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EU-Asia connectivity: the impact of the Belt and Road Initiative on maritime trade and future perspectives for Italian ports

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This research, which has taken a lot of time and sacrifice, is dedicate to my two grandparents Gerardo and Corrado, who have left us over the past few years, and who look down on me and love me from up there. *Ciao Nonni*!

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Introduction

This final thesis analyses the desire to increase connectivity between Asian countries (in particular China) and European countries, with many world powers involved in the development of the Eurasia, Asian and African areas and with a main focus on maritime trade.

It all starts with the analysis of the Chinese Belt and Road Initiative (BRI), launched by the President of the People's Republic of China Xi Jinping in 2013, which aims to increase infrastructure connectivity, by land and sea, between the countries involved in the project, but it is also an initiative that aims to increase economic, political and cultural relations. Under the BRI framework will be analysed the routes of the New Silk Road, the countries and the population involved, and the major funders of this project.

This will be followed by an analysis of Italy's role in particular after the signing of the MoU and commercial and institutional agreements between China and Italy in March 2019. There will be a geopolitical analysis on pros and cons of this global project, highlighting real Chinese intentions and international reactions to the project, especially by the USA Government, with the creation of the Free and Open Indo-Pacific Strategy (FOIP), together with Japan.

The central part of this paper will focus on current and future global maritime trade, considering trade routes and volumes, marking the importance of the sea from a geopolitical point of view, especially for the control of chokepoints. The types of maritime transport and the importance of ports on a global scale will be analysed, in particular by examining two indices: the Linear Shipping Connectivity Index (LSCI) and the Logistics Performance Index (LPI).

Will be particularly highlighted the growing importance of the East-West route, with the Suez Canal (and its Special Economic Zone) and the rediscovered centrality of the Mediterranean Sea in a world where the geo-economic center of gravity of trade is always shifting further East.

This will be followed by a description of the maritime trade routes of the future and the impact of some factors, from the presence of SEZs, to the carrier’s alliances, and green policies on maritime trade. A comparison of the European and Chinese strategy on the

subject, and the need to find an interlocking between the 21st Century Maritime Silk Road and the Trans-European Transport Network policy, will close chapter 2.

In the third chapter the Italian case will be studied in depth, firstly on the basis of commercial relations and so of the exports with Asia, but then, above all, by evaluating the impact that the BRI could have on Italian ports and their potential development. The current situation of Italian ports will be analyse and will be taken into consideration an idea of how they could be organized in the future, i.e. collaborating in multi-port systems, which for Italy should be distributed in 5 macro areas of the country. Among these, the ones that will be investigated the most will be those of the Upper Tyrrhenian and Upper Adriatic Sea, best geographical gateway by sea to the European market through the Maritime Silk Route. The research will be concluded by future challenges for Italy and its ports, considering the collaboration with the other EU member states according to a common European vision, which becomes increasingly important, in order to be able to face the new challenges of global trade and the emergence of new global powers, in a world that is increasingly changing.

Chapter I

Belt and Road Initiative

1.1 Premise

Connectivity is the key word from which we start. The aim of this paper is strictly related to connection in many areas: the ability to link distant markets, cultures, political views and many other things, thus "Bridging the World".

We start from the continents and major states taken into consideration and their willingness to increase the relations between them. The "Go global" aim of the Chinese Government and the innate openness to the world of Europe is the engine for start building the future between Asian and European continents.

From one side there is Europe and inside this the European Union, which for the first purpose had the creation of a common European market and the cooperation between the member states in many themes.

The EU covers over 4 million km^2 and has 513 million inhabitants - the world's third largest population after China and India. European Union's population is increasing with an annual rate of 0.10% (in 2019) through a combination of natural growth and net migration. At the same time, the population of Europe is ageing as life expectancy increases and fewer children are born. The population projection expected a growth up to 524.6 million people in 2040 and from this moment onwards a constant reduction for the following decades. It's interesting to notice that Italy will constantly reduce its population in the years: it will be about -26% in 2100. The states that will generally grow more in term of population will be Belgium, Ireland and France[1].

The EU due to the International Monetary Fund estimation for 2019, it's the second largest economy in the world both in the Nominal GDP (18.3 thousand billions of US$, after US) and according to purchasing power parity (PPP) GDP with 22.77 thousand billions of Int$, ($2^{nd}$ after China).

Italy in nominal term is the 8^{th} largest economy of the world with 1.9 thousand billions of US dollars.

[1] EUROSTAT data (2020), *Population on 1st January by age, sex and type of projection*, last update: 31/01/2020, https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=proj_18np&lang=en

On the other side there is Asia; on this big continent we take into account three different areas:

- *Eastern Asia*: 1.67 billions people and a yearly population growth rate of 0.37% in 2019. This area is leaded by *China* (1.4 billions people, and an annual population growth rate in 2019 of 0.43%. It's the first largest economy in the world in PPP term with a GDP of 27.3 thousand billions of international dollars, and 3rd in nominal GDP (14.14 thousand billions of US$). It's forecast to become the 1st in nominal term in the next years, with a nominal GDP of US$ 105,916 billion in 2050[2]. The first state after China for population is *Japan* (126.8 millions people and the 3rd nominal GDP in the world with 5.15 thousand billions of US$, 4th if we consider the EU as one state).
- *South-Eastern Asia*: 664 millions people and an annual population growth rate in 2019 of 1.02%. The largest country (by population) is *Indonesia* (270 millions people, and a nominal GDP of 1.11 thousand billions of US$,). For population is followed by *Philippines* (108 millions) and *Vietnam* (96.4 millions).
- *Southern Asia*: 1.9 billions people and a yearly population growth rate of 1.18% in 2019. This area is leaded by *India* (1.36 billions people, with a population growth rate of 1.02%. 5th largest nominal GDP in the world (2.94 thousand billions of US$). In term of population in this area, India is followed by *Pakistan* (216.5 millions) and *Bangladesh* (163 millions)[3].

The IMF in the World Economic Outlook (Oct 2019) compare different group of countries. In addition to those already mentioned it's interesting to notice how the emerging and developing countries in Asia have a total population of 3.63 billions people and a nominal GDP amount of 20.3 thousand billions of US$.
The ASEAN-5 countries have a population of 571.5 millions people and a total nominal GDP of 2.6 thousand billions of US$.

[2] The Economist Intelligence Unit (2015), *Long-term macroeconomic forecast – Key trends to 2050*, https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/Long-termMacroeconomicForecasts_KeyTrends.pdf
[3] United Nations, Department of economic and Social Affairs (2019), *World population prospects 2019*, https://population.un.org/wpp/

For “The Economist Intelligence Unit” the Asian countries will continue to rise their economic power, accounting for 53% of Global GDP by 2050. But growing implies facing many problems, first of all the need to cooperate and strength relations with other countries for connect markets and facilitate the movement of goods, people and capitals. For example one of the needed of China is to spread the overcapacity of its economy, and so require to rise connectivity, build infrastructures and cooperate with the others state, that are competitors but at the same time possible allies.

At the same time, countries and continents that are so different in terms of population, GDP, annual growth, quality of life and so on… can, and need, to cooperate between each others, for try to find the greatest possible benefits from connection.

So after this general overview for understand what are the general characteristics of this areas, it’s time to focus in fact on connectivity and in particular on the greatest infrastructure investment plan in the world called the Belt and Road Initiative, launched by the Chinese President Xi Jinping in September 2013.

1.2 The history of the Belt and Road Initiative

1.2.1 The Silk Road

The growth of the geo-economic power of Asia and in particular of China in the world, led the Chinese Prime Minister Xi Jinping to announce in 2013 an infrastructural connectivity plan, between Asia and Europe called One Belt One Road, in the footsteps of the old Silk Road.

It’s not a case that President Xi has chosen Italy has final destination of the maritime route of the OBOR. In fact it’s not only because Italy can be the entrance door to the European market by sea, but also for historical and cultural reasons that regard the ancient Romans and travellers as Marco Polo.

“From the provinces of Cathay itself, as well as from the other provincies of the empire, whatever there is of value is carried thither”…“The quantity of merchandise sold there exceeds also the traffic of any other place; for no fewer than thousand carriages and

pack-horses, loaded with raw silk, make their daily entry; and gold tissues and silks of various kinds are manufactured to an immense extent"[4].

With these word Marco Polo described the multitude of people who resort and depart from the city of Kanbalu and the commerce of the place in China. Marco Polo is the traveler who trekked thousand of miles along the ancient Silk road and brought back the legend of the "Far East" to medieval Eurorope astonished the European audience with his narrative of the wealth and splendid culture of ancient China.

In 1271, Marco Polo, departed from Venice, and started his journey to China in Yuan Dynasty (AD 1271-1368) which was under the rule of Kublai Khan. Taking a position at the Yan court, Marco Polo was able to visit provincies and cities across China and grasp first-hand knowledge about the ancient empire. He left China after years (in 1295) and brought Chinese-made silk, tea, and pottery to Europe. Back in Italy he wrote a beautiful book known as "Il Milione" which was the first reliable and complete account of the East and the first contribution to mutual understanding between Asia and Europe. Much of Marco Polo's information are the first real news to come to the West about Asia. His book speaks of a highly evolved civilization, of an optimally organized society, of an attentive and effective government and of a developed technology.

Along the ancient maritime silk road, which created a craze for Chinese production in Europe, facilitate the trade between the two continents and multiplying the exchange between Chinese and Western cultures.

The Old Silk Road, which extended for about 8000 kilometers, started from the Chinese capital of that time Chang'an (current Xi'an) and, crossing Central Asia, the Middle East and Africa, finally arrived in Rome across the Mediterranean. Over time the emergence of maritime navigation which reduced transport costs (eg times needed, volumes, intermediaries etc.) led to the decline of the terrestrial route.

748 years later the ancient capital Dadu in Marco Polo's narration still stands in modern China, which is Beijing today. The camels and sailboats that took Marco Polo on the trip where replaced by China-Europe freight trains and ships with over 10 thousand tons of loading capacity. The modern time Silk Road crossed the same route that Marco Polo has stepped on several hundred years ago, but this time the goods transported have more variety, including high-tech and industrialized products.

[4] Polo, M. (2007), *The Travels of Marco Polo*, Cosimo Classics, New York, 2007, Chapter XVII

1.2.2 From OBOR to BRI

The great project launched by the Chines Government in 2013 from Kazakhstan, called "New Silk Road" and then "One Belt One Road" (OBOR), was at the beginning just an infrastructure plan for connect by land and by sea Asia and Europe, retracing the routes of the old silk road merchants.

It's a project that is more close to the ancient Roman Empire routes to China than the Marco Polo routes, because is pretty much a project that aim to connect China to the rest of the World.

The One Belt One Road was originally designed as two main routes of communication. One by land, and the other by sea, as you can see from *fig. 1*

The word "Belt" that, in an extended sense, represent a geographical area that has different characteristics from those of the surrounding areas, in this case means the infrastructure network of land connections between China and Europe.

On the other side the word "Road" must be interpreted in the historical sense of a specific trade route for a particular type of goods: in this case the Silk Road, specifically Maritime Silk Road, and identifies the sea routes from the South China Sea to the Mediterranean.

Fig. 1 One Belt, One Road: the two initial main routes of communication

Source: The European Forum Ambrosetti

At the beginning were mainly two routes:

- Silk Road Economic belt: by land crossing Eurasia. This route is starting from China precisely from the city of Xi' An, going through Central Asia, Middle-East (south of both Caspian Sea and Black Sea) and finally arriving to Europe, with Duisburg (Germany) as final destination. At this one we must add a route that passed to the North, through Kazakhstan, Russia, Belarus, Poland and arrive in Germany. So at the end 2 land route.
- Maritime Silk Road: the sea route that starts from the Chinese harbour of Fuzhou and connect costal chines cities to India, Africa and Europe through Suez, with Venice that would have been the final destination.

These routes have been partly modified and increased, thanks also to the adhesion to the project of new states and this is also one of the reasons why the name of the initiative was changed.

Overtime has been clear that this project could have been greater that what was initially supposed, the possible evolution of new freight route, both on rail and maritime side, that multiply the number of arches and nodes with cumulative effects on the entire network, push the organization to change the name from OBOR into BRI that stands for Belt and Road Initiative.

The number of countries included into the project has changed as the number of initiatives planned and the situation can still evolve because China is free to let other countries get into the initiative. New possible route between Europe, China, Africa and also Artic can be defined. China is open to discuss further agreements with other countries, especially for trade.

The Chinese government places particular emphasis on the so-called "spirit of the Silk Road", which includes elements such as cooperation, inclusion, mutual learning, peace, progress. They explicitly want to promote the progress of human civilization and contribute greatly to the prosperity and development of countries along the way, in the so-called Eurasia Area.

China, as in the past, intends to use the new Silk Road as an engine of economic and social development, strengthening regional cooperation, trade and economic relations.

According to the outline, the Belt and Road Initiative is based on *five cooperation priorities*:

1. *Policy coordination* (promotion of intergovernmental cooperation, multi-level intergovernmental macro policy exchange and communication mechanism)

2. *Facilities connectivity* (improvement of connectivity of infrastructure construction plans and technical standards systems)
3. *Unimpeded trade* (reduction of investment and trade barriers, promotion of regional economic integration, cost reduction, a greater cooperation at customs level and investments ex. in renewable energies)
4. *Financial integration* (coordination and cooperation in monetary policy, set-up of financing institutions, to ensure monetary stability and crisis management)
5. *People-to-people bonds* (cultural and academic exchange and dialogue, media cooperation, tourism promotion, technical and scientific cooperation)

Also if BRI has no formal institutionalized body for the coordination of the initiative, many Chinese government agencies are involved in the formulation and implementation of BRI as the Ministries of Commerce, Foreign affairs and Culture. The main Chinese institution is in any case the National Development and Reform Commission (NDRC) that direct the "Office of the Leading Group on Promoting the Implementation of Belt and Road Initiatives". The initiative involves many actor and stakeholders operating in the participating countries, but China is for sure the first to be involved.
It is a project that definitely wants to connect, promote global economic and commercial development, but also wants to strengthen Chinese leadership in the Asian region and in the world.
The Chinese government firmly believes in BRI such that they have defined it as "a gift for humankind", but maybe it's something different, it's something more complex that we will try now to analyse more deeply.

1.2.3 Evolution and some numbers of the BRI

The Chinese government website explains that the Belt and Road is the abbreviated form of "the Silk Road Economic Belt and the 21st-Century Maritime Silk Road"[5].
Since it has been announced the Belt and Road Initiative has become the centrepiece of China's economic diplomacy. It's a plan mainly focus on the Eurasian area, but also with projects for Southern-Asia. It reaches out to the Middle East as well as East and North

[5] To know more have a look at: The State Council of the People's Republic of China (2015), *Full text: Action plan on the Belt and Road Initiative*, 30/03/2015, english.www.gov.cn/archive/publications/2015/03/30/content_281475080249035.htm

Africa, a truly strategic area where the Belt joins the Road. Europe, of course, is the end-point of the New Silk Roads, both by land and by sea, is the ultimate geographic destination and political partner of this initiative[6].

As we will see later, the global economy's center of gravity is shifting from West to East, and the trade with Asia will be the future of coming years, which as been understood by many countries that do not want to miss the opportunity.

BRI involves from 60 to 100 countries (at the moment for sure 68), more than 60% of the world population and almost 35-40% of the global GDP, with the idea of financing investments for 1,000 billion US$.

The initiative was proposed in 2013. By 2018 the chines-proposed BRI has delivered tangible benefits to many of the participating countries and regions with the creation of 300,000 local jobs. Its core concepts have been written into documents of the United Nations, G20 and APEC.

By the end of 2018 China has signed 173 BRI cooperation agreements with 150 countries and 29 international organizations.

The building of BRI touched countries in Asia, Europe, Africa, Latin America and South Pacific. From 2013 to 2018 China's direct investments in areas of the Belt and road reached more than 90 billion US$ ($15.6 billion only in 2018). The turnover of contracted projects up to 400 billion US$. China has signed agreement on industrial cooperation with more than 40 countries. In 2018 China has signed agreements with over 10 countries including France, Japan and Singapore for cooperation in third country markets.

Between 2014 and 2018, China funded $448 billion of investments in FDI and construction contracts in 64 of the partner countries, equal to 0.8% of Chinese GDP ($117 billion of total investments for 2019)[7].

In this 6 years the goods trade between China and countries along the Belt and Road totalled more than 6 trillion US$ (27.4% of total volume of Chinese goods trade), only in 2018 goods trade for 1.3 trillion US$ (up to 16.4% year on year). 82 areas of economic

[6] Amighini, A. (2017), *China's Belt and road: a Game Changer?*, ISPI (Institute for International Political Studies), 10/05/2017, https://www.ispionline.it/it/pubblicazione/chinas-belt-and-road-game-changer-16775

[7] Panaro, A. (2019), SRM (Centro Studi sul Mezzogiorno) presentation at the convention "L'Italia, Genova e le vie della seta, VI Limes Festival, 10/03/2019

cooperation have been built in the Belt and Road countries, with investments exceeding 30 billion US dollars.

By the 2018 the number of China-Europe freight trains surpassed 13,000 connecting 16 Eurasian countries and 108 cities handling over 1.1 million TEUs. Air connections have increased in the countries participating in the Belt and Road Initiative, with 106 more air routes. Currently 387 air routes connect countries participating in the Belt and Road Initiative.

China signed agreements with 24 BRI countries on mutual recognition of higher education degrees and 60 cultural cooperation agreements, establishing 17 cultural centers.

In 2017 38,700 students from other BRI countries, studied in China on scholarships provided by the Chines government. China has signed mutual visa exemption agreements for different type of passport with 57 BRI countries.

As you can notice from this data, it's not just a matter of infrastructure, but it's a matter of connection. The project wants to facilitate investments, trade and cultural exchange creating a network of highways, railways, and ports as well as facilitate energy, healthcare and education. In this sense BRI wants to change the way of learning knowledge with a plan to attract students with scholarships, to train them in China an then offering opportunities to work in China. They especially want to attract foreign students (eg Africans) to make Chinese a more vehicular language in the world.

Only a part of the BRI investments is devoted to the creation of transport networks: 24% of the total, or 301 projects worth $ 179.9 billion and include both road transport and the rail sector.

Out of a total of 1,247 projects carried out in the world in the context of the BRI, around 30% (401) concerns the energy sector and aims to increase China's interconnection with the networks of the main energy resource providers, as well as to acquire technology skills to manage Chinese networks more efficiently. 12% is in the Oil sector. The rest of the projects linked to BRI are for 10-12% Real Estate, 6% Metals, 3% Agriculture, 3% Telecom, 2% Finance, 10% other. We have to notice that in the last investments the Logistics and Shipping is taking part for 10-12% and increasing in time. Investments in telecommunications within the overall BRI project are also likely to

increase, this in view of the Chinese technological leadership in the 5G, where Huawei and ZTE currently have the most competitive solutions at the international level[8].

The geographical areas of the investment (non financial Investment) until June 2018 are: 51% East Asia, 29% West Asia, 10% Europe, 6% Middle East and North Africa, 3% Sub-Saharan Africa and 1% North America.

Describing the BRI in detail is tough, quite impossible, especially due to the lack of transparency on the initiative by the Chinese Government. However, in summary, the Belt and Road would see six large commercial corridors winding up from China, the *Silk Road Economic Belt*:

- *Cpec*: China – Pakistan Economic Corridor: Xinjiang Province will be most affected. This important project links Kashgar city (free economic zone) in landlocked Xinjiang with the Pakistan port of Gwadar, a deep water port used for commercial and military purposes.
- *Bcimec* that passes through Bangladesh, China, India, and Myanmar; this is likely to move more slowly due to mistrust over security issues between India and China.
- *Ccwaec* involving China and West-central Asia: unites Iran, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Turkmenistan and Uzbekistan.
- *Cicpec* involving China and Indochina Peninsula: Cambodia, Laos, Malaysia, Thailand, Myanmar and Vietnam.
- *Cmrec* that links Beijing with Mongolia and Russia thanks to rail links and the steppe rad that will link with the land bridge.
- *Nelb* (New Eurasian Land Bridge) that guarantees outlets in Europe via Kazakhstan, Russia, Belarus and Poland[9].

On the other side there is the *21st Century Maritime Silk Road* with two main sea routes: the first road connects China to Southeast Asia, Indonesia, India, the Arabian Peninsula, Somalia, Egypt and Europe, encompassing the South China Sea, Strait of Malacca, Indian Ocean, Gulf of Bengal, Arabian Sea, Persian Gulf, the Red Sea and Mediterranean Sea. The second one connects Beijing with the Pacific islands across the China Sea.

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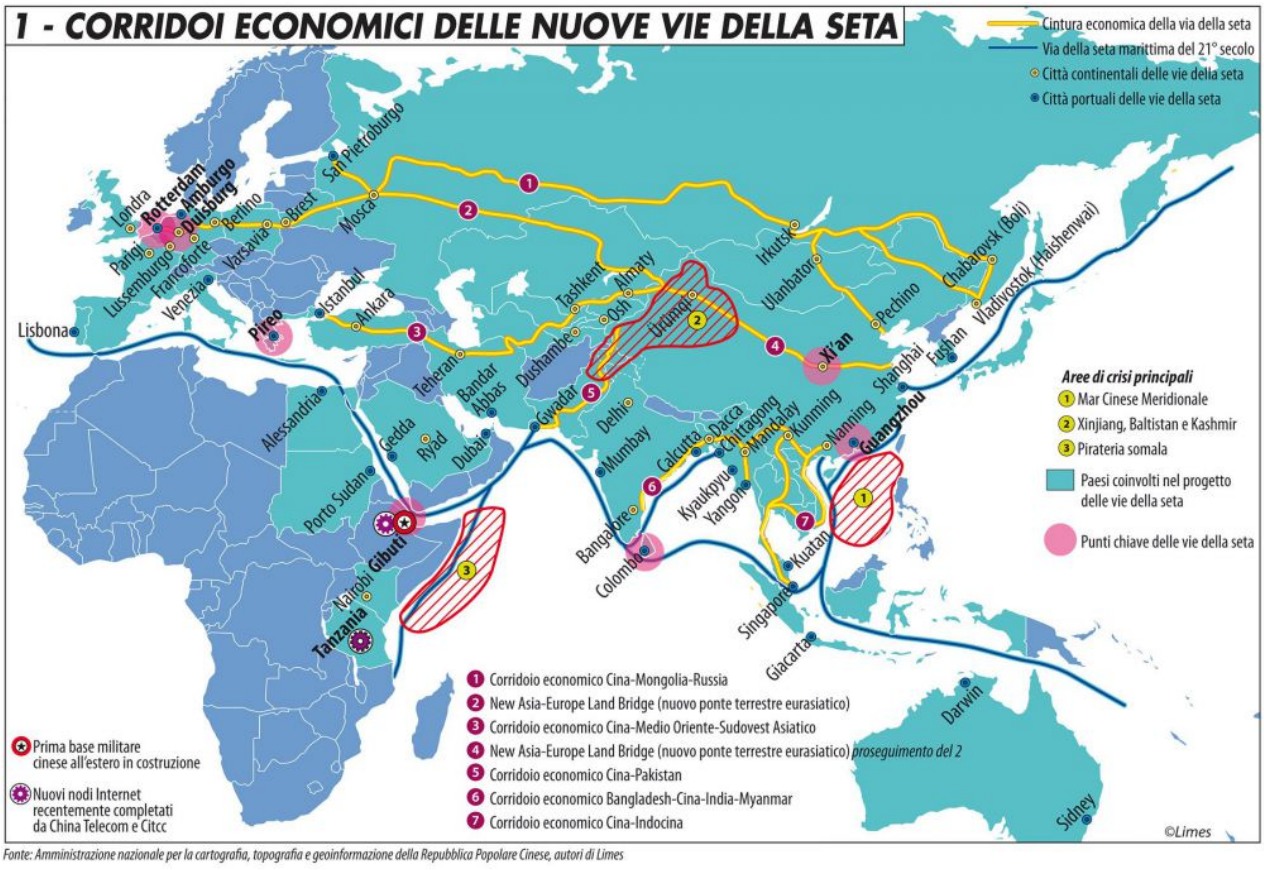
[8] Amighini, A., Sciorati, G. (2019), *Fast Checking: BRI, la nuova via della seta*, ISPI, 11/09/2019, https://www.ispionline.it/it/pubblicazione/fact-checking-bri-la-nuova-della-seta-23784

[9] OECD (2018), *China's Belt and Road Initiative in the Global Trade, Investment and Finance Landscape,* available at https://www.oecd.org/finance/Chinas-Belt-and-Road-Initiative-in-the-global-trade-investment-and-finance-landscape.pdf

To these routes we must add the *Polar Silk Road* referring to the Northern Sea Route. It is a new possible route that due to the white paper published by the State Council Information Office of the People's Republic of China, must be fully considered under the BRI framework and part of the China's Artic policy and strategy[10]. The route runs along the Russian Arctic coast, from the Kara Sea to the Bering Strait and sees the continental and island territories in the Arctic at the center of attention, especially from a geopolitical and strategic point of view.

The analysis of the freight sea routes will be deepened better in the second chapter of this paper.

Fig.2 Belt and Road corridors



Source: The National Administration of Surveying, Mapping and Geoinformation of the People's Republic of China, Limes authors

[10] To know more have a look at https://www.beltroad-initiative.com/belt-and-road/

1.3 Italy and BRI

Europe is the natural destination of the Belt and Road land and maritime routes. In EU there are countries that have already signed up the Beijing initiative including Bulgaria, Czech Republic, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Luxemburg, Poland, Portugal, Romania, Slovakia and Slovenia. The New Silk Road is already arriving in continental Europe thanks to the railway line linking Chongqing to Duisburg and by sea for example through the ports of Piraeus (majority owned by the Chinese state company COSCO) and the Northern Europe ports (Hamburg, Rotterdam, Antwerp).

China has already signed agreements with many European countries and the Balkan area, a strong example is the creation of the "16 + 1 initiative or China-CEEC" involving the countries of Central and Eastern Europe (16 or 17 with Greece) and China (+ 1). The 16 European countries of this platform are 11 ie Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia, all EU members, and 5 Balkan area: Albania, Bosnia-Herzegovina, Macedonia, Montenegro and Serbia. The latter requesting access to the EU, while waiting for a European response and in the absence of aid from the USA and Russia, have opened to Chinese investments. Chinese initiatives offer loans, investments and an increase in business cooperation in a region still characterized by serious economic obstacles and political difficulties. The countries that are part of "16 + 1 group" see in China an opportunity that guarantees them the financial assistance necessary for the construction of highways, railways, the expansion of ports and the modernization of their industrial plants.

Europe needs Chinese investments but at the same time cannot stop the historical relationship with the United States, which remain an ally and still a great trade partner.

At International level, several countries, led by Japan, the United Kingdom and the United States, have openly declared that they are not in favour of the BRI and the European Union itself has asked prudence to Italy. But let's see how and why Italy is involved.

First of all, we must underline that Italian foreign policy in relation to BRI, has been coherent and consistent over the years despite changes of government, from Prime Minister Renzi, to Gentiloni to Conte, a common line has been followed, and this is certainly good.

In 2015 the Renzi's Government decided to participate in the foundation of the Asian Infrastructure Investment Bank, with Italy involved as one of the main contributors to the bank's capitalization fund. In 2017 previous Italian Prime minister, Paolo Gentiloni was among the few Western leaders to attend the first Belt and Road Forum for International Cooperation, and was treated with great honours. On August 21, 2018, the Italian Ministry of Economic Development announced the establishment of a working group to deal with China-related affairs and enhance cooperation in trade, finance, investment and R&D, which is expected to guarantee Italy a leading role under the Beal and Road framework in Europe.

At the beginning of 2019 Italy joints the Belt and Road Initiative and is likely the first to do so in the G7 group. The entrance of Italy in the BRI was signed during the state visit in Italy of the Chinese President Xi Jinping on 21st-23rd March 2019, and has created many discussions and criticisms from some European countries and G7 partners, primarily France and Germany.

The Italian government has joined the great Eurasian connectivity project that Italy looks with favour, for promoting its position at the center of the Mediterranean, to promote the strengthening of exports, the increase in investments between the two countries and the inclusion of Italian ports in international trade routes.

In April 2019 the Italian Prime Minister Giuseppe Conte attended the Second Belt and Road Forum for International Cooperation in Beijing. In this occasion President Conte met with President Xi and stressed how "Italy can get great opportunities and benefits from participating in the New Silk Road" and stressed how this initiative can be "an opportunity for the country and for the EU, to introduce our criteria and standards of financial, economic and environmental sustainability".

Italy is China's fifth largest trading partner in Europe. In 2017, the bilateral trade reached $49.6 billion. By June 2018 Italy has 5,937 investment projects in China, with the FDI totalling $7.21 billion, China's investment in Italy exceeds $11 billion (2018) covering the energy sector, high-end manufacturing and chemical industry and sports industry[11].

These data seems to be encouraging but is still not enough compared to other EU member states, in fact Italy is lagging behind its European partners with relations with China. France and Germany have proposed to China, while Italy has gone there in a

[11] data from The European House Ambrosetti, Belt and Road Summit, Trieste, 20-21 November 2019

fragmented way, it is lagging behind in terms of exports to China and also of attraction of Chinese investments. Also for this reasons the Memorandum of Understanding (MOU) between Italy and China was signed on March 2019. A Memorandum that does not constitute obligations for the Italian Government and in general for the parts, because it's not an international treaty but it is an opportunity.

The MOU has the purpose of confirming in writing a certain convergence of interests between the parties, indicating a common predetermined line of action, also recalling official agreements previously taken between the parties. It is a document with a systematic view of relations and cooperation between the two countries, to be understood more correctly as something that identifies a broad general framework within which the two countries intend to move.

Italy exports about 13-14 million dollars of exports to China (in 2019), France and the United Kingdom about 20 billion, Germany about 90 billion. Until 2019 China has invested around 13 billion in Italy (excluding 7 for the Pirelli acquisition). China has 40 billion invested in Switzerland, 80 in the United Kingdom, 180 in USA. To give an example, only in the "green field" China invested 5.5 billion in the United Kingdom and only 130 million in Italy. France exports to China 7 times more than our wine, Italy do 160 million, France 1 billion.

On the "food" side, until recently Italy was overtaken by France, Netherland and Ireland... mainly due to the lack of interest in a market seen as distant, culturally different and for some preconcepts about communist China, while it is an immense market and a huge opportunity. China's GDP has grown 9.5% in the last 40 years, with a 30,000 km rail network ready for 2020.

There are great opportunities seized by the USA and European partners more than we do: for example the USA export is more than 130 billion to China. With the MOU Italy try to fill this gap, allowing its companies to export to a market with great potential.

China has a middle class of 400 million people, a GDP growing of 6/6.5% and a great interest in "Made in Italy" products. With the MOU we move from a Business to Business (BtoB) model to a Government to Government model, that try to solve problems and help businesses at a higher level, but let's see what the Italian-Chinese MOU includes.

The MOU speaks of intent to deepen concrete bilateral cooperation between Italy and China, welcoming the Belt and Road initiative and the advantages of strengthening economic, commercial, cultural and scientific-technical cooperation. There is a

conviction to strengthen political relations, economic ties and direct exchanges between the peoples. The respect of the principles expressed by the United Nations Charter is explicitly mentioned, for the promotion of inclusive growth and sustainable development, in line with the 2030 Agenda and the Paris Climate agreements. The promotion of peace, stability and compliance with national laws and international obligations are confirmed.

The participants parties will cooperate in 6 main areas:

1. *Policy Dialogue* for promote synergies and strengthen communication and coordination working together within the Asian Infrastructure Investment Bank (AIIB) to promote connectivity.

2. *Transport, logistics and infrastructure.* The parties will cooperate in the development of infrastructure connectivity, in areas of mutual interest (such as roads, railways, bridges, civil aviation, ports, energy –including renewables and natural gas- and telecommunications). The parties express their interest in developing synergies between the Belt and Road Initiative and the EU Trans-European Transport Network (TEN-T) that interest Italy as destination of the maritime route and rail junction to European market.

3. *Unimpeded trade and investment*. The Parties will work towards expanding two-way investment and trade flow, industrial cooperation as well as cooperation in third country markets. They reaffirm their shared commitment to free and open trade and investment, in opposition to unilateralism and protectionism, with free and open trade and industrial cooperation, open procurement, level playing field and respect for intellectual property rights.

4. *Financial cooperation*. The parties will strengthen the bilateral communication and coordination on fiscal, financial and structural reform policies in order to create a favourable environment for economic and financial cooperation, especially under the framework of BRI.

5. *People-to-people- connectivity*. This one aims to expand people-to-people exchanges, to develop sister cities network and cooperation between UNESCO world heritage sites. Promote cooperation arrangements on education, culture, science, innovation, health, tourism and public welfare as exchanges and cooperation between local authorities, media, think tanks, universities and the youth.

6. *Green Development Cooperation*. Develop connectivity following a sustainable, environmentally friendly approach, actively promoting the global process towards green, low carbon and circular development. Promote the implementation of the 2030 Agenda for Sustainable Development and the Paris Agreement on Climate Change.

All this will be done through high-level visits and discussions within existing governmental and non-governmental bodies, thanks to sharing information, pilot programs and promotion of cooperation between public and private capital, encouraging investment and financing support through diversified models[12].

The Memorandum was signed together with 29 agreements, 19 of which are institutional and 10 commercial (trade agreements).

The Italy-China 19 institutional agreements regards:

1- The MOU for the collaboration in the "Economic Silk Road" and the "Maritime Silk Road Initiative of the 21st century". Particular interest was initially directed to the port of Venice and then on the ports of Genoa and Trieste, due to the possibility of minimizing the time and costs related to the movement of goods. Having these ports as the final destination of the sea route provides a faster link between China and Europe and a direct access to railways for moving Chinese goods into the European Union.

2- MOU for the promotion of collaboration between Innovative and Technological Startups between the competent ministries.

3- E-commerce: cooperation in the field of electronic commerce.

4- Agreement to eliminate double taxation in relation to income taxes and to prevent tax evasion.

5- Protocol on phytosanitary requirements for the export of fresh citrus fruits from Italy to China.

6- MOU on cultural heritage, for the prevention of theft, illegal excavation, import, export, trafficking and illegal transit of cultural heritage and the promotion of their return.

7- Restitution of 796 archaeological remains belonging to the Chinese cultural heritage.

8- Action Plan on health cooperation between the Ministry of Health of Italy and the Chinese one.

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[12] Governo Italiano (2019), *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*, March 2019

9- Protocol regarding inspection, quarantine and health requirements for the export of frozen pork from Italy to China.

10- Protocol on health requirements for the export of bovine seeds from Italy to China.

11- MOU on bilateral consultations on Foreign Affairs between the competent ministries.

12- MOU on the Twinning Project aimed at the promotion, conservation, knowledge, enhancement and use of Italian and Chinese sites registered in the UNESCO World Heritage List.

13- MOU on strengthening cooperation on science, technology and innovation.

14- Twinning agreement between the City of Verona and the City of Hangzhou for the promotion of knowledge, valorisation and use of the respective UNESCO's sites.

15- Twinning between the Langhe-Roero and Monferrato Wine Heritage Association and the Heritage Committee of Honghe Hani Rice Terraces in Yunnan aimed at promoting awareness, exploitation and use of sites.

16- MOU between the Italian Space Agency and the China National Space Administration on cooperation on the "China Seismo-Electromagnetic Satellite 02" mission (CSES-02).

17- MOU between RAI – Radiotelevisione italiana S.p.a. and China Media Group.

18- Agreement on the Italian Ansa-Xinhua service.

19- MOU between the TOChina Hub China Global Philanthropy Institute and the China Development Research Foundation.

10 trade agreements:

- Strategic partnership agreement between Cassa Depositi e Prestiti S.p.A (CDP) and Bank of China Limited
- MOU on the strategic partnership between ENI SpA and Bank of China Limited
- Technological collaboration agreement on the Gas Turbine Program between Ansaldo Energia S.p.A. and China United Gas Turbine Technology Co.-UGTC
- Contract for the supply of an AE94.2K gas turbine for the "Bengang" project between Ansaldo Energia S.p.A., Benxi Steel Group Co., and Shanghai Electric Gas Turbine Co
- MOU between Cassa Depositi e Prestiti S.p.A (CDP), Snam S.p.A. and Silk Road Fund Co
- Strategic cooperation agreement between ICE Agency and Suning.com Group Co for the creation of an integrated platform to promote the Italian lifestyle in China

- Cooperation agreement between the Port System Authorities of the Eastern Adriatic Sea - Ports of Trieste and Monfalcone and China Communications Construction Company (CCCC)
- Cooperation agreement between the Extraordinary Commissioner for the Reconstruction of Genoa, the Port System Authority of the Ligurian Sea and CCCC.
- MOU between Intesa Sanpaolo SpA and the People's Government of Qingdao City
- Contract between Danieli & C. Officine Meccaniche S.p.A. and China CAMC Engineering Co for the installation of an integrated steel plant in Azerbaijan[13]

From this analysis, we understand how the object of the collaboration between the two states in the project of the new Silk Road is very extensive. According to the Italian Ministry of Economic Development, the value of the agreements signed amounts to approximately 2.5 billion, with a potential of 20 billion considering the leverage effect of the agreements reached.
Italy can play a strategic role due to its particular geographical position and to the national port and logistic system, despite the acquisition of the Greek port of Piraeus is likely to steal traffic from Italian ports, the latter must exploit the proximity to Central Europe and the easiest rail connections.
We must notice that in the various agreements presented, the relationship with China is deepened, while the European Union, despite being mentioned, is put a little in the background.
After the visit to Italy there was also a Chinese visit to neighbouring France where, despite the criticisms made of Italy by France, commercial agreements were signed between the China Aviation Supplies Holding Company and the Airbus for a value of more than 30 billions, with an order of 300 airbus planes for China. Other agreements were signed for 10 billion euros, concerning the construction of a field of wind turbines at sea by the French company Edf and a Chinese partner, and the purchase by the shipping company Cma-Cgm of 10 ships container built in China for 1.2 billion euros. Paris and Beijing also announced cooperation in the fight against global warming, space

[13] Riccardi, L. (2016), *Cos'è la nuova via della seta*, Corriereasia.com, 18/07/2016, https://www.corriereasia.com/notizie/la-nuova-via-della-seta-tra-politica-e-finanza-globale

research, in particular the exploration of the moon, and culture with the opening in November of a Beaubourg center in Shanghai.

France has preferred not to sign an MOU and has opted for a simple joint declaration by France and China, certainly less binding from the political point of view, but it is certainly not spared in the part of commercial agreements.

Joining in the Belt and Road Initiative can inject new impetus to the economy in Italy with the possibility of injection of Chinese capital in key sectors as like that of infrastructure and energy.

We must leave criticism aside and seize this opportunity, which if we do not seize, will be taken away from other neighbouring countries.

It has been discussed inappropriately before and after the MOU's signature of possible risks of Chinese "colonization" in our country. In addition to the fact that, as mentioned above, Chinese investments in our country (13 +7 billion) are lower than those in many other European countries (eg UK 80 billion), if we consider last year's figures, Italian GDP it was about 1750 billion euros, so even if there will be a Chinese investment of 1-2 billion on our ports, it would still be very little: 2 out of 1750 certainly does not put the Italian system at risk.

There is nothing controversial about participating in the BRI, you can see for example the creation of the Asian Infrastructure Investment Bank, to which all 28 EU countries have contributed (Germany with 4.5 Billion, UK 2.9 Billion, FRA 2.3 Billion and also Italy with 2 Billion) that is in large part financing BRI's projects. Numerically for our country the risks are small for the debt trap and from the point of view of a geopolitical penetration there are no problems. The Italian state has a Golden Power system that protects possible acquisitions by non-EU states against our strategic assets: the MOU in no way weakens this system. Italy needs investments because exports count 1/3 of our GDP and needs infrastructures for export. If exports increase, national GDP also increases.

1.4 Who is financing the BRI?

It is estimate that to fully fund the total BRI project needs range between US$ 4 to 8 trillion. Diverse funding channels such as BRI bonds, private capital investment and public-private partnerships (PPP) but also State-Owned Enterprise (SOE) investment

will be crucial for the success of the initiative. In Asia the largest investment needs, are related to road transport and energy supply infrastructure (for a 60%), followed by rail transport, telecommunications and water infrastructure.

From 2005 to 2017 China's global construction projects (mainly infrastructure) results US$ 480.3 billion for the BRI participating economies. At the same time it is clear that China alone cannot fund the entire infrastructure needs of developing Asia and for sure not all the projects related to BRI. These needs are very large and China faces its own financial constraints at home, so this means that there is a need for more effort of other countries.

Here there are some *examples of BRI projects and related costs*:

- The rail network between China and Thailand by CRCC, US$ 23 billion
- CNNC-funded nuclear facility in Pakistan, 9.6 billion US$
- Agreement for the extraction of raw aluminium in Guinea by China Power Investments, valued at US$ 6 billion
- China-Uzbekistan-Kyrgyzstan railway by CRBC, US$ 200 billion
- Railroad in Iran by NORINCO, US$ 7.8 billion
- CNPC pipeline in Russia, US$ 55 billion

So far have been invested with funds and loans, more than one trillion (1,000 bn) US$ on BRI, also if the World Bank in 2019 counted $575 billion worth of BRI investments, most of which were still in the construction or planning phase. The majority was devoted to energy and transport projects.

In any case China is not alone, because the funding of the Belt and Road Initiative will be secured by various institutional mechanisms[14], such as:

1. *Policy Banks*

- The *Agricultural Development Bank of China (ADBC)* is supporting Silk Road Fund and Chinese companies, acting through overseas investment support.
- *China Development Bank (CDB).* The CDB President Zheng Zhijie said at the Boao Forum on March 2019, that the Bank has provided financing of over US$ 190 billion for more than 600 projects of the "Belt and Road" infrastructure plan since 2013.[15]. The CDB is a

[14] See note 9

[15] Tang, D. (2019), *China Development Bank sinks $190bn into Silk Road dream*, The times, 29/03/2019, https://www.thetimes.co.uk/article/china-development-bank-sinks-190bn-into-silk-road-dream-v5s0kq623

state-owned bank that acts through concessionary and non-concessional loans, credit lines, overseas investments support that can be tied to exports in most cases. Thanks to the injection of capital from China into the SRF, the latter has bonds with a low interest rate, as the Chines Government debt, which means that banks can grant low-interest mortgages to China's state-owned companies, which compete with a great advantage in tenders for the construction of BRI.

The projects covered infrastructure, transportation, energy resource co-operation, technical facility construction and other fields. It's the world's largest development finance institution, the largest foreign-currency lender, and the second biggest bond issuer in China. The CDB also accounts for more than a quarter of the country's yuan bonds. CDB is an important driver behind the BRI and its contribution is consistently growing, as BRI represent more than 34% of total bank international interests. The projects in witch it is involved, include foreign governments, foreign companies and Chinese corporations. An example is the 40-year concessionary loan to Indonesia, with no guarantee, for 75% of the US$ 5.29 billion Jakarta Bandung high-speed railway, project won by a Chinese company at the expense of the Japanese contender. Other examples of CDB investments are the extension of credit line to the Argentina's Bank of investment and foreign trade for 150 billion US$ for financing investments projects in agriculture, energy and development, and 265 million US$ to the "Shymkent Oil refineries" for the modernization of energy plant in Kazakhstan.

- *Export-Import Bank of China (CH-EXIM).* Given its important role, the state-owned Exim Bank of China is a major player in financing the BRI. By April 2019, due to its President, the EXIM Bank had supported 1800-plus projects in countries along the Belt and Road Initiative, providing US$ 149 billion. The Exim Bank specialises in implementing Chinese state policy in the industry, foreign trade, diplomacy, investment and international economic co-operation. The projects include roads, railways, electricity, ports, communications and other fields as the building of new kind of energy-saving vessel more sustainable for the environment. EXIM Bank provided a US$ 800 million low-interest rate loan to Malaysia to build the 22.5 kilometre second Penang bridge, the longest cross-sea bridge in Southeast Asia. Other examples of investments are the Budapest-Belgrade Railway, the China-Maldives friendship bridge, the Doraleh Multipurpose Port (DMP) and livestock terminal in Djibouti (important for the maritime route), the extension of Southern Expressway in Sri Lanka (connecting two big ports in

the country), the Maputo-Katembe Bridge and the related link roads in Mozambique and the Jatigede Dam in Indonesia.

Exim Bank lends to foreign governments, foreign companies and Chinese corporations, with some measures as preferential export credits, export buyer's credit, export seller's credit, concessional and non-concessionary loans, overseas investment support and so on.

2. *State Owned Banks*

China has multiple state-owned banks, but these four are the ones that are increasingly involved in financing the BRI as they are tied to China's major state-owned enterprises, and provide much of the funding to them.

- *Agricultural Bank of China (ABC).* The ABC is China's third-largest lender with over US$ 3.2 billion. The bank assigned funds for BRI projects such as the Beijing-Tianjin-Hebei cluster, Guangdong-Hong Kong-Macau Greater Bay Area and the Yangtze Economic Belt. In 2018, the ABC increased its loans by almost US$ 63 billion.

- The *Bank of China (BOC)* is the second-largest lender in China overall, and the fourth-largest bank in the world by market capitalisation. The BOC had approved more than $140 billion of credit and funded over 600 major projects under the Belt and Road Initiative by the end of June, according to BOC semi-annual report of August 2019.

-The *China Construction Bank (CCB)* is the world's second-largest bank by market capitalisation and the sixth-largest company in the world. China Construction Bank Corporation is raising at least US$ 15 billion for a fund to finance investments related to BRI from investors offshore and onshore.

- *Industrial and Commercial Bank of China (ICBC)* is the largest bank in China and fist in the world by market capitalisation, mainly through non-concessionary loans, is active in 212 BRI-related projects for a total of US$ 67.4 billion at 2018, with potential projects expected to bring this to US$ 159 billion.

3. State Owned Funds (a selection)

- *China Investment Corporation (CIC)* manages an important part of China's foreign exchange reserves. It's the country's US$ 940 billion sovereign wealth investment fund, that "is seeking global partners to jointly establish a special cross-border investment instrument which will further finance the Belt and Road projects," said Tu Guangshao,

vice-chairman and president of the CIC in March 2019. Around one third of its funds are allocated to private markets, with a priority given to developing countries, and increasingly the ones who require funds for BRI projects.

The CIC is also a shareholder of the Silk Road Fund (with 15% share), which mainly provides investment and financing support for the BRI projects.

- *Silk Road Fund (SRF)*. The Silk Road Fund is a US$ 40 billion multilateral investment fund that was created to facilitate the BRI. Its 4 shareholders are: State Administration of Foreign Exchange (65%), China Investment Corporation (15%), Export-Import Bank of China (15%) and China Development Bank (5%)[16]. The SRF invests in medium to long term development projects related to BRI. The Silk Road Fund finances projects in the field of infrastructure, energy sector, industrial and financial cooperation, resource development and mainly wants to improve the infrastructure link across the Asia-Pacific and connectivity in Eurasian countries. There are on the other side investments in environmental protection, high-tech but also mining projects and extraction infrastructure. Basically there are no geographical limits to the investments. The SRF acts through different kinds of investments as equity investment, participation in mergers and acquisition, subscribing IPO's, also debt investments (bonds) or investing directly with sub-funds.

Their on-going projects include the Karot Hydropower Project on the Jhelum River of Pakistan, the UAE Egypt Power Plant Project coinvested and developed by Chinese investors including the China Gezhouba Group Corporation. The Pakistan Karot Hydropower Project signed in April 2015 is a prioritised energy project in the "China-Pakistan Economic Corridor". The group formed by the Silk Road Fund, the Export-Import Bank of China, the Chinese Development Bank and the International Finance Corporation has provided a US$ 200 million loan to the project. The Silk Road Fund has invested also in Italy with investments into Autostrade per l'Italia and Pirelli.

4. International Financing Institutions (a selection)

- The *Asian Development Bank (ADB)* is a multilateral development bank with 68 national shareholders. As the name implies, the bank focuses on investing in emerging Asia, for promoting economic and social development and has consequently taken part in projects through the BRI. At 2018 China holds 6.4% share behind Japan and US with

[16] To know more have a look at www.silkroadfund.com.cn

respectively 15.6% share each. The ADB also works with the World Bank and the Asian Infrastructure Investment Bank.

- *Asian Infrastructure Investment Bank (AIIB).* The AIIB is a multilateral development bank founded in 2016 with actually more than 100 members that are contributors with China, which is the largest shareholder (26.5%) followed by India and Russia. Italy, as other European countries, is among the founding members of the Bank and is its 10th shareholder with 2.6% of the capital. All the countries members of World Bank and ADB con joint the AIIB, and they are dived into Regional (Asia or Oceania countries, with more decisional power) and Non-Regional (which cannot exceed 25% of total share). The AIIB is working conjointly with the World Bank and the Asian Development Bank (ADB) and the starting capital of the bank was 100 billion US$. The bank aims to develop infrastructure, economic connectivity and other productive sectors in Asia, including energy, transport and telecommunications, rural infrastructure and agricultural development, water supply and sanitation, environmental protection, urban development and logistics.

By 2017 the AIIB moved forward on 16 projects worth $2.5 billion, or around a hundredth of its estimated eventual scaled-up capacity, in countries like Azerbaijan, India, Bangladesh, Pakistan, Myanmar, Tajikistan, Indonesia, Oman, and Georgia. Many of the countries that have so far received funding from the AIIB are located along China's BRI. The projects mainly focus on energy, transportation and slum upgrading. One of the latest approved project is the Trans-Anatolian Natural Gas Pipeline Project (TANAP) in Azerbaijan, which as part of the Southern Gas Corridor of the European Union, will transport natural gas in the Caspian Sea to Europe via Turkey. The project requires a total investment of US$ 8.6 billion, of which AIIB is contributing US$ 600 million, the World Bank US$ 800 million, and the remaining will be provided by other international financial institutions and commercial loans. Others important projects, in order of investment amount, are the Tarbela 5 hydropower extension in Pakistan (energy sector) funded for 300 millions out of 824 needed, and Duqm Port Commercial Terminal financed for 265 millions out of 353 needed. The AIIB provide financial support to the development of infrastructures mainly thanks to Sovereign and Non-sovereign Backed Financing and Equity investments.

Until the end of 2018, the AIIB Board of Directors approved the allocation of more than 7.5 billion US$ for projects involving various infrastructure sectors in 13 Member States

including India, Indonesia and Bangladesh. A limited portion of the investments (maximum 15%) can also be allocated by the bank to regions outside Asia, for projects that are closely linked to Asia or involve global interests such as environmental protection. The 8 billions US$ invested until now, seems to be a little, but we must consider that having been created only a few years ago, the bank's has considerable development margins and the potential is great[17].

