International Journal of Chinese Education
September-December 2022, 1–17

DOI: 10.1177/2212585X221143392
journals.sagepub.com/home/cne
SAGE

Challenges on the European Union-China cooperation in higher education from 'people-to-people dialogue' perspective: The case of health-related joint projects

Anabela Santiago, Carlos Rodrigues, Sara Diogo, and Jorge Tavares da Silva

Abstract

The European Union (EU) and People's Republic of China have a tradition of cooperation in Higher Education (HE) that has been increasingly developed since the Chinese reform of economic opening. From 2012 onwards, when the EU-China High-Level People-to-people Dialogue was established as the third pillar of a Comprehensive Strategic Partnership between both parties, this cooperation in HE was enhanced, particularly in terms of people mobility (students, teachers and researchers). Along with this, globalization and the need for global governance responses in terms of global issues like climate changes, water and food security, pandemics and other health issues lead us to reflect about the role of academic and scientific cooperation - in the domain of HE and research cooperation-in the lens of this People-to-People approach. By means of a literature review grounded on different sources of documents (scientific articles; policy briefs; joint statements and educational programs) and their content analysis, the aim of this paper is to trace a brief state-of-the-art of the EU-China relations in the field of HE and research to analyze if there are effective EU-China partnerships in HE as a whole, and in health scientific joint research projects in particular, by mapping health-related projects involving the EU's and PRC's academic and research institutions, as well as their goals.

University of Aveiro, Aveiro, Portugal

Corresponding Author:
Anabela Santiago, Research Unit on Governance, Competitiveness and Public Policies (GOVCOPP) DCSPT, University of Aveiro, Campus Universitário de Santiago, Aveiro 3810-193, Portugal.
Email: anabela.santiago@ua.pt

Keywords
higher education, high-level people-to-people dialogue, European Union-China health cooperation, policies and institutional strategies

Received 3 September 2022; revised 9 November 2022; accepted 16 November 2022

Introduction

Despite structural differences in political systems, cultural, social patterns and values, the European Union (EU) and the People's Republic of China (PRC) have established solid and regular dynamics of cooperation, including people-to-people dialogues. These dynamics of cooperation have been visible in the fields of higher education and research. For example, student exchange between PRC and some European countries can be traced back to the 1950s (Cai, 2019), being considered, in fact, the first bilateral dynamics between both geographies (Cai, 2019). Later, the establishment of diplomatic relations between EU and PRC in 1975 has brought the opportunity to expand cooperation and made possible the establishment of diversified educational cooperation projects, which have developed over the next two decades, covering themes as basic education, educational television, and higher education (Burnay et al., 2014; Xie, 2020).

By that time, PRC intended to implement the programme of the "four modernizations" announced by Premier Zhou Enlai and later followed by Deng Xiaoping, aiming at the transformation of agriculture, industry, national defense, and science and technology (Spence, 1990). After 1978, Deng Xiaoping, following its opening up and reform policies, started an intense policy activity aimed at improving relations with many countries, including the European Community (Möller, 2002).

After 1978, PRC's academic and cultural relations with foreign nations became increasingly broad (Pinna, 2009), with the European block and the PRC being engaged in many domains and sharing key global visions as "natural partners", using the words of Javier Solana, former EU foreign policy head (Solana, 2013). On this, higher education cooperation and partnerships represent an important component of EU-PRC relations, which have been consolidated through several landmarks, regardless of their different historical, cultural, societal and political characteristics (Christiansen et al., 2019). Nevertheless, despite previous cooperation activities in the domain of HE cooperation, it was only in October 2003 that the Chinese government drafted its first-ever policy paper on the EU (Ministry of Foreign Affairs of the People' Republic of China, 2014). In turn, in the same year, the European Commission (EC) issued the communication "A Maturing Partnership – Shared Interests and Challenges in EU-China Relations" (EC, 2003; Cai, 2019). A few years later, in 2006, the EC reinforced the importance of EU-PRC relationships to grow beyond trade and economic cooperation by stating that the EU aims for a "comprehensive strategic partnership" with PRC, "based on much more than a trade in goods alone" (EC, 2006, p. 631–2). Under this framework, in 2012, the EC and PRC launched the High Level People to People Dialogue (HPPD), a third pillar to complement the EU-China High Level Economic and Trade Dialogue and the High Level Strategic Dialogue, aiming at bringing together "decision-makers and practitioners in the areas of education, culture, youth, sport and gender to exchange ideas and good practice on how PRC and the EU can work together, also addressing areas of common interest" (EC, 2020). The HPPD would lead to the creation of the EU-China Higher Education Platform for Cooperation and Exchange (HEPCE), which aims at upgrading policy dialogue and exchange of best practices in the field of higher education. According to EC (2017) records, the following activities were developed from 2012 until 2016: three HPPD meetings (joint declarations and follow-up actions documents; three HEPCEs (higher education platforms;

three cultural fora; tuning studies (second phase); culture mapping studies; youth conferences and events, as well as a number of language initiatives to foment multilingualism. So far, the main results of this Platform are reflected in the reinforcement of links between the institutions and individuals, as well as the sharing of best practices and discussion of challenges.

The literature on EU-China higher education (Cai, 2019; Men & Linck, 2017; Pinna, 2009; Telò et al., 2018; Xie, 2020; Zhou, 2017) cooperation evidences the need to find effective ways to align both the EU's and PRC's interests, expectations, priorities and available resources in different areas of cooperation, so that "The principles of international cooperation based on solidarity, recognition, and mutual support, true partnership that equitably serves the interests of the partners and the value of sharing knowledge and know-how across borders should govern relationships among higher education institutions in both developed and developing countries" (UNESCO 1998 in Pinna, 2009, p. 9). In turn, there is also a consensus that challenges in the EU-PRC relationships emerge – among other factors, due to the lack of trust, knowledge and mutual understanding between Chinese and European higher education settings (Cai, 2019; Christiansen et al., 2019; Gao, 2020; Zayim-Kurtay & Zhu, 2019). We can identify different kind of barriers to EU-China cooperation in joint research, such as (Horvat & Lundin, 2008): (i) different legal framework; (ii) different conceptions of "open data" concept; (iii) linguistic barriers; (iv) cultural heritage and different values systems; (v) high dependency on states and bureaucracy; (vi) lack of partners' networks.

In fact, unaligned political research priorities and differing policy frameworks on an institutional, local, regional and national level often impede or complicate international cooperation. There is still room for improvement and a long way to go, but as Rubini and Pollio (2017, p. 15) concluded "(…) in the case of health, the mutual exchange of knowledge and competences might end in a win-win game, allowing all partners to improve their health systems and to ultimately increase the well-being of their populations".

Acknowledging and overcoming these problems and differences is paramount to enhance higher education and research cooperation between PRC and EU, especially after the changing relational environment stemming from the joint communication from the European Commission to the European Parliament and the European Council (EC, 2019), issued in March 2019, *EU-China – A strategic outlook* that will be further discussed in next section of this paper.

