensity by 17% between 2010 and 2015.[26] Coherently with such goals, the Energy Development Strategy Action Plan 2014–2020, launched in 2014, not only includes a cap on annual primary energy consumption, which is set at 4.8 billion tonnes of the standard coal equivalent until 2020, but also caps coal use below 4.2 billion tonnes until 2020 and sets a 15% share of non-fossil fuels in the total primary energy mix by 2020.[27] In addition, China plans to raise the share of natural gas to above 10%, construct new nuclear power plants in eastern coastal areas, and tighten energy efficiency measures.[28]

China's efforts have in particular focused on the de-carbonization of the electricity sector, inasmuch as power generation still accounted for almost 43% of China's total CO_2 emissions in 2014 due to heavy predominance of coal (56% in 2014).[29] Current estimates indeed predict a significant switch towards renewable sources in China's installed electricity capacity by 2040 compared to actual levels, with clean sources projected to account for 35% of total installed capacity altogether.[30] Accordingly, the Chinese government is also investing in grid development, regional integration and measures aimed at ensuring flexibility in the

[22] Ibid., p. 27.

[23] European Commission (2016), p. 18.

[24] Ibid. and U.S. Energy Information Administration (2015), p. 2.

[25] European Commission (2016), p. 18.

[26] Li (2014).

[27] Xinhua News (2014).

[28] U.S. Energy Information Administration (2015), p. 2.

[29] Ibid., p. 30 and Sun et al. (2016), p. 826.

[30] U.S. Energy Information Administration (2015), p. 32.

transmission system, particularly during peak times.[31] In parallel, China is taking action on reducing CO_2 emissions in energy-intensive industries and in construction on a priority basis, including regional emission trading schemes.[32]

The EU adopted its first package of climate and energy measures in 2008. This set of measures launched the so-called '20/20/20 targets', namely the achievement of a 20% reduction of GHG emissions by 2020 compared to the levels in 1990, a 20% share of renewable energy, and a 20% improvement in energy efficiency.[33] To meet these targets, the EU has adopted a wide array of climate and energy policies, which have already allowed it to reduce GHG emissions by 18% in 2012 compared to the levels of 1990, to increase the share of renewable energy in its overall energy consumption mix to 13% in 2012, and to reduce its energy intensity and carbon intensity by respectively 24 and 28% between 1995 and 2010.[34]

While the EU is projected to over-achieve its 20/20/20 targets, the European Council approved a set of more ambitious targets in late 2014 in the context of a new European policy framework for climate and energy for the period from 2020 to 2030.[35] Under such framework, the EU committed to reduce GHG emissions by 40% compared to the levels of 1990, increase its share of renewable energy by 27%, and improve the level of energy savings by 27–30% by 2030. Accordingly, the EU has developed a plan to reform and strengthen its emission trading scheme (ETS), which covers around 45% of the EU's greenhouse gas emissions and is expected to deliver a reduction of 21% by 2030 relative to emissions in 2005.[36] It also recently launched the Energy Union policy[37] and, within such framework, the European Commission has developed the so-called Clean Energy for All European package.[38]

Similar to China, the EU energy transition is expected to be led by the power sector. According to the European Environment Agency, renewable energy sources in the EU territory are developing fastest in the power sector compared to any other sector.[39] Recently released data, in particular, confirm that renewables already generated 27.5% of the EU's electricity in 2014 and they are projected to account for as much as 50% by 2030.[40]

[31] Ibid., p. 30. On the importance of network development to facilitate the integration of increasing share of renewables into the grid, see Cottier and Espa (2017), pp. 1–14.

[32] U.S. Energy Information Administration (2015), p. 2.

[33] European Commission (2017a).

[34] European Commission (2014), p. 1.

[35] Ibid. pp. 1–18 and European Council (2014).

[36] European Commission (2014), p. 5. See also European Parliament (2017).

[37] European Commission (2015).

[38] European Commission (2017b).

[39] Eurelectric (2015), p. 18.

[40] European Commission Fact Sheet (2017).

3 Energy cooperation in Sino–European relations

The analysis above shows that China and the EU are, on the one hand, leading energy consumers worldwide, which heavily rely on foreign imports of fossil fuels. Such dependence brings into the picture the issue of energy security, which both China and the EU have to face, at the least in the short- to medium-term, in a world of increasing global geopolitical uncertainty. On the other hand, China and the EU are front-runners in the race to a low-carbon energy transition and have therefore sought to achieve energy sustainability through ambitious climate change policies centred on RE promotion. Albeit instrumental to the goal of diversification of energy supply, RE promotion poses challenges of its own, making infrastructure development (namely, physical interconnections) and regional integration crucial for both actors, while at the same time requiring solutions based on technological advancement and innovation.[41]

In light of the foregoing, there is huge room for Sino–European cooperation in the energy sector inasmuch as they do face common concerns. Cognizant of such opportunities, China and the EU have long engaged in multi-level dialogues, partnerships and projects in the field, and energy is indeed one of the oldest areas of EU–China cooperation.[42] At the same time, however, the unprecedented nature of the challenges they face has made effective cooperation difficult to materialize at all levels that would be desirable owing to a whole range of factors, from existing gaps in the respective visions on energy cooperation through lack of adequate funding and communication to differences in cultural, economic and political systems.[43] Identifying critical areas for future cooperation in this perspective is thus essential in order to defuse any potential conflict on energy between China and the EU.

3.1 Evolution of the China–EU energy cooperation

China and the EU have engaged in energy cooperation efforts since the early stages of their diplomatic relations.[44] The cooperation mainly relied on a few technical assistance programmes and best practices sharing at first. More institutionalised cooperation models and mechanisms have however developed throughout the decades, and energy is now the second most important area of cooperation between China and the EU.[45] Accordingly, the paradigm of China–EU relations in the energy sector is evolving from development aid to joint action-oriented partnership, allowing from a much wider set of cooperation projects to unfold, from more traditional government-led projects to business-to-business projects and joint research projects.[46]

[41] Cottier and Espa (2017), pp. 21–43.