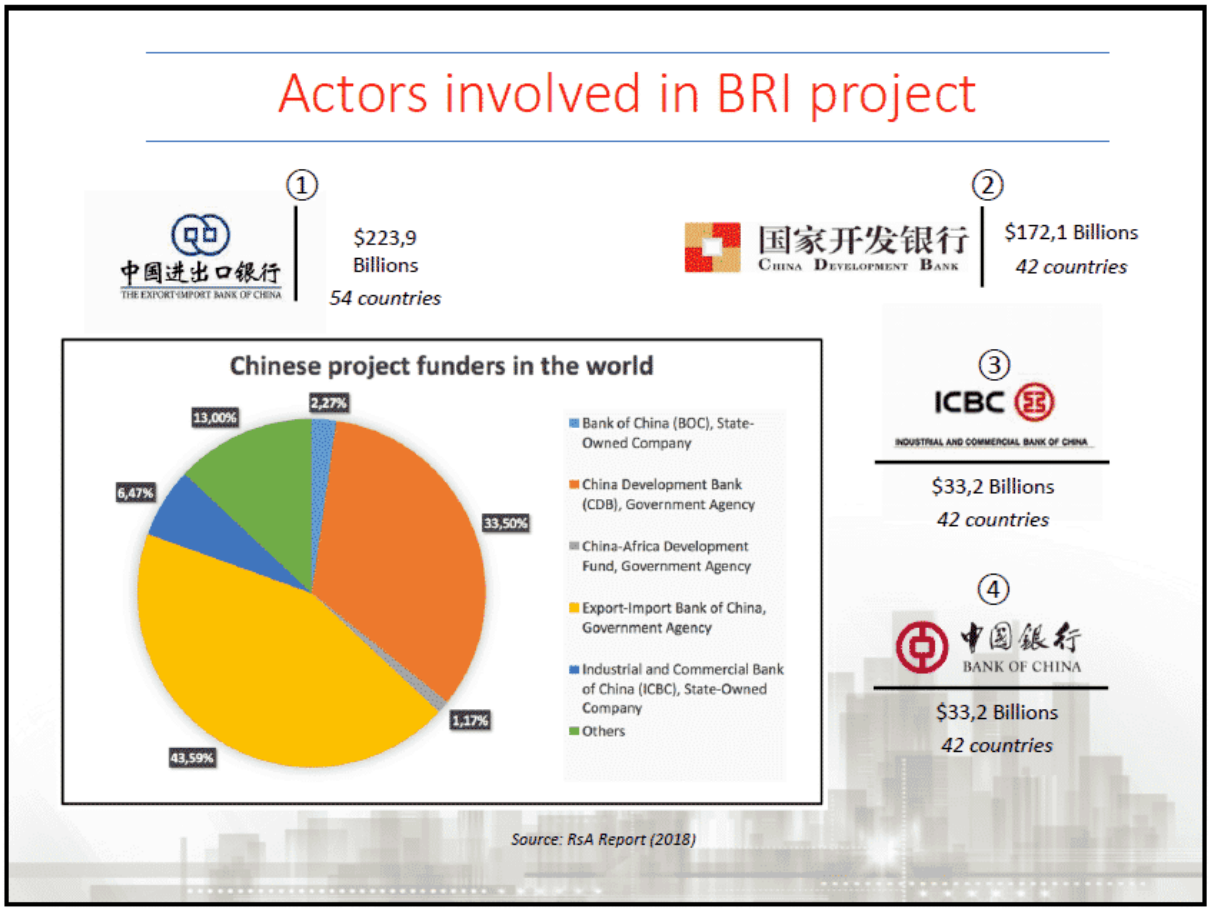
- *New Development Bank (NDB).* Established in 2014 by Brazil, China, India, Russia, and South Africa the NDB aims to facilitate investment between and among the partners. A great part of its funding has been directed towards green energy investments and to provide loans to its member countries in the infrastructure sector. Anti-pollution infrastructure measures as water treatment plants and solar and wind power technologies are examples of the projects funded. It announced the first batch of loan projects in April 2016, providing total loans of US$ 811 million to renewable energy projects in the founding countries, to support the member countries' 2370 Mega Watt generating capacity of renewable energy. In July 2016, NDB resolved to provide US$ 100 million in loans to small-scale energy projects in Karelia, Russia. In November 2016, NDB approved a US$ 350 million loan in regions along the Belt and Road Initiative area. The bank's current capital base is US$ 100 billion; the NDB had already approved more than 30 projects with a combined contract value amounting to US$ 8 billion, only in China where approved 9 projects for a loan of 2.8 billion US$ by March 2019. The bank will do, due to the NDB President, 100 projects by the end of 2021 with a total loan amount that could be between 35 and 40 billion US$.

After this short analysis we can clearly understand that there are lot of sources of funding and the numbers and partners involved are not so clear because everyday changing and also because of the lack of transparency of many institutions. We have to say that the countries are the main stakeholders and that the China Development Bank, the Export-Import Bank of China, the Bank of China, the Industrial and Commercial Bank of China, the Asian Infrastructure Investment Bank, the New Development Bank and the Silk Road Fund have for sure a leading position in the entire funding of the initiative.

[17] Asian Infrastructure Investment Bank (2019), *Asian Infrastructure Finance 2019 – Report*, available at https://www.aiib.org/en/news-events/asian-infrastructure-finance/common/base/download/AIIB-Asian-Infrastructure-Finance-2019-Report.pdf

One of the big partner not describer before is the World Bank: the international financial institution, with 189 different countries as shareholders, that provides loans to countries to fund capital projects. The WB has also pledged to invest about US$80 billion in infrastructure for BRI participants. There are also some Bilateral investment Funds as the one between China and Russia or China and India or China and Africa, that are financing in a small part the projects, others are sure to be created in the coming years.

Fig.3 Financial Institutions involved in BRI projects



Source: RsA Report (2018)

1.5 Pros and Cons of the Belt and Road Initiative

1.5.1 Advantages of BRI

To analyse the pros and cons of such a vast project, we must first understand from what point of view we want to analyse them. Do we want to take the Italian, European,

Chinese point of view or a general overview? A positive thing for China or for America is not necessarily the same for other partners, moreover we need to make a distinction for every single area or sector, because two allies on the military level, may not be on a commercial level... It is difficult to be able to say objectively what is "good" and what is "bad", but we will try in any way to give a vision as general as possible.

We undoubtedly find among the positive consequences of Belt and Road the desire to connect countries and states in the world, in many areas of society ranging from infrastructure, to the economy, to politics, to commerce, to culture, to tourism, to scientific-technological cooperation and much more. Belt and Road wants to be the engine of the global economy, launching projects concerning the South and East of the country. Africa, Central Asia and Southeast Asia are beginning to play a central and fundamental role for future years. They are the emerging countries and it is estimated that in 2050 these will be the first countries for GDP in the world, surpassing many of the current G7 countries (including Italy).

We can try to list the main advantages that the BRI brings:

- *Infrastructure construction*: railways, ports, airports, bridges, dams, roads, energy production plants and telecommunications. All these large projects involve orders and tenders, so there is the possibility of work for many foreign companies and the creation of jobs so employment of many local workers. Another sector of potential success will concern real estate construction projects; we have seen in fact how real estate occupies a large part, for sure more than 10%, of the investments made so far in the BRI. The transport sector will be affected by these changes, and so there is the will to strengthen the development of multi-modal transportation that integrates expressway, railways, waterways, and airways, building international logistics thoroughfares, and strengthen infrastructure development along major routes and major ports.

- *The promotion of interchange with the countries involved in the BRI*: for example from the cultural and touristic point of view, as the agreements and twinning between the various UNESCO sites and the Italian and Chinese cities. From an educational point of view, facilitating cultural exchanges, study trips, study abroad experiences sustained by scholarships. There is also the will to conduct international cooperation not only in the areas of culture, education and tourism, but also on science, technology, sports, environmental protection, health care and medicine. We have seen that many of these

themes are present on the institutional agreements signed between the Italian and the Chinese Government.

- *Financial cooperation*: there is the will to strengthen cooperation with international organizations including international financial organization and institutions, various currencies, many countries in projects with global goals. China, despite being the largest financier of the project, is not alone, and it is expected that by 2030 half of the BRI-related projects will be financed by private capital, multilateral banks and foreign governments. China wants to attract international capital for the creation of a financial cooperation platform that must be open, pluralistic and mutually beneficial.

- *Investment and commercial cooperation*: increasing exports to BRI countries, competing internationally and adopting "best practices". The aim to improving transparency and trying to adopt universally recognized standards is something that Europe would like to do, particularly on Asian products. All this will make possible the employment of foreign labour and reduce industrial overproduction by exporting to other markets. Europe will benefit from a greater flow of goods (and people), mostly destined to Mediterranean ports. China intends to give a huge boost to Euro-Asian economic relations and in this scenario the Mediterranean appears to be central, with Italian ports that can benefit from it (in this case a specific positivity for Italy and its ports from North to South), but also an advantage for the entire Europe, also if we consider the land and rail routes.

Many countries can benefit from the possibility of export in new markets, that where still considered distant: Italy, for example, can boost its products, promoting the “Made in Italy” brand, loved all around the world, and incrementing the export especially of machinery, textile, fashion industry and food, and other goods where the country is strong.

In Asia there are more than 800 free trade areas, and the aim is to create many others along the routes of the BRI, negotiating with countries and regions. The will is to implement the effort for gradually establishing a network of high-standard free trade zones, it is in fact demonstrated that where there are free trade areas, there is a greater incentive to attract investments.

- *Coordination of policies in certain areas, as less developed countries*: the will is to increase trade and investment along the BRI, with bilateral and multilateral cooperation mechanism, focusing on policy communication, infrastructure connectivity, trade

facilitation, capital flow and people-to-people exchanges. China seeks to strengthen its political and economic role in the region affected by the BRI and to act as a guide/leader for countries that in the past have been little considered or even abandoned especially in the area of Central Asia or Eurasian, and in doing so can find a chance for development and growth. There is the will to contribute to the development of rural or underdeveloped areas ranging from some Chinese provinces, to Pakistan, Turkey and Western Europe through countries such as Kazakhstan, Turkmenistan, Tajikistan, Uzbekistan that need investments for grow. There are very poor areas also inside some big countries as in China, in which is necessary to intervene for reduce economic inequality and promote growth, develop innovation and create networks between the cities and the rural areas.

Important investments will be done also in Africa, especially on the Eastern part of the continent as in Kenya, Ethiopia, Uganda and Djibouti (where there is a Chinese foreign military base). China has promised more than 60 billion US$ of investment and loans to Africa, and quite all the African states are interested in being part of the project. There are also investments on the West as in Senegal or Angola, and there is a plan of a railway connecting the West to the East of Africa, which could be realized in the future. Surely the investments in Africa are positive in terms of the fact that China builds and improves infrastructures, roads, railways, telecommunications systems, thanks to which African governments can trigger and fuel economic development, improve the living conditions of the population, the education, the health system and much more. On the other hand, attention must be paid to possible risks of a “new colonisation” such as the exploitation of natural resources and the debt trap of the countries that we will analyse later.

In the BRI there will be benefits deriving from the connection of two of the major world economies: China and Europe. This corridor with immense logistical potential, offers important opportunities in the energy and extractive sectors, as shown by the investments of the Silk Road Fund, the China Development Bank, the New Development Bank and the Asian Infrastructure Investment Bank.

There is potential for development, opening up to other sectors by 2025, including technology, industry, logistics and storage. Countries along the routes of the Silk Road can benefit, in fact there is the Chinese intention to create industrial parks and exploit the potential of the various areas.

- *Benefits for foreign states and international companies*: within the BRI, not everyone will be able to benefit equally, but small and medium-sized economies will certainly benefit from an opening up to a wider economy. Excluding the obvious benefit that China in the first place will have from this initiative, there are 10 other markets that will produce more than 60% of the GDP of the BRI, on which commercial opportunities are strongly focused, namely Saudi Arabia, India, Indonesia, Iran, Korea, Poland, Thailand, Taiwan, Turkey and Russia.

China is very strong at producing certain types of products, but Europe is by the exporter of products that require advanced technologies and know-how, such as machinery: the supply of products that require high environmental and safety standards becomes a opportunity for the export of our market.

Foreign companies can participate in projects thanks to the contribution of various banking institutions such as the World Bank. The opportunities to manage the risks deriving from the initiative and to be leaders in certain areas, make European companies valid contenders with the Chinese ones. There are markets like Southeast Asia and the Gulf where China is struggling to enter, and where there are more openings and business opportunities for foreign companies. International companies can participate with high standard supplies, building partnerships (such as joint ventures) with the Chinese to make stronger proposals, offer professional services by collaborating with Chinese companies and putting rules on the project, as contracts on work, taxation and the insurance part. The foreign companies have an advantage on facing the management of corporate social responsibility in projects, such as the creation of infrastructures, which can create social and environmental damage during their implementation, also if the BRI wants to develop in a sustainable way, trying to contribute to the 2030 sustainable development goals.

Companies can then participate with acquisitions, necessary for example for the Chinese who need high technology and standards (present on international companies), or with financing, which has seen an increase in the presence of foreign funds in the management of the BRI, so as to attract more and more private capital from all over the world.

The will of the BRI from the industrial point of view is to deeply restructure the industrial production with automation, use of advanced technologies like robotics. Over the years, China has realized that the industrial model of low-cost production, based on

quantity and not on quality, no longer works. In the last few years this reconversion has been activated, in order to sustain the internal economy of the country, but it is still not enough. It is clear that China is trying to make a qualitative leap, in order to compete with European or American products, and it is already doing so in information technology, but it needs to adopt an industrial model 4.0 evolved in other sectors.

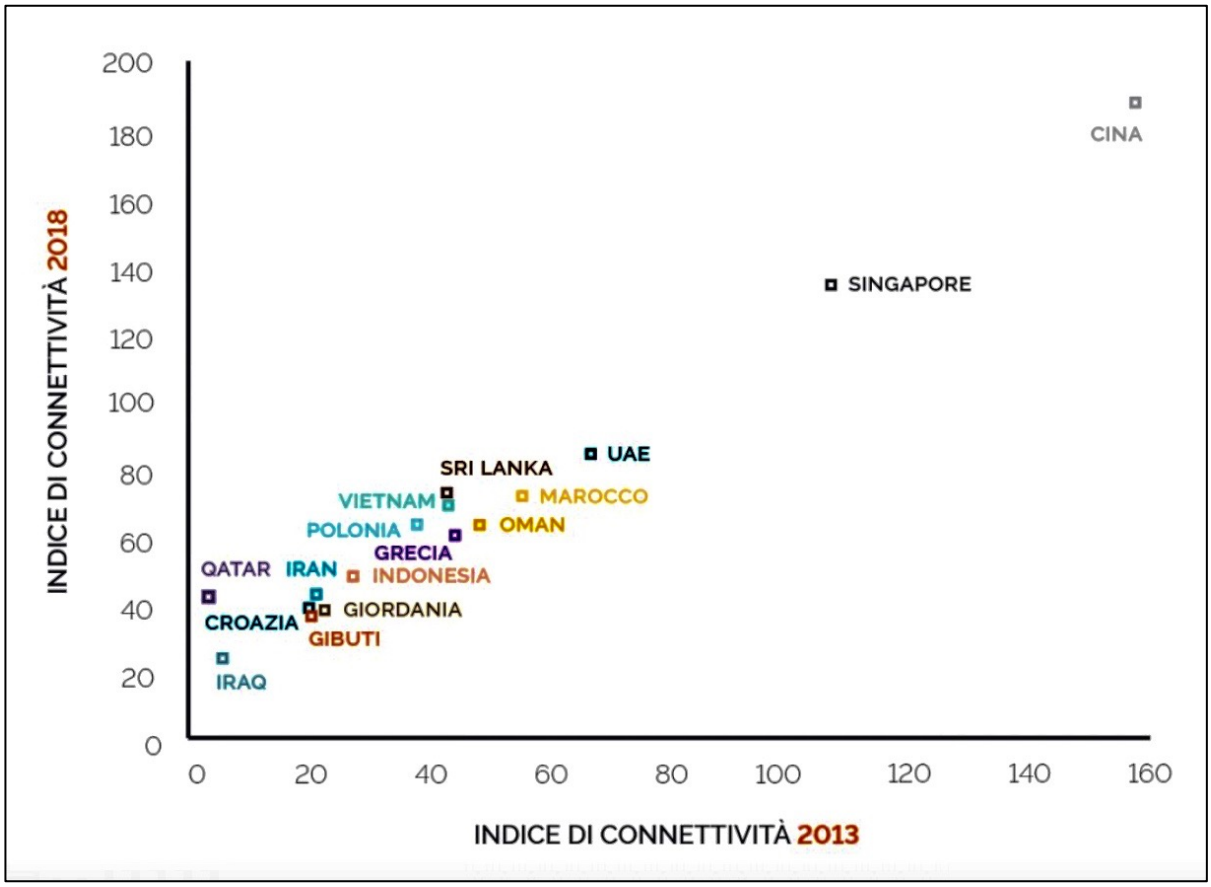
On this sense, China wants to boost innovation, intensify cooperation in frontier areas such as digital economy, artificial intelligence, nanotechnology and quantum computing, big data, cloud computing, smart cities so as to turn them into a digital silk roads of the 21st century.

Another positive aspect is the fact that China is promoting a sustainable development of the BRI, due to President Xi the Initiative must involved Peace in the sense that the countries must respect each other's sovereignty, dignity and territorial integrity, each other's development path and social systems and core interest and major concerns. The Environment must be respected, using new technology to develop global energy interconnection and achieve green and low-carbon development. The environmental protection in infrastructure construction, can be achieved enforcing environmental standards, using green transportation, green energy, with green building, eco-industrial parks, eco-industrial chains, recycling processes and so on. There will be also plan of action for food and energy security and regional development, which will generate mutual benefit in many countries along the BRI[18].

According to the Italian Institute for International Political Studies (ISPI), states that join the BRI increase their connectivity. The Chinese investments in the BRI have indeed brought great benefits in the form of an increase in the connectivity of the receiving countries, in particular of the maritime connectivity, measured in terms of integration of a country in the routes of maritime transport (calculated even if the country that does not have access to the sea). Many of the countries affected by the BRI suffer from poor connectivity, which is one of the obstacles to development, because it increases the cost of imported goods and makes exported goods less competitive on the global market. All the recipient countries of a large number of BRI projects, recorded significant increases in their connectivity between 2013 and 2018: among them, for example, Iran (99%), Indonesia (74%), Sri Lanka (68%), Vietnam (59%) and Qatar (11%).

[18] OECD (2018), *China's Belt and Road Initiative in the Global Trade, Investment and Financial Landscape*, Chapter 3, pg.10 and Chapter 4

Fig.4 Variation of connectivity due to BRI, between 2013 and 2018



Source: Linear Shipping Connectivity Index, UNCTAD 2018, ISPI elaboration

Among the countries that have benefited from the BRI investments, many have increased their exports to China, for example Myanmar, Sri Lanka, Cambodia, Serbia, Laos and Vietnam, but for others exports have remained unchanged, as in the case of Indonesia, or even reduced, as in Pakistan, Kazakhstan and Saudi Arabia. This is a demonstration that the increase in connectivity is not only in the direction of China, but also for other recipients, and that the infrastructure is not the only solution to increase the export of countries, which most of the times have other structural problems to face. It is shown instead that the countries crossed by the BRI import more from China, or China has benefited more than other countries in terms of market access, and this is one of the objectives that China had set itself with the creation of this initiative or find outlet markets for its domestic overproduction[19].

It must be said that China's willingness to act with a policy of openness and dialogue is certainly noticeable, showing that geographical distances are not insurmountable and

[19] See note 8

that protectionism is not the solution to problems. The President Xi Jinping in 2017 said: *"We should embrace the outside world with an open mind, uphold the multilateral trading regime, advance the building of free trade areas and promote liberalization and facilitation of trade and investment. Of course, we should also focus on resolving issues such as imbalances in development, difficulties in governance, digital divide and income disparity and make economic globalization open, inclusive, balanced and beneficial to all."*[20]

Protectionism is not the key for solve problem in a long term vision, and if the politicians are good they must not look at the next election, but at the next generation, and maybe it is what the United States must understand soon. At the moment we are assisting to a sort of trade war between USA and China on custom duties on goods, but maybe it is more correct to call it a New Cold War. USA and China are in fact great trade partners and the import-export between them is several billions value. There is for sure the interest to put duties on Chines goods coming into US, but the two partner will find an agreements because of the other greatest interest they have on many other fields, and because for many products China can buy a surrogate to another country, as in the case of lobsters, which China has stopped buying from the Americans and started buying from Canadians, even at a lower cost.

As a conclusion, BRI must be seen not only from the economic point of view of the specific interest of the countries involved, because it's also a way to openness in all senses, of friendship and peace, for a better future, at least we hope so.

1.5.2 Criticism of BRI

In addition to the positive aspects, there are many critical points and doubts about multiple points of the Belt and Road Initiative. The opportunities offered by the BRI will certainly bring challenges and risks for the countries involved that do not have to be underestimated.

Let's try to make a general list of doubts and critical issues deriving from the project:

- *A project built around China and which generates benefits mainly for China*. Let's start by emphasizing how China, in addition to good intentions such as connectivity around the world, investments and the development of underdeveloped areas, has mainly created

[20] OECD (2018), *China's Belt and Road Initiative in the Global Trade, Investment and Financial Landscape*, Chapter 4, pg.13

BRI to be able to cope with internal needs, primarily to be able to export as much goods as possible, for solve the problem of overcapacity of production they have. The BRI would provide strong logistical support for Chinese exports (reducing transport costs) and facilitate the supplying of raw materials. China wants to guarantee its safety also from the point of view of energy, resources and food, and for this reason it aims to have a leadership role in the various areas where it operates, mainly in neighbouring countries. It is precisely in these areas that it will create industrial parks mainly to take advantage of the low labour costs, avoid duties and exploit local potential. With the increase in investment and the creation of infrastructure, new demand for goods is created in these areas, and China is ready to offer its assets and services. It is clear that from 2013 until now Chinese exports have increased a lot, especially towards the countries covered by the BRI, which in turn have imported from China significantly (more the number of BRI projects there are in the country, more import from China the state has): according to an ISPI research, the correlation between BRI projects and imports from China is high and positive.

China has also created this project for economic and financial reasons aimed at developing agreements on tax, customs and commercial matters (such as Free Trade Agreements and Double Tax Treaties) to greatly increase its export, at a lower cost. China wants to develop its economy globally and wants to test the international use of the Chinese currency (RMB), which has no international course like the dollar or the euro. It wants to grow its own national banks and BRI-related funds and act through its banks to finance projects and grant loans which, as we will see later, have a cost and risks of not being repaid or of little benefit to the applicants. It should also be noted that China aims to ensure that especially its national companies, take advantage of the development projects created by the BRI, you can think of the hundreds of infrastructure projects that are, and will be, implemented, which involve orders, tenders, financing, jobs and to which Chinese companies participate and hope to get as much as possible to the detriment of other competing foreign companies. Last but not least, the geopolitical aspect, or rather the desire of “Chinese domination” of part of the world, with growth in strategic sectors ranging from infrastructure to telecommunications is not to be overlooked. The growth of political importance, of Chinese strategic and military action on a global scale, which are developing in the background, are subjects of fundamental importance, which we will better analyse later.

The Chinese population leave nothing to chance in business, they try to plan for the future: an investment in a country is never done by chance, but always with a specific purpose, you can see for example the interventions in Africa or on the Polar Silk Road, so it's clear from what we have seen until now that the Chinese do not move if they have no real interests. One of the limits or of the success of China, depending from the point of view, is the control of the state by the Chinese Communist Party. Surely having only one party in power, there are benefits when decisions need to be taken quickly, for example if the Chinese decide to do a public work they do it without problems and time loss for bureaucracy, you can think at the largest airport in the world, the Beijing- Daxing International Airport, inaugurated in September 2019 and built in just 5 years. On the other hand a definitely negative aspect is under the profile of free competition, free market and democracy in general. President Xi wants the leaders of the political party to be able to support his ideas of changing the production system and the reform of the Chinese economic model, starting with state-owned companies. The Chinese government also expects the BRI to support industrial restructuring at a time when its companies will have learned to compete globally by adopting international standards and acquiring technologies on a global scale and space on foreign markets. To do this, Chinese multinationals must grow and internationalize, according to the "Go Global" policy, perhaps by acquiring European or American companies that have technologies and reputation in the brands.

- *The clash between China and the United States is likely to be a limit to the development of BRI*. Politically, economically and militarily, Europe and the United States are historical and valid partners, the American influence on Europe is well known, and if China will not be able to find "an ally" for the project in Europe, it would have a much weaker operation than expected. If there is no rich end market that can be a recipient of Chinese goods, the project is very aggravated and limited in its horizons. The BRI is conceived by China in terms of "soft power" to consolidate the Chinese dream of the "resurgence" of the Popular Republic, showing itself as the driving force of globalization, in counter-current respect to the protectionist positions taken by the American President Trump. In addition to the commercial clashes between China and the US over duties, there is also a military concern from the United States, which has one of the most developed Navies in the world. In fact, China is investing heavily to enhance its naval ascent, and this could represent a major challenge for America in the long run.

- *Europe on the other hand is not united, and a fragmented action is a limit to the development of the project*. France, Germany and Italy seem to act independently, each trying to pursue their own national interests, without a common European vision. If we do not act in a compact way, making a critical mass, demanding European standards on products, asking for targeted investments in certain areas that are linked to the interventions that the European Union is already doing (eg interlocking with Ten-T networks), the project could be an own goal for someone at the expense of others.
- *Funding limit*s. The amount currently available for projects under the BRI represents a small part of the necessary investments. The participation of other actors in the financial efforts required by the project is necessary, but this will depend very much on the guarantees that the project managers (above all China) will be able to give in terms of transparency in both administrative and fund management. For example, formally, the Silk Road Fund promises to allocate financial resources following the market principle, but there is a fear that the project will especially benefit Chinese companies with unclear allocations of funds, all this is creating uncertainty about financing for the member states.
- *Environmental limits and risks*. It is clear that a project as big as a BRI will have strong impacts on the environment. China says it wants to respect the 2030 sustainable development goals and the Paris agreements on climate change, but the actions in the field are clearly not going in the direction of reducing CO_2 emissions or for environmental protection. According to the 2019 data of the European Environment Agency, greenhouse gas emissions have increased from 1990 to 2017 in Europe by 128.9% in the international aviation sector, 31.7% in international shipping and 19.2% in domestic transport.

The BRI aims to increase trade and connectivity, creating new industries and developing rural areas, which will inevitably lead to greater consumption and risks to the environment in terms of emissions, pollution but also deforestation with high risk for Southeast Asia. By 2050 the largest increase in emissions will be made mostly by the developing countries, breaching the 2-degree temperature limit set by the Paris climate agreements. According to a Report from Tsinghua University, BRI countries are currently responsible for 28% of carbon emissions, by the time the Initiative will be

completed (so 2050), 126 BRI countries could be responsible for 66% of carbon emissions [21].

- *Geopolitical and debt risks*: the commercial corridors will pass through Africa, Asia and Europe exposing the participating companies to possible political, credit and security risks. The routes pass through states in which there are situations of high geopolitical instability such as the Chinese Xinjiang, Pakistan, Turkey or the states of the Horn of Africa. The growth of Chinese regional influence on various areas, for example of Central Asia, will increase the risks of possible conflict between spheres of influence, for example with India or Russia. There are also critical issues that characterize some areas such as the historic instability in the Middle East or the problem of piracy along the coasts of the Red Sea. Also along the Maritime Road the contention of the South China Sea remains open, with tension between China, Taiwan, the Philippines and Vietnam.

Many recipients of Chinese funds are already facing a high level of debt and the BRI will further weaken their credit position. Many of the countries along the BRI have been rated with a very low credit rating by Fitch rating agency. This significantly increases the risks for Chinese banks that finance parts of the project and for countries to be involved in debt traps, linked in addition to financial problems, to inefficiencies and corruption.

We often talk about the "debt weapon": so the fact that an evolved economy like China can, through loans to small and vulnerable countries often unable to return debts, get control of strategic assets (such as ports) and limit the political sovereignty of the countries themselves.

According to the China-Africa Research Initiative[22], which collected information on over 1,000 Chinese loans in Africa between 2000 and 2017, totalling over 143 billion US$, there is however little evidence of a model indicating that Chinese banks, acting at the behest of the government, are deliberately financing loss-making projects to ensure strategic advantages for China. This one has granted loans to many countries in many continents, in Africa in particular, there are 17 countries identified by the IMF as vulnerable, China was one of the main creditor, but non-Chinese creditors still held most

[21] Tsinghua University Center for Finance and Development, Vivid Economics and ClimateWorks Foundation (2019), *Decarbonizing the Belt and Road. A green finance roadmap* Report, September 2019, available at https://www.vivideconomics.com/wp-content/uploads/2019/09/Decarbonizing-the-Belt-and-Road-%E2%80%93-Executive-Summary-English.pdf

[22] China-Africa Research Initiative (2018), *Chinese Loans to African Governments, country by country, 2000-2017*, August 2018, available at http://www.sais-cari.org/data-chinese-loans-to-africa

of the debt. Only in Djibouti, the Republic of Congo and Zambia the Chinese loans account for half or more of the country's public debt and Angola is the first recipient of Chinese loans, with US$ 42.8 billion distributed over 17 years. On the other side we must say that there are evidence of debts and advantages obtained from China in some other countries: the symbolic case is that of the port of Hambantota in Sri Lanka, where the local government was forced to sign the lease of the port, along with 15,000 acres of surrounding land, for a 99 years concession to the China Merchants Port Holding, after it was unable to repay the loan it had contracted with China

According to a report (2018) of the Center for Global Development (CGD), eight countries that joined the BRI would be at high risk of falling into the debt trap and China holds a significant portion of the foreign debt of these countries. The CGD report also identifies numerous countries that are at significant risk, namely: Albania, Afghanistan, Armenia, Belarus, Bhutan, Bosnia and Herzegovina, Cambodia, Egypt, Ethiopia, Iraq, Jordan, Kenya, Lebanon, Sri Lanka, Syria, Ukraine and Yemen. In addition to the case of Sri Lanka mentioned above, recently the governments of the Maldives, Pakistan and Malaysia have asked Beijing to renegotiate the financial agreements of some projects, so that they are less heavy, more transparent and more linked to the actual needs of their economies.

Let's see in detail the most vulnerable eight countries considered to be at high risk of a debt trap[23], in addition to the case of Sri Lanka and Malaysia:

- *Djibouti*: a small country in the Horn of Africa with great strategic and diplomatic value as regards the maritime trade route and it's home of many military bases of foreign countries, including a Chinese one. Djibouti is located in an important position, in front of the Bab al-Mandeb Strait, which divides Africa from Arabia and the Red Sea from the Indian Ocean. From the financial point of view, there is a high risk of ending up in the Chinese debt trap. Its foreign debt amounts to 1 400 million US$ (the 75% of Djibouti's GDP), of which 1 200 owed to China for major investment projects which include two airports, a new port in the city of Ghoubet, an oil terminal and a toll road. Important, mainly for Ethiopia, it's also the railway linking Djibouti with Addis Ababa, which costs 2.5 billion US$ and it's also financed by China. A large part of the Djibouti foreign debt

[23] Hurley, J., Morris, S., Portelance, G. (2018), *Examining the Debt Implications of the Belt and Road Initiative from a Policy Perspectives*, Center for Global Development, March 2018, available at https://www.cgdev.org/sites/default/files/examining-debt-implications-belt-and-road-initiative-policy-perspective.pdf

consists of debts government-guaranteed public enterprise debt and owned to Export-Import Bank of China (Exim).

- *Maldives*: a country that risks falling into the Chinese debt trap as the Maldivian government wants to implement three important infrastructure projects: the upgrade of the international airport, the creation of a new population center and a bridge near the airport and wants also to relocate the main port of the country. All three of these projects have an estimated costs for 1.5 billion US$, and China is involved in all three, mainly through Exim.

- *Laos*. Here, China is financing, through Exim, infrastructure projects including the construction of a railway line that should connect the two countries, with a cost estimated of 6 billion dollars, almost half of the GDP of Laos. Another debt of 600million US$ it's been done with Exim, for a hydropower project.

- *Montenegro*: it is the only European country to fall into the category of countries most at risk of falling into the debt trap. In recent years, the state public debt has soared due to the cost of building a motorway that should connect the port city of Bar with Serbia. The project is for around 85% financed by Exim, with an estimate cost of 1.1 billion US$, or over 25% of country's GDP. In addition, there is also the Chines will to improve the Belgrade-Budapest railway that creates problems for additional debts.

- *Mongolia* is in a particular difficult situation from the economic point of view. There is an extreme need of economic development that is strictly linked to the creation of infrastructure for export and produce more. At the beginning of 2017, Exim granted a US$ 1 billion loan to finance the construction of a hydroelectric plant and a motorway for connect the airport to the capital. However, the resources for funding the hydroelectric plant project have been moved to other projects. It's estimated that in 8-10 years, China should finance BRI-related projects in Mongolia for a total amount of US$ 30 billion. If this really happens there is a high risk that Mongolia will go bankrupt.

- *Tajikistan*: a small republic in Central Asia, as well as one of the poorest countries on the entire continent, but at the same time an important country for the BRI, because is the "first leg" of the land trade route to Europe. Here China is involved in some energy and transport projects, and it's the main creditor of many loans. The 80% of the country's external debt increase between 2007 and 2016 is destined for China. A part of

Chines FDI[24] is also devoted to the construction of a portion of the Central Asia-China gas pipeline (Line D) for a total of 3 billion dollars.

- *Kyrgyzstan*: located to the north of Tajikistan, Kyrgyzstan is a poor country that is at the beginning of the land routes of the New Silk Road. The territory of the country should host numerous infrastructures in the future: some hydroelectric plants, the China-Kyrgyzstan-Uzbekistan railway line, highways and a portion of the Central Asia-China gas pipeline. The Exim is the largest single creditor of Kyrgyzstan, of which it holds about 40% of the foreign debt.

- *Pakistan* has a fundamental role in the design of the New Silk Roads, providing a privileged outlet on the Indian Ocean. In Pakistan there is a problem of public debt, unsustainable for the country, mainly caused by the infrastructure investments for the China-Pakistan Economic Corridor (CPEC) that unites the two countries and ends in the port of Gwadar (where the Chinese are investing heavily in recent years), with an estimate cost of $ 62 billion. On a total amount of 52 projects, 31 are devoted to the energy sector and 14 on transports. If the country fails to meet the mortgage payments, because of the high interest rate, China could take control on the entire corridor.

In case of debt difficulties, China is not usual to provide debt-relief to countries, and this can be a great problem for many states involved in BRI.

At the end of this analysis on the criticism and possible risks of the BRI, we can sustain that there is also an internal risk for China of not being paid by the loans made, and to put it's own economy at risk by exporting its domestic debt to other external economies.

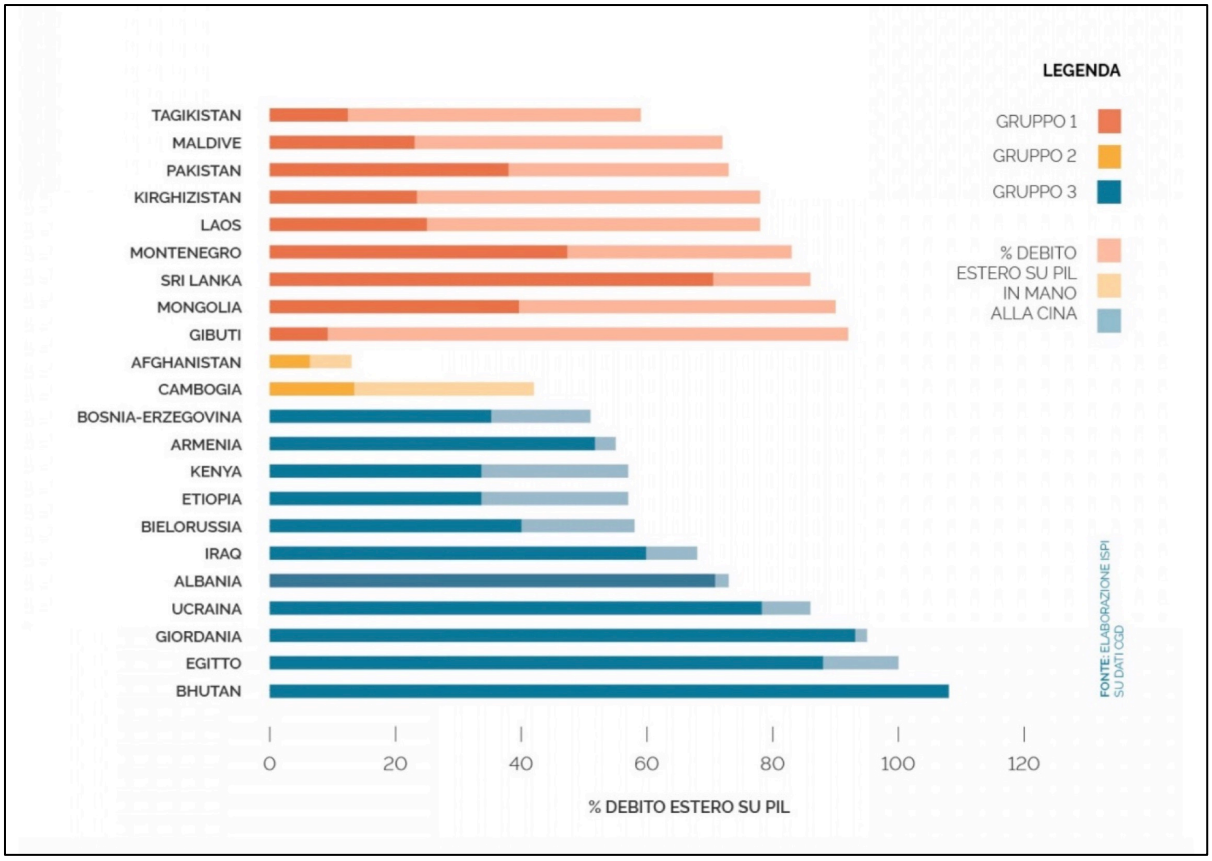
As we have seen the financing of BRI projects may, in some circumstances, increase the indebtedness of receiving countries in a worrying manner. In *fig. 5* it's shown the impact of Chinese loans on BRI countries' debt in 2018; from the graph can be distinguished three colours representing three different groups of BRI partner countries. The first group (in orange) is made up of those countries that already had a high external debt on GDP and that, receiving substantial funding from China, further aggravated their debt position. These countries that risk incurring into a debt crisis are the eight mentioned above plus Sri Lanka. The second group of countries (in yellow) presents contained ratios of foreign debt to GDP, but contracting a large debt to China are risking to become financially dependent from China. In fact, being indebted to a single large creditor is more risky than in the case of greater fragmentation of creditor countries. Finally, a

[24] Foreign Direct Investment

third group of countries (in blue), that have a high external debt ratio on GDP, but few Chinese funds. The debt crisis that these countries risk, is therefore not attributable only to Chinese loans received, but to the pre-existing conditions of the foreign debt ratio on GDP.

It is therefore not said that the greater exposure to China necessarily translates into a risk of unsustainability of the debt. The pre-existing accumulated debt stock and the number of countries to which the debt are contracted are in fact two fundamental variables[25].

Fig. 5 The BRI countries' debt to China in 2018



Source: ISPI elaboration from CGD data

In conclusion we have to say that the lack of transparency of the Initiative and of the institutions and banks involved, it's for sure not helpful for made a good analysis, but it's also a limit for the countries and investors to join the projects with less doubts and risks.

[25] See note 8

It's a limit also for China than in this way cannot plan in an accurate way it's investments and future projects. In any way, for sure we cannot have all the information that the Chines government has, but we can try to give an idea of how Beijing is acting, following a specific plan of action, that can be only partially comprise, especially from a geopolitical point of view, that is what we will try to see now.

1.6 A geopolitical analysis

We have seen so far how *China* intends to be a driving force of globalization and how it wants to promote trade in the world. The President Xi wants to promote the New Silk Road certainly for domestic interests, or to use the BRI to find new target markets outlet for its industrial overcapacity, raise the quality of Chinese products by acquiring foreign know-how, and controlling important point of the global value chains. All this will be done with a "revolution" in the industrial and economic model of the country, following the "Made in China 2025" plan, with development of industry 4.0 and smart manufacturing[26]. In any way questions have to be asked about the future stability of the economy of the countries involved and also of China. Market volatility and the percentage of growth in GDP at rates that are too high to maintain in the long term, besides China's shift to a consumer economy, are some of the topics that worry investors. A suggestion to the Chinese authorities is to try to make the initiative more multilateral and transparent, involving more institutions such as the World Bank in defining shared criteria for issuing loans[27].

On the infrastructural level the project can be divides into two main areas: the construction of hard infrastructure (ports, airways, railways, motorway, industrial parks, telecommunication facilities, energy connection) and soft infrastructures (free trade agreements, bilateral investments treaties, remove custom barriers). These two distinct but complementary perspectives represent the economic and political intentions of China; if well coordinated, as they seems to be, can be capable to transform the spaces and actions of companies and Governments with a pervasiveness never seen

[26] Confetra – Confederazione Generale Italiana dei Trasporti e della Logistica in collaboration with SRM-Studi e Ricerche sul Mezzogiorno (2018), *Belt and Road Initiative – Position paper*, Confetra, 11/12/2018

[27] Cuscito, G. (2017), *Il Forum delle nuove vie della seta celebra la globalizzazione con caratteristiche cinesi*, Bollettino Imperiale –Limes, 16/05/2017, https://www.limesonline.com/rubrica/cina-forum-nuove-vie-della-seta-belt-and-road-initiative

before on an almost global scale. There is the will to promote Chinese technology in the railway and maritime sector, developing the new land routes and sea routes, together with the consolidation of commercial relations with foreign countries and diversification of energy resources. All this has created concern because of China could control too strategic infrastructure, from transport to energy sector, and that is too dangerous for the balance of the international order.

China is moving in the global arena trying a reduction in the hegemonic role exercised by the *United States* in the world and in world governance, and China wants to act in some way as a substitute of what was the USA in the past. The intent behind the BRI, either economic or strategic, has raised significant concern in the United States, for impact on democratic governance, debt sustainability, and existing international environmental and labour standards, but first of all for the China's global ambitions. Washington is sceptical of the initiative, warning of the risks to recipients and the harm it will cause to America's strategic interests abroad. While the initiative began with a predominantly economic focus, it has taken on a greater security profile over time. It's for sure not a traditional aid program because the Chinese themselves do not see it that way and it certainly does not operate that way. It is a moneymaking investment and an opportunity for China to increase its connectivity, also with strategic objectives as building military bases, investments in many strategic countries, developing China's access to ports and key waterways.

According to some scholars the U.S. policymakers should adapt American strategy to respond to BRI maybe with a multilateral effort, working proactively with allies and partners to regain the initiative on infrastructure programs, and to pre-emptively ring-fence areas of strategic concern from future Chinese investments[28].

If America seems to be left aside, on the other hand instead China wants to involve *Europe*, or just a part of it, in his projects. One of the effects of the arrival of Chinese investments is in fact to create a "division" in the European approach. While in Western Europe there are few projects, there is a growth in activism in the countries of Central and Eastern Europe and in southern Europe, where China has great interests, especially on the maritime side, in the Mediterranean area and in the Balkan area. An example it's

[28] Bhattacharya, A., Dollar, D., Doshi, R., Hass, R., Jones, B., Kharas, H., Mason, J., Solís, M. and Stromseth, J. (2019), *China's Belt and Road: The new geopolitics of global infrastructure development*, Brookings.edu, April 2019, https://www.brookings.edu/research/chinas-belt-and-road-the-new-geopolitics-of-global-infrastructure-development/

the port of Piraeus, which is playing a strategic role in the Mediterranean Sea, as a main hub of the Chinese company COSCO Shipping and also with a strong involvement of the China Communication Construction Company (CCCC) group, that could be interested for what concerns Italian ports.

Beijing has always reaffirmed the inclusive nature of the Belt and Road Initiative, a large geo-economic plan, shared and inclusive, but we can say that is mainly destined to *Asia* and in particular for Central Asia, transforming Eurasian countries, South and Southeast Asia. Up to 2018, BRI investments in Asia account for about half of the total BRI investments in the world equal to $ 321 billion distributed over 570 projects. Central Asia received $ 96.6 billion and South and Southeast Asia were allocated $ 158.2 billion.

It's fundamental the strategic role that *Central Asian* plays, on one hand connecting China and Europe and, on the other, in guaranteeing an ever more necessary and conspicuous energy supply to China that is developing new plants and long-range connections mainly thanks to one of the largest oil companies in the country, the PetroChina. This one has activated over 30 projects along the New Silk Road, including the China-Kazakhstan oil pipeline, natural gas extraction programs in Turkmenistan, oil projects in the Iraq, the Central Asian gas pipeline in cooperation with Turkmenistan and Uzbekistan and the China-Russia pipeline.

In 2018, China imported over 10 million of oil barrels per day (showing a dependence on imports of 69%), a volume destined to grow as it is expected that by 2040 the Chinese dependence on oil imports will reach 80% (making it necessary to import 13 million oil bpd[29]) while the import of natural gas would be destined to quadruple, reaching 280 billion cubic meters per year. China wants to favour land corridors through the construction of an infrastructure network of oil and gas pipelines to balance dependence on maritime corridors by reducing transit through the Strait of Malacca, and in this sense Russia is a valid partner for energy supply[30].

Russia can make the most of its geographic position as a bridge between East and West to fit into the BRI, and today we can say that it is more Russia that needs China than vice versa. Moscow can indeed take advantage of the Chinese project to bring development to the territories of the Far East of Russia and Siberia, which are still structurally and

[29] Barrels per day (bpd)

[30] Indeo, F. (2019), *Belt & Road: tanta energia sulla via di Pechino*, ISPI, 12/09/2019, https://www.ispionline.it/it/pubblicazione/belt-road-tanta-energia-sulla-di-pechino-23886

economically backward; it can also improve its infrastructures and strengthen transport networks, still dating back to the Soviet era. At a time of relative economic difficulty for Russia, making use of BRI funding and the consequent economic development brought by the initiative on Russian territory becomes important to be able to grow and remain strong internationally. Russia, until now, benefited from substantial BRI investments for an amount of 25.3 billion dollars for 37 projects, mostly concentrated in the energy sector, in this way China finds in Russia a strong partner in terms of energy supplies. To date, in fact, Russia is the first oil supplier in China with 1.5 million bpd, especially through the ESPO (East Siberia-Pacific Ocean) pipeline from which pass 600 thousand barrels of crude oil every day. As far as gas is concerned, after 20 years of strenuous negotiations and 55 billion dollars invested in it, Gazprom inaugurates "the Power of Siberia", or the first gas natural pipeline that will supply China, with a current length of 1,067 km, which will become 3,371 when the entire route will be completed, with a flow of 38 billion cubic meters (bcm) per year from 2022-2023.

Gazprom has recently set a goal to strengthen its presence in China, meeting 13% of consumption and a quarter of imports by 2035. Considering the fact that Beijing has slowed down imports of LNG[31], eliminating those from the USA due to the duties, the Power of Siberia pipeline and in general Russia, acquires an important role under the geopolitical profile and of the global energy arena[32].

However, we must underline how on the one hand the slowness in the bureaucracy and in the infrastructural realization of Russia, combined with the mistrust in the cooperation between the Chinese and Russian population in the far East, where China is seen as a threat to economic and cultural integrity and ethnicity of peoples, become a limit for Chinese investors in Russia. Tensions also remain over the control of the Arctic and Siberia. On the other hand Russia does not want to miss the opportunity to grow its economy and take advantage of Chinese investments to develop the East of the country that will be increasingly important in the future, thanks to the fact the geo-economic center of the world is moving ever further East. It would also be an opportunity for Russia to maintain the status of a major world power, at a lower cost. Having reduced relations with Europe over time, also as a result of the economic sanctions that the

[31] Liquefied Natural Gas (LNG)

[32] Bellomo, S. (2019), *Il gas russo apre la via per la Cina: l'Europa non è più l'unico mercato*, Il Sole 24 Ore, 01/12/2019

European Union imposed on Russia for the annexation of Crimea, the Kremlin has in a sense been forced to open up economic, political and diplomatic relations with the East, so with China.

For Russia, the possibility of becoming a key part of the BRI, even with the Eurasian Economic Union (EEU) that seems to be in decline, becomes important to maintain its strong role in Eurasia and not be overwhelmed by the growing Chinese geopolitical weight.

The clear geopolitical intent inherent in the BRI proposal worries many different partners of the initiative, especially those included in the geographical context of the Indian Ocean. In fact still in Central Asia, there is a state in great economic and demographic growth and fundamental for the BRI: *India*, which is wary of the project, especially for the role that China is playing. The geographical position at the center of the Indian Ocean, which is growing for importance, together with the economic power that is everyday reaching, are the causes of the fears of a possible permanent settlement of China in the local context as an obstacle to its business.

Due to the naval theories of Alfred Thayer Mahan, the dominion over the seas and its accesses (the Chokepoints) are the key to obtain strategic supremacy. In this sense the actual Chinese actions as the acquisitions of crucial ports such as Gwadar in Pakistan, Obock in Djibouti, Hambantota in Sri Lanka, prompted the Delhi government to treat with suspects the Chinese action under the BRI.

The tensions between India and Pakistan have been known for a long time, India would not like the Chinese intervention in *Pakistan*, which however aims at developing the economy of the country. By 2018, in Central Asia, Pakistan is the country that has received the highest number of investments by BRI, amounting to 39.6 billion dollars for 52 projects, of which 31 are aimed at the energy sector ($ 27.5 billion) and 14 at the transport sector ($ 10.6 billion).

The Pakistani city of Gwadar is part of the important CPEC (China-Pakistan Economic Corridor) that will allow the autonomous province of Xinjiang to relate with the Arabian Sea area with the creation of a railway, having in the aforementioned port of Gwadar the main commercial and energetic hub. In particular, an oil pipeline and a natural gas pipeline necessary for transporting energy to China will be built: strategic operations for Beijing as they are able to avoid a long journey for oil tankers through the Strait of Malacca.

During 2018 the Pak-China Optical Fibre Cable, a 2,950 km long fibre optic network between China and Pakistan, was completed, which will significantly speed up the exchange of data and information between the two countries. Moreover a special economic zone for the joint production of fighter jets, navigation systems and military hardware was also established within CPEC, with the aim of facilitating the exchange of military technology between China and Pakistan with potentially serious consequences for regional stability.

In addition to the Pakistan corridor, on the other hand, through the development of the Kyaukpyu-Yunnan road, there will be the possibility to connect the Southern China with *Myanmar*, and in the specific with the Bay of Bengal, guaranteeing another sea access. Moreover we must consider the Chinese expansion of the Burmese port of Sittwe as an energy distribution terminal that, in addition to the Gwadar port, is another of the infrastructure projects designed to strengthen China's national energy security.