Despite the previous considerations based on existing literature, when digging into EU-China higher education and research cooperation through the literature, one finds a scarcity of documents in this domain, particularly in what concerns to health scientific cooperation, which is the focus of this paper. In parallel, and curiously, these areas of cooperation – higher education and research – are precisely those that seem to gather highest trust and mutual understandings to enhance knowledge, trust and continuity in EU-China cooperation, also in other sectors as the industry, government (Liu, 2017), and health sector (Rubini & Pollio, 2017). Our study aims thus to bridge this gap by navigating the dynamics of the EU-China higher education cooperation through multiple layers (Välimaa, 2007) of modern China history, paying special attention to the question: "Are there effective EU-China partnerships in higher education in general and, particularly, in health scientific joint research projects?"

The EU-China Higher Education Cooperation (in the Lens of People-to-People Principles: Brief State-of-the-Art

As early as the 1990s, there are records of cooperation among these geographies were the establishment of European Documentation Centres in six Chinese universities and the Chinese Academy of Social Sciences in the early 1990s, the founding of the China Europe International Business School (CEIBS) in 1994, and the EU–China Higher Education Cooperation Programme

in 1997 (Cai, 2019; Christiansen et al., 2019; Xie, 2020). The EU–China Higher Education Cooperation Program in European studies and social sciences, launched in 1997 (and which was concluded in 2001), was considered a pioneer and a milestone, as well evidenced by Xie (2020, p. 87): "At the time, this figure (EU–China Higher Education Cooperation Programme) was the highest of all international cooperation programs with China in the social sciences since the establishment of People's Republic of China in 1949". The program was proposed and financed by the EU and aimed to promote greater interest and understanding of the EU in and about PRC, namely by facilitating the involvement of Chinese scholars in research activities concerning the EU across Chinese universities and research institutions.

From 2003 on, in the era of Hu Jintao leadership of Chinese Communist Party (CCP), whose motto was the scientific-based development to achieve a socialist harmonious society, PRC's government made efforts to foster scientific and academic research, as well as higher education. Some key programs and policies are important to be referred to. For instance, in 2008, PRC launched the Thousand Talent Plan or Thousand Talent Program as a national policy to recognize and recruit top international talent in scientific research, innovation, and entrepreneurship (Fu, 2019). According to the MoE, the total number of students staying abroad after graduation is growing, indicating that PRC might be gradually losing its young talents to the outside world (Fu, 2019). Thus, it is understandable that both EU and Chinese leaders have looked at these rapidly expanding people-to-people contacts as a means to broaden and deepen mutual knowledge, understanding, trust and friendship between them, and consolidate in this way the Comprehensive Strategic Partnership (Fu, 2019; Hong, 2014). Additionally, it should be noticed that the development of European Studies in China as an instrument of cooperation was possible due to the funding from the EC and the Chinese government, but also due to the Chinese interest in learning from European experiences (Christiansen et al., 2019; Pinna, 2009; Song, 2010). Such academic cooperation is based on white papers and protocols – such as the Agreement on Science and Technology Cooperation between the EU and PRC established in 1998 (renewed subsequently in 2004, 2009 and 2014) – and aimed at managing transnational projects concerned with improving cooperation between Chinese and European higher education institutions. EU-China cooperation in higher education has thus become an integral and significant part of a strategic partnership (Cai, 2019), that the EC reinforced in 2017 when arguing that in terms of innovation capability, despite maintaining a performance lead over PRC, "(…) this lead is decreasing rapidly with PRC having improved more than seven times faster than the EU" (EC, 2017). In terms of total number of science publications, PRC had overtaken the United States leading the ranking of the most-cited research papers in the 30 most enabling technology fields (Okoshi, 2019; Tollefson, 2018; Xie & Freeman, 2019). Moreover, generating revenue and bringing the most talented people into the European labor market and to enhance the visibility and desirability of European higher education in PRC were also EU's drivers in cooperating with PRC (Cai, 2019, p. 171), despite the generalized consensus that PRC still needs to modernize its higher education system, still considered "(…) handicapped by certain educational disadvantages", for example disparities in education (EUR-Lex, 2011; Pinna, 2009, p. 20).

Collaborations and partnerships in terms of mobility, teaching and research between PRC and EU have been supported by public funding, as illustrated by several joint funding mechanisms established by the EC and the MoE (Cai, 2019), or in the Guidelines of the Chinese National Medium- and Long-Term Education Reform and Planning (2010–2020). The latter policy document, hereafter referred to as Education 2020, is considered the most crucial policy document in the domain of higher education cooperation. Launched in 2010, Education 2020 established that an international strategy would be an important long-term policy for the development of higher education in PRC (Li & Li, 2019). Education 2020 grounds the idea that beyond political and economic benefits and interests, higher education cooperation between PRC and EU is strongly

motivated by internationalization strategies and financial incentives of the EU and their home countries (Cai, 2019; Xie, 2020). Amongst 11 areas of cooperation, this policy points out health/healthcare as one of the priority areas (d'Hooghe et al., 2018).

A brief note to clarify that the concept of internationalization is ambivalent, meaning different things to different scholars… Usually, it refers to the mobility of students, researchers and faculty members, or even an export of educational programmes to other countries through cooperation with other institutions (Guo et al., 2022). For the purpose of this study, we take Knight's (2003, p. 3) ideas: "internationalization is changing the world of education and globalization is changing the world of internationalization". The reality shows that it has played an important role in the modernization of Chinese higher education, and therefore in the enhancement of PRC's competitiveness at an international level (Pinna, 2009), Every year it is estimated that more than 700,000 Chinese people leave their country to study abroad (Chu, 2022). PRC has, in fact, topped the tables as the biggest sending country of international students to the EU for a number of years, with the EU being one of the most popular mobility destinations, especially the UK (Fu, 2019). Although the mobility of academic staff and/or researchers is not collected on a systematic basis, based on the figures available in EUR-Lex (2011), there were at least 6697 academic staff of Chinese nationality working in the EU during the period 2008–2009. Most of these academic staff were recorded in data from German and UK Higher Education institutions (EUR-Lex, 2011). At the present, and according to the Higher Education Statistics Agency, PRC sent more students to the UK than any other overseas country. In 2018/19, 35% of all non-EU students in EU countries (including and mostly UK) were from PRC. The number of students from PRC in EU was also 34% higher in 2018/19 than in 2014/15, increasing from 89,540 to 120,385 in the five-year span (HESA, 2020).