[42] Europe-China Clean Energy Centre (2015), p. 13.

[43] Ibid., pp. 17–19.

[44] Ibid., p. 13.

[45] Ibid., p. 22.

[46] Ibid., pp. 16–18.

This paradigm shift has been possible thanks to the consolidation and gradual institutionalisation of various cooperation mechanisms relying on policy dialogue.[47] The EU-China Energy Dialogue was established back in 1994. Under this framework, an EU-China Energy Conference is organized bi-annually with the participation of government and stakeholder representatives, whereas a High-Level Energy Working Group, established in 2005, provides China's National Energy Administration and the Directorate-General (DG) for Energy of the European Commission with an institutionalised mechanism to discuss issues on a continuous basis.[48] The range of topics addressed through this dialogue include energy industry development planning, imbalances of energy supply and demand, energy conservation and clean energy technology.[49] Significantly, the scope of cooperation has also recently expanded to include the issue of energy security. This breakthrough was achieved in 2012, when China's National Energy Administration and DG Energy launched the first EU-China High-Level Meeting in Brussels and signed the Joint Declaration on Energy Security.[50] It has since then being fuelled through the creation of the EU-China Energy Security Working Group and the Joint Energy Security Cooperation Roadmap.[51] Finally, the Partnership on Urbanisation was recently launched with a view to provide an open exchange mechanism for Chinese and European stakeholders on the multi-dimensional challenges of sustainable urbanisation.[52]

In addition to the formal cooperation mechanisms just described, more flexible policy dialogues have developed around the conclusion of specific agreements and statements on energy between China and the EU. Examples include the two Action Plans on Clean Coal Technology and on Industrial Cooperation on Energy Efficiency and Renewable Energy (2005), the EURATOM-China Agreement for Research and Development Cooperation in the Peaceful Uses of Nuclear Energy (2008), the Memorandum of Understanding on a Dialogue and Consultation Mechanism on Industrial Sectors (2009), later supplemented by a Working Group on Industrial Energy Efficiency and Greenhouse Gas Emissions Reduction (2010), the Dialogue on Energy Performance and Quality in the Construction Sector (2010), and the Joint Statement for Enhanced Cooperation on Electricity Markets (2012).[53]

Reflecting the diversity of the issues addressed within the framework of EU–China energy dialogues, the cooperation between the two actors has gradually embraced various additional cooperation models such as capacity building, scientific research, technology demonstration projects, and market development projects.[54] Capacity building is a regular feature of EU–China cooperation projects in a wide range of areas, from grid integration to energy efficiency standards. It has

[47] De Matteis (2010).

[48] Europe-China Clean Energy Centre (2015), p. 13.

[49] Ibid.

[50] *EU-China Joint Declaration on Energy Security* (2012).

[51] For more details, see infra, Sect. 3.2.

[52] Europe-China Clean Energy Centre (2015), p. 14.

[53] Ibid., pp. 15–16.

[54] Ibid., p. 20.

helped China keeping the pace with latest innovations in energy-related technologies, while at the same time promoting the EU's normative influence in China thanks to expertise and know-how transfer on the part of its energy companies.[55] Scientific research is a very active field of cooperation and has mainly focused on energy technology innovation, particularly in areas such as sustainable energy, nuclear energy and energy efficiency, due to prominence of energy sustainability in both the Chinese and the EU climate agendas.[56] Technology demonstration projects are also a recurring feature of Sino–European energy relations. While they have mainly consisted of practical, result-oriented projects realised in China by European counterparts, ambitious co-creation projects have also lately started being implemented by businesses from both sides with the cooperation of policy makers.[57] Finally, the convergence between the Chinese and European sustainability agendas has created a huge potential for business-to-business partnerships between EU companies and Chinese private actors and/or state-owned enterprises for common market development projects. Such potential is however still untapped considering the ongoing transition towards a more balanced cooperation modality between China and the EU, on the one hand, and the still significant barriers encountered by EU businesses when accessing the Chinese clean energy market, on the other hand.[58]

3.2 Cooperation in the field of energy security

As mentioned above, the cooperation between China and the EU in the energy sector has recently reached a more mature stage, which allowed to include energy security among the core areas of collaboration. The turning point in this respect was the 2012 EU–China High Level Meeting organized in Brussels, where the representatives of both sides signed the Joint Declaration on Energy Security.[59] This Declaration is considered a landmark step forward inasmuch as China and the EU recognized that, 'with high levels of global energy consumption, in particular of fossil fuels, and the volatility of oil prices on international markets, the sustainability of [their] energy security and socio-economic development is increasingly an issue of *mutual* concern'.[60] In other words, the Declaration moves from the premise that the imbalances between energy supply and demand and the geopolitical tensions experienced in international markets shall be seen as an opportunity for furthering energy cooperation and achieve 'mutually beneficial objectives' rather than turn China and the EU into potential rivals.

Accordingly, the Declaration affirms both sides' commitment to 'engage into a strategic energy consumer partnership through aligning concepts of energy security, increasing exchanges about energy infrastructure construction and promoting open

[55] Ibid., pp. 21–22.

[56] Ibid., p. 22.

[57] Examples include the Smart Cities project. Ibid., 23. See also pp. 24–25.

[58] Ibid., pp. 23–24.

[59] *EU-China Joint Declaration on Energy Security* (2012).