Always in Asia many other countries benefited from BRI funding, for the most by 2018, *Malaysia* and *Indonesia*, $ 32.4 billion and $ 27.2 billion respectively, with 55 projects each, mainly on energy and transport sector. *Kazakhstan*, China's gateway to Central Asia, received investments of $ 10.4 billion for energy, transport and chemical projects, here is of great importance the China-Kazakhstan oil pipeline with a transport capacity of 400 thousand oil bpd; instead in Northeast Asia, only *South Korea* received BRI investments for 15 projects totalling $ 10.2 billion.

Finally, China has allocated 18 projects to *Iran* for a total of $ 12.47 billion, mainly in the transport and energy sectors. Iran has acquired an increasingly strategic importance for China because its geographical position is at the center of the North-South and East-West corridors. It must be said, however, that it is also a place of strong geopolitical tension, a state that must balance itself between Chinese investments on one hand, and Indians investments (with the support of Japan) on the other, which have recently aimed to develop the Iranian port of Chabahar, a useful base that guarantees New Delhi access to economic exchanges with Central Asia.

Another area of great importance is *Africa*, on which China has set its sights. A continent in strong demographic growth and with prospects for economic and consumption development. China is seizing control of key infrastructures and exploiting the natural resources of the countries. Great investments are made on the Eastern countries, which are important for the maritime route, especially with ports in Kenya (Mombasa),

Somalia (Mogadiscio) and Djibouti (Obock). Africa it's also important from the military point of view and for the extraction of minerals. From one side an example is the construction in April 2016 of the first Chinese overseas naval base in Doraleh (Djibouti) that provides to China access to maritime routes and a presence in the Red Sea, and so approaching also to the Mediterranean Sea. On the other side an example of mineral exploitation is the Chinese cobalt extraction mainly in Congo and in the East, useful for build batteries for the electric vehicles, which will be the future of the transport systems all around the world in the next years.

From 2013 until now, China has realized in Africa 59 projects related to energy, water and mineral extraction (for a value of 21.5 billion dollars) together with huge investments in the construction of hydroelectric generation plants, in coal extraction and realization of oil plants.

Another sector in strong growth in Africa is that linked to the development of telecommunications and the consequent e-commerce. China is involved with the construction of telecommunication infrastructures, for example the Chinese giant Huawei built the 70% of 4G networks in Africa. Investments in telecommunications will increase not only in Africa, but in all around the world and China is ready, because is also a leader in 5G technology, where Huawei and ZTE currently have the most internationally competitive solution, thanks to public subsidies and an internal market protected from foreign competitors[33].

The Chinese e-commerce holding company Alibaba is intensifying its presence in African countries, signing MOUs with Rwanda and Ethiopia to create the "Electronic World Trade Platform" aimed at removing the barriers to world trade for small and medium-sized enterprises, through the development of e-commerce. Africa is growing, its population will double by 2050 (today it is about 1.3 billion people) and the continental GDP is growing at a rate of 3-4% according to IMF, favouring an increase in incomes and spending capacity. There is a greater diffusion of connectivity and smartphones linked above all to the fact that the African population is very young and digitalized. Hubs of digital-related businesses are emerging in Nigeria, South Africa and Kenya, which also bring benefits in terms of contributing to increased knowledge and entrepreneurial training. Among the major problems of Africa there is for sure poverty, the political instability, corruption, the military instability, terrorism and various religious and

[33] See note 8

historical conflicts especially in the Horn of Africa; all this together with pirate attacks for example in Somalia, are a limit for the maritime trade route. All this critics aspects are an obstacle for the stipulation of formal agreements and commercial treaties and in general for foreign investments in the countries.

Another big limit is that of physical and digital infrastructures: according to Boston Consulting Group logistics are so inefficient that the physical journey from the factory to the consumer entails additional costs equal to 320% of the product. To improve this situation, large investments are clearly needed, but the economic return of which, besides being uncertain, is expected only in the long term.

The continent, however, is in great development and Beijing seems to have understood this for some time. According to McKinsey, 10,000 is the number of Chinese companies operating in Africa, of which 920 are in Nigeria and 861 in Zambia. 500 billion $ is instead the value of African industrial production managed by Chinese businesses, or 12% of the total. The interests of Huawei, the Chinese telecommunication company that offers prices of 5-15% lower than its competitors, generated in 2018, 5.8 billion dollars in turnover only in Africa. Of these, 60% are for the sale of equipment and services and 40% for telephones[34].

From the geopolitical point of view we have seen how there are in the project areas at risk of both economic, political and military instability. Among those mentioned above there are conflicts for example in the Chinese province of Xinjiang, in Pakistan, in Turkey, in the states of the Horn of Africa. On the other hand some of the regional powers of Asia that have problems with China are India, Indonesia, Iran, Japan, South Korea, Thailand, Vietnam... and should be included in a more open and fair economic cooperation into the project. The situation in North Korea also creates problems, with the intensification of missile tests and the will to become a nuclear power.

There are disputes over the control of strategically important areas such as the straits or the Arctic route. The control of the Straits of Malacca, Hormuz, Bab-el-Mandeb and the Suez Canal, just for giving some examples, are of fundamental importance, and vital for the development of the maritime trade routes. To give an example, China has a marked dependence on maritime supply routes, a factor of extreme vulnerability to Chinese energy security, considering that around 80% of natural gas and oil imports occur along

[34] Magnani, A. (2019), *Africa, Alibaba testa di ponte per l'offensiva digitale della Cina*, Il Sole 24 Ore, 01/12/2019

sea routes, and the 75% of those in oil pass through the Chokepoint of Malacca (while 50% of these also pass through the Strait of Hormuz)[35].

The control of Key points is playing a fundamental role on the trade flow and on part of the economic and political power deriving from them.

An alternative project to the New Silk Road of China, carried out by the United States and Japan, which have always been critical of the BRI, in order to limit the geopolitical and commercial rise of Beijing in the world, is the Free and Open Indo-Pacific Strategy (FOIP) that we will briefly analyse now.

1.6.1 The Free and Open Indo-Pacific Strategy (FOIP)

Driven by Japan, this strategy aims to link the Eurasian states, the Middle East and the African continent, like the BRI. It was born in 2016 from an idea of the Japanese Prime Minister Shinzo Abe to give a concrete response to the Chinese expansion and to offer at the states that want to join it, a "free" and "open" alternative to the Belt and Road. Several times the United States, in the person of the Vice-President Mike Pence, has compared China's plan to a belt strangling its members, referring to the nations indebted to China, forced to cede sovereignty to Beijing, and also as one-way road that give benefits only to China.

The USA supported the Japanese will to unite two continents, Asia and Africa, and as many oceans, the Pacific and the Indian. The plan is to improve trade, investments and infrastructures between the countries.

The first projects of the free and open Indo-Pacific Strategy include the redevelopment or construction of ports in Madagascar, Mombasa, Mozambique, Mumbai and Myanmar, as well as a power plant in Bangladesh. Clearly the Japanese initiative will not be able to compete right now with the Chinese New Silk Road, but Abe's weapon is to exploit Japan's well-known operations in building good quality infrastructures and operating in line with international law, with transparent financing and no debt traps[36]. Due to Japanese Government to implement the project it's not necessary the creation of new institutions because it is sufficient to use the existing ones.

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[35] See note 30

[36] Giuliani, F. (2019), *La Risposta del Giappone alla Nuova Via della Seta Cinese*, InsideOver, 06/06/2019, https://it.insideover.com/economia/risposta-giappone-nuova-via-della-seta.html

Japan intends to clarify how the FOIP is a purely economic-financial initiative, which aims to create an international order based on inclusive and transparent rules, but above all it is a non-exclusive project, that is open to all, and not thought to be an anti-Chinese alliance. On the other hand, it must be said that although Premier Abe has said that the FOIP has nothing to do with Quadrilateral Security Dialogue (the strategic-military dialogue between the United States, Australia, India), Japan itself over the last year has continued to strengthen its economic, trade, security and defence relations with the US, India and Australia. Although Tokyo does not admit it, FOIP wants to compete with the BRI to try to make Japan regain the political importance it has lost between Asian and Southeast Asian countries, since the BRI was announced in 2013[37].

The focus of FOIP is in the direction of sharing the values of democracy, transparency and respect for international rules, but specifically on freedom of navigation, questioned by China's claims on almost the entire South China Sea, where Beijing has militarized many islands. China is building a deep-water commercial port in Koh Kong (Cambodia) that could become a dual-purpose docks, as the port of Gwadar, with a great strategic dimension, that create the reaction of the US that with the ally Australia will build a naval base on Papua New Guinea's Manus Island.

Despite the assurances of the Cambodian government, the possibility of the port of Koh Kong to host also military ships is increasingly concrete given the close relations between Cambodia and China. In this regard, the US is worried also by the funding that China has given to the Cambodian Navy, to develop its fleet. It would not be so strange if China decided to exploit its commercial penetration also for military purposes, especially if we think at its policy of "String of pearls", aimed at building naval bases along the route from the East China Sea to the Mediterranean passing through the Indian Ocean, that provides this possibility. The construction of this Cambodian port could be a response to the Indian desire to build a naval base on the Strait of Malacca, which, combined with the US Navy presence in the area, would become a limit to the desires of Chinese expansion.

The FOIP strategy's economic and security objectives are clearly being influenced by the evolving China-policy shift, in changing the South China Sea status quo in its favour. This sea, it's an highly strategic corridor connecting India and the Pacific Ocean, that at the

[37] Berkofsky, A. (2018), *"Free and Open Indo-Pacific": Tokyo's Plans and Priorities*, ISPI, 04/06/2018, https://www.ispionline.it/it/pubblicazione/free-and-open-indo-pacific-tokyos-plans-and-priorities-20690

moment it's sort of tension, so the Trump Administration must act carefully, for not cause a war, and for the moment just limit it's action at guaranteeing freedom of navigation in the area. In any way such operations neither credibly deter China nor reassure America's regional allies. Without a clear plan to deal with the changing status quo there, the South China Sea will remain a critical missing link in FOIP's larger Indo-Pacific strategy. In any way Japan, US, India and Australia (the "Quad") have to coordinate their regional strategy, playing by international rules and not seeking to redraw borders by force, but using peace and security[38].

As we have seen the Indo-Pacific region, it's an area where the geopolitical tension between the states it's everyday growing, and it's also a key place where trade and energy resources flow, not only for China but also for states as Japan and Australia. The great economic, political and strategic interest of the area is devoted to the passage of the critical Sea Lines of Communication (SLOC), that made this a pivotal region for many states, and from many point of view. The FOIP strategy in this sense wants to shape the future regional order in a way amicable to their national interest, for an unimpeded trade, with freedom of navigation and with respect of security, international law and regional order. They want to create an alternative to Chinese funding, for promote the development of the regional countries, as with capacity-building support and infrastructure projects, also thanks to ODA[39] programmes. The creation of strategic partnership with Indonesia, Vietnam, the Philippines and Malaysia, whose national interests closely align with FOIP, it's a surplus to strength the initiative[40].

In conclusion, the FOIP is certainly a valid strategy from the point of view of the inclusion of democracies, respecting the rule of law, the free market principle, the respect of international law and human rights, transparency and peace and much more. In the possible criticisms aspects, we can say that in addition to the commercial side there is certainly the military cooperation between the Quad states, and that therefore the FOIP also becomes of geostrategic importance, as a military alliance, despite the partners have divided the two issues. From the economic point of view there is instead

[38] Chellaney, B. (2018), *Building a "free and open" Indo-Pacific*, Japantimes.co.jp, 21/11/2018, https://www.japantimes.co.jp/opinion/2018/11/21/commentary/japan-commentary/building-free-open-indo-pacific/#.XkGCkpNKjEY

[39] Official Development Assistance: public aids for Less Developed Countries

[40] Wilkins, T.S. (2019), *Defending a Rules-Based Regional Order: Australia and Japan's "Free and Open Indo-Pacific"*, ISPI, 15/04/2019, https://www.ispionline.it/en/pubblicazione/defending-rules-based-regional-order-australia-and-japans-free-and-open-indo-pacific-22861

to see if it really will be a valid alternative to the BRI, which is by now so developed and inclusive that it cannot surely compete with FOIP, at least not in a short period.

Chapter II

Maritime Trade, Belt and Road influences and two strategies compared

2.1 The importance of the Sea

The sea has always assumed fundamental importance for the population in the world and in general for the entire planet. 70% of the Earth's surface is covered by water and 80% of the world's population is concentrated in areas that are located at less than 200 km from the coast. All this certainly generates advantages for relations between states, and the exchange of distant cultures and civilizations, but also environmental vulnerabilities with risks of environmental disasters such as tsunamis, typhoons and all phenomena related to climate change such as the rising of the sea levels.

In general and to simplify we use the word “sea”, but we are obviously considering primarily the Oceans: the Atlantic, Pacific and Indian Oceans, which are covering almost the entire planet with their oceanic mass; more precisely, the seas constitute marginal basins in communication with the respective oceans.

From the past to the present days, many of the fundamental aspects that contribute to the survival and growth of a state pass by the sea: economy, energy, food and in general safety just to name a few. In fact, most of man's own production activities develop on the sea, from commercial transport along maritime communication lines, to energy (with oil and gas flows, and renewable energies also), to fishing, to the exploitation of energy resources located below the seabed, to mining of raw materials and many others.

Over time, technological evolution and modernization, especially in the transport sector, have led to an increasingly globalized world where the concepts of distance and geographic space have changed. The sea in this sense has increasingly assumed a role of vital importance, as an element of union for national economies and for interdependence between distant nations which, however are involved in the same producer-consumer chain, whose element of continuity is represented for example by the global flow of goods and energy resources.

Today more than ever, the control of the main maritime routes and the chokepoints (such as the straits) becomes essential for nations that are growing in naval importance

and that depend heavily from the sea, from the maritime commerce to the military just for give an example, one of those is China. Next to this there is the need of a maritime strategy capable of defending national interests that becomes vital for the prosperity, well-being and future of nations on the sea, such as Italy.

Recent conflicts have progressively involved countries, also close to Italy, characterized by social, political and economic collapse and subjects different than states (including violent Non State Actors (NSA) such as terrorist groups), highlighting new elements (economic constraints, territorialisation of the sea, exclusive exploitation of new energy reserves and mineral resources submarines, etc.) which have given to the sea an ever greater geostrategic centrality[41].

Already in ancient times Greek thinkers and philosophers such as Aristotle, Herodotus or Plato had analysed the connections between national policies and the physical characteristics of their respective territories, observing that some environmental conditions could affect the life and development of political organizations. The sea and its geographical relevance already assumed great importance in ancient Greece, above all for the central role played by the Mediterranean Sea at economic, military and political level.

In particular with Herodotus the concept of "thalassocracy" [42] developed, he identifies in the figure of Polycrates the creator of this strategy based on the control of the seas as a key for regional control.

Over time, studies of political geography and geopolitics have therefore developed with particular interest on the sea, even if the two sciences are different and have two different fields of action: political geography turned to the past while geopolitics to the future, and it must be said that it is difficult to call it a science. In fact, political geography studies the politics that have already taken place, that is, the spatial distribution of political phenomena and their influence on geographical factors. Geopolitics instead studies the influence of geographical factors on political choices, also taking into account

[41] De Giorgi, G. (2017), *L'importanza del mare nello scenario geopolitico di nostro interesse*, ammiragliogiuseppedegiorgi.it, 03/05/2017, http://www.ammiragliogiuseppedegiorgi.it/mc/451/l-importanza-del-mare-nello-scenario-geopolitico-di-nostro-interesse

[42] By thalassocracy we mean the military and commercial dominion, exercised by a specific political entity, of a maritime space and of the territories contained in it or which overlook it.

the possible choices and actions/reactions of other geopolitical subjects operating in the same territory[43].

It can be said that political geography studies the political forces that act on a state and the effects that these political choices have on the world. Geopolitics, on the other hand, considers the set of concerns of the actors facing each other on the international scene and questions the calculations of one and the other and what drives them to act.

According to Umberto Gori[44], by extending the field of research also to cooperation between States, geopolitics can be considered "as the geographical representation of international relations undertaken to achieve national interests".

Over time, the study of the geopolitics of the sea has developed, with primarily thinkers who have supported the theories of maritime power such as the aforementioned Alfred Thayer Mahan, or the theories on the control of the sea by Friedrich Ratzel.

US Rear Admiral Alfred Thayer Mahan (1840-1914) developed theories of maritime power, which greatly influenced the American war policy of the 1900-1930s: he was in fact an adviser to President Theodore Roosevelt, and his theories inspired American neo-imperialism, which gave to the Monroe doctrine[45] a dynamic, sometimes aggressive, interpretation. According to Mahan, the northern hemisphere area was considered the center of world power, and so the United States, had to develop a foreign policy aimed at expand its influence, controlling the Pacific Ocean and the Atlantic Ocean, with the consequent control of the accesses to Panama Canal, an important commercial and geostrategic hub, central for trade but above all for American security.

In his analysis, he points out that the oceans, also known as the "great artery", are the fundamental element in history and in this sense he argued that the sea was the only means of developing the power of a nation. The naval superiority is one of the main factors for the affirmation of national power at sea, the deployment of properly trained

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[43] Jean, C., Defintion of "geopolitics" due to Enciclopedia del Novecento, Il Supplemento (1998), Treccani, http://www.treccani.it/enciclopedia/geopolitica_%28Enciclopedia-del-Novecento%29/

[44] Professor Emeritus of International Relations and Strategic studies at Università di Firenze

[45] This name indicates some foreign policy principles, enunciated by President James Monroe at the American Congress in 1823, according to which the idea of the supremacy of the United States in the American continent was affirmed, so the USA would have not tolerate for the future any attempt by the European powers to found colonies on the American continent. Any interference by European governments in the internal affairs of American nations, with the exception of European-owned American colonies, would have been considered by the US as a threat to their security and peace; in turn the US would have refrained from intervening in European political issues and conflicts. http://www.treccani.it/enciclopedia/james-monroe_%28Dizionario-di-Storia%29/

naval forces was the only way to destroy enemy naval forces, and thus one nation could win over another by destroying its fleet and strangling its trade through a naval blockade. Mahan underlines how geographic elements can influence the course of history: since the sea is the most extensive element on Earth, commercial routes are created on it, and trade take place, so a fundamental prerequisite for the increase in the prestige of a maritime power was the development of trade. Mahan studied the naval history of states as France and United Kingdom, analysing the connections between the position of the State and the role of the joint action of the Commercial Marina and Navy to guarantee therefore, through the control of the maritime trade routes, the political-economic security of the State. The development of trade is essential in terms of increasing power of a state, and since the sea is the fastest and cheapest connection for the transport of goods, a state should create and develop a commercial fleet to be used alongside the military fleet, which is useful for controlling strategic points along the main trade routes. The Navy should work closely with commercial fleet, for ensure the security and prevent the routes from being destroyed by any external threats[46].

Mahan explains the theory of domain of the sea, studying maritime historiography, or the contrast between states or nations to obtain dominion, or control of the sea, neutralizing the enemy fleet and precluding its use of the sea, thus establishing maritime power. Mahan gave great importance to the geographical aspects of naval power, he believes in fact it was necessary for merchant and warships to find support points, as naval bases and ports, that offer a safe haven for example in case of an enemy attack. In case of conflict, the priority was to destroy enemy fleets with a major naval battle aimed at allowing dominion of the sea and free use of maritime communication routes.

The possession of bases and colonies, in addition to the military plan, was important for foreign trade and thus creating a worldwide domination.

One of the limits of Mahan is surely that of having concentrated too much on the sea and too little on the military ground forces, it was in fact necessary to move from a purely "navalist" strategy to a maritime one, and also an aerospace one.

The Englishman Julian Corbett (1854-1922) in this sense was one of the precursors of a mixed theory of naval power, focusing his attention on the influence it exerted on terrestrial operations. He believed that, while facilitating the victory, the domination of

[46] Alfred Thayer Mahan, Wikipedia, 2019 https://it.wikipedia.org/wiki/Alfred_Thayer_Mahan

the sea alone did not allow to win a conflict, and that, for this purpose, an army made mobile by naval transport was needed[47].

Friedrich Ratzel (1844-1904) scholar of political geography, highlights the differences between sea and land, analysing the different problems related to the control of the territory, in fact, it underlines how it is very difficult to control large spaces like the oceans. In his book Politische Geographie[48], he underlines how there are neither separations nor natural boundaries in the sea and it is through this formidable opening that the sea gives the immense advantage of dominating the land[49]. The sea is thus a unifying element that cancels separatist tendencies, since the sea is one, and its dominion tends to dominate the totality[50].

According to him, by exploiting the sea in a good way, it is possible to have both maritime and terrestrial power benefits, as "the sea expands the political and economic view at the same time"[51].

A great state cannot be conceived without its maritime power. Although there have been important states without maritime dominoes, according to him it is only the combined action of maritime and terrestrial domination that define a real power. On the one hand, it must be said that although a state is powerful if it controls the sea, on the other it is vulnerable because it depends mainly on the shipping routes, it will be at the same time large and weak. It is therefore necessary that the fleet and army are increasingly integrated.

2.1.1 A safe Sea

We have seen so far how the sea is important from a geopolitical point of view and how there is a close link between the military profile, trade, and the dominion of the seas. The navy and the merchant navy therefore have closer relationships than we think, because a state lives, grows and develops if there are both of them, the presence of one is not enough.

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[47] See note 43

[48] Translated into Italian in 1906 with the title "Il Mare origine e grandezza dei popoli", Unione Tipografico-editrice, Torino

[49] Lando, F. (2012), *La geopolitica classica: le concezioni strategiche globali*, Bollettino della Società Geografica Italiana, Series XIII, vol. V (2012), p.22-23, https://iris.unive.it/retrieve/handle/10278/32433/25727/Geopol_Classica-2012.pdf

[50] Ratzel, F. (1906*), Il mare origine e grandezza dei popoli. Studio politico geografico*, UTET, Torino, p.57

[51] *ivi*, p.11

Certainly the sea is an ideal bridge to unite peoples, but for do this it must also be a safe sea: the former head of state of the Italian navy Valter Girardelli said that "a safe sea is a less expensive sea"[52]. The widespread instabilities in the various states, piracy, conflicts at sea and the tensions that derive from them at sea, generate costs. Some example of recent tensions at sea are the attempts by Iranian armed ships to block a British oil tanker in the Strait of Hormuz which has generated the highest alert for ships in the Gulf[53], or tensions between Russia and Ukraine in the Kerch Strait[54].

Insurance costs, longer sea routes to avoid possible risk areas increase costs for the ship, the crew, the ship-owner, clients and generate pollution, in short, an unsafe sea is an expensive sea, and it is not convenient for anyone, neither from the commercial point of view, nor from the military one.

Today 90% of goods and raw materials transit along maritime communication lines and 75% of this flow pass through a few vulnerable obligatory passages (so-called chokepoints), made up of channels and international straits[55]. Particularly important is the Mediterranean basin that, with just 1% of the global water surface, is crossed by 20% of world maritime traffic.

Many countries depend on the sea, especially as regards energy, to give an example China and Italy import 80% of the oil necessary for internal needs by sea (China also 80% of LNG by sea), and most of them pass through strategic points. The maritime communication routes, along which imported raw materials travel, take on great importance, as they are fundamental for transformation economies of countries like Italy.

It is therefore clear how crucial the role of the sea is for many countries, on which prosperity and national security depend. The sea is certainly an opportunity from a commercial point of view, but also a place of threats that put national interests at risk.

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[52] Girardelli, V., (2018) speech at the conference "Il mare come risorsa strategica per l'Italia" at Ca' Foscari University of Venice, Ca' Dolfin, Venice 19/02/2018

[53] To know more have a look at Rai News (2019), *Tre navi iraniane tentano il blocco di una petroliera britannica*, rainews.it, 11/07/2019, http://www.rainews.it/dl/rainews/articoli/nave-petroliera-pasdaran-blocco-gran-bretagna-iran-1970ec2b-a461-4691-a997-ff3f03f44db7.html

[54] To know more have a look at Brunelli, R. (2019), *Il sequestro di una nave ha riacceso le tensioni tra Russia e Ucraina*, agi, 25/07/2019, https://www.agi.it/estero/sequestro_nave_russa_ucraina-5911851/news/2019-07-25/

[55] International Maritime Organization, see https://business.un.org/en/entities/13

The sea, as a great free space, and gateway to a globalized world is the ideal place for the development of illicit activities and hostile projects by transnational terrorist and criminal organizations.

The terrorist threat can affect sea transport, affecting the flows of vital resources for the economy and supporting infrastructures. Indeed, there may be attacks on sensitive plants such as, for example, pipeline or offshore platforms for the extraction of energy resources. Extraction companies such as ENI operate in countries characterized by a high degree of political and social instability[56], which often are unable to independently guarantee the security of infrastructures and national interests, therefore the Navy must act to protect international strategic points.

To face this threat, a continuous surveillance and control action of the sea is necessary, mainly to guarantee safety and free use of SLOCs[57], avoiding the economic damages and the potential ecological disasters caused by possible terrorist attacks for example, on the aforementioned platforms.

In the Mediterranean basin, the threat of terrorism and crime at sea is represented by the phenomenon of maritime piracy, which, as an indirect consequence, generates the risk of a marginalization of the Mediterranean. Piracy is particularly active in the sea areas of the Horn of Africa and the Indian Ocean, so ship-owners could opt for longer but safer routes, for example circumnavigating Africa. The northern European ports would benefit more from the displacement of merchant routes in the Atlantic, at the expense of Mediterranean ports, including Italian ones. It should be emphasized, however, that the presence of Chinese investments in Mediterranean ports and the interests of states that are great military powers in the area, generate a greater "sense of security" given the possibility of a rapid intervention in case of necessity, and the circumnavigation of Africa is no more *à la page*.

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[56] Eni S.p.A (2018), *Relazione finanziaria annuale 2018*, p. 97 - Fattori di rischio e incertezza, Rischio Paese. https://www.eni.com/docs/it_IT/eni-com/documentazione-archivio/documentazione/bilanci-rapporti/rapporti-2018/Relazione-finanziaria-annuale-2018.pdf due to this report Eni is currently exposed to geopolitical and financial instability risks in some important countries of presence, such as Venezuela, Nigeria, Egypt and Libya.

It should be stressed that, according to the Italian Ministry of Foreign Affairs, there are many other areas at risk where Eni is present, including, in sub-Saharan Africa, Liberia, Ivory Coast, Ghana, Nigeria, Gabon, Republic of Congo, Kenya, Angola and Mozambique. Other areas at risk are in the Middle East, with Jordan, Iraq and Saudi Arabia and in Asia with countries such as Pakistan, Myanmar, Indonesia and Vietnam. www.viaggiaresicuri.it

[57] Sea Lines of Communication

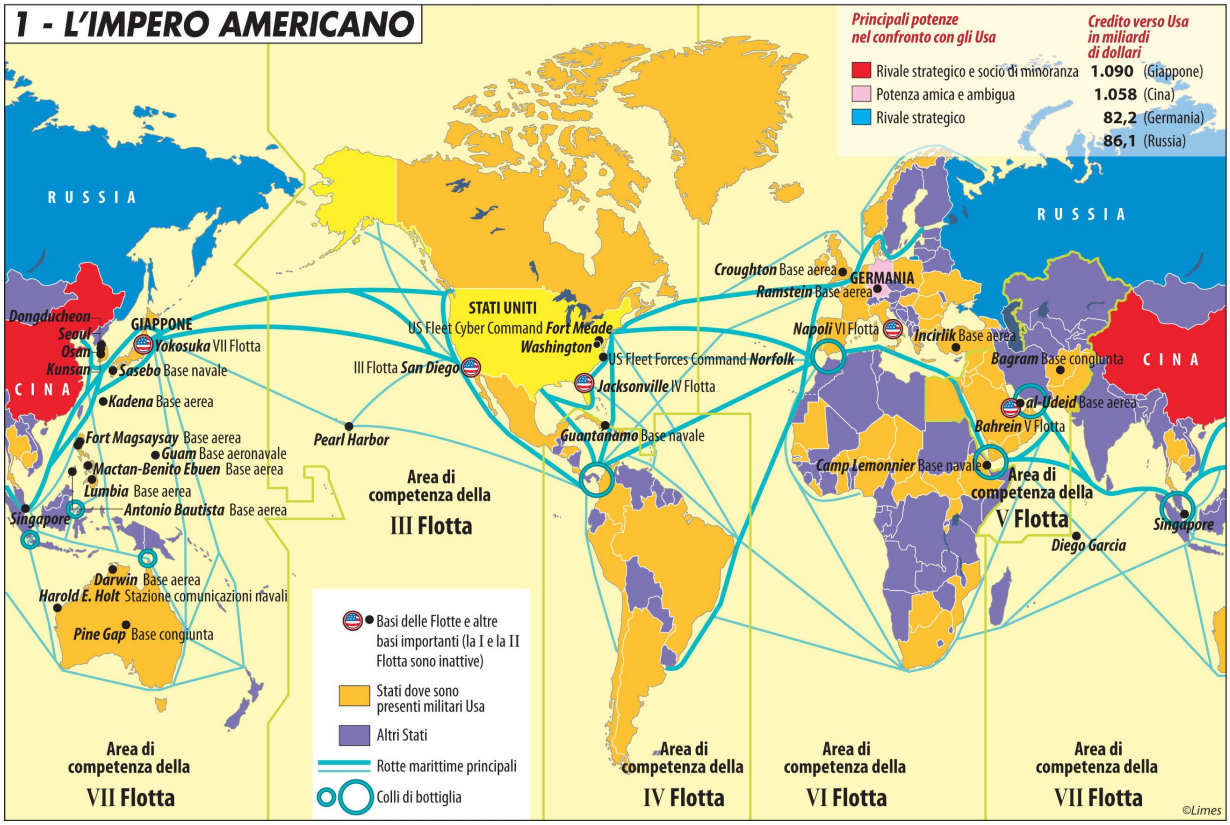
However, it is necessary that the Navy of the countries bordering the Mediterranean and not, be active to prevent, besides piracy, illicit trafficking (for example of human beings, weapons, minerals, drugs...) and the creation of coastal operational bases for criminal organizations. The Navy should prevent also the proliferation of weapons of mass destruction, the placement of explosive devices underwater or at port structures, marine pollution, the use of wrecks and vessels for illicit purposes and all activities that generally go against the law.

The instability of the North African area and some areas of the Middle East, with the consequent increase in migratory flows to Europe, are a difficult phenomenon to manage; in this sense, the Navy takes on an increasingly vital role. It must be said, however, that Italy alone cannot cope with phenomena of this magnitude, the presence of European and NATO military ships in the Mediterranean seems to be a minority, as the focus, especially of the US, has shifted to the Pacific area, leaving the Italian Navy with greater responsibility and greater commitment in terms of maritime presence and surveillance. In order to cope with the aforementioned phenomena and unforeseen events, a greater protection presence of NATO naval military forces would be needed in some key areas of the world, including the North African coast, the Suez Canal and the Red Sea[58].

It is interesting to see in the map (*fig. 6*) where the American Armed Forces are positioned in the world, being the United States Army the most powerful in the world, in terms of size and amount of investments, as well as the largest contributor to NATO. In Italy there is a great number of US sites and bases; as far as the American Navy is concerned, are of great importance the logistic command of the VI fleet in Naples, at the NSA (Naval Support Activity) Naples, and in Sicily the NRTF (Naval Radio Transmitter Facility) radio base in Nescemi and the Air Base of Sigonella headquarters of the NAS (Naval Air Station) Sigonella.

[58] See note 41

Fig. 6 The positioning of the US Armed Forces in the world



Source: Laura Canali, Limes, 2018

2.2 Maritime trade

2.2.1 Evolutions and different types of maritime freight transport

Over time there has been an evolution of the maritime and transport economy, with the development of new port systems and new commercial routes; let's briefly see some passages.

Starting in the 1700s, major maritime powers such as Spain, Portugal and later the glorious United Kingdom based their commercial and military growth and development on the sea, starting to trade, mainly overseas, thanks to the various "India Trading Companies"[59]. The trade routes explored new areas of the world and touched the Americas, Asia and Africa, then acting as a “shuttle” of raw materials and finished

[59] The India Trading Companies were a group of merchant companies established in various states during the 1600s, which held a monopoly on commercial activities. Among the most important there were the Dutch East India Company, which traded between Cape of Good Hope and the Strait of Magellan and the British East India Company, which had a commercial monopoly in the Indian Ocean.

products between the motherland and the various colonies, in both directions. The development of activities on the sea, which became the way to connect distant nations, led to the development of port areas with the creation of new jobs such as the processing of raw materials in the hinterland, in what would later become the factories, with the industrial revolution during the 1800s.

This was followed by the development of the railways that linked faster ports and industrial areas and the improvement of ships, with greater load capacities; all this thanks to the development of new technologies, which generated increase in the demand and new commercial routes. A consequence of this was the development of areas in the world that were close to the sea and that could benefit from the sea. The possibility of having a trade connection with distant countries was a source of well-being that generated jobs, development and wealth.

The use of the propeller, the steam engine and steel in the construction of vessels, combined with the opening of the Suez Canal and the exploitation of new commercial routes, are just some of the reasons that contributed in the mid-1800s to the development of maritime trade.

With these developments over time the port became increasingly important, as a junction between the sea and the land, the place where exchanges, financial sales, processing of goods, storage, development of services and much more took place.

Many maritime powers lose importance and in the early 1900s the United States of America became increasingly the center of trade, especially with Europe, and the center also of scientific and technological innovation (including the development and conservation of electricity and of the diesel engine). Trade during the two World Wars suffered a drastic drop and only with the signing of the GATT[60] and the free trade of goods, in 1947 started to grow again. Over time, technologies, work, port areas, sea routes and businesses developed; in this sense the oil tankers and the container ships give fundamental impetus. With the development of oil tankers, container ships and bulk carriers, an exponential growth in maritime trade and the size of ships is launched, leading to the so-called "Naval gigantism" of nowadays.

Today there are many types of commercial ships for the maritime transport of goods that we generally define as “cargo”, and these can be divided in based on many factors,

[60] General Agreement on Tariffs and Trade is an international agreement, signed in Geneva in 1947 by 23 countries, to lay the foundations for a multilateral system of trade relations with the aim of promoting the liberalization of world trade.

from the place of employment of the ship (costal, local, national, international…) to the goods they are transporting; this second criteria is the one we will use to briefly divided the vessels in categories[61]:

- *Container ships* are ships intended for the transport of goods, which in turn are contained in containers of standard shapes and sizes. The entire load is made up of containers, and the load is handled vertically; they can be called cellular ships for the "cell" configuration of the spaces reserved for loading. The container is a standard size metal box used for the transport of goods (conditioned or bulk goods) in an intermodal way, both by land and by sea. It was born after the Second World War in America by the entrepreneur Malcom McLean, developed mainly by the US Army to bring supplies in the Korean War and later in the railways for the transport of goods from the Atlantic to the Pacific coast. The development of the container radically changed the way of transporting the goods especially by sea, it was no longer needed that the train or truck was unloaded and loaded in the ships: everything always remained inside the container from one destination to another. It was adopted for multiple reasons including: improving and protecting the stowage of the goods, which was no longer loose and therefore subject to damage; to defend it from theft or tampering (being that the containers once in the terminals are inspected and sealed); to protect it, e.g. from bad weather or water, as it is hermetically sealed and stowed, so it is safer. The packaging costs of the goods that would have been without containers are also reduced, and also the transport costs, as a consequence the loading and unloading and transport times are speeded up.

Normally the containers are standard measures, they can be 20 or 40 feet (610 and 1220 cm), moreover the containers have a measurement that is TEU[62], which is equivalent to a 20-foot container, from which the custom of evaluating the load capacity of a container ship in TEU modules has spread. The 75% of the containers have a measure of 40-foot. The containers also have homogeneous hooks on the corners of the container to fix them on the various means of transport, which make them easily transferable. They have a particular identification system with codes for the owner, product group, size, check digit and registration number, which make them traceable everywhere.

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[61] Sellari, P. (2013), *Geopolitica dei trasporti*, Editori Laterza, Roma-Bari

[62] Twenty-foot equivalent unit

It is estimated that about 90% of cargo freight transport takes place through the use of containers, and over time, container ships have become larger than 400 meters in length and capable of carrying more than 20,000 TEUs.

Over time there has been an evolution in the size of container ships. We have moved from the Panamax Class, or ships of 250-290 meters in length, capable of carrying 4000 TEU (in 1980-1990), to the Post-Panamax Class with ships from 275-305 meters, 5000 TEU, again to the Post-Panamax Plus or ships of 352 meters, with capacity up to 9000 TEU in 2000-2006. The Super Post-Panamax, ships mainly in use now, are ships of 400 meters in length and capacity up to 15,000 TEUs; under construction and already active there are then the ULCV (Ultra Large Container Vessels), that are ships more than 400 meters long, with an average width of 59m, height of 73m and draft of 14.5 meters, capable of carrying from 18,000 to 20 / 22,000 TEU[63].

- *Tanker ships*, which can be dived mainly into two categories.
    - *Oil Tankers* are tankers of different tonnage, used for the transport of liquid loads but not necessarily hydrocarbons. Although most of the tankers are used for the transport of crude oil or derived products, these ships can also transport vegetable oils. This is a transport that can be included into the *liquid bulk* (crude oil, vegetable oil, wine, sodium hydroxide…)

Tab. 1 Different types of Oil Tankers

Typology	Oil Tankers Characteristics
Panamax	Ships with a transport capacity of between 50,000 and 79,000 tons[64] and having a maximum width of 32.2 meters and therefore able to pass through the Panama Canal.
Aframax	(Average Freight Rate Assessment) oil tankers with capacity between 80,000 and 125,000 tons
Suezmax	Oil tankers between 125,000 and 200,000 tons of capacity so that they can pass through the Suez Canal

[63] Costa, P., Maresca, M. (2013), *Il futuro europeo della portualità italiana*, Marsilio, Venezia, pg.35

[64] Gross capacities in tons

Very Large Crude Carrier (VLCC)	Ships that have a load capacity exceeding 200,000 tons (160-320 DWT[65])
Ultra Large Crude Carrier (ULCC)	Ships with a capacity exceeding 300,000 tons (320-550 DWT)

Source: data elaborated from the presentation "Classificazione delle Navi", Prof. Domenico Falcone, Master Gestione dei servizi portuali, Università di Cassino.

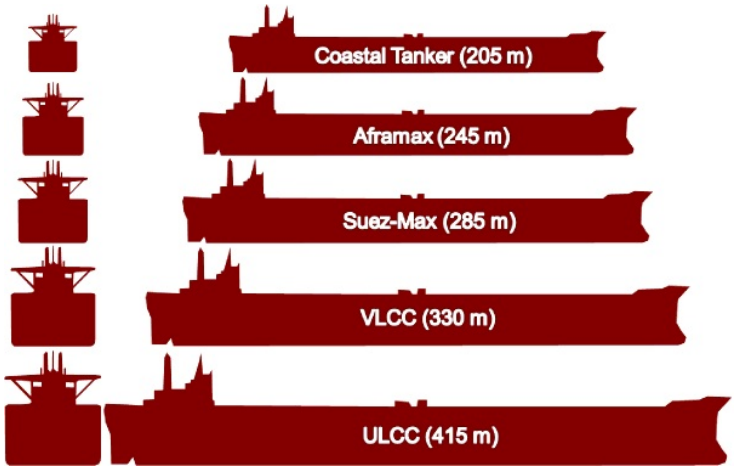


Fig. 7 Dimension of different types of Oil Tankers

Source: Jean-Paul Rodrigue, The Geography of Transport Systems, Routledge, New York, 4th edition, 2016

- *LNG carriers* are cargo ships specialized in the bulk transport of liquid natural gas thanks to special tanks in the hold. LNG carriers are double-hulled ships, specially designed and insulated to avoid losses or breakages in case of an accident; most LNG carriers use the spherical shape (Moss) with the presence of spherical tanks clearly visible on the upper half of the bridge. The liquid natural gas is stored by means of a special system inside the hull at atmospheric pressure of -256 ° F (i.e. -160 ° C). The largest LNG carriers are those of the Q-Max series (are part of the capesize ships[66]) and reach 345 meters in length and have a capacity of 266,000 cubic meters. LNG carriers is a type of transport that can be included into the "*specialized cargo*" typology, which also concerns cars, forest products, refrigerated products, chemicals...

- *Bulk carriers* are ships used for the transport of bulk goods, capable of carrying non-liquid and non-unitary loads without the use of containers or pallets. Goods such as wheat, cereals, coal, sand, minerals... (*dry bulk*) are placed in specific compartments of

[65] Dead weight tonnage

[66] The term Capesize refers to those ships whose dimensions do not allow their passage neither for the Panama Canal nor for the Suez Canal; ships with displacement greater than 150,000 metric tons, such as ULCC and VLCC.

the ship and transported without packaging and in large quantities. Almost all these ships have only one main bridge, when instead the ships are equipped with a second bridge below the deck doors, they are called tween-deckers and are more suitable for the transport of various goods such as crates, timber, machinery components... as thanks to the intermediate bridge they can make better use of the spaces without overlapping too much the materials. In addition to the bulk cargo, there are the *Break bulk cargo* which refers to a wide variety of loads, which must be loaded individually and not in containers or in bulk[67].

- *Ferries* or Ro-Ro, (from roll-on / roll-off), are vessels equipped with loading ramps capable of loading and unloading complete vehicles. Thanks to the use of special equipment, the ship can transport railway wagons and trucks (road vehicles), which board the ferry independently[68]. They can be for the transport of goods and vehicles only or they can also carry out a passenger ferry service (Ro-Ro Pax). Ferries despite being of minority importance in terms of loading capacity, are a great part of the Italian maritime freight, as Italy has the 1st Ro-Ro fleet in the world[69].

2.2.2 Ports and maritime trade routes

The transport of goods would be much faster by plane, and also by train, but maritime transport is certainly much cheaper, consider that for a 40-foot container (2 TEU), on the Far East-Europe route, the transport cost affects less than $ 15 cents per kg transported[70]. We can distinguish the transport based on the length of the route between "deep sea shipping" and "short sea shipping". For large quantities of goods, *deep sea shipping* is practically the only way of transport between different continents (interregional maritime transport). *Short sea shipping* instead refers to maritime transport within continents (e.g. between EU countries or within the Mediterranean basin), an example are the "*Motorways of the Sea*" on which European policy focuses a lot and on which line transport is done. These ones are sea transport integrated in the door-to-door logistic chains, that guarantee the flows of freight on viable, regular,

[67] Costa, P., Maresca, M. (2013), *Il futuro europeo della portualità italiana*, Marsilio, Venezia, pg.31

[68] *ibidem.*

[69] Marina Militare Italiana (2018) presentation at the conference "Il mare come risorsa strategica per l'Italia" at Ca' Foscari University of Venice, Ca' Dolfin - Venice 19/02/2018

[70] Cascetta, E., (2013) presentation "La rivoluzione del container: globalizzazione, logistica e trasporto marittimo", Università degli Studi di Napoli, Naples, 2013

frequent, high-quality and reliable short sea shipping links. The deployment of the Motorways of the Sea network should absorb a significant part of the expected increase in road freight traffic, improve the accessibility of peripheral and island regions and states and reduce road congestion[71]. We can include into the short sea shipping the Ro-Ro services, the bulk / break-bulk transport and also the container transport in short route, thanks to the development of the transhipment services[72], which helps to distribute the containers that are transported from one continent to another, from a "hub" port to another "hub" port.

As regards container transport, which interests us most, we can distinguish in the maritime services between two types of services, namely *direct* and *transhipment*, which can in turn be hub & spoke, intersection or relay. (*fig. 8*) In direct services, the exchange of containers and Ro-Ro, take place between ship and truck, train or barge for traffic destined to serve end markets, in the transhipment instead, the goods are moved from an oceanic ship to a local ship (feeder)[73].

Transhipment was initially developed to service smaller ports that had poor nautical accessibility (sites unable to accommodate larger containerships) or limited infrastructure, which lead to the setting of hub-and-spoke networks. The main rationale of using transhipment hubs is to improve the overall efficiency and geographical coverage of maritime container shipping networks. The insertion of a transhipment hub within existing networks, improving connectivity, takes three major forms:

- *Hub-and-spoke*: the purpose of the transhipment hub is to provide connectivity between short distance feeder lines (and ports) and long distance deep-sea lines, linking regional and global shipping networks. The transhipment hub is located in a central position as can command the access to a region, such as for the Caribbean (e.g. Kingston) or the Mediterranean (e.g. Gioia Tauro). The hub-and-spoke function accounts for about 85% of all transhipment activities.
- *Intersection*: the transhipment hub acts as a point of interchange between several long distance shipping routes, crossed by ship of similar capacity. The most

[71] Definition of "Motorways of the sea", by EU Commission
https://ec.europa.eu/transport/themes/infrastructure/motorways-sea_en

[72] Transhipment is the shipment of goods or containers to intermediate destination, and then to another destination; usually the means of transport is changed, for example, from a ULCV to a smaller container ship, to reach ports with a smaller draft.

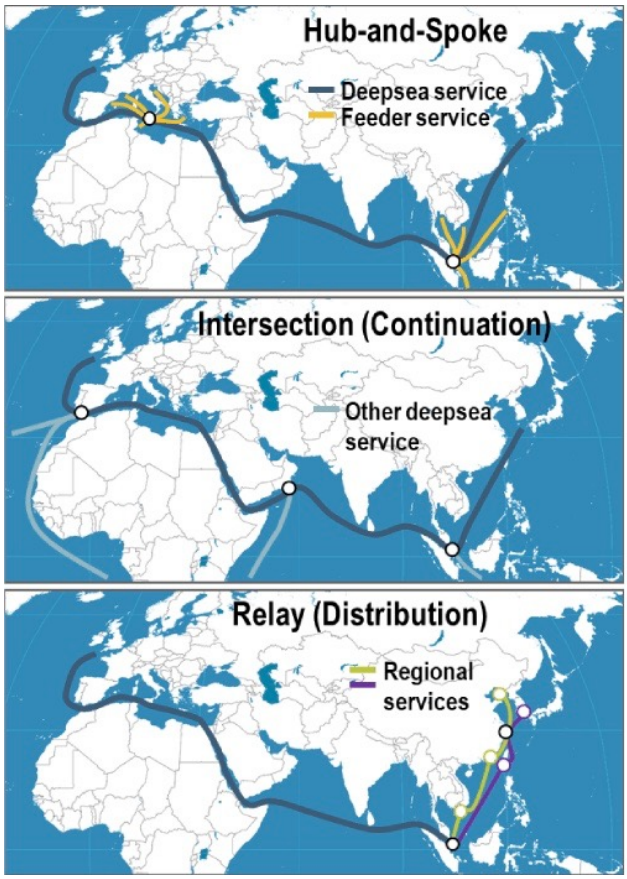
[73] Costa, P., Maresca, M. (2013), *Il futuro europeo della portualità italiana*, Marsilio, Venezia, pg.32

suitable locations tend to be bottlenecks such as Singapore, Algeciras or Tangier Med.

- *Relay*: the transhipment hub becomes an interface between shipping routes along the same maritime range, but servicing different port calls[74]. Some regional services may call the same port, permitting additional opportunities for relay forms of transhipment. There can be the use also of ships with small capacity, for serving regional routes.

  Intersection and relay functions account for about 15%[75].

Fig. 8 Different types of Transhipment Services



Source: Rodrigue, J. (2020), The Geography of Transport Systems, Routledge, New York, 5th edition, Ch.6

[74] Port call is an intermediate port where ships customarily stop for supplies, repairs, or transhipment of cargo.

[75] Rodrigue, J. (2020), *The Geography of Transport Systems*, Routledge, New York, 5th edition, Ch.6 https://transportgeography.org/?page_id=3457

In container traffic, which is measured in throughput, i.e. containers embarked plus landed, ports can be classified as gateway ports or transhipment ports (also called hub ports).

Gateway traffic consists of those containers that originate (if embarked) or have a destination (when disembarked) in the hinterland (or traffic basin) of the given port. *Transhipment traffic*, on the other hand, consists of the movement of the containers landed from a ship and subsequently embarked on another ship, towards the port of final destination.

Within routes that affect 2-3 continents or economic macro-areas, hub ports are few, perhaps only one per state, or even one in the whole Mediterranean Sea. All this creates a lot of competition for example among the Mediterranean ports in order to become a hub of transhipment, the remaining ports of the nation thus become gateway ports. In the hub port (ex. Gioia Tauro or Taranto) the mother ship (deep sea ship) is unloaded and the containers loaded on feeder ships[76] in the direction of gateway ports (ex. the other national ports).

In *tab. 2* are represented the leading 20 global container ports, in 2018, data on 20-foot equivalent units (1 TEU). Despite the US-China trade conflict that remains a big challenge, there are positive signs on the domestic policy front, that push Shanghai to grow by 4.4%. The port city-nation of Singapore, which held on to its role as the transhipment hub for the region, could benefit from the prolonging US-China trade spat, in fact it grew up 8.7%. The port complex of Ningbo, despite the decline in container exports to the US, has risen substantially the volume to Europe and Southeast Asia, and grow up 6.9%, thus overtaking the port of Shenzhen. The port of Hong Kong goes against the trend compared to the others, with a drop of - 5.6% due to the fact that the intense competition has taken its toll on the port, although it is fighting back by banding its terminal operators to improve efficiency. It is extremely important to note that among the top 10 ports in the world, 7 are Chinese and 9 out of 10 are in Asia.

In *tab. 3* you can see the ranking for the European ports in container traffic. The ports of Northern Europe grow strongly with Rotterdam and Antwerp making respectively 5.7% and 6.2% growth, Hamburg and Bremerhaven instead drops slightly. It is important to note, among European ports, the exponential growth that has been recorded at the port of Piraeus (more than 20%) with traffic increasing by almost 50% in three years;

[76] Ships that tend to be of smaller capacity than those on deep sea lines.

making it the 32nd largest port in the world in container traffic. Barcelona is also growing strongly, over 15%, the Catalan port in fact managed to break the 3 million TEU barrier for the first time. Among the Italian ports, the news is not very positive, with negative decreases for both Genoa and Gioa Tauro in container handling, the latter in particular has struggled with the departure of Maersk in 2017 and has labor issues at the site[77].