Presently, as part of the Chinese governmental strategies for strengthening the competitiveness of Chinese higher education and ties with the EU, collaboration activities have been consolidating. They are focused on the following major fields: (i) student and staff mobility/exchange as already mentioned; (ii) creation of more Confucius Institutes in Europe; (iii) development of the international dimensions of teaching and research; (iv) joint degree education provision in different levels (targeting primarily masters and doctorate degrees); and (v) research cooperation mostly through expanding cross-border academic cooperation with the expansion of Chinese-foreign cooperation projects (Cai & Yan, 2015; Hong, 2014; Pinna, 2009; Zhu et al., 2017). Among these, Kukalets et al. (2021) draw attention to the fact that cooperation between PRC and the EU in the field of student mobility and exchange tends to increase due to the rising number of Chinese students willing to study abroad, to the deterioration of the US-China relations, and to the conformity of European expectations and PRC's interests in the field.

For the enhancement of scholarly mobility between the EU and PRC, and therefore for the consolidation of internationalization strategies, several programs have much contributed, notably the Erasmus Mundus Scholarship Programme created by the EC that funds Chinese students and scholars every year to study in Europe and its equivalent in PRC, the Chinese Government Scholarship (EU Window), as well as the Jean Monnet Programme that promotes teaching and research outside Europe, and several Marie Curie Actions that grant fellowships to researchers from any country and any research area (Hong, 2014). Another type of collaboration is the involvement in joint research programmes, as per main examples listed in Table 1 below (Li & Chang, 2014; Wang et al., 2017).

We should also note that in 2013, PRC launched its big project called the Belt and Road Initiative (BRI), which intends to re-invigorate the ancient Silk Roads (Tambo et al., 2019). This is an attempt to encompass many countries in Asia, Europe, and Africa in a connected world marked by "(...) sustainable infrastructure, geo-economic influence and integration of bilateral and multilateral trade, health and education empowerment of the modern world, skills transfer, and

Table 1. Joint projects EU-China in the field of higher education and research and development (R&D).

Name and year of the Project	EU′ side involved party	PRC's side involved party
R&D-PUNE Agreement (peaceful uses of nuclear energy)/2008	European atomic energy community (EURATOM)	Chinese ministry of science and technology (MoST)
Agreement on implementing the science and technology partnership scheme (CESTYS)/2009	DG research and innovation	Chinese ministry of science and technology (MoST)
Sino-German center for research promotion (SGC)/2021	National natural science foundation of China	DFG (German research foundation)
PRCI project: Water security and watershed management + infectious disease/2014		ANR (French national agency for research)
Projects on the field of natural sciences and medical sciences/since 2017		FWO (research foundation—flanders)
China-nordic policy symposium on research funding/2019		STINT (Swedish foundation for international cooperation in research and higher education)
"Lise meitner" grants for PostDoc researchers; annual (thematic) calls for joint research projects; "erwin schrödinger" fellowships for young PostDoc researchers/2014		FWF (austrian science fund)
Merian fund programmes (urbanization + "green cities"+ sustainable agriculture		NWO (Netherlands organization for scientific research)

Source: Wang et al. (2017) combined with authors' research.

innovation uptake and development (Tambo et al., 2019). As far as health is concerned, the potential of collaborative schemes across the BRI countries is so high, that in 2017 the so-called Health Silk Road was created deriving from the BRI, aiming at fostering "progress towards planetary health-driven development", based on one-health concept, on knowledge exchange in agribusiness and food security, effective healthcare delivery and management systems and also on the transfer of cutting-edge technology and innovation skills, amongst others.

Despite the launch of BRI and after the Health Silk Road, traditionally, China is not a predominant partner of the EU in health-related scientific research. Several factors can be pointed out as explanatory potential causes for this: the different levels of maturity of the healthcare systems themselves and the different approaches towards health governance. Effectively, the Chinese healthcare system has undergone in its very recent history various internal reforms aiming at achieving goals of higher equity of access to healthcare services – notably primary care services – as well as a restructuration of hospitals network, and a regulation in drugs prices, amongst other aspects (Yip & Hsiao, 2015). The problems of the internal health system have obliged the PRC to look more at itself during a certain period of time. With the achievements of the health reforms, the priority of PRC government was to establish partnerships with developing countries, namely in Africa, to help them in the development of their own healthcare systems (Killeen et al., 2018); so far, EU has not been the main health partner for PRC, neither in the scientific research cooperation.

However, the policy-making environment has significantly changed over the past decades with increasing awareness among decision-makers of the importance of evidence-based policy-making (Meng et al., 2004), as well as the importance of high-tech industry components in health.

Up to the present, cooperation in science, technology and innovation has been considered a major pillar of the EU-China partnership, as evidenced by, for example, the Strategic Agenda for EU-China Cooperation 2020, endorsing the strengthening of the compatibility of EU's and China's higher education systems. However, albeit the long established cooperation experience in higher education, as well as the progress that has been achieved to 'bridge minds' and to purposefully change attitudes (Christiansen et al., 2019), mostly since 2019, the deterioration of EU-China overall relational ground, following the rising tensions between the US and China, which were taken beyond a mere trade war, and mooted in the EU-China strategic outlook (EC, 2019), disclosed by the European Commission in March 2019, is expected to affect the cooperation dynamics specific to the field this paper scrutinizes.

The strategic outlook (EC, 2019) made explicit a new contextual framework for EU-China relations, mirroring, as Perthes (2021) would argue, a new European understanding of the need for a more assertive reaction to PRC's growing global influence and the inherent coordination effort of member states. The EC, whilst acknowledging that the "European Union (EU) and China are linked by a lasting relationship", highlighted that there is "a growing awareness in Europe that the balance of challenges and opportunities generated by China has changed". The "unprecedented scale and pace" of PRC's economic power and political influence and its "ambition to become one of the main world powers" prompted the novel approach. According to the new outlook, PRC is viewed, simultaneously, as a cooperation partner aligned with the EU in different areas of intervention (e.g., climate change), a negotiating partner with which the EU has to find a balance of interests, an economic rival in the race for technological leadership, and a systemic adversary promoting alternative models of governance. As in Rodrigues (2021), the joint communication unveils the European intention to take a more critical position regarding China's affirmation as a challenging global power, while maintaining stable and healthy relations with it. Taking stock of Perthes (2021), the prospect of a 'decoupling' dynamic in economic, technological and scientific relations, does not seem an option for the EU. In fact, the deterioration in EU-China bilateral relations has intensified in the last year, with the Commission itself assuming this decline of enthusiasm due to "(…) China's counter-measures to EU sanctions on human rights, economic coercion and trade measures against the single market, and China's positioning on the war in Ukraine" (EEAS, 2022). It is too soon to grasp the extent to which the challenges and tensions that, notwithstanding the friendly environment, have always occurred in the realm of cooperation in higher education, are expected to be accentuated in the wake of increased turbulence. Rather than an attempt to make these still turbid waters more limpid, the authors' commitment here is to provide an evolutionary perspective of EU-China cooperation dynamics in the field of higher education, which, ultimately, can be deemed instrumental to make that attempt a successful endeavor.