[60] Ibid., para. 1.

dialogue and cooperation'.[61] At the same time, cognisant of the importance of the development of renewable energy sources for the diversification of energy supplies and, thus, the achievement of energy security goals, China and the EU agreed to 'further enhance dialogue on climate change related domestic policies and share experiences on specific climate change mitigation',[62] 'enhance cooperation on comprehensive use of renewable energy, grid access and distributed use',[63] and 'strengthen the exchange and cooperation and the development of low-carbon urban energy systems, including energy-efficient buildings, clean urban transportation and the integration of distributed renewable energy in urban setting'.[64] Other priority fields of cooperation include energy conservation and efficiency[65] and nuclear energy,[66] as well as research and innovation.[67]

Finally, China and the EU agreed to promote together '[r]ule-based energy governance…at global level'.[68] Accordingly, they committed to promote 'the incorporation of internationally recognised norms and standards given by legally binding international treaties which [they] have entered into their respective national legislation'.[69]

The Declaration's pledges were followed up through the creation of the EU-China Energy Security Working Group in 2013. During its first meeting, held in Beijing, the Working Group launched the Joint Energy Security Cooperation Roadmap. Similar to the 2012 Declaration, the priority areas of cooperation identified therein include infrastructure development, smart grids and renewable energy technologies (e.g. offshore wind power, solar thermal utilisation), the integration of renewables into the grid and the safe management of large-scale power grids.[70] Along the same lines, China and the EU signed a new Declaration on Energy Security at the occasion of the sixteenth EU-China Summit organized in 2013.[71]

Importantly, both sides have stressed the need for improved global energy governance all throughout.[72] Such a consistent feature in the definition of the respective commitments speaks of an increased awareness that energy security cooperation may constitute an occasion to promote the advancement of global disciplines in a way that is responsive to their common concerns as major energy consumers. In this respect, one of the multilateral fora where the EU and China

[61] Ibid., para. 4.

[62] Ibid., para. 2.

[63] Ibid., para. 8.

[64] Ibid., para. 9.

[65] Ibid., para. 7.

[66] Ibid., para. 6.

[67] Ibid., para. 11.

[68] Ibid., para. 5.

[69] Ibid., para. 5.

[70] Europe-China Clean Energy Centre (2015), p. 14.

[71] Ibid.

[72] Ibid.

could further promote mutually beneficial solutions on energy issues of common interest is the WTO.

3.3 Cooperation in the field of energy sustainability

As major energy consumers and large polluters, China and the EU have been front-runners in the global search for effective climate change mitigation strategies. In the energy sector, the quest for sustainability has revolved around the promotion of renewable energy development, which has created huge needs for investment, on the one hand, and opened up vast opportunities for businesses, on the other.[73]

Accordingly, renewable energy promotion has figured prominently in the agenda for energy cooperation between China and the EU. Treated as instrumental to achieving energy security and sustainable development in EU–China policy dialogues,[74] renewable energy has also become one of the most developed areas of cooperation in joint scientific research projects and capacity building programmes undertaken within the framework of the Sino–European energy relations.[75] In parallel with the gradual shift of the EU–China cooperation model in the sector, moreover, most technology demonstration projects and common market development projects have focused on the development of renewable energy technologies as a means to accelerate the transition towards a greener, yet still competitive economy on both sides.[76] Ambitious projects in this respect include the recently launched EU–China Urbanisation Partnership, which aims at promoting city matching with a view to develop an integrated approach to urbanisation and sustainability.[77]

Despite latest progress, cooperation in the field of renewable energy technology cooperation remains underdeveloped.[78] This is due to several types of constraints: first, technology advancements require massive investment, but not all the renewable energy industries are yet competitive enough under current market conditions to mobilize the amount of financial resources needed; second, technical constraints hamper the deployment of renewable energy to its full potential owing to insufficient grid (inter)connection capacity or infant energy storage capacity technologies; third, still existing market access barriers on both sides reduce the attractiveness of cooperation for businesses operating in the field, inasmuch as private companies encounter difficulties in exploiting each other's large markets.[79]

With a view to address these areas of criticality, China and the EU recently signed the EU-China Roadmap on Energy Cooperation (2016–2020).[80] The

[73] European Commission Fact Sheet (2017); U.S. Energy Information Administration (2015).

[74] See above, Sect. 3.2.

[75] Europe-China Clean Energy Centre (2015), pp. 21–22.

[76] Ibid., pp. 23–24.

[77] Ibid., pp. 24–25.

[78] Ibid., p. 19.

[79] Ibid., pp. 28.

[80] *EU-China Roadmap on Energy Cooperation (2016–2020)* (2016).

roadmap includes a specific section on 'Renewable Energy Sources', which lists a series of goals aimed at strengthening the renewable energy technology cooperation between China and the EU.[81] The introductory paragraph to the section, in particular, reaffirms that both actors share 'common interests in the pursuit of energy security, cleaner technologies and renewable energy sources'. Accordingly, a series of priorities for China–EU cooperation in the field are then identified.

First, the roadmap encourages both sides to foster 'trade and investment in renewable investment'.[82] Importantly, the link between trade and investment is formally acknowledged to the extent that financial resources can be efficiently allocated where and insofar as market opportunities can be exploited by investment companies. Coherently with this vision, the roadmap predicts that such a strategy would lead to increased competition and thus decreased costs for renewable energy technologies.[83] Furthermore, the roadmap seeks to advance the cooperation in the area of infrastructure development as a means to create the conditions for the integration of increasing shares of renewables into the grid.[84] Section A, para. 2, in particular, mandates to 'explore opportunities of distributed energy generation' and to 'promote the further development of intelligent, flexible and more reliable distribution networks', namely networks that can adjust for the necessities of variable and decentralised renewable generation. The development of distributed power generation is also considered crucial for promoting cooperation in less developed and underdeveloped regions.[85] In the same perspective, the development and the implementation of cogeneration of electricity based on renewable energy sources is also envisaged, as well as the parallel construction of infrastructure and the market for district heating and cooling.[86]

In conclusion, the China–EU cooperation in the field of renewable energy carries huge potential but yet remains to be fully explored. Despite the existence of several gaps in the way the two actors operatively approach different priorities,[87] the convergence between China's and EU's agendas on energy sustainability, on the one hand, and the ripe stage of China–EU energy relations, on the other hand, have created a landmark opportunity in this respect. The progressive implementation of joint partnerships and business-to-business projects is not only contributing to the further deployment of renewable energy at cheaper costs but also gradually promoting increased access into each other's (large) markets. With time, moreover, it is also expected to create the conditions for China and the EU to jointly explore third green products markets.[88] Put it differently, strengthening renewable energy technology cooperation will ultimately play a key role in making China and the EU more competitive in the broader international market for clean energy and more

[81] See ibid., Section A, para. 1.