Tab.2 The world's largest container ports

	Throughput 2018	Annual percentage change 2017–2018
Shanghai	42 010 000	4.4
Singapore	36 600 000	8.7
Ningbo-Zhoushan	26 350 000	6.9
Shenzhen	25 740 000	2.1
Guangzhou	21 920 000	7.6
Busan	21 660 000	5.5
Hong Kong, China	19 600 000	-5.6
Qingdao	19 320 000	5.5
Tianjin	16 000 000	6.2
Dubai	14 950 000	-2.9
Rotterdam	14 510 000	5.7
Klang	12 030 000	0.4
Antwerp	11 100 000	6.2
Xiamen	10 700 000	3.1
Kaohsiung	10 450 000	1.8
Dalian	9 770 000	0.6
Los Angeles	9 460 000	1.3
Tanjung Pelepas	8 790 000	6.4
Hamburg	8 780 000	-0.2
Long Beach	8 070 000	3.7

Tab.3 The EU's largest container ports

Rank	Port	Throughput (Million TEU) 2018
1 (11th world)	Rotterdam (NL)	14.510
2 (13th)	Antwerp (BE)	11.100
3 (19th)	Hamburg (DE)	8.780
4	Bremerhaven (DE)	5.467
5	Valencia (ES)	5.104
6	Piraeus (EL)	4.908
7	Algeciras (ES)	4.772
8	Felixstowe (UK)	4.161
9	Barcelona (ES)	3.423
10	Marsaxlokk (MT)	3.310
11	Le Havre (FR)	2.884
12	Genoa (IT)	2.609
13	Gioia Tauro (IT)	2.301

Source Tab. 2: UCTAD – Review of Maritime Transport 2019, data from Shanghai International Shipping Institute, 2019, Global Port Development 2018.

Source Tab. 3: data from Lloyd's List Maritime Intelligence, One Hundred Ports 2019

[77] Lloyd's List Maritime Intelligence (2019), *One Hundred Ports 2019*, https://lloydslist.maritimeintelligence.informa.com/one-hundred-container-ports-2019

Among the various lines operated by the shipping companies of containers we can distinguish 3 types of routes:

- *End-to-end* routes: this is the prevailing typology and provides for connection between two world macro-regions connected by a service that scales, in each region; a set of ports which varies according to the type of route chosen (can be the same in the two directions). An example of end-to-end route is the Asia - Europe Eastbound of Maersk company that move from Felixstowe to Zeebrugge, Rotterdam, Bremerhaven, Suez Canal, Colombo, Singapore, Yantian, Kobe, Nagoya, Yokohama. The Westbound it is in the opposite direction, maybe touching other ports as Shanghai, Ningbo or Hong Kong.
- *Pendulum* routes: or multi-trade service, it generally develops between two or three continents or economic macro-regions, in each of which a number of ports are scaled. It is not widespread because it is often unreliable as delays accumulate if between 3 continents.
- *Road the world* routes: the container ships sail without reversing the course along the equatorial route, crossing both the Suez Canal and the Panama Canal, so circumnavigating the globe. The system was in fact practically abandoned as delays accumulated and there were incompatibilities with Post-Panamax ships and in general with naval gigantism.

The maritime routes can be grouped into routes: “East-West”, “North-South” and “Intra-Regional”.

Among the various *East-West* sea routes we can distinguish the main ones:

- The Transpacific route, which connects Asia and North America, in case also through Panama for reach the East side of the US.

- The Transatlantic route that is the most famous because it was the first in the 1960s for containers, which went from the United States to Northern Europe.

- (Western) Europe - Middle East route.

- Europe - Far East route (and vice versa), it is the most widespread and can go from Northern Europe ports to Asia via Suez, which is currently the most popular end-to-end route by ships in the East-West and vice versa. If the route is Westbound and of pendulum type, then the ship will be able to go from Asia, to Suez, to the Mediterranean and continue towards the US.

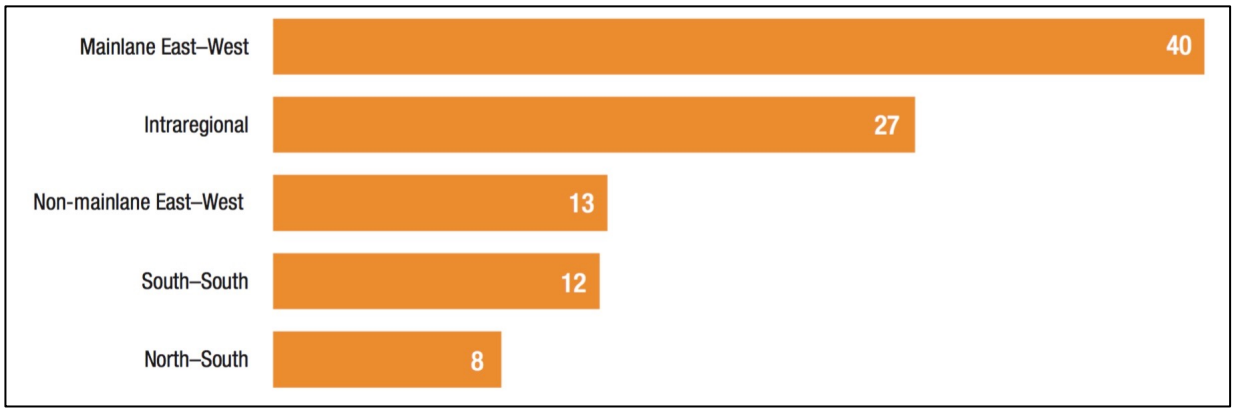
- North America - Middle East
- Far East- Middle East

Among the various *North-South* and *South-South* sea routes we can find:

- Europe to: Latin America, South Asia, Africa, Australasia.
- North America to: Latin America, South Asia, Africa, Australasia
- Far East to: Latin America, South Asia, Africa, Australasia

Among the various *Intra-regional* sea routes we can have the major ones individually in Asia, Europe and North America[78].

Fig. 9 Global containerized trade by route, 2018 (Market shares, in percentage)



Source: UCTAD – Review of Maritime Transport 2019, based on data from MDS Transmodal, World Cargo Database, May 2019

From the *fig. 9* we can clearly see how the East-West route has the majority of the container market share, mainly where ships with high capacity flows, followed by the Intraregional route, which however mainly concerns short-sea shipping and therefore the percentage of demand absorbed, in terms of TEUs-km, is much lower.

According to the United Nations Conference on Trade and Development (UNCTAD), the volume of world maritime trade grew by 2.7% until April 2019, with 11 billion tons and an estimate of 793.26 million TEUs that were handled in container ports worldwide (+ 4.7% in global container port traffic), together with +3.2% on Dry bulk and +1.4% in crude oil trades. In 2019 the growth of world trade has been estimated at 2.6% and for 2019-2024 an annual average growth of 3.4%.

[78] Stopford, M. (2003), *Maritime Economics*, Routledge, London, 2nd ed., ch.10, p.367

Currently the one that grows most in percentage terms (has doubled since 1995) is container traffic, but it must be underlined that among the maritime commercial traffic, that of containers accounts for only 17% (1,834 million tons). In fact, going into detail of the type of goods transported, 29% (3,146 million tons) regards liquid bulk such as gas, crude oil and oil derivatives which despite being in decline (in 1995 it was 44%) is still very strong, together with solid bulk (main bulks for 30%, or 3,196 million ton, and other dry cargo, for 24%, or 2,526 million ton)[79].

In this paper due to the fact that we are focusing mostly on the Europe - Asia connectivity, we will focus more on the East – West routes (and vice versa), which are the ones affected by the BRI.

2.2.3 LSCI and LPI comparison

Ports compete with each other to secure contestable markets: everything is played on the ability to attract, guaranteeing adequate services, a fast, safe and efficient movement of the goods, so guaranteeing fluidity to the logistic chains that pass through them. The port is the point of intersection between the maritime and terrestrial parts and the point of access of the goods to the markets. In order to attract goods and companies, a port must have three main things: good nautical accessibility, large port areas for the movement and storage of goods and capable railway, inland navigation and road connections to bring the goods to the final destination markets.

The advent of naval gigantism has brought, in addition to the construction of ever larger ships, the problem of adapting infrastructure to be able to accommodate them. The larger ships (ULCV) travel mainly on the Far East - Europe route, and in order to compete, ports have had to incur significant costs over time, in order to adapt the infrastructures; costs that have mainly fallen on the actors of the logistics chain for the benefit of the transport companies. The carriers decide where to send their ships to call, and the ports have had to equip themselves with deep canals, wider and longer docks, spaces for storage and processing and infrastructures to start the goods in a short time in order to face the competition.

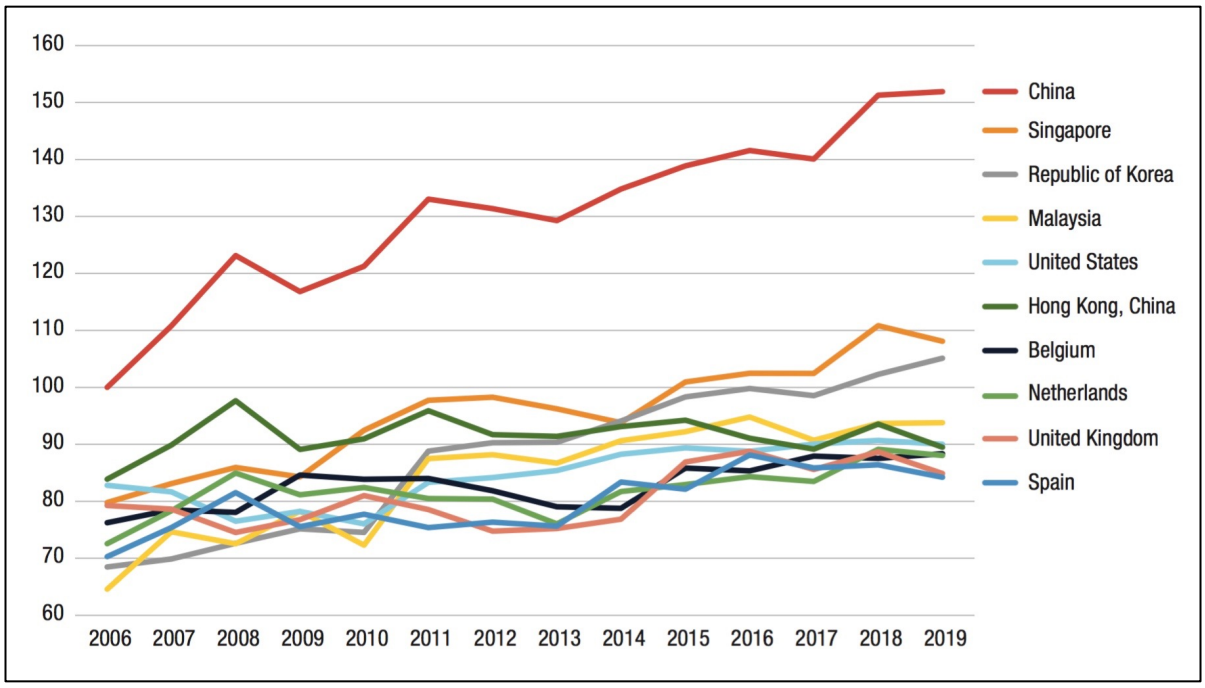
One of the indicators of a country's connectivity from a maritime point of view is the Linear Shipping Connectivity Index (LSCI). The LSCI is computed by the UNCTAD and

[79] UNCTAD (2019), *Review of Maritime Transport 2019*, data of the 2017

captures how well countries are connected to global shipping networks. It is based on 5 (+1) components of the maritime transport sector:

- The number of companies that provide shipping services
- The number of services
- The number of ships that call per month
- The total deployed container-carrying capacity
- The size of the largest vessel
- Countries that can be reached without the need for transhipment (new component added in the 2019 index)

Fig. 10 Linear Shipping Connectivity Index, top 10 economies, 2006 - 2019



Source: UCTAD – Review of Maritime Transport 2019, based on data from MDS Transmodal.

The linear shipping connectivity index can be considered a proxy for the accessibility to global trade. The higher the level, the easier it is for a country to access the global maritime freight transport system, including in terms of capacity, transport options and frequency, and thus effectively participate to international trade. Therefore, the index can be considered both as a measure of connectivity to maritime shipping and as a measure of competitiveness and trade facilitation.

Analysing the 2019 index we can draw some considerations on the areas of our interest, so along the EU – Asia route.

In 2019, 5 of the 10 most connected economies were in Asia and 4 in Europe. Since 2006 China, the most connected country, has improved its liner shipping connectivity index by 51 per cent.

In mainland China, Shanghai and Ningbo have strengthened their lead since 2006, and today Shanghai is still the most connected port in the world. The Port of Shanghai obtained the highest score overall, thanks to various factors, let's give some examples of the 6 values taken into consideration by the Linear Shipping Connectivity Index:

- In Shanghai 298 container ship port calls are scheduled per month, this means 10 per day. The average port in the world receives 12 ships per month, and the median port, 5; this means that a typical port can expect one container ship call about every six days.
- The value of the import-export trade for Shanghai is 68 million TEUs; instead the global average per port is 1.6 million TEUs.
- 265 services are offered to and from Shanghai; the global average for all ports is 10 services.
- 68 carriers provide services to and from Shanghai; the global average for all ports is six, so this means more competition in the market.
- Shanghai is also one of the 10 ports[80] in the world that on average accommodate container ships with over 20,000 TEUs capacity.
- Shanghai has direct connections with 295 partner ports, which means that an exporter from Shanghai can sell to clients in 295 overseas port destinations without the need for transhipment[81].

Another very large port in China is Ningbo that has doubled its liner shipping connectivity index since 2006. In 2018 together, mainland Chinese ports, accounted for 28.5% of world container port traffic, which is composed of Chinese exports, combined with containerized imports and some domestic transhipment traffic.

In *East Asia*, the top four ports not including mainland China, are Busan (Republic of Korea), which is ranked 3rd in the world, followed by Hong Kong (China), Kaohsiung

[80] According to UNCTAD, in 2019, 10 ports accommodated ships services with an average size of 20,182 TEUs: Antwerp (Belgium), Dalian (China), Hamburg (Germany), Ningbo (China), Piraeus (Greece), Qingdao (China), Rotterdam (the Netherlands), Shanghai (China), Singapore (Singapore) and Xingang (China).

[81] UNCTAD (2019), *Review of Maritime Transport 2019*, pg. 60, data from the Division on Technology and Logistics, based on information from MDS Transmodal.

(Taiwan Province of China) and Yokohama (Japan). Overall, the East Asian ports, outside mainland China, recorded less growth in their indices than ports in mainland China, this also due to a decline in the connectivity of the Japanese ports of Kobe and Nagoya, which are not very competitive as transhipment centers.

In *South Asia*, Colombo (Sri Lanka) is the most connected port, followed by ports in India and Pakistan.

In *South-East Asia*, Singapore reports the highest index, followed by Port Klang and Tanjung Pelepas (Malaysia); these three ports are important hub ports, largely serving the same transhipment markets. We must underline also the growth of the Vietnamese port of Hai Phong that almost doubled its index between 2018 and 2019, due to its new terminal for deep-water ships. The remaining ports in Indonesia, the Philippines, Thailand and Viet Nam largely cater for regional imports-exports and have mostly declined.

In the *Persian Gulf*, the port of Jebel Ali (United Arab Emirates) has the highest index. Dammam (Saudi Arabia), Khalifa (United Arab Emirates) and Salalah (Oman) are competitors in the transhipment cargo sector, albeit with lower levels of connectivity.

In *Northern Europe*, the ports of Antwerp (Belgium) and Rotterdam (the Netherlands) closely compete for 1st position, with Antwerp leading in recent years, followed by Hamburg (Germany) in 3rd position. Two ports in the Baltic Sea (Aarhus, Denmark and Gdansk, Poland) have joined the league of the top 10, and it is also growing faster in the United Kingdom, the new London Gateway port.

In the *Mediterranean*, Piraeus (Greece) emerged as the most connected port in 2019, followed by the Spanish ports of Valencia, Algeciras and Barcelona. As anticipated in chapter 1, in Piraeus, COSCO holds a 67.5% controlling share and increasingly uses the port for its own transhipment services. Port Said (Egypt) and Tanger Med (Morocco) are the leading African ports in the Mediterranean region, providing extensive transhipment services and benefiting from their geographical position and private sector investments from major global port operators. Tanger Med recorded the world's highest absolute increase in its index during the first decade of its operations since 2007[82]. The ports of the Mediterranean are competing with Italian ports also. In 2019, Italy is globally in thirteenth position with a maritime connectivity index of 73, which is the highest since the LSCI was defined. In 2018 the index of our nation was 65 and Italy had been ranked

[82] *Ivi*, pg. 61-64

seventeenth overall. This growth of the LSCI for Italy is certainly a positive thing, but there we must be careful, because the growth of connectivity is not necessary linked to an increase in traffic, an example in this case is given by the port of Gioia Tauro, which has seen in 2018 an increase in connectivity, this due to the possibility of host larger vessels, but not an increase in TEUs moved. Despite the crisis in the transhipment sector that seems not to be taken into account by the index, Italy has grown in this year the LSCI, also due to improvements in the possibility of accommodating even larger ships (up to 18 thousand TEU) that will for sure bring benefits in the years together with the planning of infrastructural investments in a long term vision

The Mediterranean countries are growing more in connectivity than those in Northern Europe, this is given on the one hand by the specific investments on the ports by the shipping companies and on the other by the greater attention that the shipping companies are placing in favour of the Mediterranean ports, including Italian ones.

Another index that we take into consideration is the Logistics Performance Index (LPI), which is elaborated by the Word Bank, comparing 160 different countries. The LPI is an interactive benchmarking tool created to help countries identify the challenges and opportunities they face in their performance on trade logistics and what they can do to improve their performance[83].

The index takes into consideration various factors, to which it give a score for create a ranking. The LPI take into consideration six parameters that are:

- Customs procedures (efficiency of customs and border crossings)
- Quality of transport and infrastructures
- International shipments (ease of organizing shipments at competitive prices)
- Competence and quality of logistics services
- Digital tracking (ability to trace and track the status of shipments).
- Punctuality of shipments (frequency of compliance with delivery times)

At the top of the 2018 ranking there are Germany, followed by Sweden, Belgium and Austria. Northern Europe is leading in this list, with the Netherlands, Denmark, the United Kingdom and Finland in the top 10, respectively in 6th, 8th, 9th and 10th positions. Among the Asian countries, Japan (5th position), Singapore (7th) and Hong Kong (12th) stand out, but to find China we must even go down to 26th position. Other Asian

[83] World Bank (2018), *LPI Global Ranking 2018*, https://lpi.worldbank.org/international/global

countries that we find below are Korea in 25th position and Taiwan in 27th, Vietnam in 39th, Malaysia in 41st, India in 44th and Indonesia in 46th.

Northern Europe is certainly driving the European continent, but otherwise a more integrated vision between EU countries would be needed. Italy suffers the weight of some structural weaknesses, from infrastructure to the customs system, and for this reason it is only at the 19th place in this international ranking. Further weaknesses are present on the part of the presence of warehouses, on international shipping and on the costs of bureaucracy. The costs of logistics, compared to those of production, in Italy are higher than the European average. Italy could improve by collaborating with other countries in a common European vision and by making the logistics chain efficient with a greater use of intermodality, for example with a greater development of rail freight transport between the various states.

By comparing these two indices (LSCI and LPI) we can say how there is a difference between connectivity and logistics. We must say that LSCI and LPI are different indices, which trust diverse variables and which indicate two different things, therefore they cannot be combined, but in any case it is interesting to see the differences between the two. Although 9 of the top 10 largest ports in the world are in Asia, and although this continent is the strongest for connectivity, we cannot say the same for the performance in the logistics sector.

In LSCI we saw the dominance of Far Eastern countries including China, Singapore, Korea, Malaysia and Hong Kong among the top 6 in the ranking of the most connected countries in the world. If instead we go to see the LPI there is the dominion of Europe, and in particular of the countries of Northern Europe, with 8 European states out of 10 in the top 10 ranking. Looking at logistics, we moves to the left side in the world, no longer in Asia, because in Europe there is the knowledge of logistics and the know-how on how to connect inward, with intermodality, with specific processes, knowing how to create added value, which is certainly missing to China, only 26th in this ranking. Logistics operators are not satisfied on how China does logistics and that is why China is now investing heavily in Europe, and in the Mediterranean, not only in transhipment ports, such as Piraeus, but also and above all in gateway ports that bring the connection and therefore the goods inward. It is here that great investment opportunities are and can be created, in particular in our country and especially in the ports of Northern Italy. Italy in this sense must not miss an important opportunity, because otherwise China will

shift its investments more to the ports of Northern Europe which are certainly better both for connectivity, but above all for logistics. Germany, Belgium and the Netherland excel in logistics, with ports of excellence such as Hamburg, Antwerp and Rotterdam; Italy is in 19th place in the performance of logistics, with unfortunately negative consequences also on local businesses. Without the suitable infrastructures to move the goods inside or to start them, there cannot be a valid support for the production activity. Our country has a handicap that does not allow companies and our exports to reach distant countries at a lower cost than other European countries. In a moment of the history in which the speed is extremely important, the "just in time" takes on more and more value; being able to exploit infrastructure efficiency with repercussions for the territory and take advantage of the passage of goods on our country would be vital for a positive impact on the economy in general. Belgium and the Netherland precede Italy in the rankings because they have the ports that drive and raise the level; our country will have to take advantage of an investment in infrastructure (including exploiting the Ten-T networks) to modernize and thus increase performance both in logistics and connectivity.

2.3 The maritime trade on the East-West route

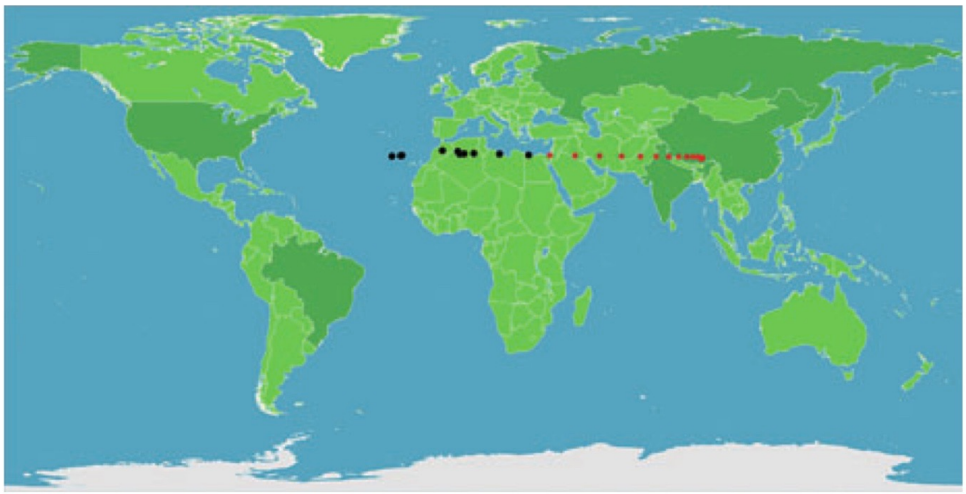
The world is changing. As well underlined by Danny Quah, Professor of Economics at the London School of Economics and Political Science (LSE), the global economy's center of gravity is shifting.

In his analysis he takes into account the average location of economic activity across geographies on Earth, extrapolating growth in almost 700 locations across the world. The calculations takes into account all the GDP produced on this planet. The research finds that in 1980 the global economy's centre of gravity was mid-Atlantic, reflecting how most of the world's economic activity then occurred in either North America or Western Europe.

By 2008, from the continuing rise of China and the rest of East Asia, the historical evidence has implied a profound eastward shift in economic activity, that centre of gravity had drifted to a location east of Helsinki and Bucharest, close to Izmir (thus having been pulled 4,800 km eastward across the surface of the planet). The results projects the world's economic centre of gravity locates by 2050 literally between India

and China (measured on the planet's surface this will be a shift since 1980 of 9,300 km)[84].

Fig. 11 The world's economic center of gravity, 1980-2050



Source: Danny Quah calculations

From *fig. 11* you can see a map where in black is represented the shifting from 1980 to 2007, and in red the extrapolated data from the analysis, at three-year intervals, for the future years.

As showed by the Professor, the historical evidence has implied a profound eastward shift in economic activity, with a reversed centrality of areas along the East-West route, such as the Mediterranean Sea. The route that connects Europe to Asia is the one that interests us most; let's see some numbers.

Since the 1980s, the center of gravity of shipping has shifted from the Atlantic Ocean to the Pacific Ocean and the Mediterranean. At the beginning, thanks to Japan's growing role in world trade, and then in the last two decades, above all thanks to the growing importance of the emerging Asian economies and China in particular. According to UNCTAD, this change is well represented by the strong influence of Asia, from which 42% of world maritime trade originate and to which 61% is destined. Europe counts for the 17% as origin of global maritime trade and for 20% as destination.[85]. It should be emphasized that the largest annual economic growth in the world in 2019 is precisely

[84] Quah, D. (2011), *The Global Economy's Shifting Center of Gravity*, Global Policy https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1758-5899.2010.00066.x

[85] SRM, Italian Maritime Economy (2019), *6th Annual Report 2019*, *"Nuovi scenari nel Mediteraneo: Suez e la Cina, le strategie dei grandi carrier, le nuove tecnologie e le rotte dell'energia"*, pg. 27-28

concentrated mainly in the Asian continent, with a big growth in China (6.1%), East Asia (5.4%), South Asia (4.1%), India (6%) and South East Asia (4.5%). Economic growth in emerging Asian economies, regional integration and global value chains has meant that volumes on intra-Asian routes have increased by 6.7%.

The growth of container trade has strengthened on all the main East-West trade routes, namely Asia-Europe, the Trans-Pacific and the Transatlantic. Overall, the Trans-Pacific commercial lane remained the busiest, with total volumes reaching 28.2 million TEU, followed by 24.4 million TEU on the Asia-Europe route and 8.1 million TEU on the Transatlantic route. Volumes on the Trans-Pacific route (east and west direction) increased by 5.4%, those on the Transatlantic route (east and west) increased by 6.4%, while flows on Asia-Europe in both directions, were 3.6%, reflecting weaker European import demand and other developments affecting the route. The transpacific route is of course also the most sensitive to the effects of the trade war going on between the United States and China. Total containerized exports from China to the United States decreased by 8.2% in the first quarter of 2019, and it is estimated that a further escalation of the US-China trade war could lead to an annual reduction in transpacific volumes heading east at least by 8% from 2019.

The alliances between the large container carriers controls 93% of the East-West routes, leaving very little space for the minor operators, which on the Asia-Europe route have only 2% of the market, on the Transatlantic one 8% and on Transpacific 12%.

In line with the trend of overall maritime transport, Asia dominates the container handling activity, representing almost two thirds of the global throughput. About 240 million TEUs (out of the 752.2 million handled in the world) were registered in China, Hong Kong and Taiwan in 2017[86].

It is interesting also to see some numbers regarding liquid bulk maritime trade. Liquefied natural gas shipments totalled 318 million tons in 2018, reflecting an increase of 8.9%. Demand growth originated mostly in Asia, especially in China where LNG imports increased by over 40% in 2018, partly supported by the growing importance of its environmental agenda.

UNCTAD estimates that world trade in crude oil was 1.9 billion tons in 2018, following an increase of less than 1%. Growth was partly limited by declining imports into Europe

[86] *Ivi*, p.30-33

and the United States and a slowdown in import demand in China, owing to refinery capacity constraints suffered earlier during the year.

As we have seen in *fig.9* the East-West route remain the leader in containerized world trade but we must point out that with 60% of this trade occurring on non-mainlane trade routes, the secondary routes (ex. Intraregional routes) involving developing countries' trade becomes increasingly important (mainly in the Asian region). Asia in fact remain central in global trade and shipping; in container handling the volumes increased of 4.4%, and China, with a total of 260.8 million TEUs recorded in 2018, accounted for over half of the regional total.

Asian container ports expanded at a rate of 4.4%, with ports in China that reported a 4.2% growth in 2018, together with a rapid growth also in South-East Asian ports, reflecting positive economic performance in countries of the Association of Southeast Asian Nations (ASEAN). Container cargo handling remains concentrated in certain major ports; the combined throughput at the world's top 20 container terminals increased and reached 347.8 million TEUs in 2018, accounting for 43.8% of the world's total. Between the top 20 ports, the majority is Asian, but we see also important European ports as Antwerp, Hamburg and Rotterdam, that are fundamental in the Asia-Europe connection[87].

2.3.1 The importance of Chokepoints

Chokepoints (or bottlenecks) are straits or artificial channels of global importance, mandatory points for the passage of goods and energy resources along the main international trade routes. In the world, there are 8 main maritime chokepoints, four are considered strategic for world trade flows: *the Suez Canal, the Panama Canal, the Strait of Malacca and the Strait of Hormuz*. Three of these are important on the Europe-Asia route, although ships do not necessarily have to pass through all three. The Bab el-Mandeb Strait, the Danish Straits, Bosporus and Dardanelles, and the Cape of Good Hope complete the list. Important are also the strait of Gibraltar, the Strait of Dover, the Strait of Magellan, the Bering Strait and the Strait of Tartary. (*fig.12*)

According to the latest available estimates, 90% of international maritime trade flows pass through at least one chokepoint, including 61% of world oil flows. To give an

[87] UNCTAD (2019), *Review of Maritime Transport 2019*, pg. 9-16

example, as we have just anticipated in chapter 1, the 80% of natural gas and oil imports of China occur along sea routes, with 75% of crude oil transiting through the chokepoint of Malacca and 50% through the Strait of Hormuz.

The situation is not very different for food supplies: in the last twenty years, in fact, the share of wheat and fertilizers marketed worldwide passing through at least one maritime chokepoint has increased from 43 to 54%. A significant share of this trade (from 6% in 2000 to 10% in 2019) now depends on the transit through one or more chokepoints as the only available supply route[88].

For sure the *Suez Canal* is taking every day more importance, because the circumnavigation of Africa is nowadays little travelled, and we will see later how the trade flows through this artificial canal are increasing, and how the area around it is developing. Relate to this one, there is than the Bab el-Mandeb Strait which connects the Red Sea with the Gulf of Aden and therefore with the Indian Ocean. It functions as a strategic link between the Indian Ocean and the Mediterranean Sea through the Red Sea and the Suez Canal; and also if not many people speak about him, it is very interesting also from a geopolitical point of view. With the escalation of the crisis between the United States and Iran, there is the Iran's possibility of closing the Strait of Hormuz and blocking the flow of oil tankers. Nobody instead talks about how Iran, through the Houthi (Shi'ite armed group of Yemen), could block maritime traffic in the Bab el-Mandeb Strait. This would pose a major problem for all countries that receive oil or other vital resources from the Indian Ocean to the Mediterranean[89]. The 8% of world oil supplies pass through this strait, or almost 5 million barrels of crude oil per day, destined for Europe, the Middle East and Asia.

The *Strait of Hormuz* is located between the Sultanate of Oman and the Islamic Republic of Iran, and connects the Persian Gulf with the Gulf of Oman and, therefore, with the Arabian Sea and the Indian Ocean. It represents the most important and strategic passage for world oil flows and has become vital for the energy supply of a great part of the planet. For this reason it was never closed to oil tankers, even for the first riots of the

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[88] Gili, A. (2019), *Il Canale di Suez compie 150 anni, ed è ancora fondamentale*, ISPI, 16/11/2019, https://www.ispionline.it/it/pubblicazione/il-canale-di-suez-compie-150-anni-ed-e-ancora-fondamentale-24414

[89] Bussoletti, F. (2019), *Usa-Iran, attenzione allo Stretto di Bab el-Mandeb*, La Stampa, 12/07/2019, https://www.lastampa.it/esteri/2019/07/12/news/usa-iran-attenzione-allo-stretto-di-bab-el-mandeb-1.36970527

Islamic Revolution, between 1978 and 1981, or during the war with Iraq between 1980 and 1988.

Today, a large part of the crude oil exported from the Gulf producing countries, as well as the liquefied natural gas extracted from Qatar, passes through this canal. In fact large producers such as, Iraq, Saudi Arabia, Kuwait, the United Arab Emirates, Qatar and Iran use the Strait for most of their exports.

During 2018, due to an estimation of the Energy Information Administration (EIA) from here, 17.4 million barrels of crude oil per day passed, equal to about 21% of all crude oil global supplies. Oil is largely directed towards Asian markets, particularly Japan, India, South Korea and China, but also to Europe: 29.3% of Italian oil imports passed through Hormuz. Recently, the Iranian Republic has threatened to exploit its strategic position and naval power to close the Straits and block oil flows as a form of retaliation in the event that further economic sanctions are imposed on it by the United States[90]. A possible closure of the Straits could therefore have significant consequences for the global market, whose geo-economic balance continues to rest on the constant flow of hydrocarbons[91]. Even a temporary blockage of straits can cause serious damage to the economy, causing delays in supply, higher transport costs and generally higher prices for petroleum products. Some bottlenecks can be bypassed, but others don't have practical alternatives. In the event of a blockade in Hormuz, the most affected exporting countries would be in particular Saudi Arabia, Iraq, Kuwait, the Emirates and Qatar. The biggest consequences, however, would be for the importing countries, less towards the West, but much more for the Asian countries. In fact, 76% of the oil that leaves the Strait goes to the Far East, with a destination in particular towards China (about 3 million bpd), India, Japan, South Korea and Singapore[92].

Another chokepoint that is interesting on the maritime route to the Far East is the *Strait of Malacca*: the marine passage of the Indian ocean that separates the Indonesian island

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[90] See note 53

[91] Borsari, F., Salesio Schiavi, F. (2019), *Crisi nello stretto di Hormuz: quale impatto sul petrolio?*, ISPI, 14/07/2019, https://www.ispionline.it/it/pubblicazione/crisi-nello-stretto-di-hormuz-quale-impatto-sul-petrolio-23478

[92] Agnoli, S. (2020), *Hormuz, lo stretto da cui passa il 20% del petrolio (e per l'Italia il 29% delle importazioni)*, Corriere della Sera, 03/01/2020, https://www.corriere.it/economia/consumi/20_gennaio_03/hormuz-stretto-cui-passa-60percento-petrolio-l-italia-29percento-importazioni-61f111c4-2e21-11ea-b175-4a50d07a03f0.shtml

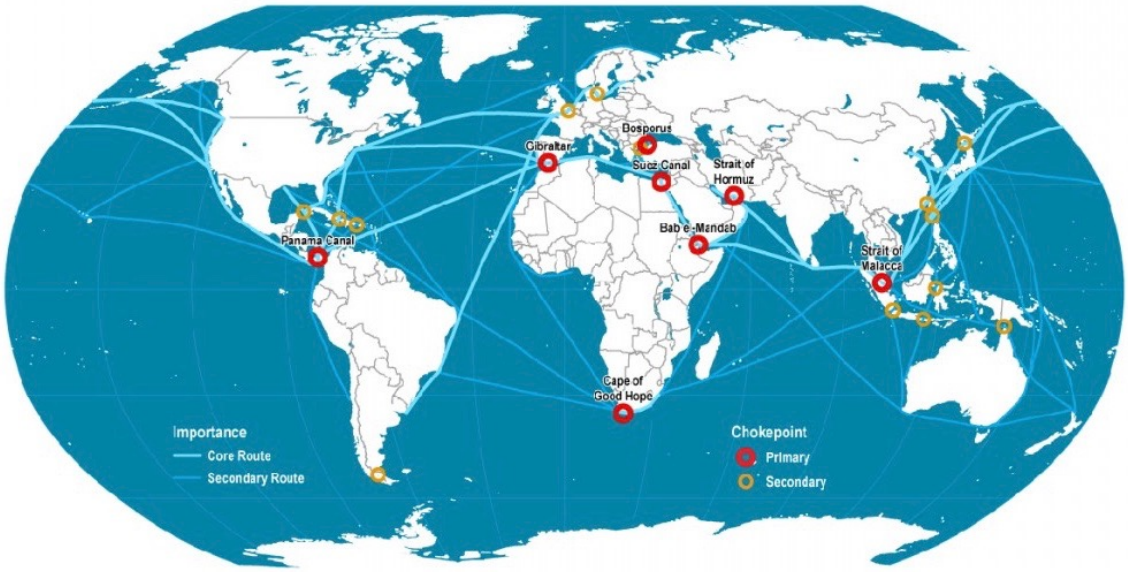
of Sumatra from the west coast of the Malay Peninsula; a strategic place because from here passes the main SLOCs.

The strait separates the Indian Ocean from the South China Sea, and is a vital point for trade in Asian countries including India and China, (especially for Chinese energy imports). It is at the same time a strategic point and a place of great geopolitical tension and possible terrorist and piracy attacks. For this chokepoint it is estimated that almost 40% of world maritime trade transits, among which an important part is made up of American goods; in fact, to ensure safety and free movement in the area, there is also the presence of the US navy in the Strait.

Within the Asia-Europe route, the straits are taking every day more importance, also due to the recent geopolitical tensions for controlling them. They are for sure strategic points but at the same time they are vulnerable, being located in areas characterized by strong political instability.

The control of the Straits, and the free movement without risks, is of fundamental importance for the development of maritime trade routes, and for economy that are living with maritime supplies and trade.

Fig.12 The Chokepoints from which world maritime trade passes



Source: Dr Jean-Paul Rodrigue, Dept of Global Studies & Geography, Hofstra University

In the important East-West connection, next to the growth of flows that is increasingly taking place in the Suez Canal, the centrality of the Mediterranean Sea has been rediscovered. Thanks also to the Belt and Road Initiative, that brings a lot of investments in the area, this part of the world is growing and at today, the 20% of the world's maritime trade passes by the Mediterranean Sea.

2.3.2 The renew centrality of the Mediterranean

The analysis made by the UNCTAD shows how world trade continues to grow (+ 9.8% in 2018), but global balances change with the advance of China; over time, the latter has progressively increased its market share on total world trade. In a period of clashes between the United States and China, Europe is in the middle and can play an important role. US exports € 256.2 billion to Europe and China exports € 375 billion to Europe, that vice-versa exports € 375.5 billion to the US and € 198 billion to China. The value of China-Europe trade is over one billion euro a day, with 80% of the trade between the two taking place on seaborne; it is estimated that only the 4% of EU-China trade in done by train. EU is in fact China's biggest trading partner, with telecom equipment as China first export to the EU; on the other hand China is EU's second largest trading partner, with cars as the EU's first export to China[93].

We have seen that the largest and best-connected ports in the world are mostly Chinese: China alone concentrates 19% of the world's port calls.

We have seen how there is a large flow of goods that travels from China to Europe and vice versa, with two markets that tend to attract each other and with most of the exported goods traveling by sea. Indeed, among the BRI countries, China is the first commercial partner for Italy, the first country from which we import and the second towards which, Italian exports are destined. Italy-China trade has increased by 65% since 2009, and almost 70% of the exchanges that China has with Italy take place by sea. Most of the Italian exports are given by machinery, automotive, fashion and chemical-pharmaceutical sector. The maritime trade between the two countries must pass mandatorily through the Mediterranean, in both ways.

In recent years, the Mediterranean has been playing an increasingly strategic role, as it has been said, 20% of global shipping is concentrated in it, which is further

[93] EU Commission data, 2018

consolidating itself for a number of various factors. The Mediterranean, on the geo-economic level, interfaces the large Atlantic and North European market on one side, and the Asian and African market on the other: so the centrality of the basin in international scenarios is a strong factor of attraction for public and private investments in the transport and logistics sector. The Mediterranean represents a privileged transit route for containerized traffic and concentrates 27% of the world's scheduled services; it is also a very significant area for short-sea shipping, in East-West and a North-South direction, in particular of the Ro-Ro type[94].

The Mediterranean therefore grows for importance in trade routes thanks to a series of factors:

1) *The Chinese investments in the area*. In 2018 the 31% of Chines investments were concentrated in Europe. Among the most recent BRI investments in the Mediterranean we find, in January 2016, the acquisition by COSCO of 67.5% of the Port of Piraeus (Greece) for a final value of the operation equal to 1.5 billion Euros. Piraeus, as we have seen, has grown a lot in recent years, becoming the best-connected port of the Mediterranean in 2019.

In May 2016 COSCO acquires 35% of the Euromax Terminal in Rotterdam (Netherlands) for a value of € 125.4 million. In October 2016 COSCO and Qingdao Port International invest in the Vado Ligure Terminal (Italy), acquiring 40% and 9.9% respectively, for € 450 million (300 public and 150 private). China intervenes in the private part with COSCO, with 53+17 million euros and Quingdao for 70 million. The terminal was recently inaugurated. In October of the same year COSCO invested 631 million euros in Abu Dhabi (Emirates). In June 2017 COSCO acquires 51% of Noatum Port Holdings, whose main assets include the container terminals of Bilbao and Valencia (Spain) for a transaction value of € 204 million. Until March 2019 with the signing of the Italy-China MoU: 29 agreements in which possible investments of up to 7 billion are expected in the ports of Genoa and Trieste[95].

China is interested in the area of MENA (Middle East and North Africa), as it is the first commercial partner in the area, with € 215 billions, (Italy has about €80 billion import-export with MENA in 2019, the 2nd commercial partner in Europe after Germany).

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[94] SRM, Italian Maritime Economy (2019), *6th Annual Report 2019*, pg. 38

[95] Investments until June 2018, data from China Global Investment Tracker database

2) *The on-going trade war between the USA and China*: as anticipated, trade at the beginning of 2019 between China and the USA suffered an 8% drop, with 25% of duties on Chinese imports by the USA on 5700 products (worth $ 200 billion) and the Chinese reaction with duties from 5 to 25% on 5000 products on US imports (worth $ 60 million). The fallout from this was on the Transpacific route, where 68% of the total volumes of containerized goods leave from China. The Mediterranean and the other routes can therefore take advantage of this situation, in particular the Europe-Far East route, which went from a market share of 27% in 1995 to one of 41% in 2018[96].

3) *The growth of regionalization and Short Sea Shipping in the area*. We have seen how intra-regional routes grow, in the area in particular by 6.1%, with Italy leading the EU countries with 230 million tons, equal to 37.4% of the market share, in the Mediterranean. The Short Sea Shipping in the Mediterranean accounts for 614 million tons in 2019.

4) *The affirmation of the Suez Canal in Deep Sea traffic*. Traffic through Suez increased by 8.2% in 2018 to exceed 980 million tons, with over 18 thousand transient ships. The traffic is half of the container type and 25% in the Oil (Suez has the 3rd world transit of Oil). 983 million tons is the number of cargo traffic in Suez in 2019. In the course of the next subsections we will analyse better the Suez phenomenon as an important chokepoint.

From 2014 to 2018 the area that has grown the most for port traffic is precisely that of the Mediterranean with a + 22%, followed by South East Asia (+ 20%) by North America and East Asia (both + 19%) and the Northern Europe (+ 9%), the Middle East only grows by + 5%.

In the Mediterranean there are 19 ports with over 1 million TEUs throughput, and the traffic is for 33% container, 22% Break bulk, 20% Liquid bulk, 15% Dry bulk and 10% Ro-Ro[97].

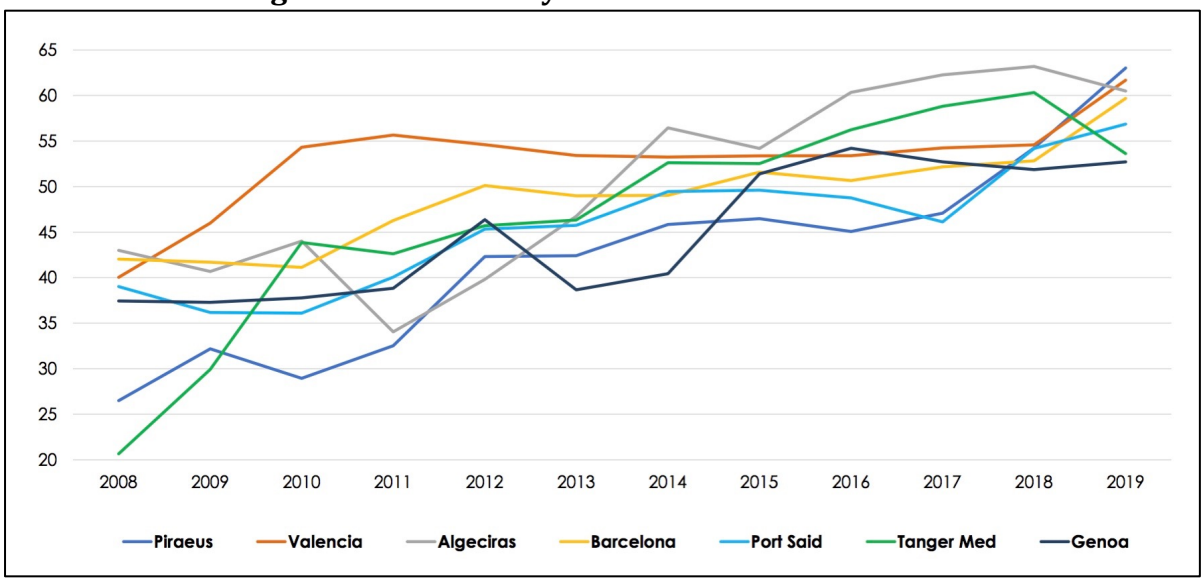
The ports of the Mediterranean continue to grow and competitiveness on the Southern shore of the Mediterranean is also growing. The gap between the Southern and Northern Mediterranean ports narrowed sharply between 2004 and 2018. Considering the LSCI trend, on average the ports of North Africa and Turkey (Morocco, Egypt and Turkey) and those of the North Mediterranean (Spain, France, Italy and Greece) reduced

[96] SRM on Alphaliner data, 2018

[97] Lloyd's Maritime Intelligence Unit and OECD data, 2019

the difference in basis points from 2004 (26 b.p. gap) to 2018 (8 b.p. gap). The difference between the Northern Range (Germany, Netherlands and Belgium) and the North Africa and Turkey ports was 50.2 basis points in 2004 and over time decreased to 28.2 basis points recorded in 2018.

Fig. 13 The Hierarchy of the Mediterranean Ports



Source: SRM presentation, "Scenari marittimi e competitività portuale nel Mediterraneo: le nuove sfide", Federmare 2019

The ports of the Southern Mediterranean area, are growing much more in percentage, because they are able to narrow the gap with those of the North, on the other hand the ports of the North Mediterranean and those of the Northern Range remain quite distant over time. The gap between the two narrowing slightly, passing from a difference of 23.7 basis points in 2004 to a 20.2 b.p. gap in 2018. The ports of the Northern Range therefore confirm their supremacy in connectivity in the European continent[98].

It is interesting to see inside the Mediterranean which ports are capable of accommodating ever larger container ships. Trade routes are increasingly concentrated around naval gigantism and ports capable of accommodating ships from Super Post-Panamax (normally up to a maximum of 15000 TEU) to ULCV (can also reach 22000 TEU). It is interesting to see which are some of the Mediterranean ports with capacity to accommodate larger container ships (up to 21237 TEUs of capacity) or the port of Piraeus, Port Said and Tanger Med, Algeciras welcomes up to 20954 TEUs. Valencia and

[98] SRM, Italian Maritime Economy, Presentation of the 6th Annual Report 2019, Naples, 4 July 2019

Barcelona follow with both 19462 TEUs ship capacity, Gioia Tauro (19224 TEUs), La Spezia (17816 TEUs), Genoa (16652 TEUs), Trieste and Koper (both 13568 TEUs) Naples and Civitavecchia (9411 TEUs), Livorno (9403 TEUs) and Venice (7024 TEUs)[99].

Among the various ports, it is interesting to note that among the 5 countries with the greatest relevance in the maritime area of the MENA area, Turkey and Morocco stand out for the strong growth in the LSCI. From 2006 to 2019 the value of the Italian LSCI grew by 20%, as did Spain, France by 25% and Egypt by 43%. Very strong in the MED area are increasingly Greece with LSCI growth of 86%, Turkey (88%) and Morocco with 383% connectivity growth. These are competitors of Italy and must be kept in sight, as from 2006 to 2019 Turkey has gone from 27th to 23rd place for connectivity and Morocco from 81st to 22nd place, becoming second among African ports in the Middle East and North Africa area.

We must pay particular attention to Turkey, that is locate in an optimal geographical position as it is a natural bridge between Europe and Asia and a crossroads of three continents, it is in fact at the center of a transport network that connects the Atlantic with the Far East and thanks also to the connections between the Mediterranean and the Black Sea across the Turkish strait. In the past year it has had 10.8 million TEUs of containers handled and has growing ports such as Ambarli (3,194 million TEUs) and Mersin (1,722 million TEUs), Aliaga (Nemrut), Izmit Korfezi and Tekirdag. The major investments are now concentrated on the ports of Candarli, Mersin and the port of Filyos on the Black Sea. Turkey is also a leading country in shipbuilding and ranks 4th (by number of orders, 133) in world rank of shipbuilding countries (China ranks first with 1,626 orders, followed by Japan at 626)[100]. The major port of Turkey (Ambarli) is controlled for 64.5% by China.

Another state to watch out is Morocco, which among the African states is one of those with greater political and institutional stability, which favour growth. We have seen the strong growth of the port of Tanger Med (5th place in the Mediterranean, 3,472 million TEUs handled), with a global increase in container traffic, equal to 4.7 million TEU. With the development of the new Tanger Med 2, which was just inaugurated in mid 2019, capacity has increased to 9 million TEU. The Moroccan government focuses heavily on

[99] SRM presentation, "Scenari marittimi e competitività portuale nel Mediterraneo: le nuove sfide", Federmare, Rome, 12 December 2019

[100] SRM on Turkish Chamber of Shipping, and UNCTAD data, 2019

the development of the maritime sector, aiming to grow an ever complex port system. The port strategy of the country with a horizon to 2030 (Strategie portuaire du Maroc a l'Horizon 2030) provides for the total allocation of 75 billion dirhams (7 billion €), concentrating the intervention in 4 areas with construction of new ports, extension of existing ones, development of the naval industry and integration of ports with the urban areas, all to get to move goods for 300 million tons by 2030. The success of this country also derives from the fact of having a Special Economic Zone, the TangerMed Free Zone, active since 1999, which employs 75,000 workers and 900 companies, capable of moving an export volume of $ 8.3 billion a year in sectors that range from cars to aeronautics, to textiles and commerce in general. As far as shipbuilding is concerned, a 437 million euro sector development plan is in place, with possible employment by 5000 to 8000 workers[101].

We have just anticipated how the Piraeus is growing, becoming the second Mediterranean port for TEU moved, equal to 4.908 million TEUs (in 2018), and the first best connected port in the Mediterranean in 2019, due to the PLSCI, that identify the position of the ports in the global network of container maritime freight. The large Chinese investments has made the ports to record a 18.4% growth in container traffic in the last year, and 257% growth from 2000 to 2018, with the aim of reaching 10 million TEU in the next decade.

The port of Valencia is also important, the first in the Mediterranean for containers moved (5,183 million TEUs) with a 7.3% growth in the last year, in total it has grown by 221% from 2000 to 2018. This port is partly controlled by COSCO too, which in 2017 acquired 51% of Noatum Port Holding, which also controls a container terminal in Valencia. This port is increasingly becoming a reference point for the West Med.

2.3.3 The Suez Canal and its SEZ

In addition to the Mediterranean Sea, consequently the Suez Canal continues to grow in importance and therefore also the whole area of the Red Sea, with particular Chinese interest.

