

Belt and Road Initiative: The emerging China-EU railway and the opportunity for Italy*¹

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Abstract

It has been a decade since the President Xi Jinping officially announced the *Belt and Road Initiative (BRI)*, commonly known also as *One Belt One Road (OBOR)*. Defined as the largest political infrastructural project, BRI has not equivalent that rivals its scale, ambition and commitment.

As a combination of two existing routes, the *Silk Road Economic Belt (SREB)* and the *21st Maritime Silk Road Initiative (MSRI)*, the project primarily aims at connecting three continents – Asia, Europe and Africa – through a number of infrastructure investments along both the maritime and land routes.

The present research is articulated in three main parts: opened by a descriptive introduction that frames the BRI, the first paragraph focuses on one of the most important branches of the project that is the railway line linking China and Europe. The second paragraph proceeds with a comparative analysis, conducted with the main purpose of detecting the pros and cons of each freight transportation mode, namely sea, air and railway. The analysis provides information about time and costs, including an investigation on the correlation between the transport mode and the category of goods shipped.

In the end, the paper investigates the possible impact that the China-EU railway development could bring on Italy. The strategic geographical position and the crucial role within the Trans-European Transport Network (TEN-T) provides Italy the opportunity to benefit from the development of China-EU railway. Italy geographical location and its leading position in the machinery sector will be evaluated as two potential strengths to enhance within the emerging China-EU railway.

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¹ This paper is the result of the research conducted as member of the PRIN 2017 project on “The One Belt – One Road (OBOR) Initiative: Legal Issues and Effects on the Financing and Development of Maritime and Multimodal Infrastructures by Chinese Investors in Italy”, co-funded by the Ministry for Universities and Research (MUR).

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1 The Belt and Road Initiative and the emerging China-EU railway

1.1 Belt and Road Initiative: an introduction

Xi Jinping's dream of a powerful and influential China, both economically and politically, has its roots in the economic reforms initiated by the father of modern China, Deng Xiaoping², around the 1980s. Those reforms were, in fact, vital in avoiding the economic impasse caused by China isolation from global markets during the Maoist period. Among the various reforms, the so-called open-door policy (*kai fang zheng ce* 开放政策) was implemented with the main purpose of expanding international trade, attracting foreign investments, and acquiring technical-industrial knowledge from abroad. The economic and social growth initiated in those years, continued during the following period. In fact, it is possible to affirm that China has been able to preserve the spirit of openness toward the outside world, passing from a condition of a complete isolationism, to one of a semi-isolationism, to one of a complete openness, that has been manifested in the last twenty years by for example the entry into the World Trade Organization (WTO) in 2001, or, more recently, the Belt and Road Initiative which can certainly be considered as the most recent manifestation of China "going global" policy, namely the strategy of expanding China's power over Chinese borders³.

The initiative of jointly building the Silk Road Economic Belt (the Belt) and the 21st-Century Maritime Silk Road (the Road) was formally announced by the president Xi Jinping during his visits in Central Asia and South-east Asia in September and October 2013, with the aim of strengthening the cooperation between China and the other countries along the old Silk Road and on a wide range of issues, in particular the field of trade and investments⁴. According to a more nostalgic interpretation, the Belt and Road Initiative has been often described as a way to revitalize the concept of the Ancient Silk Road, which refers to a set of trade routes – originated at least as early as the 1st century BC – that gave rise to an extensive network of commercial exchanges between Mediterranean Europe and Asia, of which the Chinese and Roman empires constituted the two major points respectively in the east and west territory. Rather than a mere recreation of former connections and corridors through a network of links between Asia and Europe, the Belt and Road Initiative intends to go beyond. In fact, the Belt and Road Initiative can be regarded as the most important driver for China's long-term development strategy of its foreign policy, shaping its national economic development and international activities⁵.

Two years later, the first road map of the Belt and Road Initiative (hereinafter BRI) was officially announced within the "*Vision and Proposed Actions*

² Deng Xiaoping became China's effective leader in 1978, two years after the death of Mao Zedong. He formally retired in 1992 but was referred to in the Chinese press as the paramount leader and remained influential until his death in 1997. Deng presided over the economic reforms of the post-Mao years, which produced an impressive growth of the Country, profound social transformation, and, eventually, a market economy.

³ H. OHASHI, *The Belt and Road Initiative (BRI) in the context of China's opening-up policy*, in *Journal of Contemporary East Asia Studies*, 7(2), 2019, pp. 85-103

⁴ Y. ZHAO, *International Governance and the Rule of Law in China under the Belt and Road Initiative*, Cambridge University Press, 2019, Cambridge, p. 1.

⁵ Y. VAN DER LEER-Y. YAU, *China's New Silk Route: the long and winding road*, PwC, 2016.

Outlined on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road”, published by the National Development Reform Commission, the Ministry of Foreign Affairs and the Ministry of Commerce, with State Council authorization⁶. In 2016, the BRI was further integrated into China’s national economic blueprint and outlined in the China’s 13th Five-Year Plan, became the emblem of China new vision of opening-up policy. To date, the project represents the largest and the most ambitious plan guided by China, involving 65 countries, which jointly account for some of 60% of global GDP and 30% of the world’s population⁷.

As the largest infrastructure investment plan, the BRI represents the most relevant example of China new trade policy for connecting the country with Europe, Asia, Oceania and Africa.

The backbone for the realization of such interconnection at international level is represented by the two aforementioned routes, the Belt and the Road. The former crosses the Central and West Asia towards Central Europe via land, while the latter connects the South-East Asia, Oceania, North-Africa and Europe via sea. The BRI is not limited to the aforementioned Belt and the Road linkages. The two routes are further interconnected through the creation of international economic corridors⁸. These minor routes are meant to become arteries fundamental for the recovery of the existing deficit in the infrastructural sector, absorbing a large part of BRI-related investments on transport facilities. According to official texts and some Chinese scholars’ interpretations, by means of “regional” corridors within the overall initiative, the BRI is intended to create what China calls a “community of shared destiny” (*mingyun gongtongyi 命运共同体*) and a “community of shared interests” (*liyi gongtongti 利益共同体*)⁹ by improving connectivity, infrastructure, transport and cultural exchange with the primary objective of generating synergies among states participating in the new trade and investment network.¹⁰

The BRI goal of achieving a comprehensive connectivity with the countries along the routes is supported by five strategies, namely policy coordination, facilities connectivity, unimpeded trade, financial integration and people-to-people bonds.

Among the five strategies, infrastructure accounts for the 68% of the total investments to be made pursuant the BRI, calling for the construction and

⁶ *Action plan on the Belt and Road Initiative*, The State Council of the People’s Republic of China, March 30th 2015. (http://english.www.gov.cn/archive/publications/2015/03/30/content_281475080249035.htm).

⁷ Steer Davies Gleave, *Research for TRAN Committee: The new Silk Route – opportunities and challenges for EU transport*, European Parliament, Policy Department for Structural and Cohesion Policies, Brussels, 2018 ([http://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_STU\(2018\)5_85907](http://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_STU(2018)5_85907)).