All in all, cooperation in higher education is part of the broader framework of EU-China strategic partnership building, which is based in three pillars: the strategic dialogue initiated in 2005; the economic and trade dialogue commenced in 2008; and the HPPD launched in 2012 to improve cooperation in education, culture, youth, and research (Cai, 2019; Scott, 2014) and which constitutes an important driver of EU-China research and innovation partnership (EC, 2014). In fact, Papatheologou (2013) states that "people-to-people links in the frame of mobility for European and Chinese students academics and researchers address further the objectives of the EU- China "Third Pillar on People-to-People Contacts" to contribute to the knowledge and common understanding between PRC and the EU and to open a new channel for discussions of strategic societal issues of common interest to the EU and to China". Thus, this paper focuses on the HPPD pillar, particularly, the cultural exchange and policy coordination, focusing specifically in the health-related scientific and academic cooperation between PRC and EU.

Methodology

Guided by the study object - to understand how research and science cooperation policies in the health-related field between the EU and PRC have developed, especially since the HPPD was launched in 2012, a literature review was conducted in several databases in order to capture a variety of sources.

The analyzed documents were selected according to their relevance for education as a whole - not specifically focused on higher education - because the guidelines of people-to-people dialogue are essentially oriented towards education in a broader sense, with Higher Education being a crucial element of it. Moreover, the literature review through Scopus specifically targeted higher education, lacking the political strategy envisioned by these set of documents, obtained from the literature reading. As such, the selected policy documents were the following:

(i) Education Action Plan for the Belt and Road Initiative;
(ii) Opinions on the work of the opening-up of education in the new era;
(iii) Joint Press Statement following the fifth EU-China High-Level People-to-People dialogue;
(iv) Joint Declaration on the first round of the "EU-China High Level People-to-People Dialogue";
(v) Modernization of Chinese Education 2035

The *corpus* of these policy documents was imported into NVivo software and analyzed according to a content analysis technique (Braun & Clarke, 2006; Vaismoradi et al., 2013).

Regarding the data collection of the health-related projects, we conducted a search based in the European Commission database named "CORDIS – EU research results", according to the following steps: firstly, we made a search with two keywords (China + health*) in order to limit the results to our paper scope. This initial search produced 233 results that were compiled in an Excel table automatically generated by the database website (CORDIS, 2022). In a second step, we sort out the results of the table by applying a filter in the column named "field of science," in order to obtain only the projects that had specifically the term "health" (and not other health related) in the field of science. The final results encompass 90 health joint research projects involving any of the EU state members and PRC.

For the purpose of this paper, in next section, we will take into consideration only five emblematic projects to draw a sample descriptive picture of the EU-China cooperation on academic and scientific cooperation in the areas of health and well-being is presented, through the description of some of the most emblematic projects – SENET/Horizon Europe, ICPerMed, EU-China Safe – and by surveying the concrete opportunities and challenges arising from the public reports of the results of these projects.

Data Analysis

Content analysis revealed that the five most frequently used words in the analyzed policy documents were: educational, China, people, cooperative and countries. This reveals a high degree of commitment of the government towards a cooperative framework between both people and countries in what relates to education, in a sense of promoting people-to-people ties and bridging cultures. In fact, it is stated in the Joint Declaration of the EU-China High-Level People-to-People Dialogue that: "'People to people' is a longstanding notion underpinning any action aiming to enhance international understanding and friendship through educational, cultural and

humanitarian activities involving the exchange of ideas and experiences directly among peoples of different countries and diverse cultures."

The next five words mostly used were: (i) belt and road (initiative), (ii) plans, (iii) exchange, (iv) promote and (v) improve. Belt and Road Initiative (BRI) is, indeed, a very emblematic project of the Chinese government that embraces different spheres of action and influence, in which education and scientific cooperation are not an exception. In the document Education Action Plan for the Belt and Road Initiative, we found three main proposals for action in order to enhance people-to-people bonds: (i) cooperation to improve educational interconnectivity; (ii) cooperation in training of talents; and (iii) setting up of concrete cooperation mechanisms of support aiming at building an 'integrated educational community'. Effectively, in what concerns directly health scientific cooperation, it is a reality evidenced by the emergence of the above-mentioned specific branch of BRI – the Health Silk Road – materialized in many projects of health cooperation and research across the globe. Moreover, verbs like 'exchange', 'promote' and 'improve' are a constant, once again linked to the cooperative and development spirit.

According to the content analysis of the policy documents, one can assume that the priorities of the Chinese Government are to achieve both a national modernization development and a powerful educational system. For that, "technology as a tool for teaching, learning and resource sharing" (Chinese State Council, 2019) is important along with international cooperation and exchange. In this matter, "promote people-to-people exchanges" aims to stimulate "international influence of China" and the "rejuvenation of the Chinese nation." Collaborative research centers, high-level scientific and innovative talents represent a vital strategy to "improve statistics and publication mechanisms".

Many areas are the object of collaborative research, so in next section we will map out some of the current EU- China health-related joint projects, as we intend to understand how health domain can be or not representative of the EU-China cooperation in HE and research, considering, moreover, the pandemic of Covid-19 and the current Chinese narrative of a "Community of Shared (healthy) Future for Mankind."

EU-China Academic Cooperation in Health-Related Projects: A Brief Mapping Out of the Current Status Quo

Europe and PRC are two distinct territories with different historical, cultural, societal and political characteristics, which pour into different higher education and scientific research systems, with the literature review acknowledging PRC's eagerness to develop its higher education system and its economic growth model, based on scientific development and investment in research, innovation and development. This motto has run through several generations of CCP leaders. In fact, PRC's scientific visibility has increased in parallel with its economic development, resulting from the opening reform and being a mirror of its success.

Two of the most widely used indicators in academia and science to gauge this degree of scientific performance are scientific publications on the one hand, and cooperation protocols in scientific research projects on the other hand (Braun & Clarke, 2006). Actually, from the 1980s onwards, PRC has established R&D cooperation protocols with more than 150 countries or regions and signed intergovernmental cooperation agreements with more than 90 countries (Horvat & Lundin, 2008). Not only has PRC overtaken the United States in the ranking of the most-cited research papers in 30 key technology fields as aforementioned, but it has also reached the second place in terms of R&D investment (OECD 2022) and published 23.4% of the world's scientific papers of the world scientific publications between 2018 and 2020 China (Marginson, 2022; Xie & Freeman, 2019). These figures may be connected to its "Go Global" strategy. Indeed, the "Go Global" relates to the Chinese government encouragement in the late 1990s for Chinese

enterprises to invest abroad (Wang & Hu, 2017). Although it was initially more of an economic-oriented strategy, it has soon spread to other non-direct economic spheres, such as culture, education and academic research. With respect to the academic research, one finds the example of the "Go global" strategy in health research developed through the reinforcement of benefits of Chinese Traditional Medicine application (Lin et al., 2018). In fact, according to Chen et al. (2016), from 2000 to 2015, international publications on healthcare sciences and services involving Chinese researchers increased rapidly compared to those of other areas of studies. The same authors refer that:

> *China's leading partners were all developed countries, such as the US, the UK, Australia and Canada, which have contributed to the majority of the joint publications. The academic impact of publications involving partners from European and American countries was relatively higher than those involving partners from Asian countries.*

In the current global conjuncture, PRC is simultaneously positioned as a relevant powerhouse in the academic and scientific partnership, while being seen as an economic and technological competitor and a systemic rival (Rodrigues, 2021). This duality requires a rebalancing of co-operation in research and innovation and has been the subject of efforts by both parties to re-balance by establishing frameworks based on mutual understanding at conceptual and regulatory level, aiming to overcome obstacles to cooperation by generating mutually beneficial synergies with high degrees of intellectual integrity and transparency.