A series of investments in Israel should be highlighted, with China Harbour Engineering Company, which has invested 858 million euros since 2014 for the construction of the

[101] SRM on Royaume du Maroc, Ministere du Traansport data, 2019

new container terminal in Ashdod, and the same amount of money should be invested for the improvement of infrastructures. A further investment started in 2015 is that of Shanghai International Port Group CO. for the new terminal in Haifa, with a 25-year concession starting from January 2021, with the tender won for an amount of over 850 million euros.

In the United Arab Emirates, COSCO will build and operate a new container terminal in Abu Dhabi (Khalifa Port) with an investment of $ 738 million for a 35-year concession. At the end of the works, the port will have an annual capacity of 6 million TEU.

All this investments and the continue increase in container terminal flows generate a boom in the Suez Canal businesses; but let's see some historical passages that led Suez to what it is today.

During the 1800, there was a great debate on the creation of the Suez Canal, in particular between England and France. For Italy, with the opening of the Suez Canal, there was a great opportunity to develop the southern Italy, for example by exporting agricultural products, but this did not happen, because Brindisi did not become the main port in place of Marseille (France), due to the great emigration to the USA and the great poverty of southern Italy. Marseille was in fact the port where the English Indian Mail arrived and served as a port of departure for the Far East. The Italian government hoped that Marseille would decline instead of Brindisi, but England did not choose it. In the nineteenth century the British were not in favour of creating the Canal, but Suez was a project that attracted all other European countries and the work was done anyway. The Suez Canal was built between 1859 and 1869, with the aim of connecting the Mediterranean Sea and the Red Sea and therefore the Far East, avoiding the circumnavigation of Africa. The creation at the end turned into a diplomatic victory for the British who joined the company that administered Suez from an administrative, economic and military point of view, but only after a transition period, as we will see. Cavour knew of this development and sensed how a political rapprochement between France and Italy was necessary, but the Franco-Prussian war then blocked everything.

After the cut of the Isthmus, Suez becomes the center of international disputes and opens new political scenarios.

The opening of the Suez Canal proved to be a profitable deal immediately, the distances between East and West decreased, the journey between London and Bombay was reduced by almost 50%, an advantage that England could no longer give up. In 1875,

taking advantage of Egypt's difficult financial situation, the British returned to the game and bought shares in the company that manages the Canal and so became the main shareholders with France. In 1882 the insurrection of the Egyptian nationalists and the attack on the European bases of Alexandria, gave to England the pretext to intervene militarily: the revolt quashed and the British managed to control the centers of Egyptian power, transforming Egypt into a board. The French were looking for ways to limit British influence and asked for help to other European countries to regulate the use of the Canal: thus signed the Constantinople Convention in 1888, which reaffirms neutrality and free movement in the area, so the Canal could no longer have been blocked. However, there was a clause: Egypt could take extraordinary measures to maintain peace and public order in the country, which would have come back active with the First World War when the United Kingdom closes the channel to enemy ships, or when Egypt has returned independent in the Israeli Arab war in 1948, it would have close the Canal to the Israelis. In 1956 Egyptian President Nasser nationalized the company that manages Suez, subtracting the profits from the British and French, that in turn wanted to stop Nasser and organized an attack with the Israelis through Sinai to regain control of the Canal (the Suez Crises), but the crisis created became international and feared a new world war: the UN decreed a ceasefire, and the British, French and Israelis were forced to withdraw their troops. The crisis between Egypt and Israel, however, was not solved and on May 22, 1977, Egypt closes straits of Tiran, the only Israeli access to the Red Sea. Israeli forces overwhelm the Egyptians in 6 days reaching Suez, Nasser was defeated but closed the Canal, which becomes the border between the two countries. The Canal was reopened in June 1975 and 40 years later, on 6 August 2015 the Egyptian President Al-sisi inaugurated the doubling of a first 72 km of the track (with a cost of 8 billion dollars): it is the beginning of an ambitious project which should end in 2045 with a doubling of the entire Suez canal and with the creation of an immense industrial area[102].

Today, 150 years after its construction, the Canal remains one of the fundamental arteries of globalization and has indeed acquired a new centrality within the BRI framework; in fact passing through Suez is an obligatory stage of the commercial route from Asia to Europe and vice versa.

[102] Passato e Presente (2019), *Suez, una porta verso l'Oriente*, RAI 3 TV Channel, 13/12/2019

During 2018, 10% of world commercial traffic passed through the Suez Canal, with a growth of 3.6% in the number of ships (more than 18000 ships) compared to the previous year and even 8.2% in the volume of cargo transported (for an amount of 983 million tons transported). The average size of the ships that crossed the Canal grew by 12% compared to 2014, with the possibility of transit of ships in both directions, and now is possible also for ULCV to cross the Canal, as showed with the recent transit of a container carrier of more than 23 thousand TEUs capacity[103].

The Suez Canal is also the third route in the world for the transport of oil and natural gas that leave from the Gulf to Europe and North America. The traffic through the Canal represented 9% of the world's maritime crude oil flows, 8% of liquid gas (in 2018); the container flow has increased of 2.5% in 2018, with 5.706 container ships.

The largest number of ships, among those that have made complete transits through the Suez Canal, is made up of container ships which recorded a growth of 24% from 2014 to 2018, as well as car carriers (6%) and tankers (12%); practically stationary remain LNG ships and bulk carriers, while Ro-Ro ships decrease by 13% and general cargoes decrease by 7%.

To go through Suez you need to pay a fee and the first client of the Canal is China: in 2018 the revenue amounted to 5.7 billion dollars, and it is estimated that by 2023 the income of transit could be 13.2 billion dollars[104].

China is very involved in the Mediterranean area, where it has made a + 27% presence in 5 years, with only COSCO having made + 10%. As we have seen previously, China is present with various types of investments ranging from Piraeus to Istanbul. With COSCO, China holds a 20% stake in the Suez Canal Container Terminal, and is very attracted by Special Economic Zones (SEZs) and Special Logistics Zones (SLZs). In particular, the Suez SEZ is the largest of the Mediterranean, and attracts companies and investments as it guarantees subsidies to invest, tax breaks, low labour costs, the possibility of entrepreneurial development, land at subsidized prices and much more.

After the enlargement of the Canal in 2015, the journey time of the Canal decreased from 18 to 11 hours and the number of ships passing every day increased from 49 to 97, further increasing the attractiveness for commercial routes between Asia and Europe[105].

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[103] To know more have a look at The Meditelegraph (2019), *La portacontainer più grande del mondo è passata da Suez*, 10/08/2019, https://www.themeditelegraph.com/it/shipping/2019/08/10/news/la-portacontainer-piu-grande-del-mondo-e-passata-da-suez-gallery-1.38068415

[104] Suez Canal Authority data, 2019

On a total amount of 983 million tons transited from Suez in 2018, the Southbound are 524.6 million tons (+9.8%) and the Northbound 458.8 million tons (+6.6%); on both direction the Mediterranean ports are involved for a 55% of the total flows.

On the Southbound route, the ports of departure are for 89.4 million tons the Black Sea, 86 million tons the East and South-east Med, for 62.5 million tons the North Med, and for 48 million tons the West and South-West Med. On the other side on the Northbound route, the destination of the cargo is for 110.6 million tons the East and South-East Med, for 97.6 million tons the North Med, and for 41.3 million tons the West and South-West Med.

From 2001 to 2017 the traffic of cargo in Southbound has increase of 228% from Black Sea, 139% from North Med and 96% from North West Europe and in the destination countries for 148% in the Red sea, 431% in the Arabian Gulf and for 73% in South East Asia. On the other hand in the same period, in the Northbound route, the traffic of cargo has increase in the countries of departures for 340% in the Red Sea, for 200% in Arabian Gulf and 61% in South East Asia; in the countries of destination for 544% in South East Med, 171% in North Med and 16% in North West Europe[106].

It's interesting to see how in 2017 the areas of departures for the Southbound route were for 22% in North West Europe, for 18% in Black Sea and 16% in North Mediterranean (44% others); instead in the Northbound route the areas of departures were for 36% South East Asia, for 34% Arabian Gulf and 12% Red Sea, (17% others)[107].

The Egyptian government wants to exploit the growth of transits not only for the shipping, but also with the many activities related to the sea, developing ports, industrial areas for the processing of goods, development of certain services and, as already anticipated, special economic zones. The government attracts flows of trade by making special discounts ranging from 45 to 65% for example for ships that depart from the American East Cost and are bound for Asia.

Thanks to its SEZ (the Suez Canal Zone), an area of 461 square kilometres, Egypt attracts foreign capital to develop logistic, industrial and manufacturing activities. China has become the largest investor in the SEZ of Suez together with Malaysia and Indonesia, countries that want to use this area to develop traffic in the Mediterranean.

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[105] See note 88

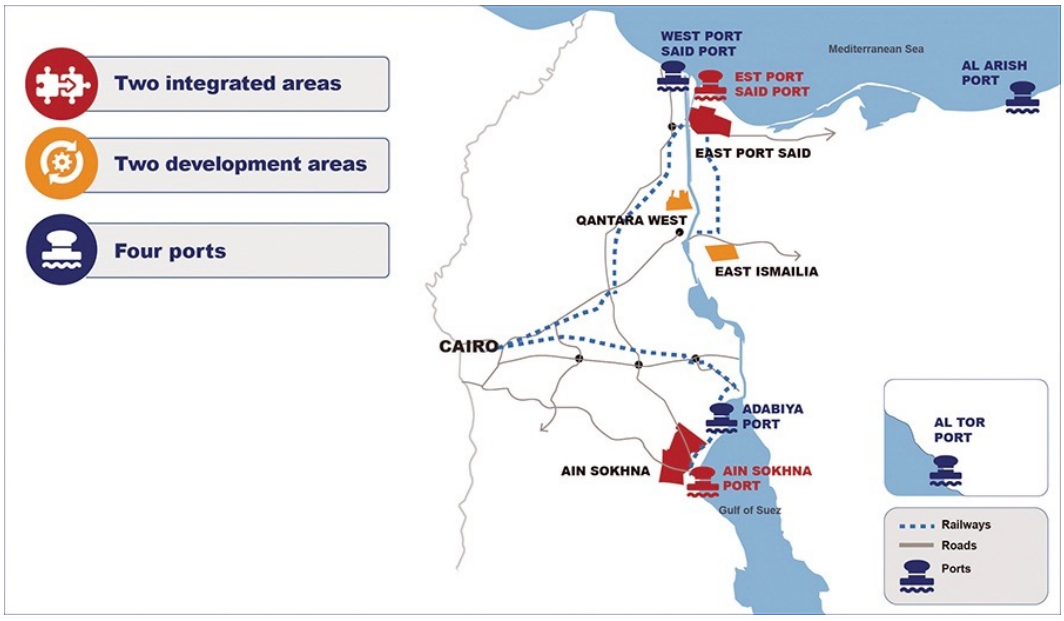
[106] See note 104

[107] SRM, Italian Maritime Economy (2019), *6th Annual Report 2019*, pg. 42-43

We have seen so far how China is involved in the area, but it is not alone, because also Russia is involved. In fact, since 2014, Moscow has been engaged in the construction of a Russian Industrial Zone in the Canal area, which should be concluded between 2020 and 2021. The project provides for investments of about 7 billion dollars, with about 25 companies fully operational that would bring in the area a production of 3.6 billion dollars a year. Russia is trying to involve other Eurasian Economic Union (EAEU) countries in the project and Belarus has already communicated its intention to participate.

Russia has multiple economic and strategic interests in Egypt, ranging from being able to export more to the markets of the Middle East and Africa, to the construction of nuclear power plants in Egypt, to the modernization of the country's industrial and railway system, up to the supply of armaments and technical and military cooperation between the two countries[108].

Fig. 14 The SCZ - Suez Canal Zone



Source: SRM and AlexBank (Intesa Sanpaolo Group) elaboration

Suez Canal Zone thus becomes "a brand", thanks to Free Zones and a system of 4 ports with 4 vocations, ranging from Container to Oil, to dry bulk.

The ports are all well connected e.g. with Cairo (and the airport), and are:

[108] See note 88

- *West Port Said* is part of a large transhipment port that extends for 2 square kilometres at the northern entrance to the Gulf of Suez on the Mediterranean Sea. The area around the port is important in addition to logistics, for the automotive, the textile and clothing sector.
- *Al Arish Port* is a port located on the Egyptian coast of the eastern Mediterranean Sea and is operational for goods, fishing and also as a tourist port, it plays an important role as an industrial and commercial port for North Sinai and Gaza.
- *Adabiya Port* is located on the western shore of the Gulf of Suez, about 10 km south of the canal, this port facility covers an area of 1.8 sq. km, has nine docks, with a total length of 1.8 km, which they can handle all types of bulk goods and can accommodate ships up to 60,000 tons. Further investments will be made here in the terminals, which will be able to manage all types of goods when fully operational; now it is important for logistics, maritime services and energy (especially solar energy).
- *Al Tor Port* is located south of Sinai and occupies three hectares on the eastern shore of the Gulf of Suez, south of Abu Zenima. Most of the goods concerned are dry bulk and minerals but there are also containers, as well as fishing boats and a marina for yachts.

There are two integrated areas:

- *Ain Sokhna* and *Sokhna Port*. This area is an important industrial and logistic center south of the Suez Canal, which combines port facilities, industrial areas, residential areas and road and rail connections to the capital Cairo. A large part, approximately 370 sq. km, is destined for production: the area is designed to host all types of industrial activities, especially maritime activities such as construction and repair services, bunkering and recycling of ships, as well as commercial and residential structures. The area is also important for various sectors ranging from solar and wind energy to the automotive, waste-to-energy plants, ITC, building materials, manufacturing and petrochemical industries.

  The production area is integrated with an international port (Ain Sokhna), which is located on the west coast of the Gulf of Suez, 43 km south of the city of Suez. It covers an area of over 22 sq km and a depth of 18 m. The port is growing more and more, becoming an important industrial hub serving international and national markets, with expansion plans that include new container terminals and

liquid bulk, logistics, warehousing and distribution centers. The terminal is at the forefront and will soon invest in automation and new equipment for handling containers, also thanks to the presence of the UAE world-class terminal operator DP World.

- *East Port Said* is a developing area that boasts the presence of an important transhipment center with a multimodal logistics center; it occupies about 75 sq km adjacent to Port Said, with about 40 sq km for medium and light industrial activities and commercial activities.

  In the area there are investments on energy and pharmaceutical sector, electronic industries, manufactures and agribusiness. East Port Said is known for its deep waters that allow it to host megaships, making it among the 40 most important and busiest ports in the world. The expansion of the airport will be brought to 70 sq km from the current 26 and will offer other possibilities for great growth. The expansion to the east of Port Said is pushing for industrial and real estate development, creating opportunities related to the desalination of water and power plants, as well as for the strengthening of the road network. In this areas the possiblility to have a port and a retro port well connected boost the investments.

Then there are two development areas:

- *Qantara West* is complex with light industries and logistics centers, easily accessible from the Suez Canal. It is located near an agricultural land 30 km north of Ismailia on the road to Port Said, and benefits from the proximity of the fertile Delta so it is ideal for the development of the agri-food sector. Logistics companies have industrial processing warehousing services, transport and distribution, goods shipments and packaging. The area is growing in importance for the development of industries related to the textile, ITC, electronics and manufactures sectors.
- *East Ismailia* is located at 10 km east of the Canal and covers an area of over 70 sq km. It is a new center for hi-tech industries as well as education and training centers, important for the energy sector. The area offers services for the light and media industry, research and development structures, as well as service and commercial enterprises. A tunnel is also under construction to connect Eastern

Ismailia with the Egyptian east side, which will decrease the transportation times of goods from east to west[109].

All these areas are strongly connected between the ports and the manufacturing system and there are incentives but at the same time also protections for workers (e.g. every Chinese worker hired, 9 Egyptians have to be hired, so there cannot be a Chinese colonization). Those who invest in SCZone receive incentives and assistance along all the time, following an economic-sustainable process that simplifies registration, obtaining licenses and permits for the creation of new businesses. A company that invests here among various things can obtain visas quickly, has the possibility of being 100% owned by a foreign company (local participation is not imposed), it can be foreign controlled by 100% of the import-export activities. In addition, has imports free of customs duties and sales tax, and customs duties on exports to Egypt only on imported raw materials, not on the final product; there are also no restrictions on financial transactions in any currency within the Zone[110].

It is clear that between choosing to invest in a normal area and choosing to invest in a SEZ, a company will certainly have the convenience to invest in a SEZ; this too is a point in favour of Suez and a point of reference for Italy, if it wants to attract foreign investments and grow more.

2.4 The future maritime trade routes proposed by BRI

China is developing the maritime trade routes of the future through the Belt and Road Initiative, aimed at reaching new markets (increasing exports), reducing the travel times of goods and increasing the connectivity between the various countries.

One of the main objectives is to connect China and Europe much more efficiently than it is today. Currently, the average transportation time from China to Europe is 730 hours, 20% more than the average transportation time of Chinese businesses with the rest of the world (i.e. around 610 hours), which in turn is by far above the world average of 430 hours. If on the one hand there is the will to increase transport from the railway point of view (which certainly would reduce time from the current 37-45 days of navigation to

[109] Panaro, A. (2019), *Le Zes nel Mediterraneo: il caso della SCZ-Suez Canal Zone*, CostoZero.it, 26/03/2019, https://www.costozero.it/le-zes-nel-mediterraneo-il-caso-della-scz-suez-canal-zone/

[110] *Ibid.*

16-21 days of the railway), most of the transport between the 2 continents will continue to travel by sea, in fact the cost of sea transport is on average a quarter compared to the railway, and can arrive also at be 7 times lower.

Italy can be inserted in this need to further reduce the journey: it is crucial to shorten the routes directed to Europe, avoiding, once passed Suez and arrived in the Mediterranean, to pass Gibraltar to reach the ports of Northern Europe and therefore the continent, when instead it would be much more convenient to have direct access to the European market from the nearest ports, so the Italian ones, this would reduce transport times by about 7 days[111].

The BRI project is structured around two main maritime trade routes of the future: the 21st Century Maritime Silk Road and the Polar Silk Road.

Let's consider the *21st Century Maritime Silk Road*. If on the one hand we find the increasing development of intra-regional maritime trade routes between the Asian countries (with also connections with the Pacific islands, via the Chinese sea), on the other the route that is certainly more interesting to us is that directed to the European continent.

In general, this is the maritime commercial route that is already used today, especially by large carriers, along the East-West route, or Asia-Europe. In addition to the current routes, there are certainly new stages, new infrastructures, new ports, new support points, with the rediscovery of the centrality of some specific areas ranging from the South China Sea, the Indian Ocean, Africa, to the Mediterranean.

The route will leave from China (e.g. from Guangzhou, or from some large Chinese ports such as Shanghai, Ningbo, Shenzhen, or Hong Kong just to name a few) or from the countries of South East Asia (Busan or Kaohsiung) and Indonesia, will head from the Eastern or Southern Chinese Sea across the Strait of Malacca (and Singapore) to the Indian Ocean and the Gulf of Bengal, reaching important countries such as Malaysia (Port Klang, Tanjung Pelepas), Myanmar, Bangladesh (Chittagong) and Sri Lanka (Colombo), then heading towards the Arabian Sea with a stop for example in Pakistan (as we have seen, seat of the port of Gwadar, strategic for China) and other important ports of the Arabian Peninsula. From here the route can continue touching some important ports of the Persian Gulf (such as Dubai) or go directly to Africa, with stages

[111] Amighini, A. (2017), *Il ruolo strategico dell'Italia nelle nuove Vie della Seta*, ISPI, 09/05/2017, https://www.ispionline.it/it/pubblicazione/il-ruolo-strategico-dellitalia-nelle-nuove-vie-della-seta-16499

e.g. in Kenya and Somalia, and then head towards the Gulf of Aden (with a possible stop in Djibouti, also strategic from a military point of view for China). The Circumnavigation of Africa would require 10 more days of navigation, so after passing the Bab el-Mandeb strait and entering the Red Sea the route will continue passing Suez (and perhaps making a stop in its SEZ) and then entering the Mediterranean Sea, with possible stages of transhipment in Chinese ports such as Piraeus or Valencia, or in Turkey, to then go to gateway ports, which could be Italian, French or Spanish.

Certainly for the current Asia-Europe route it is convenient to leave Gibraltar and enter the Atlantic proceeding towards the ports of Northern Europe, much more developed in terms of technology, availability of hosting large ships (ULCV) and speed of movement of goods, with intermodal services capable of making departing the goods to the processing or their final destination within Europe.

The Genoese shipping agency Cosulich has produced a study in this regard where it compares the cost of transferring a container from Hong Kong to Europe, taking as reference points Rotterdam and Genoa. From the research it arrives that while the rates of the sea freight to transport the container by sea are more or less similar, on the land route it is more convenient to go from Rotterdam than from Genoa. Taking as final destination the City of Stuttgart, almost equidistant from Genoa and Rotterdam, the cost of moving a container along the railway line connecting the Dutch port of call to Stuttgart is 400€, while from Genoa there is instead a competitive disadvantage of 200 euros (it takes 600€ also because there is no direct connection)[112]. If multiplied by thousands of containers, the match for Italy is obviously lost.

To date, the ports of Northern Europe are therefore more advantageous from many points of view, but certainly not on that of the route, Italy therefore has a geographical advantage that should, and will have, to exploit more, thanks also to Belt and Road.

Although it is more advantageous to reach Stuttgart from the Italian ports of Venice or Genoa, from a location point of view, on the other the ports of Northern Europe have a logistical advantage, which unfortunately is missing from our country. The possibility of accommodating ships with a draft of more than -16 meters deep, more than 400 meters long and capable of carrying more than 21000 TEU, from many ports in Northern Europe, is to the detriment of Italian ports.

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[112] Casale, M. (2019), *Colloquio con Augusto Cosulich, Sulla Via della Seta l'Italia non remi contro*, Portnews.it, 15/03/2019, https://www.portnews.it/sulla-via-della-seta-litalia-non-remi-contro/

Venice in fact can host ships of 7000/8000 TEUs and Genoa can host ships of 14000 TEUs capacity, but for example, it is more easy for Genoa to host vessels from 8000 to 13000 TEU, because they are able to move better goods, and load/unload the vessel easily.

In the South Korean shipyards, they are building ships capable of carrying 24,000 TEUs, 430 meters long and 62 wide, with a draft of 17/18 meters. The use of such ships would represent an increase of 30% of capacity compared to the 18,000 TEU units circulating mostly today. The navigation costs for a ship from 24.000 TEU are, in proportion, 23.5% lower than one of 12.500 TEU (that is one of the common big ships that today touch the Italian ports) and 17.4% compared to a 16.000 TEU.

Developing such larger vessels, bring with it the problem of having ports that are able to accommodate them, given that already in Europe there are few ports capable of accommodating ships of more than 21 thousand TEU; and investments are required, which take time to be realized.

If you think that a crane for handling containers costs around 10 million euros and it is necessary to have four of them to unload ships of this kind, it is clear that the cost of modernizing a port becomes excessive for many countries.

This is also a reason why large companies tend to prefer their own terminals for transhipment, so COSCO chooses Piraeus or Valencia, because it has a lower cost than choosing for example Gioia Tauro, and because it invests and develops the port to accommodate larger ships investing without big limits. While in Italy before building an infrastructure of more than 100 million euros (as could be a container terminal) it would take, according to a research of the Italian Council of Engineers, approximately 5-6 years only of bureaucracy and at least 10 other years for the realization, unthinkable for Chinese companies, as time is vital in an era of continuous technological evolutions[113].

Surely, however, attention must be paid, because the transport companies, behind the growth of the fleets, can hide financial phenomena rather than commercial choices.

[113] Centro Studi Consiglio Nazionale degli Ingegneri (2019), *Legge Sblocca Cantieri: per gli ingegneri un intervento poco risolutivo*, Rome, June 2019, pg. 5, https://webapi.ingenio-web.it/immagini/file/byname?name=indagine-infrastrutture-2019_centro-studi-cni.pdf

When there are already very large ships (from 18/20000 TEU) moving, putting even larger ships into circulation leads to reduced savings and moreover it becomes difficult to fill the load, and for this reason alliances between transport companies are created[114].
Many times Italy has not been able to seize the investments that large companies like Maersk wanted to make on the Italian territory, such as the investments that could be made at the port of Monfalcone for a container terminal, or the company's decision to leave Gioia Tauro to move to Egypt. It must be said that on the other hand there was foresight instead in the port of Savona-Vado Ligure, and there could still be great developments for the upper Tyrrhenian Sea and also for the Upper Adriatic, with Trieste which is of great interest for many companies, not only for China, who preferred to abandon the idea of a BRI maritime route that would end in Venice in favour perhaps of investments in Trieste.
If large carriers prefer Northern Range ports is because they have economic convenience to do so.
As we have seen, COSCO is participating and so is co-owner of part of the container terminals in Rotterdam and Antwerp, but have also interests in Zeebrugge and Hamburg, so it is more continent for them to direct the goods to the gateway ports, in which they are participating.
The competition between the ports of the Northern Europe and the ports of the Mediterranean is today distorted by the difference in the availability of adequate ports and by the choices made by shipping companies that optimize the use of their ships (ever larger). If in Italy there are no ports capable of accommodating mega-ships (of over 20000 TEUs capacity), and those ports that can host ships of 18000-19000 TEUs (like is composed the majority of Maersk fleet) are poorly connected with internal infrastructures (rail connections in the first place), an entrepreneur, or a company that looks strictly to profit, will direct its choices in the way of their personal convenience first, so preferring other destinations as the Northern Europe ports of Rotterdam, Hamburg, Antwerp.
For Italian ports, the choice to do now, lies in the ability to transform the location advantage (geographical position within the Mediterranean basin), into an economic advantage. Therefore, the availability of ports capable of accommodating ships that in

[114] Ghiara, A. (2014), *Portacontainer, ecco i giganti da 24 mila teu*, TheMediTelegraph.it, 02/07/2014, https://www.themeditelegraph.com/it/shipping/shipowners/2014/07/02/news/portacontainer-ecco-i-giganti-da-24-mila-teu-1.38175632

the short term could be from 25,000 or maybe 30,000 TEU in next decade, and which will draw up to 22 meters in depth, becomes crucial, together with all the relate services, appropriate to the needs of the market. Maersk would like to have two hubs in Italy, in the Upper Adriatic and in the Upper Tyrrhenian Sea, therefore being able to exploit the sea as much as possible, and connect in intermodal way to Central Europe, and to Eastern Europe (for Trieste) and Western Europe (for Genoa), more easily. In this sense will be essential the development of the Ten-T network and the political vision of Italy and Europe in the direction of a greener and more efficient transport system.

The other maritime route that China is trying to develop for the future is the *Polar Silk Road* referring to the Northern Sea Route and part of the China's Artic policy.

The Arctic has always been the shortest route for trade on the Far East-Europe-United States axis, and China seems that wants to exploit its potential more and more. The Chinese government's strategy envisages connecting China with other countries (including Europe), passing through the Arctic, all of this as a consequence of climate change.

The desire to increase connectivity and economically develop the Arctic area is perhaps only one of the reasons, or a pretext, to expand Chinese power with new trade routes that are faster and safer than those already in use now, and so take advantage of the resources hiding in the Arctic. Avoid bottlenecks like the Strait of Malacca, go to areas less subject to piracy and reach the final markets faster is certainly attractive for China. On the other, the negative points are certainly the costs, both economic and environmental; the North route is in fact a more expensive route than the conventional ones (for example via Suez) and there is also the danger of the icebergs. Another risk, that should not be underestimated, is certainly the geopolitical one, on the control of the Arctic territories and the exploitation of natural resources.

With the average rise in global temperatures, however, more and more new trade routes are opening, since in various areas of the Arctic ice is less and less present or is becoming increasingly thin, allowing icebreakers to pass, in more and more periods of the year compared to the past. China has already commissioned its icebreakers, including a 152-meter atomic one with 90 crew members, at a cost of 140 million euros (the largest in the world of this type) that will be able to crack a layer of ice one meter thick and half.

At the moment, the passage is allowed only in the summer months, but the pack becomes less and less thick, because the ice that accumulates is ineffective year after year, and also the passage period therefore increases.

Arctic sea routes can be divided into three types:

- *The Northwest passage*, where the freighters after Bering, coast Alaska, Canada, through canals and straits of the islands of the American continent, to the Baffin bay at north of Greenland. Here the problem is that the ice allows the passage for no more than 2-3 months a year, but in the future it may not be so[115]. This route would allow to connect Shanghai and New York in 83 days, avoiding the passage to Panama.

- *The Northeast Passage*: it is the most popular route, which allow cargo departing from China, after passing through the Bering Strait, to sail along Siberia (along the Laptev Sea and the Kara Sea) up to get to European Russia (Murmansk). From here the route can continue beyond Scandinavia and from there reach the Atlantic and therefore the ports of Northern Europe (perhaps Rotterdam) which would certainly be more advantaged than the Mediterranean ones. This route could be covered in 39-33 days (connecting Shanghai to Rotterdam) compared to the approximately 48 required on the Asia-Europe route, with the passage from Suez; this means a saving of 25-30%, or 2 weeks less travel, with respective lower costs and greater transport speed. For example, the Busan-Rotterdam route would pass from 22,000 to 15,000 kilometres. The Northeast route is open from June to November and the world's largest transport company Maersk Line, with its icebreaker Venta Maersk, was the first container ship to sail from Vladivostok to St. Petersburg in 28 days of travel, in September 2018[116].

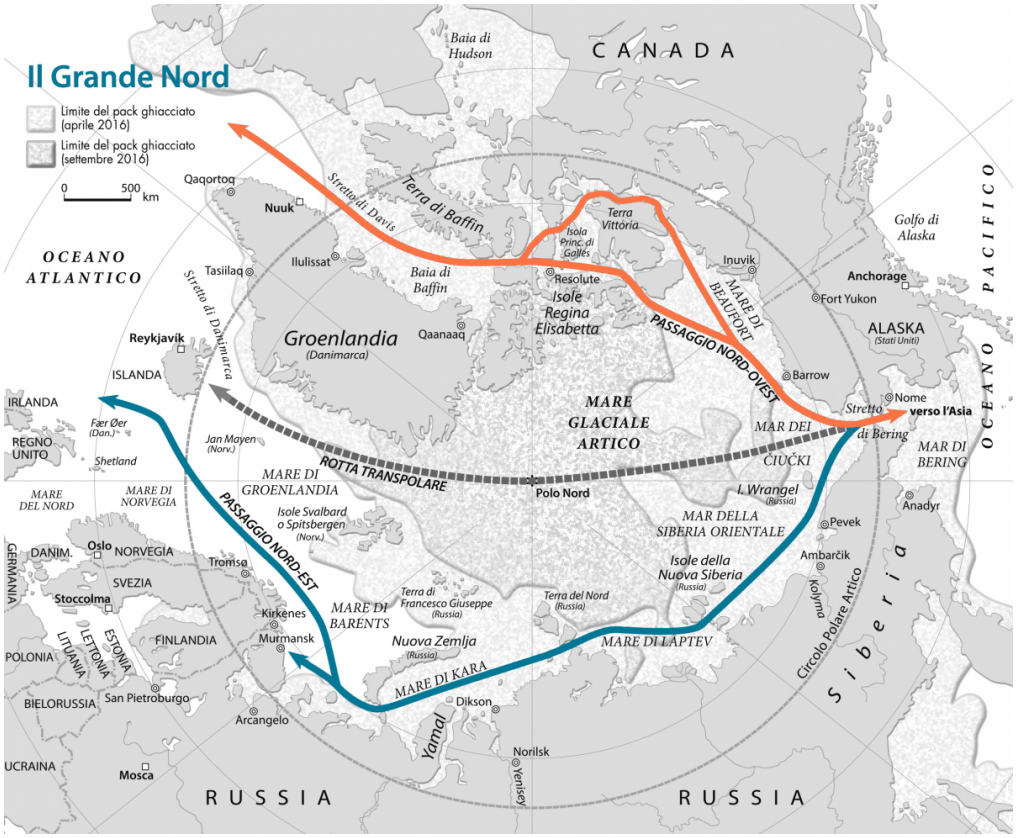
- *The Transpolar route* that from the Bering Strait points directly to Iceland with a straight route that passes through the North Pole, is the route that aims to revolutionize world shipping, being much shorter than the Siberian route, as well as two thirds more short compared to the passage from Suez. It will certainly be a new route in the future, but if it can be used, it will mean that the consequences for our planet from a climatic

[115] Pagani, L. (2018), *Commercio, si sciolgono i ghiacci e si aprono nuove rotte nell'Artico*, Repubblica.it, 21/08/2018, https://www.repubblica.it/economia/2018/08/21/news/maersk_rotta_artico-204567395/

[116] RaiNews (2018), *Il primo viaggio di una portacontainer sulla rotta Artica (anche grazie ai cambiamenti climatici)*, Rainews.it, 27/09/2018, http://www.rainews.it/dl/rainews/media/Il-primo-viaggio-di-una-portacontainer-sulla-rotta-Artica-anche-grazie-ai-cambiamenti-climatici-ba165e46-2338-4d82-82ab-6c3164a02a46.html#foto-1

and environmental point of view will be much more serious, perhaps irreversible and this will certainly not be positive for humanity.

Fig. 15 The Polar Silk Road



Source: ISPI

The Mediterranean will certainly be central for the next 20 years at least, but with the current climate changes and the opening of the Arctic routes, China already aims to move 20% of its merchant ships along the polar routes over the next decades. Perhaps as early as 2030, but surely in 2040 there will be at least 6 months of the year with the polar route open[117].

For China, the point of equivalence in using the route via Suez or the polar one, will be in a point between China and Vietnam, and so, if for Singapore the route via Suez remains more convenient, and maybe also for Hong Kong, instead for the large ports of Shanghai, Ningbo, Shenzhen, Qingdao, Tianjin, Xiamen, Dalian, Yingkou, Taicang, Lianyungang,

[117] Pompili, G. (2018), *Il Dragone bianco e la conquista dell'Artico. La strategia "polare" della Cina*, Ilfoglio.it, 24/01/2018, https://www.ilfoglio.it/esteri/2018/01/24/news/cina-polo-nord-174728/

Rizhao, Dongguan, Fuzhou, Nanjing, Yantai, Tangshan, Quanzhou and Taipei[118], would be more convenient to use the Arctic route.

Perhaps between 20-30 years it will be even more convenient to reach Genoa through the Arctic, so we must pay close attention to how this situation and the climate changes of our planet will evolve.

However, we must not forget that China wants the Arctic not only for trade routes, but above all for the energy resources that are under the ice and underground. The Silk Road in fact aims to connect various countries with China: among the different Chinese investment, there is one of 15 billion euros for the construction of an underwater tunnel of 100 km long, between Tallinn and Helsinki, to facilitate connections and trade flows; in any case the Chinese main goal is related to exploit natural resources in the North of the World. In fact 20% of the world's natural resources are hiding under the Arctic ice, which by 2050 will be largely melted and then those who control the Arctic will control a fundamental pool of energy and resources. In Arctic it is estimated there are in fact 90 billion barrels of oil, 44 billion barrels of liquid natural gas and many precious metals including uranium, platinum, gold, zinc and much more of other minerals.

Where the ice is melting faster, i.e. in Greenland (280 billion tons of ice melted between 2002 and 2016), China is already present, participates with its state company CCCC in the contracts and tenders to build ports and airports, which would become useful in the development of the polar silk road.

China also operates many uranium mines (Kvanefjeld) and rare earths, important among other things, to build missiles, smartphones, batteries and hard drives. In Greenland, China also bought iron and coal mines (such as Isua Iron Ore, owned by General Nice), copper deposits such as Carlsberg (Wegener Halvø) and in the Cjtronen fiord, one of the largest deposits in the world of zinc (70% managed by the Chinese NFC).

China is also present in Karholl (Iceland), where the China-Iceland Joint Arctic Science Observatory (CIAO) is located, completely financed by the Chinese. In this center take place scientific research activities, including the control of climate change, satellite paths (civil and military) and NATO airspace[119].

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[118] Some of the Chinese ports in the top100 ports list 2019 of the Lloyd's Maritime Intelligence

[119] Gabanelli, M., Offeddu, L. (2019), L'Artico si scioglie e la Cina è già lì. Per il grande affare, Corriere.it, 23/06/2019, https://www.corriere.it/dataroom-milena-gabanelli/artico-clima-scioglie-ghiaccio-cina-grande-affare-via-polare-groenlandia/7b4764f8-9429-11e9-bbab-6778bdcd7550-va.shtml

Chinese action therefore develops not only from a commercial point of view but also from an economic, political and military one, focusing on strategic places on the planet, including the Arctic.

2.4.1 The impact of some factors on maritime trade

We will now briefly analyse how some factors could impact on trade flows, and some of the challenges for the future of maritime transport, ranging from the presence of special economic zones to the environmental limits that we will face, to the modernization of port structures.

The importance of SEZs is growing, as an attraction for investments and development. We have seen how investments (including Italian ones) are attracted in the Suez area or in the Tanger Med area, thanks to the tax advantages, in order to be able to process the goods and ship them very easily, with services to simplify the bureaucratic procedures. According to UNCTAD, the most attractive things in the SEZs are in fact tax incentives, the special customs regime and the facilitation and protection of investments.

The number of SEZs is growing more and more, and according to UNCTAD data (2019), there are 5400 of them in the world, divided into 150 countries, employing between 90 and 100 million workers. However, the presence of the Free Zones is not always a guarantee of success, in fact only 22% is sufficiently used and 13% completely used and occupied, but 47% of SEZ is underutilized or even vacant[120].

In any case we must say that a ship-owner decides in which port he has to go, also looking at the costs he has to face, and the Free Zones, are created in order to attract, by making contributions and streamlining the bureaucratic procedure. China is very interested in the SEZs, especially in Italy, where the Know How resides, and could be an added value for Southern Italy (e.g. for the ports of Naples, Bari, Taranto and Cagliari). According to a study conducted by SRM, the presence of SEZs in the Mediterranean is able to multiply the export of a territory by 4% on average per year and container traffic by 8% on average per year; if you consider that the Italian ports in recent years have been grown on average by 1%, it is understood that having these SEZs becomes, not only important, but vital.

[120] SRM presentation (2019), "Scenari marittimi e competitività portuale nel Mediterraneo: le nuove sfide", Federmare, Rome, 12 December 2019

The Chinese have the largest manufacturing economy in the world and seek a natural connection with one of the largest markets in the world, namely the European one. However, in order to have a trade between the two continents, in both directions, it is necessary that there are advantages for both trading partners, and then the *reduction of duties in the trade* becomes a key point. Contrary to what American President Trump has done, with the reduction of tariffs both exports and the internal economy can growth. An example is the EPA (Economic Partnership Agreement) between Europe and Japan, signed in 2017, but entered into force on February 1, 2019, which is a free trade agreement that provides for the reduction, if not the elimination, of duties on many products: there was an immediate boom in Italian exports in the first 6 months after its entry into force. According to the Italian Embassy in Tokyo, the entry into force of this agreement has seen growth in many sectors of Italian exports, with in particular + 11.4% in the food & beverage sector, with a +22.2% in sparkling wine (given that a bottle of Italian wine previously had a 15% mark up, and now enters the Japanese market at zero cost), a + 5.9% on fashion, + 7.5% on chemicals and + 11.7% on transport equipment. The reduction of tariffs of almost 1 billion euro created a positive impact of 3 billion in commercial activities[121]. This is proof that where there are no tariffs, where there are SEZs, the economy grows and trade as well.

Another fact that impacts on world maritime trade is that of the *Alliances* between large container carriers. The market is highly concentrated, and in the main commercial routes, the three alliances represent a total of about 93% of the East-west routes.

To date, there are in fact three alliances between the largest companies in the sector:

- *Ocean Alliance*: brings together a European company (CMA CGM) and two Asian ones (Cosco Shipping and Evergreen) and holds 36% of the share of container shipping on the East-West routes, with 28% of global capacity, 6.2 million TEU capacity and 1,140 vessels.
- *THE Alliance*: formed by a European company (Hapag-Lloyd), three Japanese (NYK Line, MOL and K Line, which in turn generated the ONE alliance) and the Taipei company Yang Ming, have a 26% share on the East-West route, 17% of global capacity, 3.6 million TEU capacity and 543 vessels. From 1st April 2020, HMM will join this alliance.

[121] Value of Japan's imports from Italy, period: February-July 2019, Trade Statistics of Japan (Ministry of Finance) - data assembled by the Italian Embassy in Tokyo

- *2M*: formed by Maersk and MSC, it subsequently welcomed as additional members, the German companies HMM (until 1st April 2020) and Hamburg Sud, holds 31% on the East-West, with 36% global capacity, 7.7 million TEU capacity and 1,347 vessels.[122].

These three alliances regroup the eight largest container carriers of the world and represent around 80% of overall container trade. The top 10 container carriers ranking is lead by APM-Maersk and followed by MSC, COSCO Group, CMA CGM Group, Hapag-Lloyds, ONE, Evergreen, Yang Ming, HMM and PIL[123].

The alliances between these container lines carriers consist in cooperation agreements between them, on operational matters, that usually consist on a series of agreements with global coverage on sharing vessels and slots on these vessels. The aim of such alliances is to achieve economies of scale and wider service coverage.

Due to UNCATD data 2019, in the Asia-Europe/Mediterranean route the 2M controls the 39% of the traffic followed by Ocean Alliance (35%) and THE Alliance (24%), other small operators (2%).

Consolidation of the sector also continues through mergers and acquisitions or alliances: in fact if in January 2018 the 70% of the fleet was controlled by the top 15 carriers, in June of the same year it was controlled by the top 10 carriers[124]. In Italy the big carriers are controlling the traffic respectively for the 42% MSC, 8% Maersk, 5% CMA CGM, 3% Cosco, and others for the 42%[125].

Alliances have allowed carriers to acquire and operate mega-ships, reducing unit costs, and this has fuelled overcapacity and at the same time has lowered freight rates, but these cost savings are partly offset by a number of additional costs for shippers.

If from one side the alliances have made the maritime transport offer more uniform on the other they limited the possibilities of carriers to differentiate themselves, with lower service frequencies, fewer direct port-to-port connections, declining schedule reliability and longer waiting times, creating uncertainty for various shippers. Moreover, alliances have proved to be inherently instable.

The impacts of alliances on the containerised transport system, taken as a whole, seem to be predominantly negative, in fact they contribute to concentration of port networks

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122 SRM, Italian Maritime Economy (2019), *6th Annual Report 2019*, pg. 32

123 Alphaliner data on the Top 10 carriers, based on the TEUs moved by February 2019

124 SRM, Italian Maritime Economy (2019), *6th Annual Report 2019*, pg. 33

125 Alphaliner data, on total TEUs, 2018

and related underutilisation of public infrastructures (exerting strong pressure for publicly funded infrastructure upgrades to be undertaken to support the use of mega-ships, while these expenditures often prove to be uneconomic). Within ports, the buying power of the alliances can create destructive competition between terminal operators and between other port service providers, bringing to the decline of smaller container ports and the disappearance of smaller independent terminal operators[126].

If you think that the top four carriers accounted for 60% of the global container shipping market in 2018, it is clear that the greater market power of the carriers could have several implications, as they represent barriers to entry for example on East-West trades (where only the largest companies would be able to compete on price for Asia-Europe services outside an alliance structure) or the fact that alliances could function as vehicles for collusion between carriers[127].

The vertical integration strategy is also advancing, with carriers increasingly aiming to extend control over the logistics supply chain: the share of the terminals that they control has gone from 18% in 2001 to 38% in 2016, to the detriment of the terminals under the public control[128].

The market seems to be too much highly concentrated, and the EU seems to be unable to take a decision on the block exemptions which allows shipping companies with a combined market share of less than 30% to be able to enter into agreements to share container shipping services. The European Commission will have to carefully evaluate the extension of the exemption regulation deadline beyond 2020 that maybe is not any more necessary[129].

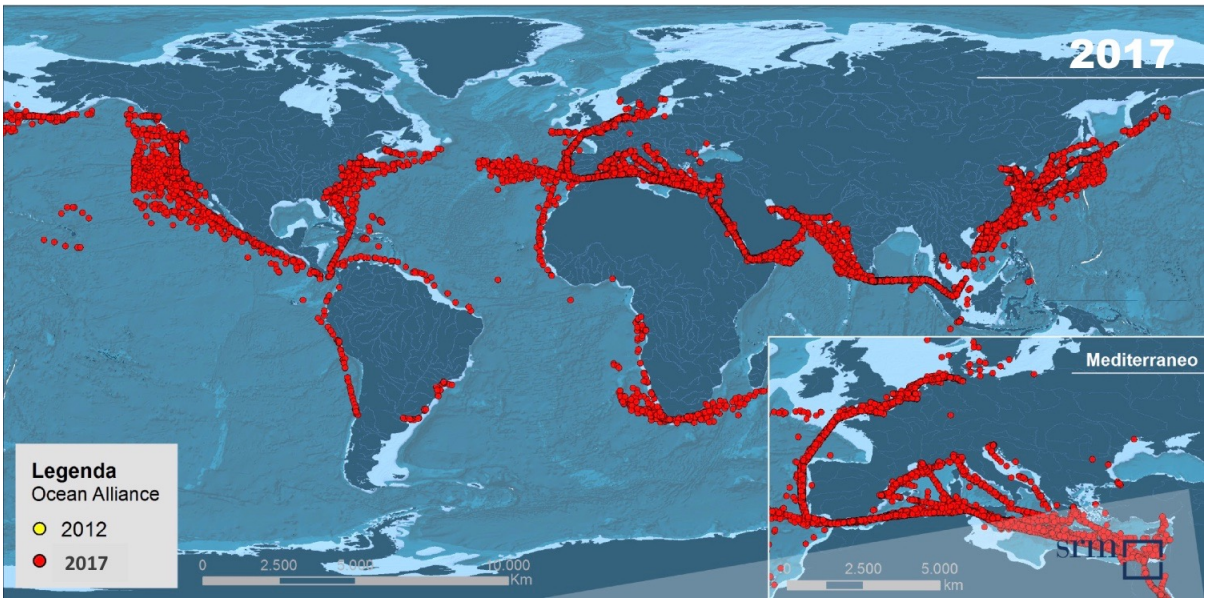
[126] International Transport Forum (2018), *The Impact of Alliances in Container Shipping – Case-Specific Policy Analysis*, pg. 7, 8, 20

[127] *Ibid.*

[128] ITF-OECD data, 2018

[129] Port News (2018), *Oligopoli nel mirino, L'Ocse contro le alleanze container*, Portnews.it, 13/11/2018, https://www.portnews.it/locse-contro-le-alleanze-container/

Fig. 16 The Ocean Alliance maritime routes



Source: SRM, data 2017

In the meantime, the big companies are investing more and more on *naval gigantism*, creating new needs for *modernizing port infrastructures*. Containerized and dry bulk trades are expected to grow at a compound annual growth rate of 4.5% and 3.9% respectively, over the 2019–2024 period; tanker trade of 2.2%, in the same period[130].

To cope with a fast growing economy, and an ever-greater need to increase the volumes transported, larger and larger ships are being designed. The hierarchies of naval gigantism is also changing, with Evergreen confirming the order to Samsung Heavy Industries for 6 container ships of 23,764 TEU; with Mediterranean Shipping Company (MSC) that after the launch in 2019 of the 23,763 TEU mega-ship "MSC Gulsun", now orders another 5 mega container ships of 23,000 TEU; and Cosco that designs maxi ships of 25 thousand TEU.

It is estimated that by 2022 in the 10,000-23,000 TEU range, 133 new ships will be launched, of which 45 in the 18,000-23,000 TEU range.

In order to accommodate such large ships, among other things, there is the need of docks long enough to accommodate ships that now exceed 400 meters in length, deep backdrops to accommodate ships with large draft of -16 meters, special cranes for

[130] UNCTAD (2019), *Review of Maritime Transport 2019*, pg. 17

handling goods in security, transport trucks (perhaps autonomous trucks, unmanned, as in the great ports of Northern Europe), port services and staff training.

To face the challenges of the future, ports and terminals around the world are forced to invest in infrastructure, equipment and automation with costs and construction processes that take time. However, these investments are necessary to face obsolescence and the risk of being excluded from rapidly evolving carrier networks. The integration of ports and terminals now seems inevitable.

Some of the largest carriers, including Maersk and Cosco Shipping, are planning to expand their presence to inland terminals, warehouses, customs brokerage and logistics to tap additional business opportunities. It was reported that up to 80 per cent of Maersk's earnings currently comes from container shipping and the plan is to achieve a 50:50 split between ocean and non-ocean services in the next few years[131].

To cope with the new realities of container shipping, digitization and automation are destined to play a vital role, in guaranteeing new revenue, cost savings and greater efficiency[132].

There are more and more ports that operate 365 days a year, 24 hours a day, and are constantly innovating with new technologies, with transport automation, efficient connectivity with the hinterland (e.g. by train), with adequate spaces for processing goods and to meet the needs of transport companies.

The future of maritime transport will also be affected by the diffusion of innovation (as robotics) and digitalization: technology will ensure the key to higher efficiency and reliability for the ports and terminals sector, thus improving systems and processes. Technology is increasingly used to digitize internal processes and develop integrated informatics infrastructures, offering transparency on shipments (e.g. with the location of cargoes) and saving on customs clearance costs. Technology is applied to ships (and in the future maybe we will have automatic and unmanned navigation ships, which use cleaner energy sources such as hydrogen and electricity), being able to have data on the ship, and on everything that revolves around the transportation, helps to optimize many operations (e.g. using remote cranes management systems, or GPS), reduce costs, speed up times and increase safety.

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[131] *ivi*, pg. 14

[132] SRM, Italian Maritime Economy, (2019), *6th Annual Report 2019*, pg. 34

If on the one hand there are certainly advantages for both transporters and the final consumer, on the other there are costs to pay, for example on port workers who are fired as they are replaced by robots and machines, and above all the impact that this growth has on the environment[133].

All these evolutions are combined with the obligation to comply with an intensified global sustainability agenda and the imperative to remain competitive and respond to the demands of the world economy and commerce.

Between the future risks and uncertainties for maritime freight we found for sure the trade tensions and growth in protectionism of the USA and the challenges posed by the Brexit. Other risks are the economic transition in China, geopolitical turmoil, natural disasters and disruptions to shipping routes and supply chains, as well as the transition to low-carbon shipping[134].

It will be interesting to see the effects of the *IMO 2020* regulations, for a greener and cleaner shipping, focus on reducing sulphur emissions (Sulphur oxides - SOx) for ships by 85% and the impact that it will have on maritime investments on 2020. The IMO 2020 regulations establishes by the IMO (International Maritime Organization), will mark a tightening on polluting emissions in maritime transport, modifying the international legislation that requires that the fuels used by ships from 1 January 2020 must have a sulphur content of 0.50% m/m[135] against the past 3,50%. To achieve this, ships have to install scrubbers (or purification filters), with an average cost of $ 3-5 million (in May 2019 only 16% of the fleet of large carriers had adopted it) or use fuel with very low sulphurs as MGO[136] or use LNG. According to a Goldman Sachs study (May 2018) 5,000 ships could install scrubbers by 2025.