⁸ Six overland economic corridors have been identified: the China-Mongolia-Russia Economic Corridor, the New Eurasian Land Bridge, the China-Central Asia-West Asia Economic Corridor, the China-Indochina Peninsula Economic Corridor, the China-Pakistan Economic Corridor, and the Bangladesh-China-India-Myanmar Economic Corridor.

⁹ J. GARLICK, *The Impact of China’s Belt and Road Initiative: From Asia to Europe*, 1st Edition, Routledge, Rethinking Asia and International Relations, 2019, p. 11.

¹⁰ A. HU, *The Belt and Road: revolution of economic geography and the era of win-winism*, 2018 in Wei Liu (ed.), *China’s Belt and Road Initiatives: Economic Geography Reformation*, Springer, Singapore, pp. 15-32.

development of new roads, railroads, airports and ports along the BRI-related countries¹¹.

In the period between 2014-2020, almost the 30% of BRI investments have been addressed to the transport sector (Natixis, American Enterprise Institute)¹².

Infrastructure represents a key pillar of the BRI, as long as their importance is evaluated in correlation with trade expansion and economic development. In this vein, large part of BRI-focused literature documented the economic benefits deriving from investment in infrastructure, mainly concerning reduction in shipment times and trade costs¹³.

As regards the total amount of investments needed for the achieving of BRI objectives, no mention is made about the clear target to be incurred. However, it is estimated a budget between \$1-8 trillion on BRI-related projects before the initiative runs its course on the eve of the PRC's hundred-year anniversary in 2049¹⁴.

What is certain is that China is the leading provider of the financial support for BRI-related investments. Specifically, the main financial sources are the two China state-owned policy banks (the China Development Bank and the Export-Import Bank of China) on one hand, and the four big state-owned commercial banks (the ICBC, Bank of China, the China Construction Bank and the Agriculture Bank) on the other hand, covering respectively the 45% and the 36% of the total financial support.

Even in lower percentage, the two multilateral development banks (the AIIB and the BRICS) are loans providers for projects in countries and regions along the belt and the road. Lastly, it should be noted that a state-owned fund, the Silk Road Fund, was established in 2014 with the exclusive purpose of funding investments for the BRI¹⁵.

With reference to the European involvement in the BRI, it is of great relevance the role played by the European Union (EU). Its importance arises both from the fact that EU is the geographical destination of the BRI and the interdependence between China and EU in terms of economic and commercial relations. In 2020, in fact, China was the third largest partner for EU exports (10,5%) and the largest partner for EU imports (22,4%)¹⁶.

China-EU cooperation in the framework of the BRI mostly concerns the transport sector. BRI investments in the EU involve transport nodes, taking the form of equity/acquisition of shares in ports, railways and airports.

The EU, too, showed particular interest in the opportunities arising from the BRI. Evidence of such interest is reflected in a number of initiatives that

¹¹ C. KYOUNG-SUK, *The Current Status and Challenges of China Railway Express (CRE) as a Key Sustainability Policy Component of the Belt and Road Initiative*, in *Sustainability*, 13, 5017, 2021 (<https://doi.org/10.3390/su13095017>).

¹² A. GARCÍA-HERRERO, *China's Financing of the Belt and Road Initiative During the Pandemic*, ISPI, 2 April 2021 (<https://www.ispionline.it/en/pubblicazione/chinas-financing-belt-and-road-initiative-during-pandemic-29948>).

¹³ C. DI STEFANO-P.L IAPADRE-I. SALVATI, *Trade and Infrastructure in the Belt and Road Initiative: A Gravity Analysis Based on Revealed Trade Preferences*, in *J. of Risk Financial Manag.*, 2021, p. 2 (<https://doi.org/10.3390/jrfm14020052>).

¹⁴ F. SCHNEIDER, *Global Perspective on China's Belt and Road: Asserting Agency through Regional Connectivity*, Amsterdam University Press, Amsterdam, 2021.

¹⁵ A. HE, *The Belt and Road Initiative: Motivations, Financing, Expansion and Challenges of Xi's Ever-expanding Strategy*, in CIGI, Papers No. 225, 2019, p. 13.

¹⁶ *Extra-EU trade in goods*, Eurostat, March 2021 (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Extra-EU_trade_in_goods#Main_EU_partners).

define a sort of “agenda on connectivity” to which efforts from both China and EU converge. In 2015, EU-China Connectivity Platform was established with the primary scope of improving transport connectivity, identifying cooperation opportunities and synergies between the Trans-European Transport Network (TEN-T)¹⁷ and the BRI.

Transport represents a key pillar in China-EU cooperation. In particular, the strong commitment of the Chinese government on the promotion of China-EU railway provides promising opportunities that the EU should not ignore, especially considering that a significant number of EU terminals represent the final destination of railway routes departing from the Chinese cities.

The popularity that China-EU railway is recently experiencing inspired the objective of the present research, which is mainly aimed at reflecting on the potential of railway in becoming a third competitive solution, in addition to air and maritime transport. For the purpose of this research, a comparative analysis has been carried out through a questionnaire submitted to both European and Chinese forwarders operating in the context of freight transport between China and EU. The questionnaire consisted of 10 questions related to freight rates, transit time and mostly traded routes for each transport mode. The information obtained have been subsequently processed in an aggregate way, with the scope of outlining a China-EU freight transport overview. International official database and the existing studies conducted in this regard provided a further support, representing an additional source for the content of this research.

1.2 China-Europe railway

The development of Eurasian transport corridors connecting China and Europe has become a key pillar of the Belt and Road Initiative, involving the construction of the overland part of the project. In particular, the announcement of the BRI represented the turning point for the development of China-EU rail freight transport.

According to one of the latest studies published by UIC (International Union of Railway) for the period 2014-2018, a significant increase in both number of trains and volumes of traffic (TEUs)¹⁸ has been registered. In particular, this latter reached 345.000 TEUs in 2018, compared to 25.000 in 2014¹⁹. The most recent data drawn up from the information published by ERAI (Eurasian Rail Alliance Index) and RZD (Russian Railways) revealed that in the period between January-September 2021, 459.000 TEU transited between China and Europe via Kazakhstan, while 782.000 TEU via Russia, registering

¹⁷ The EU 1315/2013 Regulation defined the trans-European transport network (TEN-T), which provides for the implementation of a network articulated on two levels: the Comprehensive network and the Core network. This latter refers to a central network at EU level to be realized by 2030. The implementation of the core network will be facilitated using a corridor approach, including the realization of urban nodes, port, airports and railway terminal, and multimodal connections with the primary aim of connecting the 27 EU Member States. In the medium and long term, the development of railway infrastructure will lead to a significant increase in both rail freight volume and the cargo capacity.

¹⁸ Acronym for twenty-foot equivalent unit. It is a unit measure equal to 20-foot-long container.