Both the EU and PRC face complex challenges of varying nature, including the transition to a new model of greener and more sustainable growth, rapidly ageing populations, building resilient health systems in the context of a global pandemic, among others. These challenges can simultaneously be opportunities in a fertile ground for cooperation in areas such as resilience against similar health shocks, strengthening food security, health surveillance and response systems (Hassink et al., 2020). This commitment of both parties to the development of their scientific knowledge is aligned with broader policies, namely the commitment to follow the directives of the United Nations and to contribute to achieving the Sustainable Development Goals, as well as the HPPD pillar in the sense that topics associated to global health are vital to achieve a "shared community of healthy future for mankind", one of the premises of Xi Jinping external policy and diplomacy.

Below is the selection of five health-related projects involving PRC and EU in recent years.

Horizon 2020/Horizon Europe. Preliminary to Horizon 2020 and the current Horizon Europe, the EU and PRC had already signed in 2000 an Agreement for Scientific and Technological Co-operation between the European Community and the Government of the People's Republic of China in which they committed themselves to "encourage, develop and facilitate cooperative activities between the Community and China in fields of common interest where they are pursuing research and development activities in science and technology" (EUR-Lex, 1999).

In 2018, the European Commission and PRC launched the EU-China Joint Roadmap for Future Science, Technology and Innovation Cooperation. This roadmap aims at defining joint priority areas for research and innovation cooperation in the future and to create conditions to allow a genuine research and innovation collaboration between both parts (these conditions target such areas as mobility of researchers, intellectual property rights, gender equality, open science, cybersecurity, etc.). With regard to health, this roadmap identified the following priority areas: rare diseases, chronic diseases and cancer prevention and treatment, areas closely aligned with the Health Cluster in the UN Sustainable Development Goals (EC, 2021).

Horizon Europe is the EU's key funding program for research and innovation with a budget of €95.5 billion. It tackles climate change, helps to achieve the UN's Sustainable Development Goals and boosts the EU's competitiveness and growth. The program facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges (EC, 2021). Horizon Europe is divided into three pillars. Each pillar has several areas of intervention named clusters: one of them is the Health Cluster (in Pillar II).

Here are the three goals of Health Cluster within the Horizon Europe framework (EC, 2021):

1. Promoting social cohesion for equity in health and well-being;
2. Supporting innovative scientific research in health technologies and making them accessible to citizens;
3. Making health systems sustainable and accessible from a digital health perspective.

This program with European funding has open project proposals with the People's Republic of China, namely call no. 2 "Research infrastructure services for rapid research responses to COVID-19 and other infectious disease epidemics."

As a query deriving from the new environment of relations between EU and PRC - set namely by the already mentioned EU-China strategic outlook (EC, 2019) - the Horizon 2020/Horizon Europe leaders were asked to better delimitate and set the rules for PRC's application for this and other joint research projects (Nature Editorials, 2020). In this sense, a practical guide entitled "Horizon Europe - The EU Framework Programme for Research and Innovation: A Practical Guide for China - 2021–2027" was issued (EC, 2021).

Sino-European Health Networking Hub (SENET). The Horizon 2020 funded project SENET aims to create a sustainable dialogue between health research and innovation actors from the EU and PRC and to facilitate participation of Chinese researchers in Horizon 2020 programs (SENET 2020). The main objectives of the SENET platform are to: (i) identify health challenges of common interest between the parties; (ii) develop a sustainable networking cluster by promoting a constant dialogue between the parties on the challenges of health systems and care; and (iii) implement collaborative health initiatives and create bilateral and multilateral synergies. In 2021, a basic document was established to guide the fruitful development of EU-China cooperation in the field of health – Initial roadmap for enhancing EU-China health research and innovation collaboration. This document follows the guiding principles of the "Roadmap" in progress mentioned above under the Horizon Europe program.

The areas of cooperation identified by the various experts and working groups as priorities are the following (SENET/EC, 2020):

- food, agriculture and biotechnologies
- environment and sustainable urbanization
- surface transport
- safer and greener aviation
- biotechnologies for environment and human health

ICPerMed. ICPerMed is a member state-led initiative of over 40 ministries and international funding agencies. The initiative aims to align efforts in all areas of personalized medicine, promoting international coordination and funding of research and innovation. Having protocols with several countries, as it can be seen in Figure 1 below, there is a protocol specifically established with the People's Republic of China, which is materialized in the project "Widening