Maritime transport emits around 1,000 million tonnes of CO_2 annually and is responsible for about 2.5% of global greenhouse gas emissions[137]. Shipping emissions are predicted to increase between 50% and 250% by 2050, depending on future economic and energy developments. In terms of CO_2 emissions per tonne of cargo

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133 *ivi*, pg. 36, 37, 38

134 UNCTAD (2019), *Review of Maritime Transport 2019*, pg. 17

135 mass by mass

136 Marine Gas Oil

137 International Maritime Organization (2014), *Third IMO Greenhouse Gas Study 2014*, http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/Third%20Greenhouse%20Gas%20Study/GHG3%20Executive%20Summary%20and%20Report.pdf

transported in one mile, shipping is recognised as the most efficient form of commercial transport (the worst is air freight), but at the same time, although is necessary to have transport, we must face the challenges of climate changes and improve the shipping in a greener way, with less emissions[138].

Anyone who does not comply with IMO 2020 will be subject to penalties from the various state authorities, which vary according to jurisdiction and can even lead to the seizure of the ship.

Among the effects of the new regulation, it will be seen during 2020 if there will be an increase in prices in maritime transport and changes in the price of oil; among the benefits certainly the lower air pollution and the lower acidification of the oceans, with positive effects also on the human health with reduction of cardiovascular and lung diseases. The IMO will have effects not only on shipping carriers but also on refineries and global oil markets[139].

The additional costs that the companies will have to face, will also fall on consumers, but the benefit for the environment must certainly be put first, for the wellbeing of all humanity.

2.5 Two strategies compared

2.5.1 The Chinese strategy

We have seen so far how China has decided to launch the Belt and Road project for multiple national interests, especially related to trade. It is a development plan that includes the cultural and social focus for a minority part, and concentrates heavily on both internal and foreign policy, and therefore the geopolitical action. The need for energy supply, energy and food resources for the future, the widespread military policy in the world, the expansion of exports, improving trade and therefore infrastructure, connecting to new markets, opening up new ways of communication and making a "new economic colonization" of areas rich of resource and foreign industrial companies, are just some of the points that can be inserted between Chinese domestic and foreign

[138] SRM, Italian Maritime Economy (2019), *6th Annual Report 2019*, pg. 105

[139] Kuehne+Nagel (2019), *IMO 2020 Faq*, https://it.kuehne-nagel.com/it_it/trasporto-marittimo/faq-imo-2020/

development policy. All this combined with the desire to strengthen the Chinese internal currency (renminbi), develop the Eurasian and African less developed areas, and in general the opening to the world (especially with trade), are actions that China has decided to undertake since 1978, with a new foreign policy aimed at "opening to the world", which culminated in 2001 with entry into the WTO. China experienced a 200% increase in international trade levels in 2017, compared to 1978.

China as moved from a moderate and low profile foreign policy, to the desire to change the international order at regional and then global level, with an action aimed primarily at protecting China's national strategic interests. The maritime strategy of the "String of pearls" is therefore part of the Chinese geopolitical action, which focuses on the Indo-Pacific area and Southeast Asia, which goes from the South China Sea to the Red Sea (and then the Mediterranean), and which is also developing thanks to BRI funding. China aims to become the first world power in many areas and if on the one hand it has to face America, on the other in Asia it finds India as a great competitor with an increasing growth. The USA are most present in the Persian Gulf in Kuwait, Bahrain and Qatar, in the Bab el-Mandeb strait and in Singapore, while India has more influences in ports ranging from Madagascar to Port Blaid.

China on the other aims to control chokepoints and strategic ports such as Djibouti, Gwadar, Hambantota and Chittagong, along the route to the East, and can affect trade with repercussions also on the Mediterranean.

China tries to expand its foreign presence by creating loyalty and dependence of the countries, which get into debt trap to create infrastructures that will then serve China, and sometimes they struggle to make long concessions to Chinese companies to be able to pay back. Thus China takes hold and advances in controlling key points to world trade, especially along the East-West route, and which, as we have seen, are also concentrated in the Mediterranean[140].

We have seen how the Mediterranean has acquired more and more centrality also thanks to the investments in the area, and it will be even more central in the next 20 years, also thanks to the 21st Maritime Silk Road and the investments desired by BRI.

[140], Italian Maritime Economy (2019), *6th Annual Report 2019*, pg. 137-142

Fig. 17 The Chinese chessboard

Source: SRM, 2019

We have seen in the previous pages many of the Chinese investments in the area of the Mediterranean, but it is interesting to see how the Chinese strategy in the "Mare Nostrum" and MENA area, according to the SRM study center, could be compared to the game of chess[141].

- The two main chess or (King and Queen) are located in East Med and West Med, or Piraeus (mainly transhipment port) and Valencia (both transhipment and gateway). We have already said how Piraeus (67.5% owned by China) is fundamental for its central position in the Mediterranean, to manage the flow of goods to and from the Black Sea, the routes to East, and important for the Upper Adriatic (where smaller ships arrive after transhipment). Cosco has made + 10% presence in the Mediterranean in recent years also thanks to Piraeus, where the great carrier is based.
- 2 bishops (who move diagonally), which are Rotterdam and Abu Dhabi, and carry the goods inward. On the one hand Rotterdam, which is the basis for entry into the central European market (35% of Euromax Terminal is owned by Cosco) and on the other Abu Dhabi (e.g. Khalifa Port) for the entry and exit of goods, not just Oil, towards Arab markets that are increasingly diversifying their production.

[141] Panaro, A. (2019), SRM (Centro Studi sul Mezzogiorno) presentation at the convention "L'Italia, Genova e le vie della seta, VI Limes Festival, 10/03/2019

- 2 knights (move as an "L"), which are the Italian ports of Genoa and Trieste. On the one hand, the first important Italian port, Genoa, which can facilitate connections to Western Europe and Savona (which has already seen investments in Vado Ligure, which is confirmed to be the most important refrigerated hub in the Mediterranean for the landing and storage of the fresh fruit and vegetables). On the other side, in the Adriatic Sea, there is Trieste, which would become the gateway to the market in central Europe but above all in Eastern Europe. We will analyse the situation of Italian ports better in chapter three.
- 2 rooks that are fixed access points, one on the Mediterranean or Suez (Port Said), and on the other an access to the Black Sea, or Istanbul and Ambarli Port. The Euro-Asia Oceanogate joint venture (which includes Cosco Pacific, China merchants holdings international and Cic capital corporation) acquired, in September 2015, in Turkey, 64.5% of the Kumport terminal in Ambarli (investment of 790 million euros) and Cosco is part (with 20%) of the joint venture that manages the Suez Canal container terminal[142].
- There are other important paws, which are other ports where China has invested and is investing, namely those for example are Gateways port with a Ro-Ro services, Oil vocation, dry bulk and much more. Between the "paws" we can find certainly Bilbao, Antwerp (20% of Antwerp Gateway terminal was acquired by Cosco in 2004) and Hamburg (where Cosco's headquarter is located, and where China will build an automated container terminal of 700 thousand TEU). Other important investments have been done in Zeebrugge, Marseille and Malta, in addition to two important investments that, as we have seen before, are located in Israel with the ports of Ashdod and Haifa[143].
In the MENA area we can point out also investments for $ 3.3 billion for the creation of the new commercial port of El Hamadnia (Cherchell) in Algeria, that will be managed by Shanghai Port Group and build by Chinese companies, and investments also in Egypt, in addition to Port Said, also at Alexandria Port. In Turkey, China is investing not only in Ambarli but also in the terminals of Kumport (Kumport Liman Hizmetieri).
China is moving to control strategic areas of the world in areas ranging from the Mediterranean and MENA to Asia, passing from Africa, with agreements and

[142] *Ibid.*
[143] De Forcade, R. (2017*), La Cina alla conquista dei porti d'Europa*, Il Sole 24 Ore, 25/07/2017, https://www.ilsole24ore.com/art/la-cina-conquista-porti-d-europa-AEZVDF3B

investments not only from the economic point of view (from goods to energy), but also on the political and military ones; particular attention should be paid especially from the geopolitical point of view over the next few years.

2.5.2 The European Union strategy

Since the Chinese government formally launched the Belt and Road Initiative, starkly opposite positions have been seen within European countries to take hold.

On the one hand Eastern European countries and the Balkan area[144] are more favourable to an initiative aimed at developing the connections and infrastructures of their countries, an average favourable position took place in the Mediterranean area (also from Italy), and instead a more cautious positions is the one by the great powers of Central and Northern Europe with Germany and France leading.

As we have said Europe is the natural destination of the majority of the Belt and Road land corridors (3) and maritime routes (2). In EU there are 14 countries that have already signed up the BRI including Bulgaria, Czech Republic, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Luxemburg, Poland, Portugal, Romania, Slovakia and Slovenia. But between the main founders and greater economic powers in the EU there are still many doubts.

The EU Commission has expressed doubts about the BRI project, objecting that rather than an initiative to increase connectivity it is primarily a Chinese penetration strategy which, in order to obtain the favour of the EU, must be consistent with the related European projects transport infrastructure and comply with European standards. Brussels has also raised questions about China's compliance with European standards (e.g. in fields such as occupational safety and workers' conditions).

The EU's attitude of partial opposition to Chinese projects seems to hide the willingness of the economically stronger European countries to dictate their political line once again. Given that the BRI appears to be set up so that the countries of southern Europe (through their ports) and of the East (through railway lines), become the gateway for Chinese goods into the EU, this would be at the expense of the ports of the Northern Europe and some areas of central Europe, which would like to remain the access to the

[144] Also thanks to the "16+1" initiative

European market[145]. For this reason mainly Germany, Belgium and the Netherland have doubts on the initiative: they are scared to loose their leading position, in maritime trade.

To try to give a unified response to the BRI, in September 2018, the EU adopted the "EU Strategy on Connecting Europe and Asia", which is based on wanting a connectivity that is efficient, sustainable, global and based on rules. The action should take place with concrete policy proposal and initiatives for increase connectivity between the two continents, including through interoperable transport, energy and digital networks.

The EU based its action on asking for a connectivity based on sustainable goals, with environmental and social standards, with adequate cost-benefits, that promote market access and must be comprehensive, so movement of people, goods, services and capital across the borders.

The EU has defined its plan for the connectivity policy within the Union, but also with cross-border connectivity, that is based on a clear Trans-European Network (TEN), that identified well priorities and standards to adopt. In the EU, the investment in the Trans-European network for transport is estimated to require 1.5 trillion euro in the period 2021-2030, and will be based on some of the value of the EU, so a circular economy, a sustainable development with low greenhouse gas emission (reduced in the transport sector by 60% by 2050), a fair competition, innovation and digitalization, security, and respect of standards, and social and individual rights.

The Asia-Europe connectivity plan does not include only the transport links by air, sea and land, but also energies flows, from LNG to electric and renewables resources, to digital network that goes from cables to satellites, to cultural connectivity with academics, students and researchers exchanges. As we have said the connectivity must be internationally rules-based, for example on respecting technical standards, non-discriminatory and level playing field for enterprises, with transparent investments.

As far as sea transport is concerned, the EU sustains the IMO policy for a clean and sustainable shipping, with use of alternative fuels, and boosts to develop maritime trade agreements for facilitate to regulate maritime traffic. The EU wants also to improve the

[145] See note 139

digitalization on shipping, simplifying administrative formalities and ensure maritime security in all the way possible[146].

It will be necessary, to better develop the connection plan between the two partners, to deepen strategic plan synergies between the Belt and Road Initiative and the EU's Trans-European Transport Network's policy. There must be a strategic cooperation for implement the infrastructure corridor development, to identify problems and bottlenecks, define priorities and do the best for interlock the land, and maritime corridors between the two (on railway, maritime and through the Balkans). In addition should be defined common standards for all transports ways, improve the quality of infrastructures, also thanks to digitalization, green and low-carbon transport, and use of multimodal transport connections[147].

The EU and China seems to agree on the majority of the points analysed, as was recently affirmed in the 21st EU-China Summit in April 2019[148], in any case, doubts remain by the EU, for example, regarding investments, on the types of Chinese financing, on the lack of public procurement and reciprocity and there is in general a criticism of the Chinese economic model.

Predicting the effect of the BRI on the transport network of the next decades is particularly challenging, as there is no a clear definition or programme for the BRI. There is no plan that defines precisely which investments should be made and when they should be made, in the long term. There are the many ideas and plan, many bilateral agreements between countries and works that are planned or already taking place, which should be insert within the BRI, but the lack of clarity and transparency is certainly a great limitation in order to have a clear dialogue with the EU, and to establish together some common goals. Having no clear long-term investments, it becomes even more difficult to predict how freight traffic and infrastructure capacity will evolve in the future.

The volume of container shipping traffic westbound from the Far East to the EU grew by 235% between 1996 and 2016, equivalent to an average annual growth of over 6.2% per year.

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[146] European Commission, Joint communication to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank (2018), *Connecting Europe and Asia – Building blocks for an EU Strategy*, Brussels, 19/09/2018

[147] European Commission (2018), *EU-China Connectivity Platform Short-Term Action Plan*

[148] To know more have a look at European Council (2019), *EU-China Summit Joint statement*, Brussels, 09/04/19

For maritime freight, it is estimated by an analysis of the European Parliament, that the total westbound and eastbound trade flows between Far East and the EU, were just over 16 million TEUs in 2016, and it is forecast that the total two-way freight traffic will be around 40 million TEUs by 2040. There will be a growth by 80%, equivalent to an average annual growth of 2.5% per year.

The majority of the flow is in any case form the Far East to EU, almost the double than the opposite way, so a large number of containers returned empty in the eastbound direction: here there is a great opportunity for the EU to rebalance the situation increasing the exports[149].

The TEN-T European policy has defined the fundamental TEN-T Core Network Corridors[150] that are playing, and will play, a key and strategic role in the transport in Europe, aimed at connecting the main nodes and core cities of Europe. There are nine Core Network Corridors, which were selected in 2013, that all originate and have destination, or transit, through ports.

The main nodes (cities, ports, airports, interports) are connected via multimodal arcs (road, rail, waterway), so as to connect the various European regions and look beyond, opening up to the world.

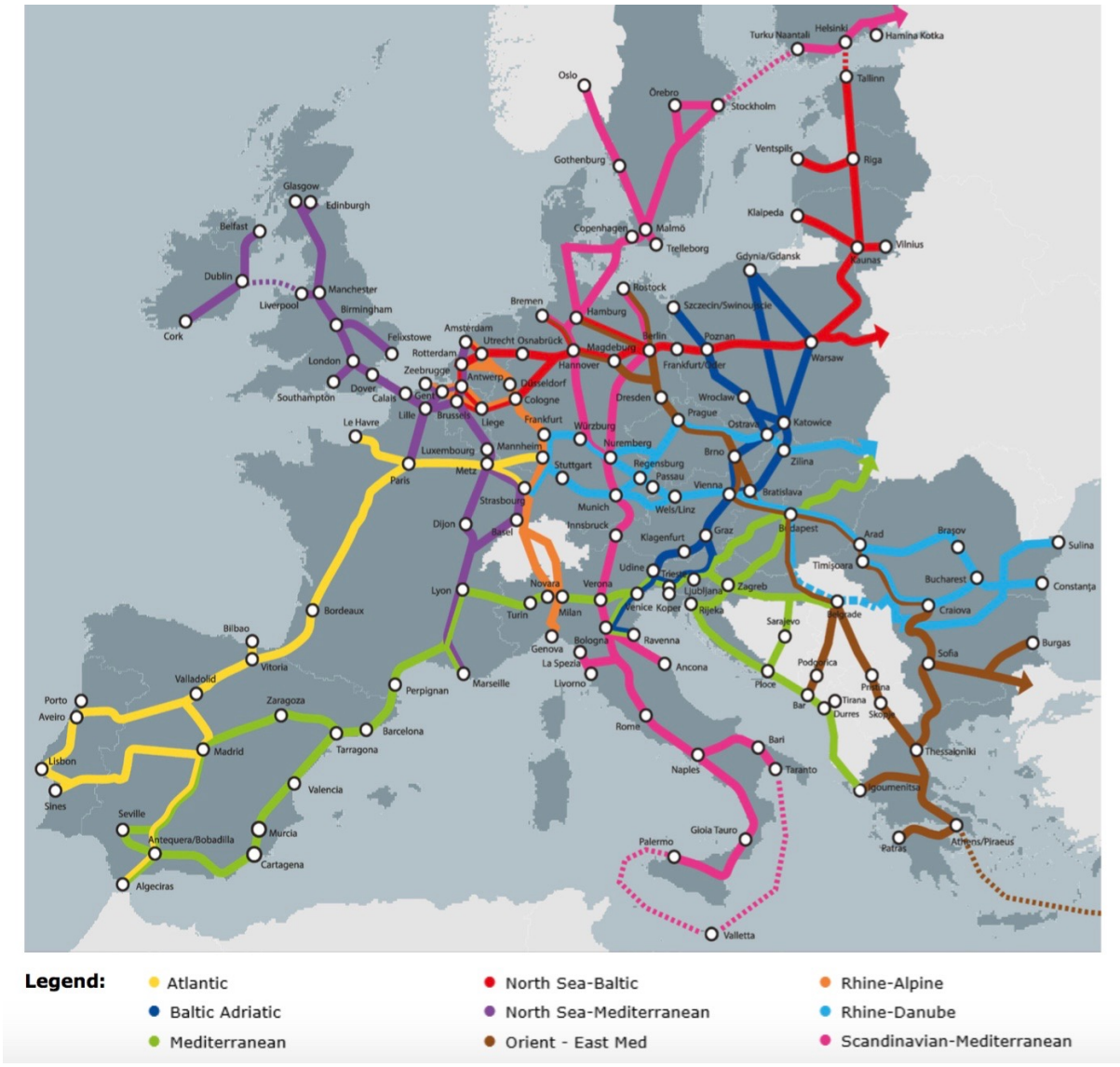
The construction of the Ten-T networks is also aimed at balancing a situation of imbalance between the ports of Northern and Southern Europe, especially in favour of the Mediterranean area. The idea is to open up to the non-European market and therefore move from a vision of "Europe as a single market" to a "Single Europe in the global market"[151].

[149] Directorate General for Internal Policies of the European Parliament, Policy Department for Structural and Cohesion Policies, Transport and Tourism (2018), *Research for TRAN Committee, The new Silk Route – opportunities and challenges for EU transport*, Ch. 2-3

[150] The nine core network corridors are based on three pillars: enhancing cross-border connections and removing bottlenecks, integrating different transport modes, and promoting technical interoperability

[151] Costa, P., Maresca, M. (2013), *Il futuro europeo della portualità italiana*, Marsilio, Venezia, pg. 58, 59, 90-94

Fig. 18 TEN-T Core Network Corridors



Source: European Commission, 2013

On the TEN-T core network, we can see that there are ports on the Black Sea, Mediterranean Sea (including the Aegean, Adriatic, Tyrrhenian and Balearic Seas), North Atlantic Ocean, North Sea and Baltic Sea, that provide a wide range of access points for shipping from outside the EU.

Containers carried by sea would first pass or call from Suez to ports in Southeast Europe, such as Piraeus, or in the West (as Valencia) where they could be transferred to rail for travel further north. However, due to the additional costs that rail transport would entail, it would therefore be more cost-effective for the containers (mainly of medium-low goods value) at Piraeus to continue by sea to ports in the north Adriatic Sea, such as Venice and Trieste in Italy, Koper in Slovenia and Rijeka in Croatia.

The plan for the future is to continue to transfer by air the highest-value goods, some other medium-high value goods by rail, and the medium-lower value goods would arrive as far possible by sea, so to the ports in the North of the Adriatic and Tyrrhenian Seas, and then transferred to rail at the first opportunity, directed to their final destination. The transit will be on one side from Trieste-Venice through a connection with the Scandinavian-Mediterranean Corridor (via Brenner) or Adriatic-Baltic Corridor (via Tarvisio); on the other from Genoa in connection with Rhine-Alpine Corridor (via Gotthard) or the Mediterranean corridors (via Frejus)[152].

In any case, in the next few years there will be no drastic drop in the flows to the ports of Northern Europe that will continue to remain central, in fact unless there are large investments in other great ports, there are currently too many capacity limits that prevent a drastic change in the commercial transport flows from ports of Northern Range to Italian or North Adriatic ones. There are opportunities to grow, but we must see them, to exploit them.

Among the recommendations that are made on the analysis of the EU Parliament there are:

- That the EU should seek greater clarity on the BRI's future plans, so to better plan the connection of specific TEN-T and BRI corridors (as the North Sea – Baltic Core Network Corridor of the TEN-T and the New Eurasian Land Bridge Corridor of the BRI, on the rail point of view).
- Adapt/review the TEN-T policy once BRI investments are defined.
- EU and China should define among other things, common standards, investments agreement and reciprocity of access to public markets.
- Establish a framework for the EU Member States to screen foreign direct investments in the European Union, and protect the strategic assets and EU intellectual property from being captured by competitors[153].

Within the trans-European transport networks (TEN-T), the completion of the Core Network is scheduled for 2030, while the entire TEN-T network (core + comprehensive) by 2050.

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[152] Costa, P. (2019) presentation "The interlocking of the Euro-Asian routes. Linking the Chinese BRI with the European TEN-T" at the 3rd Belt and Road Summit, Trieste, 20-21 November 2019

[153] Directorate General for Internal Policies of the European Parliament, Policy Department for Structural and Cohesion Policies, Transport and Tourism (2018), *Research for TRAN Committee, The new Silk Route – opportunities and challenges for EU transport*, Ch.5

Today the priority at European level is to ensure the continuity of the corridors, creating the missing connections, ensuring connections between the different modes of transport and eliminating the existing bottlenecks.

The EU regulation n. 1315/2013 on the UE guidelines for the development of the TEN-T, provides that, by 31 December 2023, the EU Commission should carry out a review of the implementation of the core network, evaluating, among other things, the implementation of the works, the changes that have taken place on flows of people and goods, new investments in infrastructure, in light of the new political, economic, social, technological and environmental challenges that arise.

The revision of the Ten-T regulation is currently under public consultation, followed by an evaluation study and other targeted consultations, to arrive at the proposal for a revision of the EU Commission by the first half of 2021.

The infrastructural policies of the member states must conform to the European ones in order to have a common vision. The problem always remains that of financing, and the possibility of having European funds, such as that of the FESR (European Regional Development Funds) of the Invest EU, of the BEI or that of the CEF (Connecting Europe Facility) directed to one's own country, can have a great influence on the infrastructural development of a state. For the period 2021-2027 CEF funding is expected for around 42 billion euros (30 billions in transport), and so far the distribution of funds has been made with a 7 to 1 criterion in favour of land infrastructure at the expense of maritime infrastructure. This is good for Germany, but certainly not for Italy, which with 8,500 km of coasts, “lives on the sea” and must make of ports its strengths. Rebalancing the funds a little more on the maritime side would be appropriate for the Mediterranean countries and in the light of the BRI would be important, given also the rediscovered centrality of the maritime nodes. Among other things, it becomes important, not only for Italy, but for many European countries, to develop better connections with North Africa and the Black Sea, to widen the motorways of the sea and short-range shipping.

China does not know who to talk with to at European level, because each state prefers to manage foreign policy autonomously, not as a single Europe. In a moment of internal crisis of the EU given by Brexit, it is necessary to join forces to give a strength response outside, balancing development and growth opportunities with risks and uncertainties. If European countries act in foreign policy with a single voice, they can bring many things in their favour, for example on intellectual property, the protection of strategic

assets, access to the foreign market and commercial agreements on the reduction of duties.

It becomes increasingly necessary to act together, because together we are stronger and have more bargaining power with partners as large as China. It is necessary that we not only look at individual national interests, but that we act in a broader and longer-range common vision.

2.5.3 The necessary convergence of the two strategies

From the 2000s onwards the constant growth of traffic from the Far East to Europe has seen a strong growth and development of the European ports, but especially of the Northern Europe ones, with intermodal connection to the markets of central Europe, and a minor development of the ports in the area of Southern Europe, bordering the Mediterranean, especially of the Italian ones, because Greece (with Piraeus) but also Spain (with Valencia, Bilbao, Barcelona), and France (with Marseille), have grown in a different way. In a moment in which traffic from the East continues to increase, and with transhipment traffic becoming increasingly important, adequate planning of the port policy, that our country should undertake, is increasingly essential.

We must not be surprised that the ports of Northern Europe are better organized than the Italian ones, but to make a comparison, the port of Rotterdam alone has handled many more containers than all the Italian ports put together have done.

The port of Rotterdam in 2018 recorded a growth of +5.7%, confirming its leadership in Europe, with 467.4 million tons of movement. The import traffic has slightly exceeded that in export: 7,571,434 TEU (+5.8%) against 6,941,227 TEU (+5.1%), for a total amount of 14.512.661 TEU.

There is a grown above all of the transhipment service, but also on the container traffic and liquids bulk such as LNG and biomass[154]. If you think that the port benefited from investments for 408.1 million euros, or almost double the previous year, especially for rail links, viaducts and roads construction, it is clear that for Mediterranean competitors it is very difficult to take traffic away from a giant in continuous growth.

[154] Redazione Trasporto Europa (2019), *Record di container al porto di Rotterdam nel 2018*, trasportoeuropa.it, 14/02/2019, http://www.trasportoeuropa.it/index.php/home/archvio/14-marittimo/19600-record-di-container-al-porto-di-rotterdam-nel-2018

If we compare Rotterdam with the entire Italy, the result can only be negative: Rotterdam alone has moved 14.512 million TEU and Italian ports together have moved 10.284 million TEU in 2018, with a decrease of 2.4% compared to 2017. Despite the excellent results of Trieste (+17.7%) and Naples (+13%) continues the crisis of the transhipment ports such as Gioia Tauro (-5.9%), Cagliari (-53.2%) and Genoa (- 0.5%).
The ports of the Northern Range have increased their traffic by + 3.3%, with 44.3 million TEUs handled, and in addition to the growth of Rotterdam (5.7%), there is also that of Antwerp (6.2%) and Zeebrugge (5%)[155]. Mediterranean ports are also growing because (excluding Italian ports) have handled a total of 27.6 million TEU, with an increase of 8.8% in 2018. Particularly noteworthy is the growth of Piraeus (18.4%, 4.9 mln TEU), first in the Mediterranean, and Barcelona (17%, 3.4 mln TEU), Tanger Med (4.8%, 3.4 mln TEU), Valencia (7.3%, 5 mln TEU) and Algeciras (8.7%, 4.7 mln TEU).
Between the ports in southern Europe, the first Italian one is Genoa at the 9th place, with 2.6 million TEU. The top 5 ports in the Mediterranean grew by 11%, the Italian ones remained substantially stationary, despite the fact that the Suez Canal recorded a double record for the quantity of ships and goods transited[156]. It is clear that the Italian situation is going against the overall trend compared to what rival ports do.
We have seen how the East-West route has grown more and more in recent years, also thanks to the importance given by the Suez Canal: the traffic for Suez recorded + 120% growth from 2001 to 2016, of goods in transit and about 75 % of these are attributable to Far East - Europe routes. With increasing traffic and routes, the relevance of the Mediterranean basin in the field of transport and maritime logistics has increased, and all the countries bordering on its shores want to take advantage of a moment of strong growth, investing in development of its port system, aware that this represents a key element for the economy and for development. But not all states are investing homogeneously or equally in ports, it is clear that there is a delay for example of Italy on the issue.
If once the ship enter the Mediterranean, makes a stop at the transhipment ports of Piraeus and Valencia (at the behest of the Chinese companies, that are owner of

[155] Redazione Informazioni Marittime (2019), *Traffico container, cresce nel Med ma cala in Italia. Lo studio Fedespedi*, informazionimarittime.com, 08/03/2019, https://www.informazionimarittime.com/post/traffico-container-cresce-nel-med-ma-cala-in-italia-lo-studio-fedespedi

[156] Paudice, C. (2020), *Bruxelles vuole tassare i porti italiani e aprire la strada alla privatizzazioni*, Huffington Post, 26/01/2020, https://www.huffingtonpost.it/entry/bruxelles-dichiara-guerra-ai-porti-italiani_it_5e202feec5b674e44b92eebb

terminals, so less costs for them), then can reach gateway ports for the final destination markets. But, if as we have seen, in the East and West Med that there are example of investments, in port infrastructures and modernization, that also in the North Africa are taking place, with Egypt and Morocco as an example, with the great investments made in Port Said and Tanger Med, (also thanks to the development of SEZs that have attracted foreign investments), Italy is not competing at the same level.

If on one side Italy can be seen as the natural geographical destination of the Silk Road maritime trade routes, and also Europe can be convinced to invest on the Italian hubs, on the other the Italian policy has not been able in the past years do define a clear policy on how to act, especially in the modernization of ports, or with strong investments in infrastructures, and so as a consequence to convince Europe to invest in the Southern Europe hubs.

We have seen how the development of the TEN-T transport network, could be such a positive aspect for Italy, that is crossed by four of the nine transport corridors, that made it able to be connected by 2030, with quite all-around Europe.

If the new EU policy wants really to be directed in the sense of be more greener, the solution of choosing the shorter maritime routes, reducing the flows to Northern EU Ports, and so investing in Southern EU ports, especially through the Italian northern ports, the plan should be valid and to be pursued with conviction also by our national policy.

As we said in the previous pages it becomes essential that our country equipped ports with cutting-edge and innovative technologies, enough long docks, enough deep canals, road and rail connections, SEZs and everything needed for the movement of goods for the next 10-20 years challenges.

For the necessary interlocking of the Chines Maritime Belt and Road Initiative and the EU Trans European Transport Network, in the Italian territory, the EU and Italian policy should in the next years face the challenges and problems already present in the Northern Italian ports, and create the necessary global network.

If on one side Venice and Genoa represented at the beginning the “entrance door” to European market by the maritime Silk Road, now the focus is more shifted on Genoa and Trieste hubs, that can host larges vessels until 16000 TEU, in any case not sufficient for compete neither with northern EU ports nor with other Mediterranean competitors.

The advantage that Italy must exploit is the proximity to the European market and the connections, which, albeit to a lesser extent than in Northern Europe, are present. Connecting the port of Piraeus or Valencia with central Europe, France, Germany, Austria and many states in Eastern Europe is difficult and expensive. To date, the transhipment of goods from large oceanic ships arriving in Piraeus to smaller ships (feeder) that connect to the Italian ports of Genoa or Trieste, and then leave towards the final designation through the various TEN-T corridors seems more convenient (with the necessary development of the existent railways connection, for direct lines and for host train long enough, 700-750 meters). Even more convenient for our country would be that the goods arrived directly, via Suez, in Trieste or Genoa, but as we have seen the infrastructure limits prevent today this direct line, which, however, would be more convenient both as costs and as benefit for the environment (given lower emission, than using many smaller ships, and less days at sea).

European policy must decide how to direct its maritime transport action, choosing how to develop market access from ports. The connections seem to be defined as we have seen, but the EU will redefine and restructure them: it is precisely in the redefinition of the core and comprehensive network concepts that Italian politics must exert pressure and conviction that the path of investment in the shortest and most ecological way is the winning one.

On the one hand there is the possibility of equipping a hub in the upper Tyrrhenian with the ports of Genoa, Savona, La Spezia and perhaps even Livorno, for the access of goods directed to Central and Western Europe, thanks to the connections with the corridor Rhine-Alpine that from Genoa allows goods to reach Amsterdam (passing, among others, through Basel, Strasbourg, Mannheim, Frankfurt and Dusseldorf) and the Mediterranean corridor that goes from Algeciras to Budapest (and that passes through Turin, Milan, Verona, Venice and Trieste). On the other, the ports of the North Adriatic could equip themselves, especially Trieste with Venice, Ravenna (and perhaps in a more European vision including Koper and Rijeka) taking advantage, in addition to the Mediterranean Corridor that we have just mentioned, of the Scandinavian-Mediterranean corridor that from Palermo arrives in Helsinki (passing through Rome, Innsbruck, Munich, with the

possibility of splitting to reach Hanover, Copenhagen, Oslo) and the Baltic-Adriatic corridor, towards Eastern Europe, which from Ravenna allows to reach Poland[157].

The lack of infrastructure together with the slower handling times of goods compared to many European competitors, the customs bureaucracy, the need of free zones for manufacturing, and many other things, are some of the various reasons which, as we will see, are a limit to the fact that the large companies could choose the north Italian ports as gateway port for the final markets. Although it is more agreed that from a geographical point of view, due to the proximity of the route, is more convenient to pass through the Italian ports, on the other the laws of economics and money, together with political choices, push the large carriers to favour other ports that are more advantageous to them. On this we certainly see a limit of the political action both of Italy and Europe, who are struggling not to be able to make a joint decision on how to manage the community transport and port policy. Single ports should certainly be selected and developed, dived for areas of the country (4-5 large hubs, ranging from the North Adriatic to the North Tyrrhenian, and in the South Adriatic and South Tyrrhenian), around which to organize a unified planning of intent. The collaboration between ports and the union of services becomes a key to be able to compete with large and modern ports; have few ports equipped to accommodate large ships that act as transhipments, and a network of minor gateway ports, which therefore speed up door-to-door transport in total, is the key for trying to compete with the Northern Range. Investments in individual hubs must be oriented, (it is in fact unthinkable to invest equally in all the major Italian ports), and priorities must be established, with hubs that should grow for a single or a few types of goods handled (some containers, some bulk, some liquid and so on) with few transhipments and various gateways ports.

The direct route from the Mediterranean ports would also be the most "ecological" one, which would go in the direction that the new European policy seems to want to take.

The new president of the European Commission Ursula von der Leyen, has presented the "Green deal", that is an overall plan of one thousand billion euros of green investments for the next ten years. The draft plan foresees that at least 25% of the EU budget is destined for green projects, for a amount equal to 485 billion euros until 2030, with another € 115 billion that will come from national co-financing and the remaining

[157] To know more have a look at Minister of Italian Infrastructures and Transport (2018), *European Ten-T corridors*, 16/02/2018, http://www.mit.gov.it/node/5335

funding that will come from the European Bank for investments and private investments through the special plan, InvestEu. The capability of the Green Deal is finally completed precisely by the one hundred billion of the energy transition fund (Just Transition Fund) until 2027 that supports the transition to a green economy, which should lead to a progressive reduction in the consumption of fossil fuels and a transition to lesser pollutants technologies in many sectors[158].

The goal of the EU Commission is for a zero carbon Europe by 2050, with a desire to reduce CO_2 emissions by up to 50% by 2030, with reduction especially in the transport sector emissions. Freight transport by ship is responsible for approximately 3% of global greenhouse gases. In addition to the adoption of the IMO 2020 on the reduction of sulphur emissions (mainly due to the diesel used by ships), the next step is to reduce the CO_2 emissions generated by ships, also thanks to the use of different fuels such as LNG and hydrogen.

According to the "Report on the Carbon Footprint" of the Port System of the Upper Tyrrhenian Sea, it is noted that CO_2 emissions can be significantly reduced through the use of alternative fuels such as Liquefied Natural Gas. In the report it is in fact underlined, for example, that if all the ships of the port of Livorno used LNG as fuel, there would be a 20% reduction in CO_2 emissions in the port, while those of SOx (Sulphur Oxides) would tend to cancel[159].

EU Member States must encourage the use of alternative energy sources and promote the reduction of emissions of atmospheric pollutants by the shipping sector; large transport companies such as Maersk have already undertaken to develop ships that move for example with hydrogen engine in the coming years.

If you think that 85% of all emissions from ships are generated in the northern hemisphere of the world, urgent action is needed by shipping companies, port operators and politicians, especially in Europe, to find an alterative solution, also on the selection of the less polluted routes.

The freight relations existing between Asia and Europe, through Suez Canal have been investigated, by a research of the IUAV University of Venice, and the results shows that

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[158] Redazione Il Fatto Quotidiano (2020), *Green deal, Ursula von del Leyen al Parlamento Ue: "Negli investimenti priorità alle regioni che affrontano le sfide più grandi",* 14/01/2020, https://www.ilfattoquotidiano.it/2020/01/14/green-deal-ursula-von-der-leyen-al-parlamento-ue-negli-investimenti-priorita-alle-regioni-che-affrontano-le-sfide-piu-grandi/5669302/

[159] Casale, M. (2019), *Un Green New Deal per i sistemi portuali*, portnews.it, 12/09/2019, https://www.portnews.it/green-new-deal-per-sistemi-portuali/

Mediterranean and Black Sea Ports are globally performing better than Northern Sea Ports in terms of energy consumption, transit time and CO_2 and other GHG[160] emissions. The CO_2 maritime emissions related to maritime movements from Port Said to the European ports shows that the emission level to reach the North European ports is two time and half bigger than Mediterranean ports. Instead if we consider the CO_2 railway emission, from Antwerp and Venice ports, (without taking into consideration maritime route), the result put in evidence a indifference emissions area in the middle of Europe.

The main results of the analysis on the shipping side, shows how there are specific convenience areas to inland destination via Genoa, for the area between Le Havre and Antwerp and almost the whole of the French territory; and via Venice, for the almost whole part of Germany, a part of Poland, Czech Republic, Austria, Switzerland, Slovenia and Croatia. While the North European ports have showed their non-convenience for any inland European destination by the CO_2 emissions point of view[161]; but we know that for the carriers the decision of choosing the port of Northern Europe is for sure not linked to the decision of reducing gas emission, but for their development attitude, specific characteristics as connection to the hinterland, reduction of port costs, good internal and logistic transport, with all these that lead to an increase in the scale of the activity that has also reduced the market flows from European competitors[162].

The lack of internationalization of external costs related to polluting emissions, prevents today from taking note of the greater environmental convenience of a supply from the South Europe (so from the Mediterranean), of European markets for goods coming from the Far East[163]. This market failure of non-internalizing external costs, does not allow the private convenience (of the carriers, that prefer their own interests) to coincide with the collective well-being (of greater efficiency and environmental sustainability).

While it is true that the ports of Northern Europe such as Rotterdam are evolving to have less and less impact on greenhouse gas emissions, on the other it is evident that a forward-looking European policy, in the direction of a greener and cleaner Europe, should favour routes with access from Southern Europe. The perspective of possible privatizations that could occur in the future in Italian ports, could also incentivize large

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[160] Greenhouse Gases

[161] SoNorA (2010), *New EU Freight Corridors in the area of the central Europe*, Research Unit "Transport, Territory and Logistics" (TTL)-University IUAV of Venice, 2010, https://www.port.venice.it/files/page/studiosonoraco2.pdf

[162] Costa, P., Maresca, M. (2013), *Il futuro europeo della portualità italiana*, Marsilio, Venezia, pg. 102

[163] *ivi*, pg. 59

companies such as MSC or Maersk to invest in our country, perhaps following a line of environmental sustainability as requested by Europe, which would be the most rational from many points of view.

Over the course of this paragraph we have seen how the two Chinese and European strategies have two different visions from multiple points of view, but they are not incompatible. There are certainly points of union, and if there is a European political will to rebalance the situation between the ports of Northern and Southern Europe, there is also a possible advantage for our country. What is certainly clear is that if on the one hand China manages to act according to a clear line of intent, as "favoured" by a unidirectional government regime, on the other the European Union must find a compromise solution between 27 members states, and setting objectives and action strategy is more and more complicated, especially being able to keep everyone satisfied.

In any way despite the differences, it is certainly evident, that the different strategies of the EU and China are together creating an increasingly widespread global transportation network, which will inevitably be destined to join in various nodes. Be able to match infrastructure investments with the maritime routes, becomes essential for the development of a network that will hopefully be as greener as possible in the future, and that looks to the community interest rather than to individual interests (both of operators and countries).

Chapter III

The Italian case

3.1 Italy-Asia export

SACE Simest[164] forecasts, at the end of 2019, estimate that there will be a slowdown of Italian exports (+3.2%) in the period 2019-2022, but with growth opportunities concentrated in the countries of the Asia-Pacific area, in addition to the well known China and India markets, some of the main ASEAN countries (Indonesia, Malaysia, Philippines, Thailand and Vietnam) are experiencing a good phase of development: these geographies will see their GDP increase at higher rates, on average, to 5% in the three-year period 2019-2021, generating new opportunities for business that Italian internationalized companies could be able to grasp[165].

Among the Asian countries, China, Japan, India, Malaysia and Vietnam are the most promising for Italian exports. Among the various products, sales of investment goods and, in particular, machinery and means of transport are expected to slow down, while growth beyond all expectations instead of sales of products in the pharmaceutical and food sectors[166].

Again according to SACE, the majority of Italian exports (which are confirmed to be the engine of the economy for our country, and an important influence of GDP), are concentrated mainly in the EU countries (56.3%), in the American continent for 13.2%, in European non-EU countries for 10.5%, in Asia for 10.2%, in MENA for 6.6%, in Sub-Saharan Africa 1.2% and in Oceania and other territories for 2%. There are therefore great growth opportunities in non-European countries, especially in Asia where China, India and the ASEAN area together represent half of the world population and 36% of global GDP, all with growth rates above 5%.

[164] It is a joint stock company of the Italian group "Cassa Depositi e Prestiti", specialized in the insurance-financial sector.

[165] SACE Simest (2018), *Rapporto Export 2018 - Keep calm & Made in Italy*, pg. 45

[166] SACE Simest (2019), *Rapporto Export Update 2019-2022*, update: December 2019

According to the European Commission, Europe and China are two valid trading partners, with China exporting 375 billion euros to Europe, and Europe exporting 198 billion euros to China in 2018, with 80% of freight exchanges that takes place by sea.

The Italian Ministry of Economy has confirmed that China has become over time an increasingly important trading partner for Italy, with the overall exchange between countries exceeding 43 billion euros in 2018, the year in which Italy has confirmed itself, due to Eurostat data, as fourth supplier of China, among the European States. China is the ninth destination market for our exports and the first on the Asian continent. The Italian export to China in 2018 was just over 13 billion while the import from China of about 30 billion euro, with overall Italian exports that fell by -2.4% compared to the previous year and imports from China which instead grew by 8.2% compared to 2017.

According to the ICE[167], there are about 1,700 Italian companies in China, with over 150,000 employees and turnover of around 22 billion euros, thanks to the driving force of "Made in Italy" products such as fashion, agri-food and instrumental mechanics, but also the environment and sustainable energy, sustainable urbanization and smart cities, infrastructure and transport and space technologies.

To date, the economic-commercial relationship between the two countries is mainly based on the bilateral Global Strategic Partnership signed 15 years ago, which was further strengthened with the Memorandum of Understanding signed in March 2019 on collaboration in the scope of the BRI. The Belt and Road Initiative can be a strong driving force for Italian exports because it includes, among the various agreements signed, for example one between ICE and Suning on the promotion of Made in Italy products and the Italian lifestyle in China, or another interesting agreement aimed at speed up customs procedures between the two states, with special collaboration between the port of Shanghai and the Italian ports of Trieste, Ravenna and Venice. Other agreements aimed at promoting the entry of Italian products into the Chinese market are more concentrated in terms of infrastructure (e.g. one between the Port System Authority of the Eastern Adriatic Sea and the Chinese Group China Communication Construction Company), aimed at improving connectivity and to facilitate the flow of goods and, among other things, the access of Italian SMEs to China[168].

[167] Italian National Institute for Foreign Trade

[168] Ministero dell'Economia e delle Finanze (2019), *I rapporti tra Italia e Cina*, mef.gov.it, 09/07/2019, http://www.mef.gov.it/focus/article_0057.html

As we have said in previous pages, trade relations with Japan are very good, growing strongly compared to 2018, with a + 17% of Italian exports marked in mid-2019 and with an export estimate of 6.7 billion euros for 2019. Very positive data for the export of food and textiles as well as machinery and means of transport are sawing, all thanks above all to the entry into force of the EPA free trade agreement between the EU and Japan which has seen a saving of € 1 billion in duties for European companies; a great advantage especially SMEs, which represent 83% of Italian companies that export in Japan[169]. Excellent opportunities are expected for the export of Italian products to Japan, with estimates at 8.4 billion euros for 2022.

The commercial exchange with India instead is around 8 billion, with an Italian export in 2018 of about 4 billion in strong growth (almost 10%) compared to the previous year, especially for instrumental mechanics (machinery), intermediate goods (such as plastic, chemicals products) and consumer goods (textiles, food), with good growth prospects estimated at 5 billion exports for 2022.

As far as ASEAN countries are concerned, it is a growing market, but with great differences within it, it involves 10 countries with almost 500 million people (around 10% of the population of the earth), and represents an export of € 8 billion for Italy (35% machineries). If you think carefully, it is the same export that Italy does normally towards a small EU country, so it is very little related to a large market like the ASEAN one; Germany has twice our export to the ASEAN countries. Among these countries we find Malaysia where Italy exports 1.2 billion and where there are 70 Italian companies and Vietnam, where Italian exports are 1.3 billion (in 2018). The latter with growth prospects at 1.7 billion in 2022 has growth and developed mainly thanks to various agreements that the EU has made with Vietnam (such as the one on the technology field). There are therefore many Asian countries besides China and with great development potential, but for all of them a connection with the various countries is needed; therefore connectivity is the basis of growth and development both for them and for us.

International trade is in a period characterized by strong uncertainties and volatility, ranging from protectionism to a slowdown in global value chains (e.g. in intermediate

[169] Carrer, S., Cavestri, L. (2019), *L'accordo con il Giappone mette il turbo all'export (+17%)*, Il Sole 24 Ore, 23/08/2019, https://www.ilsole24ore.com/art/l-accordo-il-giappone-mette-turbo-all-export-17percento-ACsK8kf

goods). China was in the past only an assembly and export hub, now it has increased the quality of its products, with less reliance on the import of intermediate goods. In the last 10 years Italy has seen uninterrupted growth in exports, which have grown by 62.7% from 2002 to 2018, also thanks to the presence of the EU, where Italy exports almost €1 billion a day. But if on the one hand Italy in recent years has decided to focus heavily on quality (which has allowed us to partially withdraw from international competition), on the other hand, however, there has been no growth in the quantity of equal steps, which is grown by only about 5%. It is increasingly necessary to diversify and open up to new markets; today Italy exports half to Europe and most to Germany, but in Asia there are new markets waiting for our businesses. One of the limits of Italy is surely given by the fact that our companies are mostly SMEs, which therefore have difficulty in taking the risks of going out to distant markets, while the big multinationals, which are more present in other European countries, can afford it[170].

Although international trade is moving further East, Italy still remains the 8th exporting country in the world and the 11th importer. In the ranking of importers, China is 2nd and 1st for exports, with a strong Asian presence in the top 20 of import-export countries in general. Among the world exporters ranking we find Japan 4th, South Korea 7th, Hong Kong 9th, Singapore 15th and India 17th. Among the importers Hong Kong, South Korea and India respectively 8th, 9th and 10th, Singapore 16th and Vietnam and Thailand 19th and 20th in the world[171].

For Italy, total exports are around 463 billion euros (2018) and have a significant impact on the regional GDP of several Italian regions, more than 30% for Piedmont, Lombardy, Veneto, Emilia-Romagna, Tuscany and Basilicata. Large companies, lead exports especially from Northern Italy, with Lombardy accounting for 27.4% nationally, followed by Emilia-Romagna and Veneto for 13.7% each and Piedmont with 10.4%[172].

The Italian manufacturing industry and especially the Lombardy one, according to a study done by Assolombarda, is the one most threatened by the Chinese investment program "Made in China 2025", especially in the high-tech technological branch, given that the degree of overlap between Chinese products and the Italian and German ones is

[170] The Former President of SACE, Quintieri, B. (2019) presentation at the Conference "La Nuova Road Map del Commercio Globale", Milano, 30/10/2019

[171] Italian Ministry of Economic Development, Osservatorio Economico Ministero Sviluppo Economico (2019), on FMI-DOTS data, June 2019

[172] Italian Ministry of Economic Development, Osservatorio Economico Ministero Sviluppo Economico (2018), on ISTAT data 2018

very high[173]. This is a dangerous challenge, but not necessarily a negative one if you are able to exploit relations with China as well as Germany did, i.e. they create 3 industrial parks in China where Chinese and German companies exchange technologies, collaborate and create innovation platform for the development of industry 4.0. Our companies and our government should take inspiration from what Germany has done, so that we can enter in a much larger commercial network, creating new businesses.

According to Eurostat data 2017, within the European Union, Italy is confirmed as the second industrial power with 16% of total production, after Germany, which has 28% and before France that follows with 12%, but Italy at the same time is not among the top EU exporting countries. In fact 24% of EU exports it is German, followed by the Netherlands (11%) and France (9%) and then Italy always at around 9%, Belgium is at 7%[174]. It is evident that countries like Belgium and the Netherlands have a lot of exports thanks to the logistical advantage of their ports, but not for industrial production.

If on one hand there is a limit of our country in not having created a sufficient network between companies, embassies, ICE, SACE, ministries, with incentives to help companies export, on the other there is an evident disadvantage on infrastructure that certainly does not facilitate our exports to reach more distant markets. It is necessary to have adaptability, time to take root, flexibility and interculturality in order to open up and manage markets such as Asia, but first of all it is necessary to have greater connectivity in order to reach them. These are challenges that many companies prefer not to take for the risks they bring, but once they are reached, there are great growth opportunities

Interconnection between territories is becoming increasingly necessary: according to Bank of Italy (Banca d'Italia), in 2018, 44.2% of our import-export travelled by road transport, 30.1% by sea, 14.9% by rail and 9.1% by plane. Sea transport becomes increasingly important for the Italian export, with 52.7% of international trade

[173] Assolombarda Centro Studi (2019), *Made in China 2025: quadro generale e implicazioni per la Lombardia*, Research N 04/2019, based on World Bank and Istat data, 2015. The vulnerability respect to "Made in China 2025" increases with increasing manufacturing added value (% of GDP) and medium-high and high tech manufacturing added value (% of manufacturing added value). Available at https://www.assolombarda.it/centro-studi/042019-made-in-china-2025-quadro-generale-e-implicazioni-per-la-lombardia

[174] Ministry of Economic Development data, 2018

transported by ships, with the majority of the export in non-EU countries that take place by sea, especially for volume (and tons) of goods[175].

In this sense, the BRI can be an impulse to modernize our infrastructure structure, to create dialogue platforms also at European level, giving a more international vision, exploiting European investments and opening up more to the world.

The Italian ports as we have seen can play the game and take advantage of the favourable geographical position, so let's now see how it is the situation of some Italian ports at the moment, and how they could develop for the future.

3.2 Future perspectives for Italian freight ports

In 2018 according to Assoporti[176], the Italian ports handled 491 million tons of traffic, involving 37% of liquid bulk, 13% dry bulk, 23% container and 22% Ro-Ro.

Italy is the world leader in the Ro-Ro fleet with ships for more than 5 million gross tonnes. The total Ro-Ro volume was 109 million tons in 2018 (+3%) and thanks to the evolution of Ro-Ro, Italy has further strengthened the primacy of Short Sea Shipping in the Mediterranean with 230 million tons of goods transported, equal to 37.4% of the total.