¹⁹ *Eurasian Corridors: Development Potential*, International Union of Railways, UIC Freight Department, 2020 (<https://uic.org/com/enews/nr/684/article/eurasian-corridors-development-potential>).

respectively a +30% and +40% compared to the previous year. This means that an annual volume of above 1 million TEU between China and Europe (both directions) is fairly likely.²⁰

As a consequence, positive trends emerge also in terms of market share as means of freight transportation. In 2020, railway freight transportation covered only the 3% of the market share mainly due to the dominance of sea and air transportation. During the following year, this value registered an increase, reaching almost 6%. This percentage has been estimated to turn into 10% by 2024.²¹

Physically, the emerging Eurasian land bridge revives the Ancient Silk Road as a land route for trading between east and west, connecting cities in Europe with Russian Far East and China by railway. Specifically, the two major rail land bridges between Europe and Asia are the Trans-Siberian Railway (TSR or First Eurasian Land Bridge), and the New Eurasian Land Bridge (NELB or Second Eurasian Land Bridge), spanning from the Chinese city of Lianyungang to Rotterdam, running through China, Kazakhstan, Russia, Belarus, and Germany.²² The TSR represents the backbone of the Eurasian land bridge and, due to the competitive advantage, the railway development between China and EU have been exclusive based on TSR routes running through Russia, typically referred as the northern corridor. The northern corridor provides three alternatives branch lines connecting China and Europe via TSR, namely through the Kazakh route (via Alashankou/Dostik), the Mongolian route (via Erenhot/Zamyn-Uud) and the Manchurian route (via Manzhouli/Zabjalsk)²³.

New connections between China and EU tend to use the transport corridors with the biggest capacity, the best infrastructure, and the most favorable legislative conditions²⁴. The NELB provides for an alternative route linking China to Europe through Kazakhstan, Russia, Belarus and Poland. Specifically, trains on this route cross the Chinese-Kazakh border at Alashankou or Khorgos, further flowing into the TSR, entering EU at Brest/Malaszewicze on the Polish-Belarusian border. To date, NELB, provides for the shortest option by rail linking China to Europe, covering a distance of 10,900 km compared to the 13.000 km of the TSR northern

²⁰ This information has been acquired from Onno De Jong during his presentation shared in occasion of the fifth edition of the “European Silk Road Summit” held in Amsterdam on December 7-8, 2021.

²¹ Data provided for by Yulia Kosolopova during her presentation entitled “*Container transit transportation through Russia territory: Main challenges and opportunities*” shared in occasion of the fifth edition of the “European Silk Road Summit” held in Amsterdam on December 7-8, 2021.

²² F. SARWAR, *China’s One Belt and One Road: Impact of “New Eurasian Land Bridge” on Global power play in region*, in *NUST Journal of International Peace and Stability (NJIPS)*, vol. I, no. 2, 2018, p. 136.

²³ X. ZHANG-H.J. SCHRAMM, *Eurasian Rail Freight in the One Belt One Road Era*, in J. STENTOFT (edited by), *30th Annual NOFOMA Conference: Relevant Logistics and Supply Chain Management Research*. Syddansk Universitet. Institut for Entreprenørskab og Relationsledelse, 2018, pp. 769-798.

²⁴ Russia, Kazakhstan and Belarus are part of the Eurasian Economic Union (EEU). EEU is an international economic union established through the signing of the Treaty on EEU on May 2014. The Treaty came into force in 2015, defining a free trade zone that comprises countries located in central and northern Asia and Eastern Europe. The EEU ensures the free movement of goods, services and labor and provides a coherent and unified policy in economy sectors.

corridor. It, in fact, represents one of the most ambitious BRI-project, targeted as a potential enabler of China-EU trade exchange by land.

It is also worth mentioning the Middle corridor or Trans-Caspian International Transport Route (TITR), which runs through Kazakhstan, the Caspian Sea, Azerbaijan and Georgia further to Turkey, Ukraine and European countries, forming an alternative transport corridor to the one passing across Russia²⁵.

Lastly, the southern corridor spans from China to South-Europe, connecting Kazakhstan, Uzbekistan, Turkmenistan, Iran and Turkey²⁶.

Before 2010, a railway link between China and Europe already existed. However, regular and scheduled freight services were not provided, mainly due to the weak competitiveness compared to the other transport modes²⁷.

Freight service launched by China, the so-called China Railway Express (CRE), commenced its first operation in 2011 with the first freight train service from Chongqing (Southwestern China) to Duisburg (Western Germany).

Initially, the freight service in China was mostly concentrated in the central provinces and cities such as Chongqing, Sichuan, Henan and Hubei. Subsequently, new rail connections to Europe opened in the coastal provinces of China.

The development of railway connection was clearly driven by an economic logic. In the first decade of the 21st century, foreign investors from electronic and automotive sectors relocated their manufacturing plants in the central area (including Sichuan and Chongqing) of China, due to an increase in the labor cost in the coastal cities. The sectorial development in this area and the distance from the Chinese ports led to the utilization of railway transportation, giving rise to new China-Europe connections, with the main intention of servicing global producers of electronics and machines²⁸.

CRE routes have been actively expanded over the last years. As of January 2019, the CRE departed from 43 cities in China. The main CRE routes depart from the Chinese cities of Changsha, Zhengzhou, Yiwu, Wuhan, Chengdu, Chongqing connecting the European cities of Hamburg, Madrid, Duisburg/Hamburg, Lodz/Tillberg, with a frequency ranging from 1 to 3 trains per week. The main cargo involves IT products, machinery, textile, clothing, medical instrument²⁹.

The rapid increase of China-EU railway has been possible only due to subsidies, granted by Chinese governments. The trains departing from China to the European cities receive a financial support from the Chinese central and local government that, in line with the political and economic objectives, have made them a means of promotion of the BRI.

As from 2018, in different percentages depending on the specific region, the economic subsidies in favor of forwarders and railway operators lowered the

²⁵ R. PALU-O.P. HILMOLA, *Future potential of Trans-Caspian Corridor: Review*, in *Logistics*, 2023, p. 1. (<https://doi.org/10.3390/logistics7030039>).

²⁶ F. DAVENNE-A. SCHWILLING-X. LI, *UICs Eurasian Corridor Study with focus on the middle Francois and southern corridor: presenting the conclusion*, 22 April 2021.

²⁷ R. POMFRET, *The Eurasian Land Bridge: the role of services providers in linking the regional value chains in East Asia and the European Union*, ERIA Discussion Paper, 2018, p. 3.

²⁸ J. JAKÓBOWSKI-K. POPLAWSKI-M. KACZMARSKI, *The Silk Railroad. The EU-China rail connections: background, actors, interests*, OSW Centre for Eastern Studies, n. 72, 2018.

²⁹ C. KYOUNG-SUK, *op. cit.*, p. 10.

costs of freight transportation bringing them to a closer level of sea freight rates. This marked the beginning of a new phase for the railway infrastructure, being a mode of freight transportation effectively used by operators and consequently attracting higher freight traffic volumes. For this reason, at least during the initial stage of promotion, the subsidies have been fundamental in the process of creation and development of China-EU railway market.