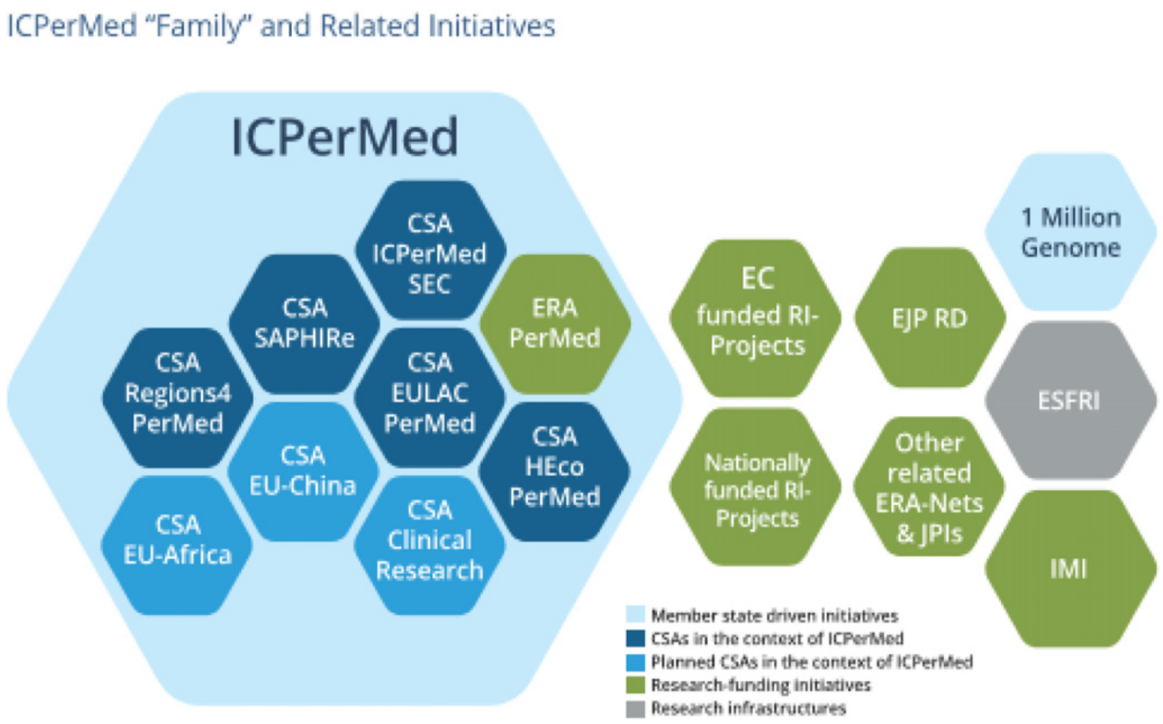

Figure 1. Projects and initiatives which are either directly part of the ICPerMed platform (big hexagon) or indirectly related to ICPerMed.
(Source: Vicente et al., 2020).

Sino-EU policy and research cooperation in Personalised Medicine" (Sino-EU-PerMed). It aims to link the strategies and activities of the International Consortium for Personalised Medicine (ICPerMed) with relevant Chinese stakeholders. (Vicente et al., 2020).

Personalised Medicine (PerMed) approaches bring potentialities to improve diagnosis and treatment of diseases and prevention strategies, taking into account individual genotypes and phenotypes, as well as biomedical, lifestyle or environmental data.

By 2030, the basic spheres of action are: (1) Informed, empowered, engaged, and responsible citizens; (2) Informed, empowered, engaged, and responsible health providers; (3) Healthcare systems that enable personally tailored and optimized health promotion, prevention, diagnosis, and treatment for the benefit of citizens and patients; (4) Availability and optimal use of health-related information for optimized treatment, care, prevention, and research; and (5) Economic value by establishing the next generation of medicine.

Each of these perspectives are fully developed and translated into opportunities and challenges resumed in a report called "The ICPerMed vision for 2030" that the various actors involved should be aware of.

EU-China Safe. EU-China-Safe mobilized resources in Europe and PRC to develop a cohesive partnership that delivers a shared vision for food safety and authenticity and work towards "mutual recognition". Comprising 16 participants from the EU and 17 from PRC, EU-China-Safe contains key research organizations, government and industry needed to develop and jointly implement major advances in improving food safety and combating food fraud in the two trading blocks (EU-China Safe, 2022).

The project strategic objective is to develop and implement a shared vision of best practice within the EU and PRC that will enhance food safety, deter food fraud, restore consumer trust,

deliver mutual recognition of data and standards and support the flow of agro-food trade between the two trading blocks to promote economic growth (EU-China Safe, 2022).

The strategic objective is divided into operational ones that are described as follows (EU-China Safe, 2022):

- To define a shared framework for harmonization and visualization of data that will enable convergence of standards and practices
- To improve transparency in management of the food chain through the development of a digitized DNA system and innovative traceability tools
- To develop, in collaboration, new/improved food authenticity surveillance systems
- To develop, in collaboration, improved food safety systems and practices.
- To build confidence in EU-China trade by improved understanding of consumer practices and regulatory frameworks, the latter by developing and demonstrating mutual recognition of laboratory standards and results.
- To enhance EU-China cooperation and knowledge exchange through a series of joint initiatives on training and dissemination, in the area of assuring the integrity of exported and imported food.

All these strategic and operational objectives are meant to help achieving improvements in consumer confidence and safety and facilitate sustainable growth in trade between the EU and PRC (EU-China Safe, 2022). The project finished in February 2022.

CARE-Corona Accelerated R&D in Europe. This is one of the most recent joint research projects as it was opened to help fighting against the recent pandemic of COVID-19. It integrates the European funding theme of "Innovative Medicines Initiative 2 (IMI2)." The CARE consortium has three main goals (IMI-CARE, 2022): (i) the development of therapeutics to provide an emergency response towards the current COVID-19 pandemic; (ii) the development of therapeutics to address the current and/or future coronavirus outbreaks, (iii) the understanding of the physiopathology of COVID-19 and the discovery of immune markers contributing to the host immune responses to COVID-19 infection and their correlations with clinical and virological outcomes. This is a project in which PRC is represented by its Global Health Drug Discovery Institute headquartered in Beijing as an associated partner.

There are other specific health-related projects with particular countries of the EU (such as Germany, Italy and Spain) that are not mentioned in this paper, as it is not the scope of the work to exhaustively mention all of them.

Conclusions

Analyzing cooperation dynamics between the EU and China, the literature positions the latter block as a powerful actor in the academic and scientific partnership, an economic and technological competitor and a systemic rival (Rodrigues, 2021). However, this relationship requires a rebalancing of cooperation in research and innovation activities, while continuing to acknowledge and overcome problems and differences in terms of quality frameworks, mutual understanding at conceptual and regulatory levels and enhanced mutual trust to consolidate (or restore) strategic partnerships. These challenges endanger the effectiveness of EU-China partnerships in higher education and research cooperation - efforts to overcome this are thus especially paramount after the changing relational environment in 2019, which stemmed from the joint communication from the European Commission to the European Parliament and the European Council. This is precisely in the context of these efforts that the HPPD assumes an accrued relevance in a sense in which it

helps both parties to get more aware of the other, in terms of culture, communication and common interests in the education field. Through the dialogue-oriented approach based on people sharing of experiences, and by bridging cultures and ways of thinking, the HPPD pillar is a vital element in order to transform the current negative perceptions of EU regarding China, deriving from the *EU-China – A strategic outlook* issued in 2019 and also from the negative initial perception of how PRC dealt with the new coronavirus outbreak.

From the analysis of the reports of these projects and cooperation protocols between the EU and the Chinese government, it is possible to highlight some strategic convergent points, but also some difficulties and challenges to overcome. The EU is the main trading partner of PRC and one of the key international partners in research and innovation. Gradually, PRC has reached a position in which it is able to contribute and benefit from the EU research and innovation capacity in a fair and responsible way. Mutually beneficial knowledge transfer starts to become a reality. With the increase in Science and Health Services research in PRC, there has also been an increase in the international component in this field. Scientists have benefited from exchanges with foreign colleagues within research teams, and resources and technologies have been shared across countries, including the EU and PRC. In the healthcare field, most of the top joint priority areas are already identified: (i) research on infectious diseases; (ii) global health; (iii) antibiotic resistance; (iv) development of innovative prophylactics, medication and diagnostics; and (v) research on geriatrics (SENET Strategy Paper, 2019).