As regards the national port, the goods handled remain substantially stable in recent years, with Italy that thanks to inclusion in the network of international container trade is in 13th place in the world ranking of LSCI[177]. There are two Italian ports in the Top 100 ranking of the biggest container ports in the world, with Genoa (71st place) and Gioia Tauro (79th), but there are many other important ports for other kind of traffic moved, as Trieste, Cagliari, Augusta, Messina-Milazzo for liquid bulk, or Taranto and Ravenna for dry bulk, just for give some examples. (*fig.19*)

Italy has 57 important ports of national relevance, which have seen their legal form mutate in the years, first with the main ports that where 23 single port authority (law 84/1994 that regulated them), to the Delrio reform of 2016, which grouped them into 15 areas called Port System Authorities (AdSP), which combine the management of 3-4

[175] Analysis by Banca d'Italia (2019), *Indagine sui trasporti internazionali di merci*, 20/06/2019, https://www.bancaditalia.it/pubblicazioni/indagine-trasporti-internazionali/2019-indagine-trasporti-internazionali/statistiche-ITM-20190620.pdf

[176] Association of Italian Ports

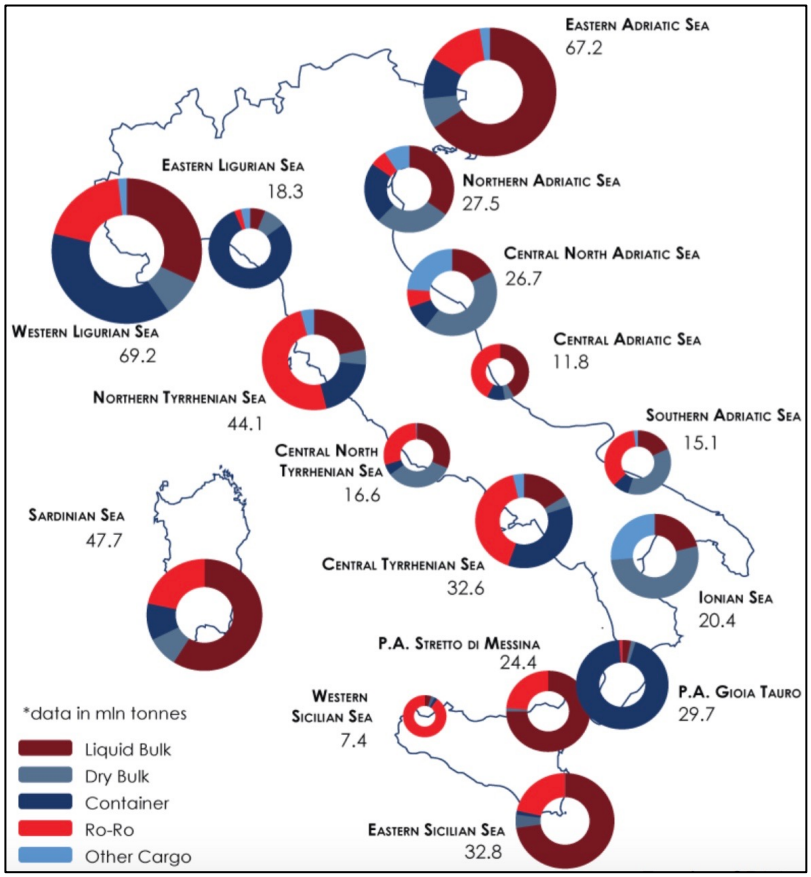
[177] Federmare (2019), *The Sixth Maritime Economy Report*, pg. 7,8

ports close to each other (areas), to increase efficiency. To the 15 AdSP a new one (the Messina Strait) was added recently, so now they are 16. To the AdsP is given the strategic role of direction, planning and coordination of the port system in its area, and they are controlled by the Ministry of Infrastructures and Transports.

The Assoporti ranking, based on the tons of goods handled in 2018, sees the port of Trieste in first place among the top15 Italian commercial ports, with 62.676.502 tons handled, followed by Genoa, Livorno and Cagliari-Sarroch. Then there are Gioia Tauro, Ravenna, Venice, Messina-Milazzo, Augusta, Taranto, Naples, La Spezia, Salerno, Savona-Vado and Civitavecchia.

The top 10 ports for container handling in 2018 are Genoa (2.6 million TEU), Gioia Tauro (2.3 million TEU), La Spezia, Livorno, Trieste, Venice, Naples, Cagliari, Salerno and Ravenna[178].

Fig. 19 Type of traffic managed by the Port System Authorities, 2018 (mln tonnes)



Source: SRM elaboration on Assoporti data, 2018

[178] To know more have a look at Assoporti website: https://www.assoporti.it/it/associazione/

If Italy is very strong in the Ro-Ro, especially with the Balkans and North Africa, especially form the ports of Livorno, Genoa, Piombino, Naples, on the other hand, despite the growth in the worldwide movement of container especially through Suez, our country has not been able to be attractive for container traffic (and so for the carriers), which has remained substantially unchanged in the last 5-6 years, (or with small growth), reaching around 10.5/10.6 million TEU in 2019. In particular if the gateway ports record growth (with 8 million TEUs handled), those of transhipments continue their negative decline, also due to the strong growth of the Mediterranean competitors. In fact the final destination container terminals capable of accommodating the ships used in the intercontinental line services (such as La Spezia) are seeing their business grow, while the Italian transhipment ports continue their crisis. If on the one hand the competitors, such as Piraeus, Tanger Med and Valencia grow, on the other after the Taranto crisis (maybe solved), now also Cagliari and Gioia Tauro, follow this phase of decline, mainly due to naval gigantism, so the large ships replace those smaller ones that move to serve a regional market. The possibility of accepting ULCV is linked to the need for modernization, with new cranes, long docks, deep waters, retroport spaces and above all the presence of the SEZs for Cagliari and Gioia Tauro (already present), which are becoming more and more vital in order to survive. If you do not invest in a productive hinterland, which made convenient bringing goods to those places, surely the game of transhipment will be lost; transhipment is much more convenient, e.g. in ports of North Africa where the cost of labour is lower than in Gioia Tauro, and on the other hand what sense would it make to call in Cagliari, if the same ship can enter directly in Genoa? These ports can survive only by focusing on know-how, retroports, production activities, and free zones, intercepting traffic lines in the Mediterranean, because surely on the connectivity side, the ports of Northern Italy have an indisputable geographical advantage[179]. In any case if for the port of Cagliari the situation is quite drastic, on the other the investments by a Turkish group in Taranto and by MSC in Gioia Tauro are expected to change the situation of these two hubs, from 2020.

As far as container traffic is concerned, the goods arriving/departing from the ports of Northern Italy (especially Genoa, La Spezia, Livorno, Venice, Trieste), in addition to

[179] Capuzzo, N. (2018), *Porti di transhipment sempre più a rischio estinzione in Italia*, Ship2shore, 25/05/2018, http://www.ship2shore.it/it/porti/porti-di-transhipment-sempre-piu-a-rischio-estinzione-in-italia_67636.htm

serving the regional and local market, mainly serve France, Switzerland, Austria and the southern part of Germany (primarily Bayern and Baden-Württemberg areas). In Northern Adriatic there is also the specialization of Trieste in Liquid Bulk, and Ravenna with dry bulk, in addition to the Ro-Ro services in Tuscany ports.

As we have seen the ports of Southern Italy, on the other hand, have a more transhipment vocation with Gioa Tauro, Cagliari and Taranto primarily, and in addition as gateway for serving their respective local markets (in a small part). We must also point out, how there are break-bulk specializations especially in the ports of Taranto (dry bulk) and with liquid bulk in Cagliari and in the Sicilian hubs, together with the Ro-Ro services in Naples[180]. It is evident that road and rail connections, as well as the proximity of the border, facilitate the ports of Northern Italy (Genoa, Savona, La Spezia, Venice, Trieste and Ravenna) to have a certain type of market which can, and must, also be directed abroad and not only to a narrow vision to compete for the regional market of the Po Valley.

In this paragraph we do not want to give an analysis of every Italian ports, on how they structured, or on what kind of goods are moving, because it is something useless; instead we want in any case to focus more on future perspectives and on Northern Italian ports, which are the ones of our interest in the vision of a possible link with the Belt and Road Initiative. However, we believe it is necessary to give also a vision of how some southern ports could better develop in the future and grow first of all by better serving their regional markets and with the development of production activities with destination of goods for the European market, also thanks to the development of SEZs; and so by better connecting the South with the North of the country.

In fact, both for the North and for the South of the country, multi-port and logistics systems could be created, that can combine the services of the various ports, allowing them to perform better, specializing in the transport and handling of specific types of goods, and thus becoming points of reference for the whole nation in that sector. We will soon go to see how this idea could be organized in Italy, especially in 5 macro areas of our country.

[180] To know more have a look at the Statistics of Confetra, https://www.confetra.com/centro-studi-statistiche/

3.2.1 Privatizations?

We have seen before how Italy is organized in 16 Port System Authorities, which represent the nodes of a logistics network that integrates maritime, land and air transport, in continuity with the TEN-T Corridors that connect Italy to Europe, from the Baltic to the Atlantic, and to the Mediterranean networks[181]. The union of the management, to increase efficiency and connections with territories and markets is certainly a positive value, but nevertheless the system still appears to have some problems that range from coordination to the legal form, which means that Italian ports fail still to be truly competitive despite the strategic advantage they have.

Among other things, in a moment of "crisis" for Italian ports, there is the clash between Italy and the European Commission (in particular the Director-General for Competition), on the Italian Port Authorities, accused of not paying the taxes on certain activities such as collection of concession fees.

In the past, Italy has chosen a model of "landlord port" types, that is, with the State that remains, through the Port System Authorities (AdSP), owner of the ports and infrastructures, but which allows the management of the same, as well as all operations and services relating to the "ship cycle", to authorized private companies.

For the European Union, AdSPs are therefore not to be considered non-economic public bodies, but rather as private companies engaged in economic activities[182]. An infringement procedure could be opened against Italy, which (in a different way from other EU countries), is accused of not collecting taxes, in particular the corporate income tax (IRES), by the 16 Port System Authorities, (as it considers them exempt because they are public bodies), and for which the European Commission believes it can distort competition (with State aid).

The clash is in whether the fee paid to the AdSPs by private individuals who receive authorizations and concessions, is comparable to a lease relationship (and therefore taxable) or to a tax (and therefore not taxable, as Italy claims).

This is a problem above all of a juridical type, which we do not want to get into too much, but it is clear how the EU wants to make the Italian AdSPs appear engaged in

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[181] To know more have a look at Ministero delle Infrastrutture e dei trasporti (2018), *The new Italian port System*, 19/10/2018 http://www.mit.gov.it/Il-nuovo-sistema-portuale-italiano

[182] Informazioni Marittime (2018), *Ancip, E se la strategia di Bruxelles sia privatizzare i nostri porti?*, informazionimarittime.com, 19/04/2018, https://www.informazionimarittime.com/post/ancip-e-se-la-strategia-di-bruxelles-sia-di-privatizzare-i-nostri-porti

economic activities; and so EU could interfere with the management and administrative model of Italian ports, for many in view of a private policy, in order to change the public nature of our ports. In doing so, if Italy wanted to finance our ports, it would have to pass through Brussels and EU state aid rules. On the other hand, with the separation of economic and non-economic activities under the AdSPs, a new market would open up for private individuals (especially foreigners): with the possibility of privatization of Italian ports.

The Commission wants to standardize the tax regime of ports at European level, but the difference between the ports of Northern Europe (subject to corporatization, favouring the entry of private entities alongside public shareholdings, as they are economic public entities or joint stock companies) and those of Southern Europe (more public owned ports), it is clear; despite seeing how Piraeus was forced to privatize the port because of the state's economic problems[183].

Privatizations in Italy are badly seen by the government and by the authorities themselves, given the strategic role of our country, on the other there is no need to be afraid of encouraging private investment in our country, with due precautions and guarantees, also maintaining our land lord system, but creating incentives to invest as with SEZs, and tax breaks.

In addition to private investments, a new organization of the Italian port system may be necessary, focusing even more on its integration with the European transport network, and on the advantages that Italy has. As we said earlier, in a development plan such as Belt and Road, and in a desire to connect it with European infrastructures and markets, the most efficient maritime route (via Suez) from three points of view is the Italian one. Environmental efficiency (with lower emissions of polluted gases, such as CO_2 and sulphurs), better energy efficiency (with lower consumption for ships and less wear), and above all less travel time compared to the routes that from Suez point to the ports of the Northern Range, are the key points on which national and European politics must focus.

It becomes increasingly necessary to converge the European and Italian infrastructure policy objectives, defining the strategic objectives on which to act in the light of the changes and the new context of world trade.

[183] See note 156

As we have seen, however, having the best route is not a guarantee of success, the port system as it is organized today appears not performing to the best of its ability: a change also directed in the creation and development of the 5 anticipated multiport systems, 3 for the South and 2 for Northern Italy, it would perhaps be a possible solution to return competitive in the Mediterranean and beyond, and also for the revitalization of the country, especially the South, which is still too backward respect to the North.

3.2.2 The multi-port systems in Italy

In defining Ten-T transport networks, European policy has established that the main corridors have to pass through the ports: therefore there will be a core network, which passes through designated ports (core ports), to connect the sea part with the land part as much as possible. If on the one hand it becomes difficult if not impossible (for various limits), and therefore not convenient, investing in a single (or few hubs) to be made as large as Rotterdam, Antwerp, Hamburg (or the competitors of Northern Europe), on the other a solution could be the adoption of a model of multiport systems, which works using several ports in a given area as ports of the same port system[184]. This is not a utopian thing, because connecting ports such as Ravenna, Venice, and Trieste that may seem distant from each other is something that can be done if you think that in various Chinese ports, this model is real. To give an example, the distance between the 5 terminals of the same port of Shenzhen is almost similar to what could be between the Italian ports of the various areas taken into consideration; in fact, the port of Shenzhen is made up of several ports that develop along 260 km of coast, with the idea in the future to further expand the area and build six new terminals that could even go as far as to connect with the Hong Kong port[185].

The creation of these multi-ports has the objective of organizing itself between port authorities to become competitive in the final destination markets, which are highly contestable. Everything must be directed by a national transport economic policy that conforms to the European one, exploiting the Ten-T core networks that will be implemented by 2030. We must ensure that the Italian strategic priorities manage to fit in with the redefinition of the trans-European transport networks, so that there are

[184] This idea was theorized by the Professor Paolo Costa (Ca' Foscari University of Venice) and the Professor Maurizio Maresca (University of Udine) and well explained in their book *The European future of Italian port system*, Marsilio, Venezia, 2013, Ch. 3

[185] Ship Hub (2019), *Port of Shenzhen*, 25/09/2019, https://www.shiphub.co/port-of-shenzhen/

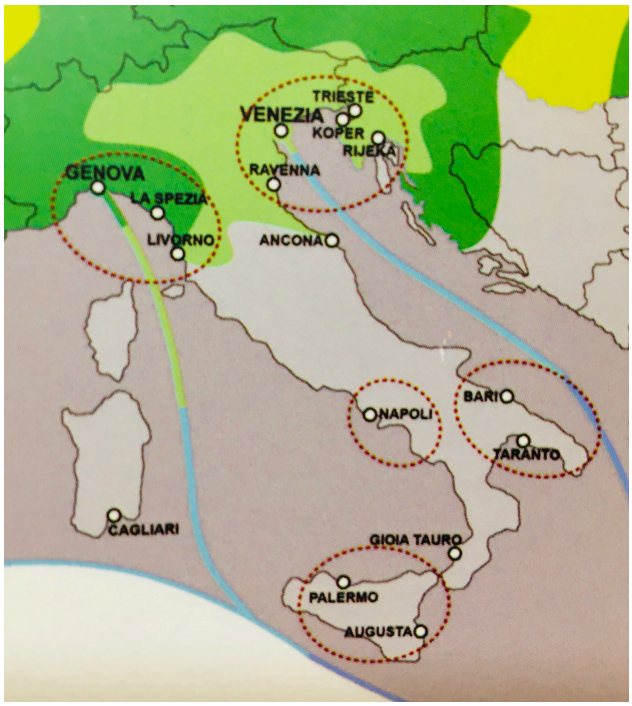
suitable connections to operate a system that mainly sees 5 systems for 14 ports involved, (in groups of 3-4) which are managed as terminals of the same port, thus obtaining a scale size that allow to deal with larger volumes of goods. In fact with the advent of naval gigantism, it is necessary to organize not only the landing of goods, but also it's handling on the ground and the consequent infrastructural connections, also with retroports and logistic platforms.

In addition to competition, it becomes necessary to join and collaborate if not, there is a risk that the decline for Italian ports will continue in the long run. It is also necessary to involve all possible partners, including the supply chain and regions that have no outlet to the sea (such as Lombardy and Piedmont), which, however, are essential for interports, airports, rail links, roads and industrial production, so that there is a greater efficiency of the system. Only with an efficient connection with the hinterland we can hope to go beyond the service of an area 150-200 km from the port, and be able to take greater shares of exports also abroad of France, Austria, Switzerland and Germany. In order to grow, it is therefore necessary to collaborate from multiple points of view, but above all it is necessary that there is government planning, which among other things helps to reduce the level of bureaucracy, streamline customs procedures and facilitate connections. The Government should dialogue with the EU and has courage to let grow those who are strong in certain areas, with common rules at national level, so as not to hinder development, but encouraging private investment (including FDIs), by acting in a long-term perspective, which looks to the next 20-30 years.

In this vision it becomes necessary to combine a core network (defined by the EU, which connects ports, airports, important urban hubs via rail, road and inland waterway connections) with a comprehensive network (established with a bottom-up model, by the Italian state, under a general coordination of the EU) so as to better link also the connections with smaller ports, but which are nevertheless part of a wider system such as the multiport. In the relationship with the EU it becomes essential to find the necessary funds for the investments (as for example CEF Funds) and thanks to coordination "from above", improve the internal market between EU member states, and open up more towards the outside. On the other, with bottom-up management

(according to the principle of subsidiarity), local needs and requirements are better defined, without leaving anyone behind[186].

Fig. 20 The Italian multi-port systems



Source: Costa, P., Maresca,M. (2013), Il futuro europeo della portualità italiana, book cover

Let's now see in detail how these *5 multiport systems* would be organized:

In southern Italy we find 3 multi-ports, which are all linked to the Scandinavian-Mediterranean corridor (which goes from Helsinki to Palermo), with essential focal points such as the Brenner Tunnel, and the development of the motorways of the sea that would also allow Malta and two southern hubs such as Sicily and Apulia to be best connected.

Respectively in Southern Italy we therefore find:

1- The *Campania Multiport*, which revolves around the ports of Naples and Salerno and served by the retroports of Nola, Marcianise-Maddaloni.

2- The *Sicilian Multiport* and the important logistics hub, which is based on the ports of Palermo and Augusta (and can also include Messina).

3- The *Apulian Multiport*, which connects the ports of Bari and Taranto, with the important retroport of Bari. It will be connected to the Scandinavian-Mediterranean

[186] Costa, P., Maresca, M. (2013), *Il futuro europeo della portualità italiana*, Marsilio, Venezia pg. 68

corridor thanks to the railway connection that from Bari connects to Naples (and goes up to the North).

Two multi-ports will instead be located in Northern Italy:

4- The *logistic multi-ports system of the Upper Tyrrhenian Sea*, which will include the ports of Genoa, La Spezia, Savona-Vado and Livorno, which will be connected to four possible Ten-t corridors, two most important for Genoa, or the Rhine-Alpine one (which part/or has its own destination in Genoa), the Mediterranean one which passes through nearby Milan and Novara. Two other corridors instead are more favourable to La Spezia and Livorno ports and are the Scandinavian-Mediterranean one (which passes through both cities), and the Baltic-Adriatic one (which would be taken, with the connection of the railway line to Bologna). The interports of Genoa (Vado), Turin (Orbassano), Novara and Milan are involved in this multiport system from the port of Genoa, while from the ports of Livorno and La Spezia are interested the interports of Livorno (Guasticce), Florence (Prato), Bologna, Verona and Padua.

5- The *logistic multi-port system of the Upper Adriatic*, includes the main ports of Ravenna, Venice and Trieste (with their smaller ports), and in a more European vision could involve the ports of Koper (Slovenia) and Rijeka (Croatia). This multi-port could also use all four of the Ten-t corridors that pass through Italy, but it is still involved by the Scandinavian-Mediterranean corridor (which passes through Bologna and Verona), the Baltic-Adriatic corridor (which originates or is destined to Ravenna, and passes through Padua, Venice, Trieste, and Koper), and the Mediterranean one (which always passes through Verona, Padua, Venice, Trieste, Koper and also through Rijeka in the direction of Eastern Europe). Important interports or railway exchange areas such as Cervignano, Padova, Verona, Bologna and Milan are involved, and in addition to the railway connections, a dense network of internal river connections that would allow from Ravenna, Chioggia, and consequently Monfalcone, Porto Levante, Porto Nogaro to reach Mantua and Cremona internally[187].

3.2.3 The three multi-port systems of Southern Italy

Let's now briefly see some hints to the situation, and possible evolutions, of the three hubs in Southern Italy, in particular by exploring how their service vocation for an

[187] *ivi*, pg. 108-111

internal national and local market in the South, can be improved with the development of industrial production, improving the logistic efficiency and the links between them, to aim at growth and then export the added value that is given, to the North and to European markets.

As regards the *Campanian Hub*, involved in the Port System Authority of the Central Tyrrhenian Sea (which in addition to Naples manages Salerno and Castellammare Ports) everything revolves around the Port of Naples, which has grown strongly in recent years as regards container handling, with excellent performance in 2018 and 2019 as a Gateway port, with movement of 682 thousand TEU (+ 16.9%), that together with the ports of Salerno (413 thousand TEU) and Castellammare exceeds the one million TEU. While on one hand solid bulk and Ro-Ro traffic decrease, on the other liquid bulk (+4.4%), refined oil products (+ 7.2%), and gaseous, liquefied (or compressed) oil products, and natural gas (+ 3.1%) have grown.

The port of Naples is a candidate to be, as required by the national energy plan, one of the eight strategic locations for the storage of LNG. Already today the Neapolitan port is an essential hub for energy distribution in the southern regions: with 4 million tons of oil and more than 1 million LNG.

Maybe the realization of an LNG storage depot here could be a winning choice, if it is respecting the times line, in a historical period in which the energy reconversion is increasingly taking hold and where the owners of cruises, but also of container carriers, are giving consideration to the possibility of using bi-fuel ships, with multi-fuel engines capable of running on two fuels, so also compatible with LNG[188].

The port system is served by the retroports of Nola and Marcianise-Maddaloni, which can be connected to a dense network of businesses in the area, but at the moment the presence of widespread retroports, makes the relationship between operators and freight terminals less efficient, together with the need of a rail connection between ports and retroports that do not exists at the moment, with all the traffic that pass by road[189]. The connection to the Port of Naples and to the whole area of the Campanian production activities becomes essential, an more over the development of high speed trains, to serve not only the Campania area, but all the south, also with the connection from Bari

[188] SRM, Italian Maritime Economy (2019), *6th Annual Report 2019*, pg. 156

[189] Ship2shore (2019), *Gli interporti campani vogliono ridurre la distanza coi porti (ma non è facile senza collegamenti)*, 18/03/2019, http://www.ship2shore.it/it/porti/gli-interporti-campani-vogliono-ridurre-la-distanza-coi-porti-ma-non-e-facile-senza-collegamenti_70246.htm

and Taranto, and thus allow that connection to the Scandinavian-Mediterranean corridor, which would allow the departure of the goods to the North.

One of the major problems of this hub is the lack of good connections with the port, especially from the railway point of view, which could allow long enough trains to be able to transport the goods easily, especially in the port area, where the rail links are not virtuous.

A further limitation is certainly the lack of a structure with deep waters capable of accommodating sufficiently large ships; works are now underway in the "Darsena di Levante" which will allow in four years to be able to accommodate ships of 12,000 TEUs, so it is clear that the port of Naples can only be a gateway in the future, perhaps with greater relations with transhipment hubs like Gioia Tauro or Cagliari[190].

Today more than ever, there is a need of speed up with infrastructures investments and use the presence of the Campanian SEZ, established in 2018, to attract foreign investments.

The other ports and important logistics hub that we want to take into consideration is the *Sicilian Multi-port*, which is based on the ports of Palermo-Termini Imerese, Messina-Milazzo, Catania and Augusta, with refers to three different Port Authorities.

This is undoubtedly a system with a vocation for liquid bulk traffic (given the historical presence of refineries in the region), but also Ro-Ro.

In the Port of Palermo there is surely a greater vocation in passenger traffic, with investments of almost 387 million put in place, (645 million of investments in all Sicily), mainly to relaunch the cruise sector, with important agreements with Costa and MSC on the cruise side, and with Fincantieri for shipbuilding, with the construction and maintenance of ships in the basins of Palermo from 2023[191]. On the freight side in 2018 Palermo-Termini Imerese grew by 5.7% with 7.4 million tons handled, and now aims to invest heavily in the Ro-Ro (which is the prevalent sector in the Port Authority of the Western Sicilian Sea): the Ro-Ro in fact accounted for 87% of the traffic of the port of Palermo in 2017. Instead, the idea of making a container terminal in Palermo seems to

[190] Ghiara, A. (2019), *Spirito: "In Campania le navi da 12000 Teu" / Intervista*, The MediTelegraph, 09/10/2019, https://www.themeditelegraph.com/it/shipping/shipowners/2019/10/09/news/spirito-in-campania-le-navi-da-12-000-teu-intervista-1.38067571

[191] Amadore, N. (2019), *Era un mostro che andava demolito e ricostruito. Intervista a Pasqualino Monti*, Il Sole 24 Ore, 20/12/2019

be abandoned since the Italian ports that are devoted to this are in crisis, therefore connections with other already existing transhipment ports will be better developed[192].
The Western Sicilian Sea AdSP has instead decided to invest more on the cruise sector, which is estimated to generate greater spillovers from an economic point of view, it is in fact estimated that in a few years the number of people arriving with cruises will pass from 600 thousand to more than 1 million, and this could generate a direct economic spillover of around 51 million euros and the overall ones at 117 million euros in 2030, with the system in full capacity[193].
The other Sicilian hub of great importance is Augusta, which in 2018 handled around 24 million tons of goods (-9.1% compared to the previous year), and also negative data for the port of Catania, with 8.6 million tons handled and -11.7%. Messina-Milazzo instead goes against the trend with 24.4 million tons moved and a growth of 22.7%. The typologies of goods handled in the Sicilian hubs listed above, accounted for about a quarter of the total Ro-Ro services (i.e. 20% of the total Italy and over 40% of the total South of Italy), and for just a bit less than 3/4 liquid bulk (excluded Palermo). In 2017, 67% of Sicilian freight traffic was in fact devoted to liquid bulk, and for the future it becomes increasingly essential that the ports of the Eastern Sicilian Sea Port System Authority, and in particular Augusta, equip themselves with the necessary infrastructure to not continue in this crisis, which for Augusta could even lead to be removed from the European list of "Core" ports.
If on the one hand Palermo has decided that its vocation must be that of passenger traffic, on the other for Augusta it is necessary that by 2025, a LNG deposit must be created for the energy supply of ships in the Mediterranean, given that LNG has been identified, by technology and by the transport market, as the fuel of the future, also for its characteristics of eco-sustainability[194]. If Augusta does not gear up at changing times, the fallout could also be negative for companies in the region that exploit the proximity to the port, who may perhaps decide to move to other locations.

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[192] De Forcade, R. (2018), *Palermo crede nel nuovo porto, Sarà l'hub delle navi da crociera*, Il Sole 24 Ore, 21/07/2018
[193] Amadore, N. (2019), *Palermo investe quasi 390 milioni per rilanciare il sistema porto*, Il Sole 24 Ore, 20/12/2019
[194] Unionports (2019), Augusta, a rischio la qualifica di porto Core: entro il 2025 deposito Gnl, Siracusa Post, 17/06/2019, http://www.siracusapost.it/1.75690/cronaca/sicilia-siracusa-provincia-augusta/104/augusta-unionports-rischio-la-qualifica-di

Surely in the next 20-30 years the oil sector could be overcome and therefore even the refineries would risk to be closed, therefore a diversification of port services becomes increasingly necessary, with incentives for investments (in the hope of having a large SEZ in the area around the port) together with the necessary reclamation of the polluted areas. The construction of a container terminal in Augusta (where, among other things, an important base of the Italian Navy is located) could be a winning choice thanks to the fairly deep seabed, in conjunction with Catania (which already moves 60 thousand TEU, in 2019); the proximity to the city and airport of Catania and the industrial area developed around Augusta, are an important surplus to exploit.

Now we want to focus more than the other, on the *Apulian hub*. The two main ports of this area are Bari (served by the retroport of Bari) and Taranto: between the two there are almost 100 km and many productive activities in the middle, which, however, are not collaborating much with each other. We want to start this analysis from the future perspectives, so the idea of considering this area as a single territory, a single metropolitan area linked to the rest of the activities, then it would become a polycentric city, where each city has its specificity, in a sort of union of cities, infrastructures and industries, where trade and transfers of goods and people could be put together, as the Architect Beppe Fragasso of ANCE Confindustria Bari suggests. In this area there is a population of 2 million people who can be put in contact, exploiting the local mechanical, chemical, pharmaceutical, agri-food and aerospace industries. It is necessary to exploit the Bari International Airport and first of all the Grottaglie Airport, that has the longest take-off runway in South Italy, and where the Apulia Region is investing 80 millions. This one is about to become a spaceport for private space flights and launch of satellites, therefore it becomes increasingly necessary to link the technological and aerospace districts (that include between the other the well known Leonardo S.p.A company)[195]. In Taranto there is also a large steel plant (the ArcelorMittal steelworks, ex ILVA) and in an area where businesses are related, the steel needed to build cars and technological knowledge, could be linked to build a self-driving, low-emission car factory of the future. This system of industries present in the area must be linked to the system of schools and universities, in order to give young generation the possibility to work in their territory of origin, creating added value for their land.

[195] Palmiotti, D. (2019), *Taranto investe sul rilancio dello scalo di Grottaglie*, Il Sole 24 Ore, 05/08/2019, https://www.ilsole24ore.com/art/taranto-investe-rilancio-scalo-grottaglie-ACCl6Kd

There is the need to see this area as a whole, a metropolis with 2 ports Bari and Taranto (each one developing according to its needs and serving the cities of reference), but connected: it is in fact necessary to have soon a railway line for large freight trains capable of connecting the two industrial poles of the Bari and Taranto metropolitan area and also passenger transport (like a surface metro that connects the two centers in about 30 minutes), capable also of connecting the areas in the medium (such as Rutigliano, Acquaviva delle Fonti, Santeramo In Colle, Gioia del Colle, Martina Franca, Grottaglie)[196].

According to the President of the Ionian Sea Port System Authority Sergio Prete, it is essential to connect these two strategic infrastructures, but above all the market that exists between the two; the industries in the middle could use the logistic system to access the Transoceanic lines from Taranto (to the Americas) and from the Port of Bari going to the Balkans and the Middle East. Idea shared by the President of the Southern Adriatic Port System Authority Ugo Patroni Griffi, who claims that the choice to connect the two hubs is important, because Taranto has an infrastructure and seabed capable of accommodating larger ships than in Bari, therefore it can hast a type of traffic that could not be reached by Bari. Bari on the other becomes important for Taranto thanks to the connections to the North (via Napoli) and therefore the European market, also thanks to the Adriatic railway which is gearing up to accommodate trains 750 meters long, to transport 2 thousand tons of goods. Only in this way Taranto could intercept a part of freight traffic arriving from the Far East, and take advantage of its ideal position in the Mediterranean, which intercepts the route from Suez to Gibraltar. Today along this route most of the goods are directed to Northern Europe, but if the South of Italy and in particular the Apulian hub, will be able to intercept this traffic with the right modernizations, the choice could be a winner. In Bari trains are built, there is maintenance and training for logistics specialists, so it is increasingly necessary that there is a connection between the two ports and metropolitan areas as soon as possible, which would lead to an increase in both freight and passenger traffic and therefore also greater investments, business and employment activities for the entire region[197].

The Port of Bari is at the forefront of digitalization, having had first a pilot project where the logistics and customs processes work in parallel, associating information on the

[196] Report (2019), *Città intelligenti*, Rai 3 TV Channel, 23/12/2019

[197] *Ibidem.*

location of a vehicle, from the moment it enters the port to when it leaves, to the customs information related to the state of the goods transported[198]. Bari it is also strong in the passenger sector, but much less in the transport of goods, especially for the limit of not being able to accommodate large ships in the port.

On the other, the Port of Taranto has waters that allow to accommodate ships around 13/14 meters of draft, which must have increased in the past, but the delay of the public institutions to intervene and modernize the infrastructure, pushed the Taiwanese company Evergreen, that from 2001 until 2014 managed the Taranto Container Terminal, to move away to Piraeus. Evergreen managed to move up to 900 thousand TEUs in Taranto, but to grow they asked local institutions to do work to extend the railway and highway links to the port and to carry out dredging works for the docking of larger ships; since the works were not done in 2014 they left[199].

Now, however, there are prospects for improvement, in fact the port, given the crisis in the steel sector, has decided to diversify its action, and thanks to the investment of the Turkish group Yilport (which belongs to Yildirim Holding A.S., owner of 24% of the French CMA CGM, and which recently entered into an agreement with COSCO), has obtained from the Port Authority of Taranto a concession for the next 49 years, of some areas of the port, setting up on a 1,900 meters long quay[200]. From April Yilport will restart the Port's multi-sectorial pier, restoring 6 cranes on the quay, and focusing on multipurpose traffic from containers to various goods (also Break bulk and Ro-Ro), with a target of 500 thousand TEU in two years and 1 million in five years (by 2025), hiring the 500 employees of the former Taranto Container Terminal, and others more. There are also state plans to allocate 11.2 million for 2020 and 11.5 million for 2021, in addition to the launch of the recently established ionic SEZ, which is a godsend to rehabilitate a zone that surrounds the area of Taranto and Bari, and towards Basilicata, which has suffered a lot from the crisis, but which is now ready to attract investments thanks to tax relief, and to revive trade and its ports[201].

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198 De Forcade, R. (2019), *Nei porti la dogana digitale taglierà 20 mila ore di lavoro all'anno*, Il Sole 24 Ore, 05/08/2019

199 Cassano, A. (2019), *Taranto, la santa alleanza Turchia-Cina per il porto*, La Repubblica, 29/09/2019, https://bari.repubblica.it/cronaca/2019/09/29/news/taranto_la_santa_alleanza_turchia-cina_per_il_porto-237228823/

200 XPED International Logistics Solutions (2019), *Il Porto di Taranto tra Yilport e Cosco*, 06/11/2019, https://www.xpedinternational.com/news-it/il-porto-di-taranto-fra-yilport-e-cosco-strategie-e-nuove-opportunita/

201 Palmiotti, D. (2019), *Taranto riapre il porto dei container*, Il Sole 24 Ore, 31/12/2019

3.2.4 The multi-port systems of Upper Tyrrhenian Sea

Now we want to give a view of the two hubs of Northern Italy, which are the one of main interest by the EU and Chinese side: let's start from the Upper Tyrrhenian Sea.

The *logistic multi-ports system of the Upper Tyrrhenian Sea*, includes three different Port System Authorities: that of the Western Ligurian Sea (with the ports of Genoa, Savona and Vado Ligure), the Port System Authority of the Eastern Ligurian Sea (with the ports of La Spezia and Marina di Carrara) and the Port System Authority of the Northern Tyrrhenian Sea (with the ports of Livorno, Capraia, Piombino, Portoferraio, Rio Marina and Cavo).

Let's start from the most "southern" part of this multiport system, or analysing the Livorno hub.

In the port of *Livorno* in 2018, 36.5 million tons of goods were handled, with +8.5% growth compared to the previous year. The Ro-Ro sector, which makes up 44% of the traffic in the port of Livorno grows, also containers grow by 1.9%, with 748 thousand TEU moved in 2018 (while the negative trend of transhipment continues with a total of 154 thousand TEU, -9.3%); for the 2019 the container moved should be around 800 thousand TEUs, so still growing. On the other, liquid bulk also grows, which with 9.5 million tons, are another strong point of the port, where, among other things, there is an ENI refinery.

2018 was a record year for Livorno, for tons moved, Ro-Ro, but also rail transport: the railway activity of the port of Livorno in fact recorded a total of 35,670 wagons handled and 1,963 trains with an increase of 14% of volumes shipped and received by rail, both in terms of wagons moved and trains entering / leaving the port.

The presence of railway connections becomes increasingly vital, if we consider that in 2018 59,190 containers were handled by train, with an increase of 8.7%, while input / output wagons were 27,318 (+3.5%)[202]. The Livorno hub must take benefit of this natural advantage of being able to bind to the North East of Italy more easily than the other more Northwest ports, such as Genoa, which suffer from the lack of a developed railway infrastructure.

[202] Il Tirreno (2019), *Porto di Livorno, l'anno dei record: aumenta del 14% anche il traffico via ferrovia*, 26/03/2019, https://iltirreno.gelocal.it/livorno/cronaca/2019/03/26/news/e-l-anno-dei-record-per-il-porto-di-livorno-aumenta-del-14-anche-il-traffico-via-ferrovia-1.30133707

The positive trends in goods handling were also confirmed in 2019, with the connection to the hinterland becoming increasingly important. This hub grows if it is connected to the railway, so the direct connection to the Scandinavian-Mediterranean and Baltic-Adriatic corridors (via Bologna) will become essential over the next few years.

The interports of Livorno (Guasticce) and Florence (Prato) are involved in the movement of goods from the port, in particular the interport closest to the port of Livorno is the one located in Guasticce, called Amerigo Vespucci, which is 4 km from the port, and which has recently been financed. In fact, a series of projects are progressing in Livorno, for a total value of € 330 million, to enhance the logistics of the area and the railway accessibility at the Amerigo Vespucci interport. Various interventions are financed, which will allow the interport to connect with the national railway network (also with Florence, through the bypass of Pisa), which will improve the logistics of the coastal area and allow a better outflow of goods. Furthermore, a railway overpass, worth € 27 million, will soon be built, which will directly connect the port of Livorno with the interport (thus transforming it into a real retroport), which will be completed in 2022[203].

Moving a little further North we find the port of *La Spezia*, very important for the container sector (which employs more than 70% of its services). In 2019 the traffic of goods handled amounted to 15.9 million tons (+ 0.6%), with the handling of containers equal to 1.41 million TEU, a decrease of -5% compared to 2018. According to the Port System Authority of the Eastern Ligurian Sea, this decrease is substantially attributable to the reduced transhipment activity (mainly of its major terminal operator), that affected the port throughout 2019, but it is still a very significant volume of traffic, which confirms the port of La Spezia ranks second in Italy among the ports of access to the final destination markets, with a share of around 18% of the national market.

It is also interesting to note that in 2019 intermodal rail transport, which affected the La Spezia Container Terminal, totalled approximately 360 thousand TEUs (+ 2.4%) handled by train, with a total of approximately 7,800 trains. Here too, the connection to the Scandinavian-Mediterranean corridor therefore becomes vital, and the connection to the important interports of Florence, Bologna, Verona and Padua.

[203] Morino, M. (2019), *A Livorno 330 milioni di opere in cantiere*, Il Sole 24 Ore, 13/12/2019

A positive result is certainly given also by the traffic of the liquid bulk that has recorded an increase of + 55.8% reaching 2.1 million tons, as positive is the transit of the cruise passengers that confirmed with a growth of 32%[204].

La Spezia for the future, in addition to passenger traffic, must, and will always have, a minor vocation for transhipment, and focus on being a gateway port, also thanks to the to the four weekly connections with China that are granted from the container terminal managed by Contship Italia[205]. La Spezia should take advantage of the possibility of welcoming ships of more than 17,000 TEU capacity and which, together with the investments that are in place in the hub of the Western Tyrrhenian Sea, can truly be decisive as a gateway to the European market, obviously with the necessary infrastructure investments in the port and in the rail transport network.

As far as Liguria is concerned, the sea accounts for 74% of the region's import-export, and the hub of the Western Ligurian Sea, which includes the ports of *Genoa*, *Savona* and *Vado Ligure* is probably, together with La Spezia, the one of main importance. In 2018, 69.2 million tons were handled, with a prevalence of container traffic, followed by liquid bulk, Ro-Ro and, to a lesser part, dry bulk; passengers traffic on the other is always growing, with new record thanks to the presence of MSC in Genoa and Costa Crociere in Savona.

As we have said before, the container vocation of this hub it's clear and, waiting for the new container terminal in Vado Ligure to go into operation in March 2020, the ports of Genoa and Savona should have closed 2019 with around 2.7 million TEUs, up 1-2% compared to a year earlier (2.5 million in 2018)[206].

After the collapse of the Morandi Bridge in August 2018 (when traffic grew by 5%), there was a drop, but a new way is now marked and will continue thanks to the investments put in place by the AdSP, with estimates of reaching even 5 o 6 million TEUs in 2026, thanks to two new container terminals and land infrastructures in Genoa-Savona.

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[204] Informare (2020), *Nel 2019 il traffico delle merci nel porto della Spezia è ammontato a 15.9 milioni di tonnellate (+0.6%)*, 17/01/2020, http://www.informare.it/news/gennews/2020/20200062-porto-Spezia-traffico-Y-2019.asp

[205] De Forcade, R. (2018), *Porti. Venezia preda cinese nella corsa ai corridoi europei*, Il Sole 24 Ore, 14/12/2018

[206] Capuzzo, N. (2020), *Italia stabile nei container*, Milano Finanza, 17/01/2020, https://www.milanofinanza.it/news/italia-stabile-nei-container-202001171045141442

The possibility of connecting mainly with TEN-T corridors, for Genoa, Savona and Vado, is fundamental, in fact if it is clear how the Ligurian hub can manage the capacity but, on the other, the big limit is given by the connection to the North, and so here the national and European infrastructure policy could be vital for the launch of this gateway hub for the future. The presence of the Rhine-Alpine corridor first (which part/or has its own destination in Genoa) and then the Mediterranean corridor, which passes through nearby Milan and Novara, are essential in this way action. In particular the possible connection with the interports of Genoa (Vado), Turin (Orbassano), Novara and Milan is central in the development of this multiport system.

Genoa can accommodate ships up to 16000 TEU, but it is difficult to unload them easily, it is much better with smaller ships of 8000 to 13000 TEU capacity, on the other hand, if Vado is currently accommodating ships of 7000-8000 TEU, thanks to the presence of seabeds of more than -17 meters, will in the future make it possible to accommodate the latest generation of ships (up to 22000 TEU)[207].

As we have seen the port has problems with rail and road connections, from the delay in the construction of the "Terzo Valico" railways connection, to the new bridge construction after the demolition of "Morandi Bridge", to the realization of two important infrastructure, supported also by China CCCC, or the new dam of the port and the upset to sea of Fincantieri Industry in Sestri Ponente[208].

But despite these limits according to the president of the Port Authority of the Western Ligurian Sea, Paolo Emilio Signorini, the action to be taken to grow exponentially, must develop in 3 distinct phases: the first, has already started with the entry into operation of the Calata Bettolo terminal in Genoa and the Maersk platform in Vado Ligure, which will make 800 thousand and 900 thousand TEUs respectively (when fully operative), together with the upgrading of Psa (in the terminal of Pra and al Sech), which are estimated to bring flows, within a couple of years, close to 3.5 million TEUs.

Then there is the second phase, which concerns the improvement of accessibility by land, with the road and railway "last mile", linked to the "Terzo Valico", which is estimated to contribute to the growth of the hub by another 1 million TEU; and finally

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[207] The Medi Telegraph (2019), *Container, Vado Ligure soffia due servizi a Genova e La Spezia*, 29/11/2019, https://www.themeditelegraph.com/it/transport/ports/2019/11/29/news/container-vado-ligure-soffia-due-servizi-a-genova-e-la-spezia-1.38223663

[208] De Forcade, R. (2019), *Così i colossi cinesi corteggiano i porti di Genova e Trieste*, Il Sole 24 Ore, 12/03/2019

the third part will consist of the new Genoa dam, the Vado dam and the speeding up of the Tortona-Milan railway section. At the end of all there will be the possibility of being able to really accommodate the larger ships, and send away the containers with the most advanced performance on rail and road, approaching the 5-6 million TEU, which is the goal set by the AdSP[209].

The challenges that naval gigantism is posing, push ports to have to modernize in order to accommodate ever larger ships, even with sufficient dredging (already scheduled for Genoa). Ports must equip themselves and unfortunately submit to the "economic law", linked to the economies of scale, of shipping companies that have the convenience of carrying more and more goods with a single ship. Genoa is preparing for these challenges, among other things, with investments in road infrastructure to access the Sanpierdarena port basin (for 128 million), and the Vado Ligure breakwater (70 million), with 10 further interventions to improve the road access to the port (which should start in the first half of 2020). The President of the AdSP Signorini stressed that the investments for these works were unlocked thanks to the commission procedures and in derogation of the procurement code approved after the collapse of the Morandi Bridge, which allowed a cut in the times compared to the ordinary procedures. This spontaneously raises the question whether, even at national level, it is not appropriate to adopt a system similar to the Genoa case, in which bureaucratic procedures are streamlined: essential for realizing works in less time than usual[210].

Of particular interest is the investment made in Vado Ligure, and recently inaugurated in December 2019, of a maxi container terminal (Vado Gateway) which, when fully operational will move 900 thousand TEU, in addition to the 250 thousand per year that the Reefer terminal already moves. After 14 years of work, and a total investment of 450 million euros (180 of which from APM Terminal and 43 in project financing), this maxi terminal has finally started operating, and in the future will be able to accommodate mega ships from more than 20000 TEU (thanks to -17mt depths and 700m long docks). To date is the most advanced terminal in the West Mediterranean, which guarantees Liguria to now have a unique system with 3 platforms for containers. This work was an investment by the most important operators in the world of shipping, as the structure is

[209] Redazione ANSA (2019), *Porto Genova: Signorini, nel 2026 raddoppio fino a 6 mln*, Ansa.it, 08/10/2019, http://www.ansa.it/liguria/notizie/2019/10/08/porto-genova-signorini-nel-2026-raddoppio-teu-fino-a-6-mln_0710dbff-e092-4037-b6b9-61177e012114.html

[210] Santilli, G. (2019), *Porto di Genova, via ai cantieri. Rete stradale a Pizzarotti*, Il Sole 24 Ore, 21/12/2019

managed by APM Terminals (company of the Maersk group, number one in the world of container transport, which holds 50.1% of the shares, and management was guaranteed for 50 years), together with Cosco Shipping Ports (40%) and Qingdao Port International (9.9%), both companies controlled by the Chinese government.
The terminal will be operational from February / March 2020, with the arrival of the first two Maersk lines ships (which are moved from Genoa and La Spezia), and will have 390 employees (with a further increase when the new quay will be completed at the end of 2020).
This terminal is the first in Italy to be fully automated with yard cranes that operate in a fully automated way and are supervised remotely by specialized operators, ensuring high safety standards; there is also an innovative container registration and handling system in the internal areas with hybrid vehicles.
Such an advanced system could be put at risk by the deficient infrastructure system that surrounds it; in fact, they intend to move 40% of the containers operated by rail, aiming to connect the markets of Northern Italy, Switzerland, Germany and North-Eastern France, but there is the need of speed in carrying out the infrastructure works, despite having the advantage that the terminal will gradually be operative[211].
In any case, must be underlined that if the main transport companies in the world have decided to invest in Liguria, certainly the prospects for the future of Region, but also for the impact on the Italian maritime sector, can only be good. With the right infrastructural interventions (road and rail), the Upper Tyrrhenian multiport will play a very important role in the coming years, as a key gateway for the Western, Central and Southern European Market[212].

3.2.5 The multi-port system of the Upper Adriatic Sea

The *logistic multi-port system of the Upper Adriatic*, includes three main Ports System authorities: the one of the Central-North Adriatic Sea (port of Ravenna), the Port System Authority of the North Adriatic Sea (ports of Venice and Chioggia) and the Port System Authority of the Eastern Adriatic Sea (ports of Trieste and Monfalcone). According to a

[211] De Forcade, R. (2019), *Solo il caos delle autostrade rischia di minare il progetto*, Il Sole 24 Ore, 13/12/2019
[212] De Forcade, R. (2019), *Vado Ligure avvia il maxi terminal da 900mila container*, Il Sole 24 Ore, 13/12/2019

broader vision, the neighbouring and direct competitors ports of Koper (Slovenia) and Rijeka (Croatia), already present in the voluntary Association of North Adriatic Ports (NAPA), may also be involved.

We will focus on the Italian ports in the first place, since before having a European approach, it is necessary to have a union on rules, procedures, services of a central and national type, especially in the case of the Italian ports, which are 3 ports present in 3 different regions. In fact, it must be Italy that decides to collaborate with two other states, which have systems and rules different from ours, the fact is that proximity and serving the same markets could facilitate an enlarged system, allowing a large number of goods to be moved more easily.

The North Adriatic in recent years has seen its importance grow, also with attention from Europe as well as internationally, on the fact that it is the northernmost point of the entire Mediterranean (with Trieste), and therefore to be a natural, direct way that from Suez connects the Far East with Europe (with about 8 days less travel, compared to going to the ports of the Northern Range).

The presence of the passage of several Ten-T corridors through many of the ports in the area: the Baltic-Adriatic corridor, the Mediterranean and even the Scandinavian-Mediterranean (in nearby Bologna and Verona), are certainly signs of how Europe believes in a development of infrastructure connections from the North Adriatic Sea to the final destination markets. In particular these ones could the markets of central and northern Italy, eastern France, Switzerland, southern Germany, Austria, the Czech and Slovakia, and further east of Hungary, Slovenia , Croatia, Serbia and Bosnia. The ships therefore have the possibility of serving several ports, making a stopover in the North-East part of the Adriatic (Rijeka, Koper or Trieste) and in the North-West part of the Adriatic (Ravenna and Venice), so as to be able to handle the great part, if not all, of their cargo in a few ports close to each other, which becomes convenient for transport companies, which prefer to make fewer stops as possible[213].

It is clear that the system works only if, however, the large carriers find convenience to come to the ports of the North Adriatic, in addition to the obvious geographical advantages with lower transport costs, and better environmental sustainability, the total economic advantage of door-to-door transport that's what needs to be fully considered. In fact, it is not enough to get the ship to arrive, it is necessary to have the structures to

[213] Costa, P., Maresca, M. (2013), *Il futuro europeo della portualità italiana*, Marsilio, Venezia pg. 218, 219

welcome it (in the ports of Northern Europe the oceanic ship can unload all the cargo in a single hub), but also the road and railway connections to move the goods (which are mostly developed in Northern Europe, which make it possible to have longer and heavier trains that can travel unlike those of Southern Europe)[214].