The initial government plan provided for a subsidies reduction year by year (50% in 2018, 40% in 2019, 30% in 2020), initially planning a definitive cut for 2022, year when this mode of transport would have reached – at least according to the expectations of the legislator – a good level of sustainability and economic competitiveness regardless of subsidies.

Notwithstanding the contrapositions between those in favor of the subsidies and those who consider them a factor of market price distortion, it is rather widespread the possibility of subsidies extension until 2023³⁰ (also due to the Covid pandemic), considering them still necessary for the development of this industry. However, the more optimistic experts believe that rail transport has already reached a good level of maturity over the last years and there are already the conditions to operate independently from the subsidies.

Nonetheless, the creation of the necessary conditions and the resolution of a series of economic, operational and geopolitical bottlenecks will be of great importance in order that railway transportation can increase its market share and its level of competitiveness on the basis of the transport quality, the strengths and the ability to adapt to the technological and digital process, rather than on subsidies.³¹

Furthermore, subsidies tend to create transport prices distortion, altering the effective price of a container shipment by rail. This leads to an increasing awareness of Chinese governance on the importance to base the competitiveness of China-EU railway on market mechanisms, rather than subsidies³².

In other words, the successful operation of railway as means of freight transportation between China and Europe in the following years should focus mainly on the “quality” of the service rather than on “quantity”.

The system launched by the government with regard to subsidies for the promotion of China-Europe freight trains, also as a means of propaganda for the Belt and Road Initiative, has certainly played a crucial role in the construction of this channel. The total elimination of these subsidies could certainly have both advantages and disadvantages, but it will certainly lead to a clear shaping of a precise slice of the market that will continue to rely on this type of freight transport (especially for certain categories, which will be discussed in the comparative analysis, subject of this paper). Furthermore, it is not excluded that the subsidies currently provided will be eliminated in favor of other forms and instruments of financial support³³.

³⁰ According to a statement of Mr. Jacky Yan, founder and CEO of New Silk Road Intermodal. (<https://news.cgtn.com/news/2022-01-14/New-record-set-in-rail-transportation-on-China-Europe-route-160QQUBsvNS/index.html>). Accessed on December 15th, 2022.

³¹ This information has been provided in occasion of the fifth edition of the “European Silk Road Summit” held in Amsterdam on December 7-8, 2021.

³² J. JAKÓBOWSKI-K. POPLAWSKI-M. KACZMARSKI, *op. cit.*, pp. 13-22.

³³ <https://baijiahao.baidu.com/s?id=1719215607673006911>

2 Air, railway and maritime transportation: a comparative analysis in the framework of China-EU connectivity

Transport facilities allow the movement of goods between countries. When it comes to choose the transportation mode, several factors emerge. The evaluation of the category of goods to be shipped, price and duration of transport and several other factors as the geographical locations, the value of the goods, their vulnerability to damage, security and promptness of delivery is fundamental in order to ensure that goods reach the destination within the time and conditions agreed.

The international flow of goods is distributed among three methods of transportation, namely land, sea and air, whose different nature implies different transport conditions, specifically in terms of transit times and costs. Pursuant the objective of this article, the China-EU relations will be analyzed under the perspective of connectivity on the basis of a comparative analysis between air, sea and railway freight transportation. The analysis mainly focuses on providing information about transit time, freight rates³⁴ (calculated according to the parameter \$/FEU³⁵ in the case of air and railway transport and \$/kg in the case of air transport) and product categories shipped for each transport mode. The main objective is to identify the pros and cons, reflecting on the recent popularity that China-Europe railway is experiencing within the framework of the BRI. The recent development in the infrastructure field arising from the ongoing BRI investments will be taken into account.

2.1 Maritime transport

Trade relations between China and Europe largely rely on maritime transportation. Covering the 94% of trade by volume, transport by sea represents a lifeblood for China-EU economic relations³⁶.

Goods shipped from China towards EU countries mostly transit through BRI maritime route, namely the 21st Maritime Silk Road (MSR), entering EU through the Suez Canal, which naturally favors the Mediterranean ports. At present, the 30% of the global maritime trade transit through the Suez Canal³⁷, without which vessels should follow an alternative route transiting through the Cape of Good Hope. However, it would involve significantly higher transit time and greater costs.

³⁴ It should be noted that the freight rates showed within this comparative analysis do not take into account the Covid-19 pandemic period, during which especially the maritime and air freight rates experienced a dramatic increase. By way of example, during the pandemic the sea freight rate for a container of 40FEU shipped along the route Far East – Mediterranean increased from around 1.789\$ (2020) to 11.924\$ (2021), with an increase in percentage of 567%.

³⁵ Acronym for forty-foot equivalent unit. It is a unit measure equal to 40-foot-long container.

³⁶ Data shown during the intervention of Professor Gian Enzo Duci (Vice President, Confrasperto – Confcommercio) in his report entitled “Storytelling vs facts checking: China and maritime Europe”, in occasion of the webinar “EU ports and Chinese investments: Time for a Post-Pandemic Maritime Silk Road?” organized by the University of Genoa in the context of the PRIN (Research Projects of National Interest) on Belt and Road Initiative.

³⁷ D. TENTORI, *Commercio: dopo Suez, quale futuro per la globalizzazione?*, ISPI, 2 aprile 2021 (<https://www.ispionline.it/it/pubblicazione/commercio-dopo-suez-quale-futuro-la-globalizzazione-29866>).

In view of a continuously broadening of BRI geographical scope, the hypothesis of the so-called Polar Silk Road is widespread. The main advantage would reflect the shorter transit time for vessels heading towards Northern Europe. However, an advantage for the Southern Europe has not been assumed and the Suez Canal currently maintains its competitiveness³⁸. The importance of the Mediterranean in the context of China-EU commercial exchanges remains undisputed. It, in fact, represents the final destination of the MSR and the main recipient of Chinese investments, mainly focused on European container ports. The main acquisitions from Chinese investors concerned the ports of Rotterdam, Zeebrugge, Valencia, Vado Ligure and the port of Piraeus³⁹. This latter represents one of the major ports in the European mainland⁴⁰, followed by the ports of Venice, Trieste, Genoa, Marseille and Barcelona⁴¹.

Freight transportation by sea occupies a leading position, allowing the shipment of the majority of goods between China and EU. This is mainly due to a number of advantages that render the maritime freight transport highly competitive compared to air and railway. In particular, the two main advantages provided for by sea transport concern price and cargo capacity. According to the aforementioned established parameter (\$/FEU), the average cost for a container of such dimension shipped from China towards Europe stands around \$ 1-2 thousand⁴².

Concurrent with price competitiveness, the other exclusive advantage of sea freight is related to volume capacity. Ships are the vehicles with the largest cargo-carrying capacity and there is no other means capable of moving large amounts of cargo over long distances at a low cost.

As regards to product categories, ships generally provide for various types of cargo that allow the shipment of the most of product categories. Basically, there are not specific constraints in terms of goods allowed to sea transport, therefore a ship container carry an array of commodities, ranging from

³⁸ *The Arctic Route, Climate change impact, Maritime and economic scenario, Geo-strategic analysis and perspectives*, SRM, 2020.