[82] Ibid., Section A, para. 1 (a).

[83] Ibid.

[84] See Cottier and Espa (2017).

[85] Europe-China Clean Energy Centre (2015), p. 28.

[86] *EU-China Roadmap on Energy Cooperation (2016–2020)*, Section A (b).

[87] Europe-China Clean Energy Centre (2015), p. 17.

[88] Ibid., p. 17.

interested in jointly exploiting all of the mutually beneficial advantages arising out of their front-running efforts in the field.[89]

4 The relevance of the WTO system for Sino–European energy relations

The analysis above has identified three main features of China–EU energy cooperation. First, the cooperation has developed along two main axes: energy security and energy sustainability. Second, these two areas carry the highest potential for cooperation due to the convergence of China's and EU's interests as regards access to energy resources and renewable energy development. Third, unexplored and/or unsuccessful cooperation efforts between China and the EU in the areas of energy security and energy sustainability may still leave room to tensions and potential conflicts, given that pursuing coincident interests on an individual basis may turn them into rivals in the international market.

In light of the foregoing, this section investigates whether the WTO system has proved instrumental in fostering the China–EU energy cooperation, as it stands now, and whether it has the potential to defuse any potential conflicts that may arise out of underdeveloped sub-areas of collaboration. Because of the complexity of WTO law, and the many areas where existing international trade rules may be relevant for defining energy cooperation between China and the EU, this section focuses on one case study, namely the analysis of whether WTO rules on export restrictions have been instrumental to serving the common energy security interests of China and the EU. The choice of energy security as an illustrative example is driven by three considerations. First, the issue of energy security has prompted the cooperation between China and the EU to a new, more mature level. Second, energy security has also clearly inspired a closer cooperation on the energy sustainability front.[90] Finally, the adequacy of the WTO system to ensure energy security can be assessed relatively simply by looking at the WTO rules that regulate the use of export restrictions.[91]

4.1 The case of energy security

Energy security of large fossil fuel importers such as China and the EU depends on access to foreign energy commodities in the international market. Access may be hampered by the use of barriers applied on the exportation on the part of energy-producing countries. Albeit traditionally biased towards the regulation of import barriers,[92] the WTO rulebook does contain rules on the use of export restrictions in

[89] Ibid., p. 28.

[90] See above, Sect. 3.3.

[91] See below, Sect. 4.1. This is much more difficult for the energy sustainability field, as this would require an assessment of a broad range of international trade rules, from subsidies to trade remedies. These topics are addressed separately in the next articles of this Special Issue.

[92] For these aspects see Gardner (1980).

the General Agreement on Tariffs and Trade (GATT). Such rules are applicable to trade in goods and, therefore, to trade in energy products too.[93]

Interestingly, WTO rules on export restrictions have recently been invoked to challenge China's regime of export restrictions on raw materials in three different disputes.[94] In all cases, the EU is a complainant party. Significantly, however, none of the disputes concern energy commodities.

4.1.1 Brief overview of WTO disciplines on export restrictions

Under Article XI:1, the GATT distinguishes export duties or taxes (namely, price measures that operate by increasing the prices of exports) from quantitative restrictions (QRs) on the exportation (that is, quantity measures, such as export bans and export quotas, which limit the quantity of a good to be exported).[95] The latter are outlawed outright, whereas export duties or taxes fall outside the scope of the elimination obligation:

> No prohibitions or restrictions *other than duties, taxes or other charges*, whether made effective through quotas, import or export licences or other measures, shall be instituted or maintained by any contracting party on the importation of any product of the territory of any other contracting party or on the exportation or sale for export of any product destined for the territory of any other contracting party (emphasis added).

4.1.1.1 Treatment of export QRs The general elimination obligation imposed under Article XI:1 GATT has been consistently interpreted in a broad manner in GATT/WTO case law.[96] In particular, the WTO dispute settlement bodies have made clear that the scope of Article XI:1 does not solely cover formal quantitative restrictions, such as export quotas, but also any types of 'restrictions',[97] irrespective of their legal status or their de jure or de facto nature, as long as they have a limiting or restrictive effect on the volume of exports. Accordingly, a variety of measures other than export quotas have been considered to fall within the remit of Article

[93] See Marceau (2009), pp. 25–26.

[94] *China—Raw Materials* (Panel and Appellate Body Reports), *China—Rare Earths* (Panel and Appellate Body Reports) and *China—Raw Materials II* (Panel Report pending).

[95] For a more detailed classification of the various types and categories of export restrictions, see Fliess et al. (2014), p. 40.

[96] At the time of writing, six cases have dealt specifically with quantitative restrictions on exports under Article XI:1 GATT: *Canada—Herring and Salmon*, *Japan—Semiconductors*, *Argentina—Hides and Leather*, *China—Raw Materials, China—Rare Earths,* and *China—Raw Materials II*. While the latter dispute is pending, all the measures challenged so far were considered to fall within the meaning of 'prohibitions or restrictions…on the exportation' under Article XI:1 GATT. For a thorough analysis of Article XI:1 GATT jurisprudence on the export side, see Espa (2015), pp. 169–179.