By taking advantage of the multi-port, larger quantities of goods can certainly be handled, even inland, but as long as you do not equip the North Adriatic ports to have at least a large hub capable of accommodating ULCV ships, which then are moved in the other smaller ports, then the game is not worth playing. Ideally, everyone would be able to accommodate mega-ships, to work the goods, and make them move by land, but the costs of the operations would be unthinkable especially for a single state as Italy (unless they are able to attract EU funds and foreign investments). To date, thinking of removing traffic from the Northern Range in large quantities is impossible for North Adriatic ports, in fact if there is no convenience in the door-to-door, the best transit time and energy and environmental efficiencies are not considered by carriers. The 6 and more, millions TEUs that are estimated could be managed with an advanced system in the North Adriatic, are now a distant mirage, because many port facilities have not been able to modernize or the works are slow, blocked by bureaucracy, as happened in the ports of Ravenna and Venice. Exploiting the railway connections (and modernizing them to accommodate trains of 750 meters), ensuring retroports, processing areas, SEZs, road and inland navigation connections, are just some of the needs that are needed to be able to attract companies to base or stop in ports of the North Adriatic[215].

Let's go to see the situation of the port of *Ravenna*: freight traffic in 2019 was 26.2 million tons, down 1.6% compared to 26.7 million tons handled in 2018 (3200 ships, 6700 trains). The number of containers handled grows by 0.8%, settling at around 218 thousand TEU (in particular, full containers grow, 3.8%, equal to approximately 168 thousand TEU).

The movement of goods has been substantially stable over the past few years, but certainly not growing, above all due to the main problem of the ports: a seabed that is too high to accommodate large ships; a problem that has been linked to the Port of Ravenna for years. Most of the traffic in the port is linked to the liquid bulk (+ 2.3%, except oil that has register -1%), followed by dry bulk (-1.2%) and containers. 8.9% of

[214] *ivi*, pg. 222, 223

[215] *ivi*, pg. 230

the port's traffic is related to cereals, which saw a decrease (-8.6%), while food and feed went well (9.4%), also the traffic of minerals is important, which despite a decrease, represent an important part of the bulk traffic, given that the Port of Ravenna is the hub of reference for raw materials (80% clay), which serve the Sassuolo tile sector. It's important to notice also how the rail freight represent the 13.6% of total movement of goods in the port (7.6% container), in particular with transport of cereals in the directions to Parma at the Barilla company[216].

As far as cereals are concerned, above all, in Ravenna there is the largest terminal in the Mediterranean for the storage and handling of dry bulk goods (managed by the PIR group). According to ANACER (association that brings together grain traders and raw material processing industries), the import of cereals would be at risk in the ports of Ravenna and even of Venice, due to the bureaucracy and delays in infrastructure investments. The demand for cereals represents 40 million tons, but the "Made in Italy" production can only cope with 20 million of this, so the rest must be imported. The ports of the North Adriatic are the most used for imports of raw materials (for cereals) from Eastern European countries (through the Black Sea), from North America and South America. In particular in Ravenna, the excavation of the canals has been awaited for years to allow the entry of larger ships, which today are forced to unload the ship in several ports to lighten it and allow it to enter the port, which increases costs and so is not convenient for the transport companies. If the ports of the North Adriatic will not equip and modernize soon, they will not be able to withstand competition from other countries, and the companies will move to other ports[217].

Finally, after more than 10 years of waiting, a call has started, for the value of 235 million euros of work needed, in addition to widening the waterways, for the adaptation of the docks and the construction of new logistics areas (on an area of 200 hectares), with 2 railway stations for freight transport and a link with the Ravenna ring road and the motorway network; it is planned the start of works for the autumn 2020.

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[216] Porto di Ravenna (2020), *Porto di ravenna. Nel 2019 lieve calo del traffico merci con -1.6%*, Ravenna Notizie, 05/02/2020, https://www.ravennanotizie.it/rubriche/porto-di-ravenna/2020/02/05/porto-di-ravenna-2019-in-leggero-calo-con-16/

[217] Ronchetti, N. (2019), *Porti dell'Adriatico in ritardo, a rischio l'import di cereali*, Il Sole 24 Ore, 24/12/2019

In addition, it is interesting to note how Ravenna also attracts Chinese investments for 10 millions, in fact China Merchants Group has created a research and development center in Ravenna, in the field of Oil and Gas and also Naval engineering.
Only with the necessary investments on the port and on the infrastructures, by adjusting the railway system for goods, there will be a rationalization of transport costs and a vital market, as the Emilia Romagna one, for the port of Ravenna could be saved[218].
Let's now consider the port of *Venice*: 2019 was a particularly negative year for the port, which handled 24.92 million tons of goods globally, with a decrease of -5.9% on the previous year (27.5 million tons), both for the goods landed (-6.0%) and the tons boarded (-5.9%). The handling of containers was equal to 593 thousand TEU (-6.1%), the Ro-Ro fell (-4.2%) as well as refined petroleum products, chemical products (-10.3%); very badly also the cereals trade (-28.7%) and minerals (-11.9%). Positive signals come from other liquid bulk (+ 10.2%) and chemicals (+ 5.8%) driven by the presence of the petrochemical center of Marghera and the ENI Bio-refinery; passenger traffic also performed well (+ 1.5%), in particular cruise passengers (+ 2.5%)[219].
The negative numbers are many, and Venice has now become one of the most backward ports in the North Adriatic in term of investments, in fact if Trieste and Ravenna are investing to renew their structures, followed also by Koper and Rijeka, in Venice, bureaucracy is an obstacle that reduces traffic and consequently generates loss of jobs and economic damage to the territory and related activities.
Venice, in a normal situation can accommodate ships of 7000/8000 TEUs, still too little respect to the new era of naval gigantism, but due to the many local problems pays non-decisions and loses traffic.
Some of the main limits of this port are the presence of the lagoon, the little draft of the ships (at the moment -10,2 meters due to the presence of sand on the seabed), the MOSE mobile dam construction and its delay, the infrastructure connections problems, and in general the lack of a national policy that is unable to decide how to operate and to better plan the national port system, which obviously does not work. In first place the responsible of the delays are the Ministry of Environment and Ministry of

[218] Ronchetti, N. (2020), *Ravenna ristruttura il porto, via alla gara da 235 milioni*, Il Sole 24 Ore, 30/01/2020
[219] Informare (2020), *Nel quarto trimestre del 2019 il traffico delle merci movimentate dal porto di Venezia è diminuito del 7.7%*, 03/02/2020, http://www.informare.it/news/gennews/2020/20200137-porto-Venezia-traffico-4Q-2019.asp

Infrastructures and Transports, for example on the decisions on the "Protocollo fanghi" or literally a Mud Protocol necessary for the dredging, and so allow ship with -12 meters dawn to enter the port.

It is news of January 2020 that the Ocean Alliance has decided to cut starting from April, the stopover in Venice of the direct line with China and South East Asia, instead maintaining Genoa, La Spezia and Trieste. If on the one hand the presence of large ships in the lagoon is certainly a negative factor from an environmental point of view, to which a solution must be found, on the other hand it must be said that 20 thousand workers are employed in the port and related industries, so the fact that there is a less traffic certainly has a negative impact on the local economy[220]. There must always be a balance between the economic and the environmental side, trying to find equilibrium. Over time, thanks to the immobility of not choosing politics, they have gone from being able to accommodate 7500 TEU ships to losing the 6500 TEU vessels that now pass (until April) through Venice once a week. Now it remains only to decide how to act, whether to strengthen the port relation with the transhipment port of Piraeus, or with other North Adriatic ports, or to dare, perhaps with an idea of an off-shore port at sea a few miles from the Venetian coast as had been proposed in the past.

The port of Venice has the quality of being a multipurpose port, which can exploit the passage of the Ten-t corridors, especially the Baltic-Adriatic, Mediterranean and Scandinavian-Mediterranean, and can be served by many interports (such as Padua, Verona, Bologna) is one of the natural destination basins of the Maritime Silk Road. In Venice there is an area of 26 industrial and commercial terminals, 163 active docks, 8 cruise terminals, an international airport with 13 million passengers, served by 50 airlines and where 60,850 tons of goods are transported; there are also 4 universities of excellence and an economic and industrial area that is driving force in the North East of Italy. All this and much more make this area a pole of attraction for investment and the flow of incoming and outgoing goods. In particular, Porto Marghera is one of the largest coastal industrial areas in Europe, with 2,200 ha, with 884 established companies, 27 billion annual turnover and an estimated infrastructure value of 6.4 billion. There are 30

[220] Zorzi, A. (2020), *Canali bassi, il Porto di Venezia perde le grandi navi portacontainer. Un disastro Annunciato*, Corriere del Veneto, 14/01/2020, https://www.google.it/amp/s/corrieredelveneto.corriere.it/veneto/cronaca/20_gennaio_14/canali-bassi-porto-venezia-perde-5bff4110-36b3-11ea-b8fe-84cc8de8aae7_amp.html

km of docks, 127 km of railway network, 108 km of road network, 19.5 km of navigable canals. Above all, companies in the advanced tertiary sector (35%), transport and logistics (22.3%), the manufacturing sector (13.5%) and trade (11.7%) are based, with 300 ha available and many areas under reclamation or soon to be reclaimed. As just listed there are many strengths to attract investments, from the presence of a diversified economy, to infrastructure, research and development, professionalism, production chains, available areas and above all a free zone[221].

At the end of 2019, the Italian Government gave the green light to extend of the tax concessions of the SEZ (in the South of Italy) also to the North, starting from the Logistic Zone Simplified of the area of Venice and Rovigo: a news much awaited and welcomed with great success especially by Confindustria Venezia, which claims that the SEZ can be included in an area of 385 hectares actually abandoned, redeveloping an area which in 3 years could activate 2.4 billion of investments and more than 26 thousand jobs. The possibility of establishing manufacturing, logistics companies, especially SMEs, together with collaboration with universities would generate an extendable benefit for the whole province of Venice and beyond[222].

We have seen how there are great possibilities in the hinterland and in the port, including the possibility of redeveloping an area of more than 80 hectares (Montesyndial), which could become a new terminal with road and railway accessibility with a 1400mt quay. Today the port, according to a research done by the AdSp and Chamber of Commerce Venice-Rovigo, has an economic impact as direct, indirect production and the related activities by the estimated value of around 21 billion. The port is fundamental not only in passenger traffic, but also in container traffic, and is related in particular to the agri-food, iron and steel, chemical and energy supply chains throughout Northern Italy[223]. There are many positive points to be underlined, including the signing of a MOU between the AdSP of the Northern Adriatic and the Piraeus Port Authority especially to intensify relations and the direct commercial flow to/from the Far East and in the MENA area, all confirmed by an agreement signed with COSCO Shipping for a new weekly line that connects Piraeus with Venice. China is very

[221] Città di Venezia (2018), *Porto Marghera – Venezia. Un'area strategica per investire*, Venice Development Agency, data of 2017

[222] Ganz, B. (2020), *Venezia e Rovigo diventano zone speciali per la logistica*, Il Sole 24 Ore, 04/01/2020

[223] Morino, M. (2020), *I porti di Venezia e Chioggia toccano 21 miliardi di ricavi*, Il Sole 24 Ore, 23/01/2020

interested in shortening distances and transport costs to Europe, but to do all this, our country must be in step with the challenges of the future[224]. The port grew in 2017 and 2018, but as we saw in 2019 there was a drastic drop, due to the failure of the dredging of the canal that leads from Malamocco entrance to Porto Marghera, with the consequence of the Ocean Alliance (CMA-CGM, COSCO, Evergreen and Oocl) decision to leave the port of Venice, with their direct line AEM6 to China connecting Shanghai (via Singapore) with Venice. The ships intended for this service (of 6500 TEU capacity) to be able to pass in the canal, need a draft of 11.5 meters[225]; the MOSE is designed to allow ships with a maximum draft of -12m to pass, or there will never be the possibility to have vessels of more than 8500 TEU capacity at the port of Marghera; if you want to accommodate mega-ships you need to find an alternative solution.

On the part of the Port Authority, there is the will to find a solution as soon as possible, to dredge the seabed and remove the mud and maybe reuse it in a sustainable way as other European ports already do (after being treated, the sludge can be used, in the form e.g. of floor strips)[226]. The president of the AdSP Pino Musolino claims that the funds for dredging are already there (23 million), now it is enough to find the sites where to place the excavated sediments and return to a draft of -11.5, perhaps succeeding by the summer or the autumn 2020 to bring the large container ships back to Marghera, including the 8500 TEU line for the Far East, of CMA-CGM which for the moment has moved to Trieste, waiting for the necessary works to be done, and which is then hoped to be able to call back to Venice[227]. According to Musolino, the loss of the presence of the direct line of the Ocean Alliance at Venice port will generate a loss of around 50 million of wealth per year.

It seems clear that a solution to accommodate large ships of higher capacity can only be found outside Porto Marghera, according to someone in Chioggia (where, however, the draft is currently less than -7 meters, which would require significant modernization of a hub which is now practically abandoned, with a 30% drop in the last two years). The

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[224] Ganz, B. (2019), *Venezia nuovo hub per l'Europa. Accordo con i cinesi del Pireo*, Il Sole 24 Ore, 12/02/2019

[225] De Forcade, R. (2020), *I cinesi danno addio al porto per i mancati dragaggi in laguna*, Il Sole 24 Ore, 14/01/2020

[226] Spinazzi Lucchesi, S. (2020), *Scavo dei canali e fanghi: il Porto rischia di perdere volumi di traffico*, Gente Veneta, 24/01/2020

[227] De Forcade, R. (2018), *Industria, petrolchimico e terminal. Venezia ricompone il puzzle porto*, Il Sole 24 Ore, 08/06/2018

Chinese company CCCC in the past had proposed to invest for the construction of a high-depth quay (with a cost estimate of 1.3 billion) but in the end it did not materialize, as on the other hand another proposal that was not accepted by the state, as it was considered a non-strategic project by the Government, was the construction of an offshore terminal for large container ships located a few nautical miles from the coast, and which would perfectly fit into a multi-port project, being able to move around 1 million TEU per year. The off-shore solution with a terminal at sea, therefore without problems of depth (at least 20 meters deep) but without storage of the containers at sea, which would provide for the unloading of an oceanic ship into smaller ships or barges (mama vessels), which would be shuttling with the hinterland by unloading in an onshore terminal (which at the time was thought in the Montesyndial area), it could have been a valid solution, which has been abandoned but is now returning to the news. An open sight is left by President Musolino in the possibility of using the Offshore terminal only for passenger and container traffic, with a light connection under the lagoon by means of e.g. Teflon vacuum tubes where a little train that shuttles with the hinterland could run, and so it would no longer be necessary to dig the seabed. While as regards bulk, imports of raw materials for the industrial center (which represent 30% of the volume of traffic), and semi-processing of goods, these would require the arrival of the ship in the inland port[228]. Among the future problems in addition to those already listed, there will certainly be the commissioning of the MOSE and the need to coordinate it with ship traffic for the port: according to the simulations made by the AdSP, in the best case scenario the MOSE could affect only 10% of the traffic, but at worst even 60%, would mean unparalleled damage to the port. In short, what is needed for the future of the port of Venice are responses from national politics, the taking of courageous choices (perhaps rethinking the possibility of the offshore terminal), and a general overview at national level together with a coordination with the other Northern Adriatic ports[229]. For the future it becomes increasingly necessary to focus on the fact that the port of Venice is multipurpose, to focus on passenger traffic, which is increasingly growing, to foster the Ro-Ro services with Turkey, Greece and North Africa, and to create stable

[228] Spinazzi Lucchesi, S. (2020), *Il porto Offshore? Si, se sarà collegato*, Gente Veneta, 24/01/2020

[229] Spinazzi Lucchesi, S. (2020), *Con il Mose in funzione il Porto rischia di fermarsi. Senza un sistema di gestione sarà emergenza*, Gente Veneta, 24/01/2020

relationships especially with Piraeus and nearby Trieste which must be a point of support, thanks to its connections and investments that make it a leading port in Italy.

Let's go now to see how the situation of the port of *Trieste*. The Port System Authority of the Eastern Adriatic Sea, which includes the ports of Trieste and Monfalcone, recorded in 2018 a total movement of goods of 67.2 million tons (62 million 700 thousand on Trieste and 4 million 500 thousand for Monfalcone), confirming itself as the first port in Italy for the tonnage of goods handled. The first type of goods handled is certainly liquid bulk, which in 2018 marked 43.2 million tons (-1.1%) of which 41.3 crude oil; general cargoes count 17 million tons, with importance of the container and Ro-Ro sector (despite this one has lost 30% of traffic with Turkey, due to the Turkish economic crisis).

In 2018, as far as containers are concerned, the port of Trieste, that can host vessels of 16,000 TEU capacity, recorded a movement of 725,426 TEU with an increase of + 17.7% respect to 2017 (+45% respect to 2015), growth confirmed in 2019, with the entire port marking between 750-800 thousand TEU (and the Trieste Marine Terminal, which alone closed 2019 with the primacy of 688,647 TEU, or an increase of +8.5%). It is interesting to notice how in 2018, the number of full container (for the hinterland) has increased of +31.8% (373 thousand TEU), while the empty have decreased by -7.6%. The port is involved also in the transhipment service, and this one has increased of +9.1% (291 thousand TEU), especially in full containers, confirming to be important also for the other ports of North Adriatic Sea[230].

The strength of the port of Trieste is certainly to be above all a European hub, about 90% of the market basin according to the AdSP is of a European type, with relations with Central, Eastern and Northern Europe, above all thanks to the fact that the railway connections used, are the real strength of this hub, which employs 2 thousand workers. As far as container traffic is concerned, thousands arrive from Turkey and then head towards Northern Europe, to Scandinavia, England and Poland. It is the first railway port in Italy, equipped with an internal network of 70 kilometres of tracks, which connects with national and international networks and allows all the piers to be served by rail, with the possibility of assembling freight trains directly in the various terminals. More than 400 trains a month connect the port of Trieste with the manufacturing and

[230] Autorità di Sistema Portuale del Mare Adriatico Orientale (2019), *Port of Trieste throughput statistics – ESPO*, 2018 data, https://www.porto.trieste.it/wp-content/uploads/2019/02/Statistiche_ESPO_anno-2018.pdf

industrial areas of North Eastern Italy and Central Europe, especially with destination Germany, Austria, Czech Republic, Hungary, Switzerland and Luxembourg. The strong point is surely the movement of goods through the integration of different modes of transport, with a great desire to invest in rail transport, in fact it has gone from 6 thousand trains per year in 2015 to almost 10 thousand in 2019, with doubling of the volumes over the past 4 years, which is estimated to be 210 thousand less trucks circulating on the roads.

The willingness to invest in the development of a strategic and dynamic hub, above all thanks to the railway, has been confirmed by the European investments on the "Trieste Rail Port" project, of the CEF (6.5 million) and of the European Investment Bank (EIB), which has granted a 39 million loan to the AdSP to improve railway accessibility simultaneously to several trains of 750 meters long (now they are 550mt), which will be able to transport 40% of extra goods, together with the restoration of railway connections with Wartsila and Ex Aquila areas. It is an operation that falls within the framework of the European Ten-T networks, with support for sustainable investments especially in the fight against climate change, and which is estimated to involve the hiring of 400 workers for the construction[231].

Today 55% of the intercontinental container traffic with the Far East, which disembarks or embarks in Trieste, is handled by rail (this indicator is continuously growing and already today exceeds the 50% share that the EU has set as its target of modal transfer of European freight traffic for 2050).

The port, in a fully intermodal logic, has acquired the interport of Cervignano (and in the future perhaps also that of Pordenone); Cervignano, in Friuli Region, is the subject of the "Trihub" project, which provides for investments by RFI (Italian Railways) for 200 million, with the desire to improve the railway yards that connect it to the Port and also Villa Opicina. In particular, interventions are underway in Campo Marzio for 110 million, to improve the system by equipping it with four tracks with module up to 750 meters, with the end of works expected in 2024; all this together with investment to improve the Venice-Trieste direct line, and interventions of "last mile" to Villa Opicina and Cervignano[232]. The interport of Cervignano is affected by a new connection with the

[231] Morino, M. (2019), *Porto di Trieste, dalla Bei 45 milioni per la ferrovia*, Il Sole 24 Ore, 21/12/2019

[232] Morino, M. (2019), *Porto di Trieste, maxi hub ferroviario tra Europa e Far East*, Il Sole 24 Ore, 27/12/2019

interport of Turin (Orbassano), which is currently operating 3 times a week, but which will become daily in April 2020. It is another intervention made in the direction of reducing road congestion, in the direction of more sustainable mobility (which is part of the strategic objectives of RFI, 2019-2023). It is estimated that this connection will lighten roads and highways of about 12 thousand trucks each year and save 80% of the carbon dioxide emissions into the atmosphere for each load transported compared to the use of the road[233].

This port is therefore an Italian excellence for connections with European markets, which is of great interest not only nationally, but also internationally. The Port System Authority continues to establish commercial relations, including new agreements for a railway service with Nuremberg (active from July 2019), MOUs signed to send goods to Dusseldorf and Luxembourg (Bettembourg) and work is being done on the connections with Zeebrugge. The strong relationship with the Hungarian government, which has signed an agreement with the AdSP, is already operational for the creation of a multipurpose terminal on a 32-hectare space, with an investment of 100 million. Already today the port of Trieste has 28 trains per week with Budapest, so the Hungarian government has decided to establish an import-export hub in Trieste, acquiring the concession of an area (from the private group Tesco and Seastock), which it is among other things a free customs port since 2017, with docks where can arrive ships with draft -13 meters and an internal railway terminal.

But the interest in this port is also great for China: China Merchants Ports has repeatedly expressed its interest in the new logistics platform of Trieste (Ptl) which is in the final phase of construction (March 2020), a work that involves the construction of a terminal for both containers and Ro-Ro, which concerns an area of 26 hectares and an investment of 130 million euros.

As already mentioned, the Chinese, and in particular CCCC, were also involved in the signing of a MOU, in March 2019, with the AdSP Eastern Adriatic Sea, which provides for 3 points: on the one hand, the already anticipated Trihub project and investments by the China on the railway system of Trieste, Monfalcone, Villa Opicina and Cervignano, according to the construction in Slovakia of a mega logistic-railway plant in which AdSP of Trieste is also involved, and third, agreements to encourage the export of Italian

[233] Morino, M. (2019), *Fs, nuovi treni merci Piemonte-Friuli per togliere 12 mila Tir dalle strade*, Il Sole 24 Ore, 24/12/2019

products to China. On the one hand, the port of Trieste offers free customs points to China, which is looking for places to invest and create industrial areas, and rail links that guarantee the outflow of goods from the port of Trieste (with the aim of reaching 25 thousand trains per year, in the coming years), on the other hand China offers Italy the possibility of establishing logistics platforms for the sale of Italian products in China[234].

In short, the port of Trieste seems to be able to play an important role in the 21st Maritime Silk Road, especially thanks to the rail links and its free port. In a moment of contrasts between China and the United States, the free port can be attractive for those who want to dodge duties; if the Chinese decide to move the production of some products to other states, to avoid American duties, this could be an important opportunity to attract investment in this area of the country. The presence of a port with a logistic system integrated with the free points, especially thanks to the railway (with the traffic that has doubled in a few years)[235], can truly be a driving force for all the other ports of the North Adriatic. Perhaps one of the major limitations of Trieste is the fact that it still does not have the possibility to welcome the sea giants from 18,000/20,000 TEUs; so there are good connections with the markets, but there are not enough spaces. In this vision, a multi-port system with a large reference hub such as Trieste (for the Italian cooperation) and the help to divide the load in the other Adriatic hubs could be successful, but it is necessary that the ULCVs can also dock in Trieste, to take a larger market share of traffic.

For what concerns instead a more European vision, that how we can imagine, could be more complicated but more efficient, the other two important ports of the Upper Adriatic, which could be included in the multi-port system of the Upper Adriatic Sea, with the limits and advantages that we have already anticipated, are the port of Rijeka and the port of Koper.

The Croatian port of *Rijeka*, in 2018 has handled a record traffic of 13.4 million tons (+6.3%) with liquid bulk of 8.6 million tons (+7.9%) and dry goods at 4.8 million tons (+3.4%), and the container traffic was 260.375 TEU (+4.2%). Between the ports of the Upper Adriatic Sea we will have to pay close attention to the fact that the Croatian port will be the first port of call in the Adriatic to be able to accommodate 20,000 TEUs

[234] De Forcade, R. (2019), *Il porto di Trieste ai cinesi, sbocco per il made in Italy a Est*, Il Sole 24 Ore, 06/09/2019

[235] Morino, M. (2019), *I dazi? Per Trieste una opportunità*, Il Sole 24 Ore, 25/10/2019

container ships in the coming years. This is in fact the objective of the development program presented by the port and which provides for the dredging of the seabed to -16.5 meters and the implementation of new cranes with a greater capacity. There will be a first phase, already approved, of dredging at -15 meters and lengthening of a quay at 438 meters of length, which will thus allow accommodating ships of 400 meters long, and a second phase, which will bring dredging to -16.5 meters.

In addition, new post-Panamax cranes with outreach capable of reaching 24 rows of containers will be installed, as well as transport vehicles for the movement of container in the port. All this will allow the annual capacity of the terminal to grow up to 600 thousand TEU, and addition, the railway terminal will be strengthened, and will reach a capacity of 360 thousand TEU at the end of 2019[236].

On the other there is the Slovenian port of *Koper*, which has established its new historical record of annual traffic of goods having handled 24.05 million tons of cargo (+2.9%) and particularly important to notice, is the handling of containers equal to 988,499 TEU (+8.4%). Certainly the successes of this port are linked to investments by the state that considers this structure, one of the fundamental pillars of Slovenian transport policy, also confirmed by the desire to make it become a destination hub for Chinese goods, following the signing of an agreement of cooperation between the port of Koper and the port of Ningbo in China in June 2018, thus officially joining the BRI. One of the major limitations of this port are certainly the railway connections to the hinterland, which the state will have to invest in, together with a 100-meter extension project for an existing quay and more dredging, in addition to the construction of new storage facilities, which are expected to be complete by 2021, allowing the port to reach an annual traffic capacity of 1.5 million TEU[237]. Another limit, in addition to the railway connections, is for sure that of the areas available in the port, in fact the limit of expansion seems to have been reached by now, and this has create as consequence that part of its Ro-Ro traffic has moved to Venice, especially for fresh products[238].

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[236] A. Gh. (2019), *Fiume si prepara per le portacontainer da 20 mila Teu*, The MediTelegraph, 11/06/2019, https://www.themeditelegraph.com/it/shipping/shipowners/2019/06/11/news/fiume-si-prepara-per-le-portacontainer-da-20-mila-teu-1.38069296

[237] Nonne, C. (2019), *L'unico porto sloveno, il Porto di Capodistria (Luka Koper) fa registrare ogni anno un fatturato da record e il traffico continua a crescere. Invidiato dalle grandi potenze e dai paesi dell'Europa centrale senza sbocco sul mare; continuamente sfidato dal suo principale rivale, Trieste*, balcanicaucaso.org, 17/07/2019, https://www.balcanicaucaso.org/aree/Slovenia/Quale-futuro-per-il-porto-di-Capodistria-195645

[238] Ganz, B. (2019), *Dalla Slovenia una quota di traffico in Laguna*, Il Sole 24 Ore, 06/09/2019

It is clear that the ports of Koper and Trieste are in competition with each other, but on the whole, all the rest of the North Adriatic ports also compete with each other for gaining market shares; and whoever is able to invest in infrastructure wins. Now the interesting part is that, in addition to competing, at the same time the port within the NAPA, must be able to collaborate / coordinate their action, to attract the ships as much as possible towards this route. For a ship coming from the Far East, making a stopover in Ravenna or Rijeka, or Trieste, make very little changes in terms of navigation costs, but it is necessary to see who, among these, has the infrastructure capable of reducing costs in the door-to-door transport (then welcome the ship, unload it, speed up the paperwork, maybe work the goods or start it with road, railway and inland waterway infrastructures in a reliable and efficient way as much as possible).

In this overall picture, with the right modernizations and investments in internal connections and retroports, a multiport system of this kind could allow large ships to arrive directly from Suez without making transhipment stages, but instead unloading all the cargo in the ports of the Upper Adriatic, which would act as stopovers in the same large port. At the moment we are not ready but maybe soon this view could be real, with some ports such as Rijeka that will be able to host ULCVs, and that for sure will need to move the containers to other close ports for managing such an amount of goods that arrive in the same moment, because it does not have the areas, and infrastructure to let the containers depart to their final destination. In this way if one invests, there could be a benefit also for the others, who, however, if they want to keep up, must also modernize themselves. Certainly the institutions of the European Union could finance investments as an example of a cross-border cooperation project, which involves three different member states and which touches some key points that are included in the infrastructure development plan of the TEN-T networks policy.

3.3 Future challenges

With a multi-port system, large companies would have more incentives to choose as destination of their routes, a system of few multi-port gateways that allow them to move all the cargo of the oceanic ship without having to go to other ports. However, what is fundamental for the good operation of a system of this type, are land and sea connections (road, rail, inland navigation), connections with retroports and areas

equipped to accommodate the goods, processing and departure to the final destination markets. A port alone would not be able to handle volumes of goods, which for the hubs of the Upper Adriatic and Upper Tyrrhenian Sea could be 5-6 million TEU each, but if instead one acts with the multi-port gateway, and more retroports and hinterland connected, then it maybe can work. All these, of course, together with the need of modernizing the structures to the challenges that shipbuilding poses, that is, the ability to accommodate ships of more than 18,000 / 20,000 TEU within multiport systems, and to have connections that guarantee the arrival and departure of the goods in easy way. Obviously the works to be carried out take time and money, and there must be a political will and long term vision to do it. These systems would work at full speed, only thanks to the connection with the Ten-T corridors (with the core networks, which should be ready for 2030), and so it is essential to act in time, overcoming the bottlenecks, and advancing in the works (e.g. in the passages of the Alpine passes, and in the connections of the ports of call with the essential European networks) that require more time[239]. Today more than ever, time is the key on which we must invest, with the development of a long-term network, which allows us to meet the challenges of the future, playing ahead of time. Just acting in this way, maybe, we could try to compete with the ports of Northern Europe.

Italy has a strategic position and an important opportunity for development, but is now lagging behind in this game, forced to face historical structural difficulties, bureaucratic delays of Italian legislation (e.g. the lack of a framework law for port concessions), and as we have seen, an on-going clash with the European Commission.

Italy's delay in infrastructure investments for 2019 is estimated at 10 billion dollars, with a cumulative deficit perspective of 373 billion in 2040, the largest in Europe. This gap could have serious consequences on the country's competitiveness in the long run[240].

It becomes essential to understand that a dialogue with the European Union, if on the one hand it can take something away, on the other hand is the only solution to increase investments and have a transport policy that is homogeneous throughout the EU; moreover, a united and cohesive Europe may be able to better manage political and

[239] Costa, P., Maresca, M. (2013), *Il futuro europeo della portualità italiana*, Marsilio, Venezia pg. 113-116

[240] Parola, F., Gili, A., Sciorati, G. (2019), *Le parole dell'Europa: infrastrutture*, ISPI, 29/04/2019, https://www.ispionline.it/it/pubblicazione/le-parole-delleuropa-infrastrutture-22910

institutional relations with China, compared to a single country. The EU is struggling to respond to the BRI in unison, especially in light of the interest of some European governments in signing agreements directly with China. However, it is only by working together with other member states within the EU, that European countries can guarantee lasting economic success, as well as protection and guarantees from China's growing assertiveness in bilateral trade and political relations[241].

As far as the link between BRI and European transport policy is concerned, Italy has a fundamental role on the maritime part, which Europe seems to have understood and want to encourage, with the ports of Northern Italy (on one side on the North Tyrrhenian Sea and, on the other, on the North Adriatic) which are the natural access gates to the markets of Central Europe.

On the other, the Southern Italian ports, with their privileged position in the center of the Mediterranean, are fundamental for the development of the Motorways of the Sea (MoS), and could be the natural gateway to the Italian market (in particular the central-southern one) and act as a link between Suez and Europe, with the extension of the TEN-T, in the Trans-Mediterranean Transport Network (TMN-T).

If on the one hand the limit of the ports of Southern Italy is certainly the lack of infrastructure, Italian politics must try to connect as much as possible these with the North, and at the same time the ports of the South must exploit the possibility of attracting investments thanks to the their ZESs[242].

Precisely the development of the SEZs in the Italian territory is one of the challenges for the future, capable of guaranteeing tax breaks and attracting foreign investments. The benefit of these Free Zones is confirmed by the success of the SEZs of the Mediterranean competitors, such as Tanger Med, or of the Suez Canal one. Investing in these tools would allow our country to recover abandoned areas, retrain them and create jobs not only for external companies but also for a large number of Italian SMEs. Attracting investments to develop ports does not mean selling our strategic ports to foreign companies such as the Chinese ones (as happened in the port of Piraeus), because according to Italian law it is not possible to sell our ports (as public bodies), we can

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[241] Poggetti, L. (2019), *UE-BRI: Controstrategie, memorandum d'intesa e regole da condividere*, 14/02/2019, https://www.ispionline.it/it/pubblicazione/ue-bri-controstrategie-memorandum-dintesa-e-regole-da-condividere-22258

[242] Gili, A. (2019), *Il Canale di Suez compie 150 anni, ed è ancora fondamentale (anche per l'Italia)*, ISPI, 16/11/2019, https://www.ispionline.it/it/pubblicazione/il-canale-di-suez-compie-150-anni-ed-e-ancora-fondamentale-24414

instead give the ports areas and docks under concession to Chinese or European companies, as happened in Vado Ligure, whose benefits will soon be seen.

We also need to increase digitization, reduce the level of bureaucracy and simplify customs procedures: the path of digitization, in this sense, seems to be the best one to follow for the future. The objective that the Italian Customs and Monopolies Agency has pursued in the last period with the development of a "Port Community System" model, is in fact to arrive at a seamless logistics chain in which, for example, goods cleared through customs in sea ("preclearing", that is already active in 17 Italian ports), pass quickly through the port thanks to "gate automation", to then direct themselves to their destination along a "fast corridor". This would allow for the rapid release of port areas, which are often congested[243]. To be competitive it is necessary to simplify the administrative procedures, with the digitization of the import/export procedures and customs formalities connected with the entry/exit of goods and the embarkation/disembarkation, as well as the payment of anchorage and port taxes, standardizing the operating methods and thus reducing the time and costs of the entire customs clearance process, together with an increase in safety at the same time[244].

If you think that about four trillion dollars of goods are shipped every year, and it is estimated that 80% of those destined to consumers are travelling by sea, it becomes essential to process and manage the related commercial documentation (which requires an expense of 1/5 of the physical transport costs). In the port of Singapore every 2 minutes a ship enters or leaves the port, and the Asian ports are the first in the world to focus on the digital transformation of port systems, integrating them with all the logistics. In Singapore, estimated time of arrival of the ship is updated in real time, with forecast of possible congestion, the boat is followed automatically until docking and with a machine learning system, anomalous problems are identified, so improving the times and the work of the operators. Thanks to an agreement between IBM, in the port of Singapore machine learning systems, artificial intelligence and big data are used, which make the port more efficient and safe. Also in Hamburg internet, cloud computing, internet of things and big data technologies are used to manage the port area, parking lots, terminals and roads. Italy also needs to activate soon with data standardization

[243] Agenzia Dogane e Monopoli (2019), *Procedure doganali nei porti*, https://www.adm.gov.it/portale/procedure-doganali-nei-porti

[244] See note 198

models, and a first step has already been taken with the "Port Community System". The advantages are many from the less permanence of the goods in the ports to the reduction of costs. Among the technologies of the future, that will make a contribution to the efficiency of ports, in the coming years there is also the use of the blockchain for sharing and consulting data, e.g. on the traceability of the container's, logistics and management of documents[245]. Many of the largest ports in the world are getting organized, and now also the European Union has taken the first steps towards promoting digitization on freight transport, with Coreper[246] approving a proposal establishing a uniform legal framework for the use of electronic freight transport information in all modes of transport. A system capable of ensuring interoperability between the different IT systems used for the exchange of information on freight transport, which will result in significant savings on administrative costs for businesses, in particular SMEs and for the authorities also, making the transport sector more efficient and sustainable. Now it's up to the Council and then the EU Parliament to adopt the proposal[247].

The challenges of the future are many, from digitization to more efficient and sustainable mobility, also from an environmental point of view, using intermodality.

The challenge in investing in the green sector becomes very important for Europe, as we have seen pushed by the new action of the President of the EU Commission Von del Leyen, but also by Italy which, with a Green New Deal, plans to invest 33 billion over the next 15 years for investments in sustainability and the fight against climate change. According to the President of Alis (Association that brings together 1510 companies including ship-owners, haulage companies, railway companies, terminal operators, shippers, freight forwarders), investments by the transport sector are already in the field, for 5 billion for new more sustainable ships, trains, trucks and infrastructures, for a transformation towards more efficient and ecological means of transport. Allowing savings of almost € 1 billion per year on transport costs, obtained by moving 40 million tons of heavy goods vehicles from road to sea, and 30 million tons from road to rail. The

[245] Maccaferri, A. (2018), *Porti, reti intelligenti con i big data*", Il Sole 24 Ore, 12/07/2018

[246] Coreper, is the Council's main preparatory body on some subjects, and stands for the "Committee of the Permanent Representatives of the Governments of the Member States to the European Union". Its role and different formations is explained in article 240(1) of the Treaty on the Functioning of the EU.

[247] Council of the EU (2019), *L'EU promuove la digitalizzazione delle informazioni sul trasporto merci – Il Coreper conferma l'accordo con il Parlamento*, 18/12/2019, https://www.consilium.europa.eu/it/press/press-releases/2019/12/18/eu-promotes-digitalisation-of-freight-transport-information-coreper-confirms-agreement-with-parliament/

challenge to a green mobility seems to have been taken favourably by the companies of the logistics and transport sector, but it is necessary to encourage this transition with incentives and more bargains to those who invest in the sector (e.g. reducing traffic taxes and port taxes for those who have of a less polluting fleet)[248]. Companies must understand that the direction of more sustainable mobility does not mean increasing costs but having companies that are often more profitable, efficient and competitive.

The transition to greenfield infrastructures and the adoption of new technologies generates significant investment opportunities also for Italy, where there is a strong brownfield opportunity.

Among other things in the Northern Adriatic Sea, precisely in Porto Levante, off the coast of Veneto, there is a regasification unit from the Adriatic Lng group, which for 10 years has been satisfying 10% of national gas consumption. It is one of the largest European methane hubs, and imports more than 6 billion cubic meters of gas per year in Italy. Since it has been in operation in September 2009, 700 LNG carriers have moored there, and have given 59 billion cubic meters of gas to the Italian energy system; gas which comes from Qatar, Egypt, Trinidad Tobago, Equatorial Guinea, Norway, Nigeria, the USA and Angola[249].

Following the adoption of regulations requiring the use of less polluted fuels in transport, the use of LNG as a fuel for heavy transport, from ships to trucks, could be seen in the coming years the right choice. Now the challenge for ports in particular in the North Adriatic, including Venice which could be transformed into a low-emission port, is to gear up, building deposits of liquid methane for refuelling ships, but also to be able to supply all the needs of methane from a region like Veneto. The ports meeting in the NAPA association have financed 320 thousand euros for the definition of a development plan for port infrastructures for liquefied gas and logistical solutions for distribution and provisioning. Among other things, projects are being developed for 32,000 cubic meter depots in Porto Marghera and a refuelling point for ships, and the Venice transport company (Actv) plans to invest in a fleet of 100 new waterbuses no longer running on diesel but natural gas[250]. The challenge of having carriers and ships

[248] Di Pillo, L. (2019), *Dalla logistica 10mila posti di lavoro. Servono incentivi per chi investe*, Il Sole 24 Ore, 13/11/2019

[249] Giliberto, J. (2019), *A Porto Levante la piattaforma che distribuisce metano all'Italia*, Il Sole 24 Ore, 04/10/2019

[250] Giliberto, J. (2019), *Patto tra i porti del Nordest per usare gas liquefatto*, Il Sole 24 Ore, 04/10/2019

that use less polluting fuels is also launched to large transport companies, who are already investing in this and in the coming years there could be particular developments on the subject.

If among the future scenarios of world shipping, there are certainly the great doubts about the China-USA trade clash, Brexit, geopolitical clashes, war in the Middle East and much more, surely the challenge of fighting climate change is one of those of great importance and to be taken strongly under consideration. According to a study by Enea and Federlogistica (Conftrasporto), based on reliable models that lead to realistic forecasts, there will be an increase in sea level over the next 20/30 years by an average of 30 centimetres along the Italian coasts, and 90 centimetres, up to 1 meter, by the end of the century. If global warming continues at these rates, by 2100 thousand square kilometres of Italian coasts are likely to be submerged by the sea, including many Italian ports; an estimated 5,688 square kilometres are at risk of flooding, equivalent to an area such as the Liguria Region. The most affected cities will be Venice where the sea will rise +1.064 meters and Naples (+1.040), followed by Cagliari, Augusta, Brindisi, Palermo, Bari, Olbia, Taranto, Salerno, and other important ports such as Livorno, Ancona, La Spezia (+0.994), Trieste (+0.980), Gioia Tauro, Messina, Catania, Genoa and Savona (both +0.922). To all this must be added the “storm surge”, ie the consistency of low pressure, waves and wind, variable from area to area, which in particular conditions determines an increase in sea level compared to the coast of about 1 meter. According to Federlogistica's President Luigi Merlo, a plan is needed to protect the Italian coasts; the Netherlands has issued a € 6 billion green bond to invest in this problem, and have activated for some time a security plan for the defence of strategic ports such as Rotterdam.

In Italy it is necessary to protect our ports and coastal areas, and it is necessary to move in advance with preventive works (maybe even the MOSE system when it will be in operation may already be obsolete and not enough to protect Venice from extraordinary tides). Nowadays violent weather phenomena are no longer an extraordinary event and will be increasingly violent and unpredictable in the future, if we do not act immediately. According to Federlogistica tens of billions would be needed to secure coastal areas, we need dams, walls at least 3 meters high, better anchoring systems in ports, different equipment, raising coastal railways and roads, but first of all we need a cultural change,

and a national awareness of the emergency we will face if we all do not act to protect the environment and our planet[251].

In a greener vision, the choice of less long and therefore less polluted maritime routes would already be a positive factor, if it were not tied to the choice of large carriers and alliances, which primarily look at their own profit, to reduce transport costs with economies of scale, and to use ever larger ships, difficult to fill and consuming even more. Italy and Europe will have to focus more and more in this direction and not be "imposed" on how to act by transport companies, which put pressure to have infrastructures at their service.

As far as Italy is concerned, one of the challenges will increasingly be to provide services, to focus on its know-how, creating ever-greater links between ports and interports. It is necessary that at national level there is a planning and design of port and retro-port infrastructures with a unitary vision; rather than having competition between individual realities, a national interest, and also a European one, should be pursued when necessary (such as the case of collaboration between NAPA ports). For transhipment, Ro-Ro and bulk traffic, greater coordination should be made at national level, to make the best use of existing structures instead of creating new works, that perhaps are not needed. According to the 6th Annual Report of SRM 2019, it is necessary to make a survey of the existing works (ports, terminals, internal connections, interports etc.) and then decide how to operate in a long-term vision, with an industrial and development plan that looks at a time scale of at least 30 years in the future, with technological development and digitalization. Before making major works, it is necessary to immediately identify the economic resources or financial planning tools to be able to carry them out, especially by asking Europe to finance projects (e.g. thanks to CEF funds)[252].

The BRI in this sense becomes a stimulus and an important opportunity to do our part, and to show what is the value of Italy, but it is necessary that the Italian strategy, after the signing of the Memorandum of Understanding with China, follow 3 key principles:

[251] Morino, M. (2019), *Allarme Enea: porti a rischio con l'innalzamento del mare*, Il Sole 24 Ore, 02/11/2019

[252] SRM, Italian Maritime Economy (2019), *6th Annual Report 2019*, pg. 147-150

- Continuity: surely the instability of the governments in Italy is a great limit (in the last 20 years our country has changed 10 different governments); so it is necessary to have a foreign policy line that continues despite the government's changes;
- Coordination: at an Italian level, between economics, diplomacy, culture, coordinating one's intervention to better elaborate the various points on which to act, after the signing of the MoU; and coordination at European level with the other member states and above all with the European institutions;
- Knowledge: if you have to relate to China, you need to know your business partner, listen to the experts, because China already has an economic, diplomatic and cultural plan to carry out and we must have the same, to act on the same level[253].

[253] Speech by Professor Samarani, G. (2019) at the conference "La Nuova Via della Seta e l'Italia dopo la visita di Xi Jinping", Ca' Foscari University of Venice, Venice, 02/04/2019

Conclusion

In the course of this research we have deepened many themes, starting from Asia, and in particular from China, a power in strong economic and demographic growth, and in general a new global power, which in the future promises to continue growing. We have seen how China wants to place itself in the world as a substitute of its historic rival, the United States, as the first economic and military power, creating new spheres of influence and investing in areas of the world, once abandoned, but with great geopolitical value, such as Eurasia and Africa, which will be decisive in the future and important pool of resources for China.

The desire to cope with an internal overproduction, of the largest manufacture in the world and therefore the need to find an outlet for Chinese products, prompted President Xi Jinping to launch the One Belt One Road initiative, which has then transformed into the current Belt and Road Initiative, which involves dozens of countries in the world and billions of investments. There is the will of better connecting China, and therefore Asia, with the largest market in the world, Europe, through land and sea routes, which involve infrastructure investments, with the construction of roads, railways, bridges, tunnels, viaducts, ports, terminals and much more ranging from energy to the military and cultural fields. Yes, because BRI should not be thought of as an initiative with the only desire to connect two countries structurally, because it is also based on an exchange of cultures, students, research, information, policies, diplomatic actions, innovation and, according to many, with China's willingness to export its "model" to the world. According to the most sceptical, both in the USA and in Europe, it would be seen more as a “colonizing” program, aimed at acquiring the strategic foreign assets of the various countries, aimed at controlling the crucial points of the trade, at distributing military bases along the trade routes, to guarantee energy, food, minerals resources for the future of China, and surely after all there is something true, because China acts according to a precise plan of action, well defined and not known to many, in the first place to maximize its interest. It is definitely a "win" program for China, but there are big investment opportunities for many countries that are lagging behind and can grow, so it can be a "win-win" also for Italy, if we are able to take on challenges, act as a team with Europe, defend our strategic assets, act with written guarantees and a well-defined plan,

so as not to fall into traps such as the debt trap. We have seen how Italy has moved following a line of foreign policy that has not transformed, with the changing governments, but it has been consistent and this is certainly a positive fact, which has led to the signing of important commercial agreements and the MoU between Italy and China. For our country there is the possibility of playing a winning game, if, however, we ask for guarantees and we also protect ourselves at European level from an initiative that today still lacks full transparency (e.g. on the funding and on the total costs it has to face); partners must find a compromise and discuss as clearly as possible, respecting internationally established rules and standards. If the initiative really wants to be inclusive and with concrete development it must be clearer, less focused on Chinese interests and limiting financial, environmental and geopolitical risks as much as possible.

We have also seen how the initiative also focuses heavily on the maritime part, where today most of the trade between states in the world takes place, with the widespread importance of Asian and Northern European ports in the rankings of the best and most connected ports in the world. We have described the importance of the sea and of having a safe sea, because a safe sea is a less expensive sea, in an era in which the control of sea routes and straits (chokepoints) becomes increasingly important, to guarantee safety and the free movement of goods. Among the trade routes, the East-West route is the one mostly travelled by transport companies, and among these the Europe-Asia route, and vice versa, takes on great importance, with renew centrality of the Mediterranean Sea, where 20% of world maritime trade passes, and of the Suez Canal, which with its SEZ, is the fulcrum of innovation, manufacturing, technologies and strategic point of commercial flows.

China has well understood the importance of approaching and having strategic bases in Europe, where it has directed 31% of its investments in 2018. In recent years, China has invested, among other things, in specialized industries, in container terminals, construction and purchase of ports, logistics, digitization, and much more both in European countries and in the MENA area. In the last 5 years, China's presence in the Mediterranean has increased by 27%, and most of the goods that arrive by sea from Asia, are passing through its transhipment ports, including Piraeus and Valencia, to then be directed to the target markets. Many of the ports of Northern Europe are the preferred routes for access to the European market, as they are more equipped and with

internal connections (railways, roads, inland navigation), which allows a sorting and a quick departure of the goods. One negative thing that however the ports of Northern Europe have, is that the routes to reach them from Suez require on average 7-8 days of navigation more than the ports of Southern Europe, or the Italian ports, which with the Upper Tyrrhenian and the Upper Adriatic Seas, would give the natural and best gateway to the market in Central and Southern Europe, but also in most of Eastern Europe. The route on the North Italian ports would be more efficient as transit times, energetically and in terms of polluting emissions, however, it is clear that the biggest challenge for Italy is to have ports that are able to modernize in order to accommodate the 20,000 TEUs ships of today and even larger ones of the future. It is also necessary that our country invests more and more in digitally and energy efficient ports, with sustainable investments also in fuels and transports, to better guarantee the mobility of goods on railways instead of roads. Italy must assert its know-how, its manufacturing capabilities, its innovation, with efficient links between industries, interports and retroports, and ports, to ensure that large companies can opt for our ports, compared to those of Northern Europe, rebalancing a situation of imbalance that is present today. Europe seems to want to take up this challenge and the investments in Ten-T core networks, to be made by 2030, seem to be going in this direction, with special investments in the green sector and the fight against climate change. It is more and more necessary to plan where the Silk Road and Ten-T networks can meet and the North Italian ports can be the best solution. But it is not enough to have the most efficient route from multiple points of view, carriers must have convenience with cost efficiency in door-to-door transport, so it is necessary that the entire logistics chain is optimized to operate an entire system. The ports of Southern Italy must also be included as access markets for central and southern Italy and as the possibility of developing industrial areas thanks to the SEZs, which can attract investments and produce goods for the European market. In particular, it is necessary for Italian ports to network with each other in a system that provides for cooperation between ports, which may organize themselves into multiport systems, capable of being attractive and allowing the movement of larger volumes of goods, even in a European vision, as in the case of the ports of the North Adriatic, including other states such as Slovenia and Croatia in a project that surely Europe could support.

Europe itself must be the driving force in a strategic planning project for transport at European level, involving member states, just as at national level our country must be able to set objectives and priorities and comply with a broader common and long-range vision. It is only with infrastructure investments, long-term planning for the next 30 years, with attention to the challenges of digitization, environmental and geopolitics risks, and working all together at national and European level, without clashing between each other, but by competing and cooperating in the same way, that perhaps we will succeed in making sure that the challenges that are presented to us, like the BRI, can be taken and won.

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