³⁹ *Chinese acquisitions of EU port infrastructure*, European Parliamentary Research Service (EPRS), 2018 in *China's Maritime Silk Road initiative increasingly touches the EU*, European Parliament, March 2018, p. 3 ([https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/614767/EPRS_BRI\(2018\)614767_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/614767/EPRS_BRI(2018)614767_EN.pdf)).

⁴⁰ The Greek port of Piraeus consists of two terminals handling containers: Terminal I and Terminal II. Terminal I has a capacity of 1 million TEUs and it is operated by the Piraeus Port Authority, which has been majority owned by China COSCO Shipping Group since August 2016. Terminal II is run by COSCO Pacific under a 35-year concession signed in 2008. The agreement between Piraeus Port Authority and COSCO allowed investment not only in new piers, but also in a rail link between the port's terminals and the national rail system. In 2016, Piraeus annual container throughput reached 3.7 million TEU, which represents a 168 percent increase. In 2007, Piraeus was not among the top 15 container ports in Europe, but in 2016 it ranked as the 8th largest container port on the continent. This impressive increase has been largely driven by growth in transshipment, likely relocations from other transshipment ports. See World Bank Group, *Belt and Road Economics. Opportunities and Risks of Transport Corridors*, 2019, p. 51.

⁴¹ D. DUNMORE-A. PRETI-C. ROUTABOUL, *The "Belt and Road Initiative": impacts on TEN-T and on the European transport system*, in *Journal of Shipping and Trade*, 10, 2019, p. 6. (<https://doi.org/10.1186/s41072-019-0048-3>).

⁴² Drewry-World Container Index, September 9, 2021 (<https://www.drewry.co.uk/supply-chain-advisors/supply-chain-expertise/world-container-index-assessed-by-drewry>).

consumer goods, foodstuff, clothing, electronic devices, chemical, machinery and raw materials.

Actually, commodities shipped by sea, although of different categories, have in common the low time-sensitivity. This means that they are products for which time does not represent a priority factor.

The longer are distances covered by ship, the higher is the transit time. Although transit time may vary depending on the cities of departure and destination, on average a ship from China requires around 30-35 days to reach the final destination in Europe.

When the time factor is involved as a priority in the context of freight transportation, the possibility of choosing vessels as transportation mode decrease, due to its long transit time. In other words, for those categories defined as high time-sensitive, time plays a crucial role in defining the appropriate transportation mode. The expression “high time-sensitive” groups those product categories requiring times of delivery quite short, reliable and extremely punctual for a number of reasons such short shelf life, seasonality, rapid technological obsolescence. Hence pharmaceutical products, foodstuff and fresh products or commodities that have to meet specific market demand rarely are shipped by sea, inasmuch the long transit time would burden the conditions and the value of goods.

2.2 Air transport

A wide range of airports across Eurasia are used to carry air freight, whether in dedicated freighter aircraft or in the belly holds of passenger aircraft⁴³.

Despite the dominant role of maritime transportation in the context of China-EU commercial exchanges, a fair portion of these relies on air transport. The air freight share between China and EU developed favourably over the last ten years, increasing from 20% in 2011 to 26% in 2020⁴⁴.

Pursuing one of the main BRI objectives, namely the implementation of an extensive Eurasian transport network, a number of investments on EU transport nodes concerns the airport sector. These investments are mostly concentrated between Central and Western Europe. A number of these have already been completed in the context of the BRI concern Germany, Belgium and France⁴⁵.

Airports located within this area, Frankfurt Hahn (Germany), Charles de Gaulle (France), Liege (Belgium), together with the airports of Schiphol (Netherlands), Luxembourg and Malpensa (Italy), are ranked in the top-10 of the busiest EU airports by tons of freight, especially in the extra-EU trade⁴⁶.

⁴³ D. DUNMORE-A. PRETI-C. ROUTABOUL, *The “Belt and Road Initiative”: impacts on TEN-T and on the European transport system*, in *Journal of Shipping and Trade*, 10, 2019, p. 4. (<https://doi.org/10.1186/s41072-019-0048-3>).

⁴⁴ Y. ZHANG, *Alternative Transport Mode: China-EU Trade on Rail*, IHS Markit Global Trade Atlas, March 17th 2021 (<https://ihsmarkit.com/research-analysis/alternative-transport-mode-china-eu-trade-on-rail.html>).

⁴⁵ Steer Davies Gleave, *Research for TRAN Committee: The new Silk Route – opportunities and challenges for EU transport*, European Parliament, Policy Department for Structural and Cohesion Policies, Brussels, 2018 ([http://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_STU\(2018\)5_85907](http://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_STU(2018)5_85907)).

⁴⁶ *Air transport statistics*, Eurostat, December 2019 (<https://www.sipotra.it/wp-content/uploads/2019/12/Air-transport-statistics.pdf>).

In particular, Germany is emblematic in the China-EU strategic cooperation. The excellent connections to railway, road and water networks render Frankfurt airport highly strategic. In 2017, in fact, the HNA Group acquired the 82,5% of its stake. It is noteworthy that during the period 2017-2020, Frankfurt airport cargo capacity significantly increased, reaching almost 200 million kilograms in 2020⁴⁷.

Air transport is definitely the means of transport requiring the shortest transit time. Considering China-EU distance, a freight air takes around 3-5 days⁴⁸. It is evident that the exclusive peculiarity of freight air transport compared to sea and railway reflects the potential of covering long distances within the shortest time.

However, in some cases the air transport mode is not identified as the best option, since the great advantage of short transit time comes in conjunction with quite expensive freight rates.

According to the parameter \$/kg, the cost for a container carried by air is around 2-3\$/kg⁴⁹.

It is evident that facing tariffs ten times higher than maritime transportation, air freight is exclusively employed for cases in which time represents an imperative priority, therefore for the aforementioned reasons such as short shelf life, product seasonality or rapid technological obsolescence. In other words, air freight represents the only alternative for high time-sensitive and high value products that require the shortest possible delivery time. Specifically, commodities mostly transported by air in the context of China-EU trade involve pharmaceutical, fashion, electronics, machinery and foodstuff products. However, a portion of these two macro categories, in particular those ones that can accept a slighter longer delivery time (several days), are good candidates to shift from air to rail, which implies lower transportation tariffs.

2.3 Railway transport

The development of Eurasian railway transportation is one of the key pillars of the BRI. In particular, the most ambitious project relies on the New Eurasian Land Bridge economic corridor, meant to become the new enabler of China-EU trade.

BRI appears to contribute to the increased infrastructure capacity, routes operated and service frequency at existing ports and airports, but without fundamentally changing the network available. In contrast, improvements on the railway sectors are possible, following the introduction and direct rail services between China and Europe.

It is of great relevance the case of Budapest-Belgrade railway. This project was firstly evaluated in the context of the Trans-European transport network

⁴⁷ HNA Group restructuring Part 2: Foreign airport aspirations, CAPA - Centre for Aviation, February 6th 2021 (<https://centreforaviation.com/analysis/reports/hna-group-restructuring-part-2-foreign-airport-aspirations-550566>).