[97] The term 'prohibitions' unambiguously applies to measures that impede exports outright (i.e. export bans). Hence, it has not created interpretative problems. Ibid., p. 170.

XI:1 GATT, from non-automatic export licensing schemes to minimum export prices.[98]

When it comes to the energy sector, Article XI:1 GATT could play a role with respect to production quotas such as the ones imposed by the Organization of the Petroleum Exporting Countries (OPEC) as part of its range of supply management policies. Until now, the issue of whether such measures are covered under Article XI GATT has not been settled. In particular, WTO dispute settlement bodies have never ruled on what constitutes a measure imposing a restriction 'on the exportation'. On one occasion, the Panel did clarify the concept of a restriction 'on importation' under Article XI:1 GATT. It concluded that it not only encompasses 'border measures', or measures relating to the actual 'process' of importation, but covers any form of limitation imposed on, or in relation to importation.[99] In particular, it posited that it is the 'nature of the measure as a restriction in relation to importation which is the key factor to consider in determining whether a measure may properly fall within the scope of Art. XI:1'.[100] If applied to the export side, this conclusion would suggest that production quotas may fall under the scope of Article XI:1 GATT, especially in light of the broad interpretation of the term 'restriction' given in existing WTO case law.[101]

4.1.1.2 Treatment of export taxes Together with import tariffs, export duties or taxes are explicitly left outside of the scope of the general elimination obligation prescribed under Article XI:1 GATT. In contrast to the legal treatment of import tariffs, however, the GATT does not explicitly envisage a mechanism for scheduling and binding export duty concessions *à la* Article II:1 (b), although Article XXVIII (*bis*) encourages WTO Members to negotiate import and export duty commitments alike. In other words, WTO Members bound exclusively by GATT obligations remain free to assume export duty concessions in their GATT schedules following the same procedure used for import tariffs. Once included in GATT schedules, such concessions are binding and legally enforceable by virtue of Article II:1(a) and Article II:7,[102] and could be subject to the deconsolidation procedure under Article XXVIII.[103]

WTO Members bound exclusively by GATT obligations have however refrained from scheduling export duty commitments with the only exception of Australia.[104]

[98] In *China—Raw Materials*, in particular, the Panel clarified that "the very *potential* to limit trade constitute[s] a 'restriction' within the meaning of Article XI:1 of the GATT 1994". Panel Report, *China—Raw Materials*, para. 7.1081 (original emphasis).

[99] *India—Measures Affecting the Automotive Sector* (Panel Report), paras. 7.254–7.263.

[100] Ibid., para. 7.261.

[101] Cottier et al. (2011), p. 235. However, some authors pointed out that this would significantly hamper the principle of sovereignty over natural resources. Crosby (2009), p. 84. Others submit that it would create a conflict between WTO rules and OPEC rules. Farah and Cima (2013).

[102] Ehring and Chianale (2012), pp. 112–117.

[103] Matsushita (2011), p. 273; Qin (2012), pp. 1160–1161.

[104] Australia has negotiated export duty concessions in its GATT schedule by inserting an ad-hoc note referring to 11 HS 8-digit tariff lines—accounting for a predominant share of its exports of mineral products (that is, iron ore, titanium ore, zirconium ore, coal, peat, coke, refined copper, unwrought nickel, nickel oxide, and lead waste and scrap)—in Section 2 of Part I of its Schedule on "MFN [most-favoured nation] import tariff commitments on non-agricultural products." The note states: "There shall be no export duty on this product." Australia's Uruguay Schedule, AUS1-201 through AUS1-204.

In the context of its WTO accession, the Russian Federation has moreover negotiated export duty concessions following the scheduling and binding procedure already envisaged in the GATT. In particular, it created a new Part in its GATT Schedule (Part V 'Export Duties') where it included export duty concessions on more than 700 tariff lines. The Russian case is the first and only example of systematic incorporation of export duty commitments in the form of concessions into a Member's GATT schedule as admitted by GATT provisions.[105]

Twelve other WTO Members (Mongolia, Latvia, Croatia, China, Saudi Arabia, Vietnam, Ukraine, Montenegro, Lao People's Democratic Republic, Tajikistan, Kazakhstan and Afghanistan) have assumed country-specific obligations on the use of export duties in the context of their accession to the WTO. Such export duty commitments are quite uneven in scope and coverage, with some countries abiding by general elimination obligations (for example, China) and others committing to phase down and bind the export duties applied on a specific list of products (for example, Saudi Arabia and Kazakhstan).[106] In all such cases, however, these obligations were not incorporated into the respective GATT schedules but rather assumed under individual accession protocol provisions.[107]

4.1.1.3 Available exceptions WTO Members seeking to use export restrictions in derogation from their commitments may invoke several GATT exceptions. According to Article XI:2(a) GATT, Article XI:1-inconsistent export prohibitions or restrictions may be 'temporarily applied to prevent or relieve critical shortages of foodstuffs or other products essential to the exporting contracting party'. This provision appears particularly important for dealing with export restrictions on extractive resources, as they are often applied with the aim of ensuring adequate domestic supply.[108] Various GATT general exceptions are also relevant for extractive resources, namely: Article XX (b), which covers measures that are 'necessary to protect human, animal or plant life or health'; Article XX (g), which provides justification for measures 'related to the conservation of exhaustible natural resources, if such measures are made effective in conjunction with restrictions on domestic production or consumption'; Article XX (i), which shelters measures 'involving restrictions on exports of domestic materials necessary to ensure essential quantities of such materials to a domestic processing industry during periods when the domestic price of such materials is held below the world price as part of a governmental stabilization plan'; and, Article XX(j), which allows Member States to adopt measures that are 'essential to the acquisition or distribution of products in general or local short supply …'. As general GATT exceptions, any of these provisions may be invoked to exclude violations of any GATT obligation.[109]

[105] See Espa (2015), pp. 156–159.