The mechanisms in place that can foster EU-China cooperation in academic and scientific research are essentially joint funding schemes and mobility programmes for researchers. Nevertheless, as far as health cooperation in higher education is implied, there is no evidence of a long tradition of cooperation between EU and China in this area of knowledge. There are only a few joint projects when compared with the overall panorama of joint programmes and potential opportunities, which reveals that both EU and China are recommended to engage in doing more efforts to align medical studies curricula, to promote more joint research in fields related to health, care, infectious diseases, amongst other derived topics.

This should be understood as part of a broader effort in order to strengthen strategic dialogue, to build mutual understanding as to eliminate misjudgments and improve mutual trust, as well as institutionalized cooperation – governments, universities, research centers and other institutions involved.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the PhD doctoral grant reference SFRH/BD/151133/2021 from Foundation for Science and Technology, I.P., Centro Científico e Cultural de Macau (CCCM) and by the Research Unit on Governance, Competitiveness and Public Policies (UIDB/04058/2020) + (UIDP/04058/2020) funded by national funds from Foundation for Science and Technology, I.P.

References

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Burnay, M., Hivonnet, J., & Raube, K. (2014). Soft diplomacy and people-to-people dialogue between the EU and the PRC. *European Foreign Affairs Review*, 19(3/1), 57–76. https://doi.org/10.54648/eerr2014021

Cai, Y. (2019). China-Europe higher education cooperation: Opportunities and challenges. *Frontiers of Education in China*, 14(2), 167–179. https://doi.org/10.1007/s11516-019-0009-5

Cai, Y. Z., & Yan, F. Q. (2015). Supply and demand in Chinese higher education. In S. Schwarzman, R. Pinheiro, & P. Pillay (Eds.), *Higher education in the BRICS countries: Investigating the pact between higher education and society* (pp. 149–169). Dordrecht, Netherlands: Springer.

Chen, K., Yao, Q., Sun, J., He, Z. F., Yao, L., & Liu, Z. Y. (2016). International publication trends and collaboration performance of China in healthcare science and services research. *Israel Journal of Health Policy Research*, 5, 1. https://doi.org/10.1186/s13584-016-0061-z

Chinese State Council. (2019). *XinhuaNet. 'China's Education Modernisation 2035 Plan'*. The State Council. www.gov.cn/xinwen/2019-02/23/content_5367987.htm

Chu, B. (2022). *Why are Chinese students so keen on the UK?* BBC News. https://www.bbc.com/news/uk-scotland-60587499

Christiansen, T., Kirchner, E., & Wissenbach, U. (2019). *The European Union and China*. MacMillan International, Bloomsbury Publishing.

CORDIS (2022) Cordis-EU research results. European Commission. Retrieved from: https://cordis.europa.eu/projects

d'Hooghe, I., Montulet, A., de Wolff, M., & Pieke, F. N. (2018). *Assessing Europe-China collaboration in higher education and research*. Leiden Asia Centre.

EC (2003). A maturing partnership - shared interests and challenges in EU-China relations. *Policy paper for transmission to the Council and the European Parliament. COM (2003) 533 final*. Brussels: European Commission.

EC (2006). Communication from the commission to the council and the European parliament. *Closer Partners, Growing Responsibilities COM (2006) 631 final*. Brussels: European Commission.

EC (2014). *EU-China high-level people-to-people dialogue (HPPD)*. European Commission.

EC (2017). *EU-China higher education platform for cooperation and exchange (HEPCE) - 4th meeting*. European Commission.

EC (2019). EU–China – A strategic outlook. *European Commission and Contribution to the EU Council, JOIN (2019) 5, final*. Brussels: European Commission.

EC (2020). *Joint press statement following the fifth EU-China high-level people-to- people dialogue. COM (2080), 20*. Brussels: European Commission.

EC (2021). *Directorate-general for research and innovation. Horizon Europe, budget: Horizon Europe - the most ambitious EU research & innovation programme ever, publications office*. https://data.europa.eu/doi/10.2777/202859

EEAS – European Union External Action (2022). *EU-China relations*. European Union. https://www.eeas.europa.eu/eeas/eu-china-relations-factsheet_en

EUR-Lex (1999). Proposal for a council decision concluding the agreement for scientific and technological cooperation between the European community and the people's republic of China /* COM/99/0287 final - CNS 99/0123 */. Official Journal C 247 E, 31/08/1999 P. 0032–0038

EUR-Lex (2011). *EU-China student and academic staff mobility: Present situation and future developments*. Joint Study Between the European Commission and the Ministry of Education in China. https://eur-lex.europa.eu/resource.html?uri=cellar:03419f23-122a-4440-ab76-c23bf76c339e.0001.01/DOC_1&format=PDF

EU-China Safe (2022). Retrieved from: http://www.euchinasafe.eu/work_plan.html

Fu, J. (2019). *Moving towards a bright future: Chinese students in the EU*. European Institute for Asian Studies. EU-Asia at a Glance.

Gao, J. (2020). Repositioning China in the global education hierarchy through the sino–foreign educational partnerships in the belt and road initiative. In Marijk van der Wende, W. Kirby, N. C. Liu, & S. Marginson (Eds.), *China and Europe on the new silk road: Connecting universities across Eurasia*. Oxford University Press. https://doi.org/10.1093/oso/9780198853022.003.0009

Guo, Y., Guo, S., Yochim, L., & Liu, X. (2022). Internationalization of Chinese higher education: Is it westernization? *Journal of Studies in International Education*, 26(4), 436–453. https://doi.org/10.1177/1028315321990745

Hassink, R., & Gong, H. (2020). *Regional resilience in times of a pandemic crisis: The case of COVID-19 in China*. Elsevier. https://doi.org/10.1111/tesg.12447

HESA - Higher Education Student Statistics (2020). *UK, 2018/19 - Where students come from and go to study*. https://www.hesa.ac.uk/news/16-01-2020/sb255-higher-education-student-statistics/location

Hong, N. Y. (2014). EU-China education diplomacy: An effective soft power strategy? *European Foreign Affairs Review*, 19(3), 155–171. https://doi.org/10.54648/eerr2014026

Horvat, M., & Lundin, N. (2008). *EU-China science and technology agreement final report*. European Commission Research Area.

IMI-CARE (2022). Retrieved from: https://www.imi-care.eu/project/

Killeen, O. J., Davis, A., Tucker, J. D., & Mason Meier, B. (2018). Chinese global health diplomacy in Africa: Opportunities and challenges. *Global Health Governance: The Scholarly Journal for the New Health Security Paradigm*, 12(2), 4–29.

Knight, J. (2003). Updating the definition of internationalization. *International Higher Education*, 33(33), 2–3. https://doi.org/10.6017/ihe.2003.33.7391

Kukalets, O., Sydoruk, T., & Avhustiuk, M. (2021). China-EU student mobility: Policies, opportunities, and challenges. *Studia Politica: Romanian Political Science Review*, 21(2), 603–628.