⁴⁸ Author's own calculation. It has been generated through the average of data related to air transit time acquired from the questionnaire.

⁴⁹ K. KIDA-K. YOSHIDA-Y. MURAMATSU, *China to US airfreight prices spike as coronavirus hits*, Nikkei Asia, May 16, 2020 (<https://asia.nikkei.com/Business/Transportation/China-to-US-airfreight-prices-spike-as-coronavirus-hits2>). Data on air cargo rates from Shanghai to Europe published by TAC Index in CNY currency and converted into dollars through author's own calculation.

(representing the corridor X). Subsequently its strategic importance was revived in the framework of the BRI, becoming a flagship, and crucial route, for the so-called China-Europe Land-Sea Express route⁵⁰. This latter refers to the railway line which aims at linking the Greek Port of Piraeus with the city of Budapest⁵¹ with the result of rendering Hungary a key entry point for the Eurasian trade. The project is emblematic. It represents an example of integration between BRI and the TEN-T, becoming part of the list of projects of common interest included within the EU-China Connectivity Platform⁵². Central and Western Europe provides for the major railway terminals in transit from China. However, the development of railway service could be attractive also for transport to EU Member States bordering the Baltic Sea and the North Sea. These areas suffer the longest shipping times distance via sea, considering the maritime route through the North Sea up to 1 week longer than the Mediterranean. Therefore, they could benefit from the implementation of steady railway service from Russia network⁵³.

As regard to transit time, a container transported by railway from China to Europe requires, on average, 12-18 days, for a maximum of 21 days in the case of Yiwu-Madrid line, which represents the longest route, covering a distance of 13,052 km⁵⁴.

Basically, railway freight involves different product categories. In 2020, some of the top commodities imported via railway from China included electric equipment (\$5.96 billion) and vehicles (\$1.44 billion). Textile and apparel cargo also formed a large portion of rail carriage. In contrast, EU export to China via railway has been largely dominated by vehicles, followed by machinery and mechanical appliances, foods and cosmetics.⁵⁵

The determination of the cost for a container carried from China to Europe via railway cannot disregard the subsidies provided for by the Chinese governments, since they change the economics of international railway traffic, distorting the actual transport costs and freight rates⁵⁶.

Costs will be evaluated on the basis of two railway lines: Chongqing-Duisburg and Chengdu-Lodz. Chongqing-Duisburg route receives a subsidy of \$ 3.500-4.000 per FEU, therefore the initial price of \$ 8.000-9.000 is reduced to \$ 4.750 per FEU. The Chengdu-Lodz route receives a subsidy of

⁵⁰ F. RENCZ, *The BRI in Europe and the Budapest-Belgrade railway link*, EIAS - European Institute for Asian Studies, 10, 2019, pp. 3-4.

⁵¹ D.A. BERTOZZI, *La Belt and Road Initiative - La nuova via della seta e la Cina globale*, Reggio Emilia, Imprimatur, 2018.

⁵²The EU-China Connectivity Platform is a connectivity platform included in the MoU signed between the European Commission and the National Development and Reform Commission of China in September 2015. The platform specifically serves as a tool for the identification of projects of common interest, enhancing synergies between BRI and TEN-T (<https://ec.europa.eu/transport/sites/default/files/eu-china-connectivity-platform-projects-2019.pdf>).

⁵³ D. DUNMORE-A. PRETI-C. ROUTABOUL, *op. cit.*, p. 9.

⁵⁴ B. BESHARATI-G. GANSAKH-F. LIU-X. ZHANG-M. XU, *The Ways to Maintain Sustainable China-Europe Block Train Operation*, Business and Management Studies, Vol.3, No.3, 2017 (<https://doi.org/10.11114/bms.v3i3.2490>).

⁵⁵ Y. ZHANG, *Alternative Transport Mode: China-EU Trade on Rail*, IHS Markit Global Trade Atlas, March 17, 2021 (<https://ihsmarkit.com/research-analysis/alternative-transport-mode-china-eu-trade-on-rail.html>).

⁵⁶ E. VINOKUROV-V. LOBYREV-A. TIKHOMIROV-T. TSUKAREV, *Silk Road Transport Corridors: Assessment of Trans-EAEU Freight Traffic Growth Potential*, Eurasian Development Bank, MPRA Paper No. 86184, 2018 (<https://mpra.ub.uni-muenchen.de/86184/>).

\$ 3.000-3.500 per FEU, determining a price of \$ 6.150 compared to the initial price of \$ 9.000 per FEU. To date, the cost for a container via railway is around \$ 4.500-7.500 (including subsidies) and around \$ 7.500-12.000 (excluding subsidies)⁵⁷.

In the light of a general analysis between the three transport modes, the obvious advantages of railway freight concern time and costs, respectively compared to sea and air freight transport.

However, the existence of a number of bottlenecks concerning aspects as legal environment, technical limitations and the trade imbalance on the route EU-China (considering that the number of westbound block trains are about three times of the eastbound ones)⁵⁸ still create some obstacles that constraints the complete and smooth operational working of this transport mode.

The role of subsidies is crucial for the development of the Eurasian railway. However, the Chinese government is gradually reducing subsidies for container railway transportation to Europe, setting the total cut for the year 2022, or, at the latest, for 2023⁵⁹. This will be determinant in assessing the effective competitiveness of railway in comparison to sea and air.

2.4 The legal framework of international carriage of goods by railway

The carriage of goods does not merely refer to the physical transfer of goods from one place to another. It rather refers to a delicate activity through which a series of obligations agreed by the parties are to be fulfilled, also according to the rules governing the specific carriage. This activity may face obstacles and challenges in the case in which more than one legal framework applies, meaning that goods literally are shipped from one area to another governed by two different legal systems. This is specifically the case of the carriage of goods by railway. In fact, differently from the freight carriage by sea and by air, the legal framework which regulates the carriage of goods between Asia and Europe by railway does not enjoy a complete uniformity.

Nowadays there are two main international conventions which are the result of the work conducted by the two major intergovernmental organizations, namely the Intergovernmental Organization for International Carriage by Rail (OTIF) and the Organization for Co-operation between Railways (OSDJ). The OTIF's basic text is the "Convention concerning international carriage by rail (COTIF), which is also known as the Vilnius Protocol 1999, derived from the original version of the Convention concerning international carriage by rail 1980, including the CIM Uniform Rules. On the other side, the OSDJ's agreement refers to the "Agreement on International Goods Transport by Rail (SMGS)⁶⁰.

In order to understand the geographical application of the above-mentioned conventions, reference is made to the member states belonging to each of

⁵⁷ B. BESHARATI-G. GANSAKH-F. LIU-X. ZHANG-M. XU, *op. cit.*, p. 35.