[106] For a complete overview see Espa (2015), pp. 147–161 and, for an update, Espa (2017).

[107] For an analysis of the systemic implications of the fragmentation of WTO disciplines on export duties, see Espa (2015), pp. 194–208.

[108] See Espa (2015), pp. 111–116.

[109] As per the chapeau of Article XX, measures falling under one of the listed exceptions cannot be applied 'in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade'. For a more detailed analysis, see ibid., pp. 223–225.

It follows that export quantitative restrictions may in principle always seek justification under both Article XI:2 (a) and Article XX GATT exceptions, irrespective of the specific WTO Member which maintains them. The picture is more differentiated in the case of export duties. First, Article XI:2 (a) GATT is not available because such measures are not prohibited by terms of Article XI:1 GATT. Second, those WTO Members that have assumed export duty commitments may have access to Article XX GATT only to the extent that such commitments exhibit an 'objective link' to the GATT.[110] This is automatic for export duty concessions included in GATT schedules, such as those negotiated by Australia and the Russian Federation.[111] In the case of export duty commitments contained in individual provisions of country-specific accession protocols, however, a case-by-case analysis is required in order to assess whether the specific language of such provisions grants access to Article XX exceptions.[112] This is however a non-issue for the majority of WTO Members, which are bound exclusively by GATT obligations and have not assumed export duty commitments of any sort. They thus remain free to use export duties without the need to justify such measures under WTO law.

4.1.2 WTO rules on export restrictions and energy security

When looked at through the lens of energy security, WTO rules on the export side become essential to ensure fair access to energy commodities to net fossil fuel importers such as China and the EU. In this perspective, the narrower the policy space left to energy-producing Members to restrict the exportation of energy resources, the more effectively WTO law contributes to ensuring energy security at a global level. This section explores how much policy space is available to energy-producing WTO Members to introduce and/or maintain export taxes and export quantitative restrictions on energy commodities.

4.1.2.1 Policy space to impose export taxes As explained above, the WTO disciplines on export taxes are quite fragmented. On the one hand, the majority of WTO Members, as original Members bound exclusively by GATT obligations, can introduce and/or maintain export duties on any product unless they decide to negotiate export duty concessions in their GATT schedules. On the other hand, a selected number of newly acceded WTO Members have assumed export duty commitments in the context of their accessions.

Among the latter group of WTO Members are several energy-producing countries, namely Oman, China, Saudi Arabia, the Russian Federation, Yemen, and Kazakhstan (in order of accession).[113] However, not only assumed export duty

[110] *China–Raw Materials* (Appellate Body Reports), para. 293; *China–Rare Earths* (Appellate Body Reports), para. 5.65. For a thorough analysis of the approach designed through WTO case law, see Espa (2015), pp. 194–202.

[111] For more details, see Espa (2015), pp. 202–208.

[112] This has led some authors to speak of 'multi-tiered' membership. See Qin (2012), pp. 1161–1162.

[113] Among the newly acceded WTO Members, these are the countries that export their energy products to either China or the EU. See above, Sect. 2.1.

commitments are very diverse in terms of scope and coverage, but they very limitedly address energy resources. The looser obligations were undertaken by Oman and Yemen, which simply confirmed that they applied no export duties at the time of their accession negotiation, without explicitly committing not to introduce such measures after the accession.[114] Moving along the spectrum, Saudi Arabia and Kazakhstan agreed to phase down and/or eliminate the export duties applied to a selected number of products, not including any energy commodity, and reserved the right to impose duties on exports of all other products.[115] The more stringent export duty commitments were assumed by the Russian Federation and China albeit through different legal techniques. As mentioned above, the Russian Federation created a new 'Part V' on 'Export Duties' within its GATT Schedule, where it bound more than 700 tariff lines including oil and gas products.[116] Yet, it did not promise to eliminate export taxes on such products nor to bind export duty rates at a fixed rate. Rather, it incorporated into its schedule specific formulas for determining the maximum allowable rate based on, respectively, the world price of crude oil and the average LPG price at DAF Brest.[117] Finally, China agreed to a general elimination obligation on export duties,[118] mitigated by the existence of a list of export tariff bindings.[119] None of them are applicable to energy products, however.[120]

Among the larger group of WTO original Members, in particular, the only country that has negotiated export duty concessions in its GATT Schedule is Australia. Yet, even in this case, Australia committed to refrain from imposing export duties on a very limited set of raw materials, including coal and coal products.[121] All other energy-producing Members remain free to introduce and/or maintain export taxes on any energy products as per Article XI:1 GATT.

[114] Working Party Report on the Accession of Oman, para. 74; Working Party Report on the Accession of Yemen, para. 131.

[115] Working Party Report on the Accession of Saudi Arabia, para. 315; Working Party Report on the Accession of Kazakhstan, para. 534. In the case of Kazakhstan, in particular, export duties were applied on, among others, crude oil and gas oils at the time of the accession. See ibid., Table 17(A).

[116] Working Party Report on the Accession of the Russian Federation, para. 738. Part V of the Russian Federation's Schedule starts with the statement: '[t]he Russian Federation undertakes not to increase export duties, or to reduce or to eliminate them, in accordance with the following schedule, except in accordance with the provisions of the GATT 1994'.

[117] See footnote# and footnote##, Part V of the Russian Federation's Schedule, WT/MIN(11)/2/Add.1.

[118] China's Accession Protocol, para. 11.3.

[119] Ibid., Annex 6. Annex 6 to China's Accession Protocol, labelled 'Products Subject to Export Duty', lists eighty-four HS 8-digit products for which maximum levels of export duty are provided. With respect to these commitments, a Note to Annex 6 clarifies: 'China confirmed that the tariff levels included in this Annex are maximum levels which will not be exceeded. China confirmed furthermore that it would not increase the presently applied rates, except under exceptional circumstances. If such circumstances occurred, China would consult with affected Members prior to increasing applied tariffs with a view to finding a mutually acceptable solution'.