Li, A., & Chang, C. (2014). Beyond competition: Past, present and future on EU-China science and technology collaboration. *European Foreign Affairs Review*, 19(3), 97–118. https://doi.org/10.54648/eerr2014023

Li, J., & Li, J. (2019). Educational policy development in China in the 21st century: A multi-flows approach. *Beijing International Review of Education*, 1(1), 196–220. https://doi.org/10.1163/25902547-00101014

Lin, A. X., Chan, G., Hu, Y., Ouyang, D., Ung, C. O. L., Shi, L., & Hu, H. (2018). Internationalization of traditional Chinese medicine: Current international market, internationalization challenges and prospective suggestions. *Chinese Medicine*, 13, 9. https://doi.org/10.1186/s13020-018-0167-z

Liu, Y. (2017). *Speech at fourth meeting of China-EU high-level people-to-people dialogue*.

Marginson, S. (2022). What is global higher education? *Oxford Review of Education*, 48(4), 492–517. https://doi.org/10.1080/03054985.2022.2061438

Meng, Q. (2004). *Health policy and systems research in China*. UNICEF/UNDP/World Bank/WHO - Special Programme for Research and Training in Tropical Diseases.

Men, J., & Linck, A. (2017). *China and EU: Reform and governance*. Taylor & Francis.

Ministry of Foreign Affairs of the People's Republic of China (2014). *China's policy paper on the EU: Deepen the China-EU comprehensive strategic partnership for mutual benefit and win-win cooperation*. https://www.fmprc.gov.cn/mfa_eng/wjdt_665385/wjzcs/201404/t20140402_679655.html

Möller, K. (2002). Diplomatic relations and mutual strategic perceptions: China and the European Union. In R. L Edmonds (Ed.), *China and Europe since 1978: A European Perspective* (pp. 10–32). Cambridge University Press.

Nature Editorials (2020). *Keep collaboration open when doors are closing*. Springer Nature.

Okoshi, Y. (2019). *China's research papers lead the world in cutting-edge tech*. Nikkei Asian Review.

Papatheologou, V. (2013). *EU-China academic exchanges in the context of people-to-people diplomacy: Significance and challenges for China's new leadership*.

Perthes, V. (2021). Dimensions of rivalry: China, the United States, and Europe. *China International Strategy Review*, 3, 56–65. https://doi.org/10.1007/s42533-021-00065-z

Pinna, C. (2009). EU–China relations in higher education. *Asia Europe Journal*, 7(3), 505–527. https://doi.org/10.1007/s10308-009-0238-y

Rodrigues, C. (2021). *Portugal, Nova Rota da Seda e rivalidade sistémica: contradições e dilemas*. Rotas a Oriente – Revista de Estudos Sino-Portugueses. https://doi.org/10.34624/ro.v0i1.26202.

Rubini, L., & Pollio, C. (2017). China and Europe networks in health: An empirical analysis on co-publications. *International Journal of Healthcare Technology and Management*, 16(1–2), 155–176. https://doi.org/10.1504/IJHTM.2017.087592

Scott, D. (2014). Trust, structures and track-2 dialogue in the EU-China relationship: Resetting and resettling a 'strategic partnership'. *Asia Europe Journal*, 12(1–2), 21–34. https://doi.org/10.1007/s10308-014-0375-9

Sino-European Health Networking Hub/ SENET (2019). *Strategy paper: Towards closer EU-China health research and innovation collaboration*. EU Official Press.

Spence, J. (1990). *The search for modern China*. Hutchinson.

Solana, J. (2013). Europe's Smart Asian Pivot. *Project Syndicate*. Retrieved from: www.project-syndicate.org

Song, X. (2010). European "Models" and their implications to China: Internal and external perspectives. *Review of International Studies*, 36(03), 755–775. https://doi.org/10.1017/S0260210510000835

Tambo, E., Khayeka-Wandabwa, C., Muchiri, G. W., Liu, Y. N., Tang, S., & Zhou, X. N. (2019). China's belt and road initiative: Incorporating public health measures toward global economic growth and shared prosperity. *Global Health Journal*, 3(2), 46–49. https://doi.org/10.1016/j.glohj.2019.06.003

Telò, M., Ding, C., & Zhang, X. T. (Eds.), (2018). *Deepening the EU-China partnership: Bridging institutional and ideational differences in an unstable world*. Taylor & Francis.

Tollefson, J. (2018). China declared world's largest producer of scientific articles. *Nature*, 553(7689), 390. https://doi.org/10.1038/d41586-018-00927-4

Välimaa, J. (2007). Social dynamics of higher education reforms: The case of Finland. In *Reform and Change in Higher Education*. Springer. https://doi.org/10.1007/1-4020-3411-3_15

Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences*, 15(3), 398–405. https://doi.org/10.1111/nhs.12048

Vicente, A. M., Ballensiefen, W., & Jönsson, J. I. (2020). How personalised medicine will transform healthcare by 2030: The ICPerMed vision. *Journal of Translational Medicine*, 18(1), 180. https://doi.org/10.1186/s12967-020-02316-w

Wang, L., Wang, X., & Philipsen, N. J. (2017). Network structure of scientific collaborations between China and the EU member states. *Scientometrics*, 113(3), 765–781. https://doi.org/10.1007/s11192-017-2488-6

Wang, H., & Hu, X. (2017). China's "Going-Out" strategy and corporate social responsibility: Preliminary evidence of a "boomerang effect". *Journal of Contemporary China*, 26(108), 820–833. https://doi.org/10.1080/10670564.2017.1337301

Xie, Z. (2020). A quiet success: The EU–China higher education cooperation program (1997–2001). In M. van der Wende, W. Kirby, N. Cai Liu, & S. Marginson (Eds.), *China and Europe on the new silk road: Connecting universities across Eurasia* (pp. 86–99). Oxford University Press. https://doi.org/10.1093/oso/9780198853022.003.0005

Xie, Q., & Freeman, R. B. (2019). Bigger than you thought: China's contribution to scientific publications and its impact on the global economy. *China & World Economy*, 27(1), 1–27. https://doi.org/10.1111/cwe.12265

Yip, W., & Hsiao, W. C. (2015). What drove the cycles of Chinese health system reforms? *Health systems and reform*, 1(1), 52–61. https://doi.org/10.4161/23288604.2014.995005

Zayim-Kurtay, M., & Zhu, C. (2019). Challenges of Chinese and European universities in the modernization and global context. *Frontiers of Education in China*, 14(2), 284–308. https://doi.org/10.1007/s11516-019-0014-8

Zhou, H. (2017). *China-EU relations: Reassessing the China-EU comprehensive strategic partnership*. Springer.

Zhu, C., Cai, Y. Z., & François, K. (2017). Perceptions of European and Chinese stakeholders on doctoral education in China and Europe. *European Journal of Higher Education*, 7(3), 227–242. https://doi.org/10.1080/21568235.2017.1290866