⁵⁸ B. BESHARATI-G. GANSAKH-F. LIU-X. ZHANG-M. XU, *op. cit.*

⁵⁹ *Growth of container transportation via railways between China and Europe is possible even without subsidies*, UTLC – Eurasian Rail Alliance, December 3, 2019 (<https://www.utlc.com/en/news/growth-of-container-transportation-via-railways-between-china-and-europe-is-possible-even-without-su/>).

⁶⁰ S. JIA, *The Legal Nature of a Bill of Lading Issued by the China-Europe Railway Express: The Chinese Perspective*, in Poredbeno Pomorsko Pravo, 2022, pp. 681-682.

them. On one hand, the OTIF, which has been active since 1893, has now 51 Member States (Afghanistan, Afghanistan, Albania, Algeria, Armenia, Austria, Azerbaijan, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iran, Iraq, Ireland, Italy, Jordan, Latvia, Lebanon, Lithuania, Luxembourg, Monaco, Montenegro, Morocco, Netherlands, North Macedonia, Norway, Pakistan, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Syria, Tunisia, Türkiye, Ukraine, United Kingdom). On the other side, the SMGS applies in many countries of Eastern Europe and Asia, including, Republic of Albania, Republic of Azerbaijan, Islamic Republic of Afghanistan, Republic of Belarus, Republic of Bulgaria, People's Republic of China, Republic of Estonia, Georgia, Hungary, Islamic Republic of Iran, Republic of Kazakhstan, Democratic People's Republic of Korea, Kyrgyz Republic, Lao People's Democratic Republic, Republic of Latvia, Republic of Lithuania, Republic of Moldova, Mongolia, Republic of Poland, Russian Federation, Slovak Republic, Republic of Tajikistan, Turkmenistan, Ukraine, Republic of Uzbekistan, Socialist Republic of Vietnam.

At present, the existence of two different regulatory regimes is one of the obstacles which constraints the smooth development of rail as a means of freight carriage. This is particularly due to the fact that the application of two different legal systems create logistical and administrative barriers, prolonging transit times between one legal system and the other, with possible significant impact on the costs to be incurred.

These barriers, which inevitably affect the carriage of goods between Europe and China (and vice versa), have been a fairly discussed issue over the past ten years, stimulating the various organizations towards the development of a unified legal system, the so-called "Railway unified law", which is - as previously anticipated - something that at present does not exist.

The member states of the UNECE are trying to address these problems, with the main objective of unifying and harmonizing the railway law for international traffic in Eurasia, guaranteeing freight operators the possibility to deal with one legal regime, one consignment note and one liability regime for rail carriage along the corridor connecting Europe to Asia.

The proposal for the development of a unified legal system was first launched in 2010, when the UNECE - United Nations Economic Commission for Europe started work on the project "Towards Unified Railway Law". In 2017, an informal draft containing the legal provisions of unified railway law was presented, in which the need of a single consignment note issued on the basis of a single contract – and not two as is the case now – was also addressed⁶¹.

In 2023, in the occasion of the special session of the Working Party on Rail Transport held on 10-12 July and 29 September 2023, the draft provisions of the Convention on the contract for international carriage of goods by rail as a first Convention of a system of Unified Railway Law Conventions were reviewed. Recently, the 77th session of the Working Party on Railway Transport was held on 15-17 November 2023 in Geneva, providing for the finalization of those provisions⁶².

⁶¹ https://unece.org/DAM/trans/doc/2019/sc2/Unified_Railway_Law_for_translators.pdf
Accessed on 29 October 2023.

⁶² The current version of the Convention on the contract for international carriage of goods by rail as a first Convention of a system of Unified Railway Law Conventions is available at this

The harmonization of legal and organizational solutions is of significant importance in handling international flows, while increasing the competitiveness of railway freight transportation.

It follows that the creation of a unified railway law providing for a unified transport document will represent an important step forward towards the simplification of logistics and customs procedure between parties which will recognize it⁶³.

2.5 Discussion

The comparative analysis was aimed at highlighting the general aspects concerning the three freight transportation modes involved in the context of China-EU commercial exchanges. As evidenced, each mode satisfies specific requirements that fundamentally reflect the product category evaluated on the basis of its time-sensitivity and value.

Following the evaluation conducted in terms of transit time and costs, the railway can be classified as an optimal solution in the middle between the weaknesses of extremely long transit time and fairly high tariffs, respectively compared to sea and air transport.

The analysis confirmed the dominant role of maritime transportation. The possibility of shipping high volume cargo at the lowest tariffs emphasizes the role of ships as the vehicle most employed in China-EU trade. However, the long transit time represents an obstacle for the shipment of high time-sensitive commodities.

The air transport, although representing the most expensive freight transport means, is the only alternative in those cases in which time has the absolute priority.

Far from considering the popularity of China-EU railway as a threat to sea and air transport, it rather represents a third alternative mode in the middle between sea and air transport.

The advantages provided for by the railway particularly attract a market segment. The niche market of high-value (luxury products, machinery and equipment, automotive, vehicles) and time-sensitive goods (food and beverage, pharmaceutical) seems to benefit more from railway transportation, considering that goods are deemed to be time-sensitive when they are subject to depreciation and uncertain demand due to inventory holding costs, perishability, rapid technological obsolescence⁶⁴.

Delivery time is a crucial aspect for these product categories. In both cases railway can represent an advantageous option, providing shorter transit time compared to sea and lower tariffs compared to air, provided that, in the specific case of freight air transport replacement, a slightly longer delivery time (by several days) is acceptable.

link: (<https://unece.org/sites/default/files/2023-10/ECE-TRANS-SC.2-2023-02r1e%20%281%29.pdf>). Accessed on 10 November 2023.

⁶³ J. DONSKI-LESIUK-A. BUKOWSKA-PIESTRZYNSKA, *CIM/SMGS consignment note as a necessary document in the new legal regime for cross-border rail freight transport – trends on the external border of the European Union*, Proceedings of the 36th International Business Information Management Association (IBIMA), Granada, Spain, 4-5 November 2020, pp. 10449-10457.

⁶⁴ D. HUMMELS, *Transportation Costs and International Trade in the Second Era of Globalization*, in *Journal of Economic Perspectives*, 21(3), pp. 131-154.

However, as previously mentioned, a series of bottlenecks – of different nature – that currently constraint the smooth operation of China-EU railway cannot be underestimated, considering that the resolution of them could support a stable development of the so called “Iron Silk Road”, therefore the acquisition of a proper market competitiveness within the framework of trade changes between the two countries.

In particular, the lack of efficiency at the border crossings in terms of customs procedures represents one of the major bottlenecks, further compounded by the lack of a good level of digitalization. Although customs processes are deemed as naturally complicated for rail, the application of digitalized procedures, in substitution of paper-based documents, and the establishment of a coordinated harmonization among states actually show a great potential for railway system improvement.

The ramp up of train frequencies, the improvement of the service, the transparency on freight rates, transport status and service schedule, as well as the creation of a unified railway law, are deemed as other fundamental aspects to focus on in order to support a qualitative improvement of railway line in the following years⁶⁵.

3 China-EU railway: the role of Italy

The emerging of China as a world power has led to a strengthening of the economic and commercial relations between China and Italy to such an extent that China is nowadays an essential market for Italian companies.