[120] Ibid.

[121] The full list comprises iron ore, titanium ore, zirconium ore, coal, peat, coke, refined copper, unwrought nickel, nickel oxide, and lead waste and scrap. Australia's Uruguay Schedule, AUS1-201 to AUS1-204.

When looked at from an energy-specific perspective, existing WTO disciplines on export duties leave quite a large policy space to WTO Members. This is due to a general paucity of commitments, which not only includes the quasi totality of original WTO Members exclusively bound by GATT obligations (except Australia), but also those large energy-producing new Members that have assumed export duty commitments in the context of their accession—the only notable exceptions being the Russian Federation and China. Finally, both Australia and the Russian Federation can invoke available GATT exceptions to seek justification of export duties applied in derogation of their export duty commitments, whereas China cannot be granted access to Article XX exceptions due to the specific language of the export duty obligations contained in its individual accession protocol.[122]

4.1.2.2 Policy space to impose export QRs Article XI:1 GATT outlaws any type of quantitative restrictions on exports. Contrary to what happens in the case of export duties, this general elimination obligation applies across the board to all WTO Members, and is indeed a cornerstone of the overall GATT architecture.[123] In such context, the policy space left to energy-producing countries can be assessed by way of testing the chances that such Members have to successfully defend export restrictions on the basis of available GATT exceptions. As mentioned above, the exceptions relevant to export restrictions applied on extractive resources are Article XI:2 (a), the general 'environmental' exceptions (Article XX (b) and (g)) and the general 'industrial' exceptions (Article (i) and (j)).[124]

While the latter exceptions have never been interpreted by WTO case law,[125] the reach of Article XI:2 (a) GATT and the general 'environmental' exceptions have recently been explored with respect to export restrictions imposed on extractive resources (namely, mineral resources) in *China—Raw Materials* and *China—Rare Earths*. Interestingly, these are two disputes opposing China, the respondent party, and the EU, the complainant party together with the United States and, respectively, Mexico and Japan.[126]

As to the shortage of supply exception under Article XI:2 (a), the Appellate Body narrowly interpreted this provision in *China—Raw Materials* and identified three main requirements to be met cumulatively: first, the 'temporarily applied' requirement, which demands that the restrictions or prohibitions be limited in time; second, the 'critical shortage' requirement, which refers to deficiencies that amount to a situation of decisive importance or that reach a vitally important or decisive stage; third, the 'essentialness' of a product, which requires that the product be important or necessary or indispensable to a particular Member have due regard to the particular circumstances faced by that Member at the time when it applies the

[122] See above, Sect. 4.1.1.3.

[123] *Turkey–Textiles* (Panel Report), para. 9.63.

[124] See above, Sect. 4.1.1.3. For a more detailed account, see Espa (2015), pp. 208–209.

[125] Even so, the potential of 'industrial' Article XX exception to justify export restrictions applied on energy commodities is considered to be quite limited. Ibid., pp. 221–223.

[126] For a full account of the two disputes, see the article by Elisa Baroncini in this Special Issue.

restriction or prohibition.[127] In essence, Article XI:2(a) GATT cannot be invoked to justify export restrictions responding to situations of physical scarcity and/or exhaustibility of essential extractive resources.[128]

As to the use of export QRs for 'environmental' purposes, in *China—Raw Materials* and *China—Rare Earths* the Appellate Body made clear that export restraints could hardly be justified as environmental protection or conservation policy instruments to the extent that environmental externalities and depletion risks derive from *domestic* extractive activities rather than exports. In the same vein, it warned against invoking the principle of sustainable development and the principle of sovereignty over natural resources as pretexts to justify export restrictions used as instruments of industrial policy.[129]

Although condemning China's export restrictions in both disputes, the WTO adjudicators did elaborate on the space left to WTO Members for sustainable management of exhaustible resources, with particular reference to Article XX(g) GATT. They did so by elaborating on the relationship between 'conservation' under Article XX(g), sustainable development and permanent sovereignty over natural resources. They accepted that the term 'conservation' in Article XX(g) incorporated the notion of exercising rights over natural resources in the interests of a Member's economic and sustainable development, and accordingly recognized the right of WTO Members to design their conservation programmes based on 'their own assessment of various, sometimes competing, policy considerations and in a way that responds to their own concerns and priorities'.[130] However, they clarified that, while 'conservation' policies may take sustainable economic development into account, measures that have a 'sustainable economic development' objective, such as supply management, cannot be pursued under the rubric of 'conservation' within the meaning of Article XX(g) GATT.[131] In other words, Article XX(g) cannot be 'stretched' into an exception protecting measures that pursue industrial policy goals.[132] This conclusion lies in the premise that the exercise of sovereignty over natural resources cannot be intended to enable Article XX(g) to allow a WTO Member to allocate the available stock of a product between foreign and domestic consumers because, once extracted and in commerce, natural resources are subject to WTO law.[133]

[127] Espa (2015), pp. 180–185.

[128] For more details, see, among others, Howse and Josling (2012), p. 14.

[129] For a full account, see Espa (2015), pp. 209–221.

[130] *China–Rare Earths* (Panel Report), para. 7.459.

[131] Ibid., para. 7.460. The Panel reiterated that 'measures adopted for the purpose of economic development … are not "measures relating to conservation" but measures relating to industrial policy'.

[132] Ibid., paras. 7.451–2 and 7.459–60.

[133] *China–Rare Earths* (Panel Report), para. 7.462. As noted by the panel in *China–Raw Materials*, 'a State's sovereignty is also expressed in its decision to ratify an international treaty and accept the benefits and obligations that such ratification entails. In becoming a WTO Member, China has of course not forfeited permanent sovereignty over its natural resources, which it enjoys as a natural corollary of its statehood. Nor … has China or any other WTO Member 'given up' its right to adopt export quotas or any other measure in pursuit of conservation. China has, however, agreed to exercise its rights in conformity with WTO rules, and to respect WTO provisions when developing and implementing policies to conserve exhaustible natural resources'. Ibid., para. 7.270.

4.2 Implications for China–EU energy relations

The analysis of existing WTO rules on the export side from an energy-specific perspective tells much about the role that the multilateral trading system has played and could play when it comes to promoting energy security. Notably, two main features of the current WTO disciplines are directly relevant for the interests of China and the EU.

First, the overall paucity of commitments on export duties may potentially affect the energy security interests of both players. Of all the main energy suppliers that China and the EU rely on,[134] in particular, the Russian Federation is the only WTO Member which has assumed some export duty commitments on energy commodities, whereas the majority of the other partners have reserved their right to tax exports of such resources at any time as per standard GATT disciplines. Although it is true that export duties are the least restrictive and more transparent type of restrictions on the export side,[135] it is undisputed that excessively high export tariffs ultimately have the same effect of an export prohibition.[136] In this perspective, and in light of the prospective accession of several other large energy suppliers to the WTO (namely, Algeria, Azerbaijan, Equatorial Guinea, Iraq, Iran, Lybia, and Uzbekistan), China and the EU share a common interest in 'imposing' upon such countries substantive export duty commitments. In particular, the EU and China could arguably endorse the more flexible 'Russian model' with a view to stimulating the acceptance of more ambitious export duty concessions on the part of such countries.[137]

Second, the comprehensive prohibition of export QRs, matched with a sufficiently narrow interpretation of available GATT exceptions relevant to extractive resources, mitigates the relatively loose reach of WTO rules on export duties. Interestingly, China and the EU have been on opposite fronts in all the disputes targeting allegedly legitimate export QRs on extractive (namely, mineral) resources defended under Article XX exceptions. While this circumstance has been taken as evidence of an emerging tension between the two players on a more general level, it should not be interpreted as a sign of potential deterioration of the existing China–EU cooperation in the energy sector too. Rather, both China and the EU have a strategic interest in having the Appellate Body discourage the use of export restrictions when it comes to energy commodities. Depending on their stringency and on the specific suppliers that implement such measures, the use of export QRs may indeed significantly hamper access to energy commodities and therefore compromise their energy security goals.[138] In this perspective, a clear and consistent stance of the WTO adjudicator against any abuse of Article XX exceptions for the purposes of justifying beggar-thy-neighbour export restrictions is actually in the

[134] See above, Sect. 2.1.

[135] Bonarriva et al. (2009).

[136] Piermartini (2004), p. 8.

[137] This scenario would also ensure more coherence and equity in WTO disciplines on export duties. For a full account, see Espa (2015), pp. 277–282.

[138] Bonarriva, Koscielski and Wilson (2009).

interest of *both* China and the EU in the energy field, irrespective of whether it comes at the detriment of China's specific interests in the mineral sector.

In conclusion, existing WTO rules on export restrictions, as interpreted by most recent case law, seem well-equipped to encourage cooperation and defuse potential conflicts between China and the EU on energy security, despite being overall fragmented and under-developed in the area of export duties. Moreover, were China and the EU to promote the advancement of international trade disciplines in a way that is responsive to their common energy security concerns, this would not only bring them mutual gains but contribute to furthering global energy governance.

5 Conclusions

This article aimed at dissecting strengths and weaknesses of the China–EU cooperation in the energy sector while providing some insight on the relevance of the WTO legal system for fostering rather than discouraging such cooperation. Starting from an analysis of the individual energy interests of China and the EU, it revealed that they face common challenges as major fossil fuel importers seeking to lead a climate-driven energy transition. Accordingly, it gave an account of the evolution of the Sino–European energy relations and found that, while they have gradually developed along many decades, they have accelerated in recent years in the areas of energy security and energy sustainability. In this respect, China and the EU seem to have clear that, on the one hand, these two areas carry the highest potential for cooperation due to the convergence of their interests as regards access to energy resources and renewable energy development. On the other hand, they have also insisted on the need for improved global energy governance in latest cooperation efforts as if they were aware that unexplored and/or unsuccessful cooperation efforts may still leave room to tensions and potential conflicts, given that pursuing coincident interests on an individual basis may turn them into rivals in the international market. Within this framework, this article discussed the role that international trade rules can play in serving China's and the EU's common energy interests while still enhancing global energy governance. Focusing on the case of energy security, it identified a number of areas where existing WTO disciplines could be improved to ensure increased and fairer access to energy commodities for China and the EU. Importantly, it highlighted that China and the EU have a shared interest in promoting an advancement in WTO disciplines despite the apparent conflicts emerged between the two with respect to the use of export barriers in other sectors.[139] In this respect, seeking

[139] While this analysis was not conducted for the area of energy sustainability as such owing to the reasons explained in Sect. 4 above, it can be preliminarily noticed that the evolution of the Sino-European energy relations seems to have informed the Chinese and the EU attitudes towards the use of trade-related instruments in the area of RE promotion within the WTO legal framework, both as regards the settlement of potential disputes emerging between each other and with other leading renewable energy players. Compared to the recent trends of RE disputes in the areas of subsidies and trade remedies brought before the WTO dispute settlement system until now, China and the EU have in fact appeared as either complainants or respondents several times but only once against each other—and the dispute is still at the consultations stage. For a more detailed analysis see Leal-Arcas and Filis (2014) and de Bièvre et al. (2017).

a greater role for the WTO on this front would not affect China–EU relations in the energy sector, but rather encourage the furtherance of their cooperation in addition to being beneficial for global energy governance more generally.

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