The interest of China towards Italy has intensified over the years, mainly under the framework of the BRI.

Located at the center of the Mediterranean, Italy has always attracted China for its strategic geographical position, which provides a distinctive advantage for the entrance to mainland Europe.

The increased centrality of the Mediterranean as a result of a number of BRI-related investments, for example the huge investment in the Greek port of Piraeus, further emphasized Chinese interest in Italy, later formalized by the signing of the MoU on BRI in 2019. On the heels of the ever-expanding BRI projects, Italy has been targeted by Chinese investors, aiming well beyond its manufacturing industries, specifically in infrastructures as ports, logistics and utilities⁶⁶.

The strong commitment of the Chinese government on the development of BRI land route, specifically on rail freight transportation, provides for interesting opportunities that even Italy should not ignore.

The great advantage for Italy arises from its crucial role in the framework of the Trans-European Transport Network (TEN-T). It is noteworthy that 4 out of the 9 central corridors, identified by the TEN-T Core Network, encompass Italy, namely the Mediterranean corridor, the Rhine Alpine corridor, the Baltic-Adriatic corridor and the Scandinavian-Mediterranean corridor.

⁶⁵ Data provided for by Andreas Schwillig during his presentation entitled “*Middle/Southern Corridor-Status and Perspective*” shared in occasion of the fifth edition of the “European Silk Road Summit” held in Amsterdam on December 7-8, 2021.

⁶⁶ A. AMIGHINI, *Italy in the Belt and Road Initiative*, in *GeoProgress Journal*, vol. 6, i. 1, 2019.

The potential of these central corridors arises from a dense transport network that integrates ports, airports, railway and intermodal terminals that are essential for increasing links between Italy and European markets and for the integration of them in an extra-continental sphere, starting from the BRI project.

Compared to Germany and France, Italy suffers from a weak domestic railway infrastructure⁶⁷. In this regard, it should be noted that railway sector is identified as the chief recipient within the “Connecting Europe Facility” funding project, absorbing a number of projects worth € 1,209.8 million⁶⁸.

Concurrent with the strategic geographical position and the entanglement in the TEN-T, the development of an efficient railway transport network could provide Italy further opportunities for curving a strategic position within the Eurasian land connectivity, being naturally shaped as an ideal platform for the distribution and collection of goods from and to Asia⁶⁹.

Investing in infrastructure is an essential condition in order to maintain a high level of competitiveness in the context of foreign trade. It is especially the case of Italy, whose economy relies for the 30% on export. The lower efficiency of Italian logistic infrastructure, compared to other countries, causes the loss of a significant export opportunities⁷⁰.

The possibility of exploiting its potential in the framework of the emerging China-EU railway, could provide Italy interesting opportunities for strengthening trade with foreign markets, including China, which represents one of the main destination countries for the Made in Italy products.

According to the Position Paper published by *Confindustria* for the year 2019, a significant increase of Italian export to China has been registered. In 2001, China absorbed the 1,2% of Italian export, while in 2017 this figure rose to 2,8%. On the other side, the importance of China as a supplier rose from 2,8% to 7,1%. The same Position Paper reports a record on China-Italy commercial exchange, reaching € 43,8 billion, compared to € 10,6 billion in 2001 and € 25 billion in 2009.

With regard to the composition of China-Italy commercial exchanges, it should be noted that almost the 30% of Italian export towards China is represented by machinery and mechanical parts, followed by pharmaceutical and chemical products (14%) and vehicles (8,5%)⁷¹.

The leading role of Italy in the machinery sector is confirmed by data elaborated by *Centro Studi e Cultura di Impresa* of *UCIMU-SISTEMI PER PRODURRE*. The competitive advantage of Italy derives not only from the performance within the domestic market but also from the positive trend in

⁶⁷ E. FARDELLA-G. PRODI, *The Belt and Road Initiative Impact on Europe: An Italian Perspective*, in *China & World Economy*, vol. 25, no. 5, 2017, p. 133.

⁶⁸ *Connecting Europe Facility (CEF) - Transport grants 2014-2020*, European Commission, June 30th, 2019 (https://ec.europa.eu/inea/sites/default/files/cefpub/eu_investment_in_transport_in_italy.pdf).

⁶⁹ E. FARDELLA-G. PRODI, *op. cit.*, p. 133.

⁷⁰ *Logistic Performance Index-Global Rankings*, World Bank, 2018 (<https://lpi.worldbank.org/international/global/2018>).

⁷¹ M. FELISATI-G. DIOGUARDI-L. TRAVAGLINI-C. PACE-D. FRATTALE-C. PIRRONE, C. GUIDO, *Italia, Europa e Cina - Analisi e proposte per un rinnovato modello di cooperazione*, International Affairs Area of Confindustria, April 12th 2019 (https://www.confindustria.it/wcm/connect/18dff75-6660-48e6-bbcf-ceda0818e26c/Position+Paper_Cina_12042019_Confindustria.pdf?MOD=AJPERES&CA_CHEID=ROOTWORKSPACE-18dff75-6660-48e6-bbcf-ceda0818e26c-mEw3nmF).

exports. According to the ISTAT data processed by UCIMU, in 2021, the Italian export destined to the Chinese market reached a value of 228 million Euro, registering an increase of 1.78%. Furthermore, in 2022, according to the information released by ISTAT-UCIMU, China was confirmed among the five main target markets, absorbing a total value of 226 million Euro of Made in Italy machinery export⁷².

Having defined machinery as one of the product categories more efficient for railway transportation, it is evident that the development of a railway network is an aspect that Italy shall consider. The relevance of this challenge concerns not only the possibility to become the crucial gateway to Europe, but also an opportunity to preserve both Italy competitive advantage in the machinery sector and positive trend of this latter in the commercial exchange with China. In this vein, it will be important to pursue the objective fixed in the MoU between China and Italy, namely the opportunity of transforming the complementary strengths in mutual benefits, creating and supporting those synergies between the BRI and the TEN-T, especially in the field of infrastructure connectivity⁷³.

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⁷² Data provided by UCIMU-SISTEMI PER PRODURRE. (<https://www.ucimu.it/settore/export-italiano/>). Accessed on 10 January 2023.

⁷³ *Memorandum of Understanding between the Government of the Italian Republic and the Government of the People's Republic of China on Cooperation within the framework of the Silk Road Economic Belt and the 21st Century Maritime Silk Road Initiative*. See: (https://www.governo.it/sites/governo.it/files/Memorandum_Italia-Cina_EN.pdf).

At national level, the strong commitment of Italian government on the improvement of transport infrastructure system has been finalized within the PNRR (*Piano Nazionale di Ripresa e Resilienza*). The document illustrates how Italy intends to manage the Next Generation EU funds among six main missions, including infrastructure. This latter specifically aims at developing an efficient Italian railway system with an increase in both capacity and transport nodes. Concurrently, it provides for the improvement of links between railway and ports, with the primary scope of facilitating the inter-modal freight transport.

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