Istituto Affari Internazionali

IAI PAPERS 22 | 07 - MAY 2022
ISSN 2610-9603 | ISBN 978-88-9368-244-2

Maritime Scenario in the Mediterranean: Analysis of the Competitiveness and Investments of the Major Logistics Players

by Massimo Deandreis, Alessandro Panaro and Olimpia Ferrara

ABSTRACT

The recent dynamics that are currently shaping the logistic-maritime economy, from reshoring/nearshoring to the growing role of technologies partly owing to the pandemic, are increasing the development of ports in the Mediterranean area and the role of Suez as a strategic hub for the transit of goods and energy flows. These aspects improve the maritime attractiveness of container ports in the Med. Maritime competitiveness is a result of considerable investment due to shipping being a capital-intensive sector, and foreign investment gauges the importance of these interventions alongside the attractiveness of the Mediterranean. In particular, Chinese investment (especially through the Belt and Road Initiative) is very relevant in the Euro-Mediterranean area. Finally, free zones, linked to top Mediterranean ports, are experiencing significant growth while encouraging investment, including in the green sector.

Mediterranean | Transports | Infrastructures | Ports | FDI | China

keywords

IAI PAPERS 22 | 07 - MAY 2022 ISSN 2610-9603 | ISBN 978-88-9368-244-2

Maritime Scenario in the Mediterranean: Analysis of the Competitiveness and Investments of the Major Logistics Players

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Highlights

Outlook

• The world economy *marks a return to pre-crisis figures* (world GDP: +6.1 per cent in 2021 on 2020; trade volumes: +10.1) *but* the growth *curve flattens* out and volatility increases.
• The relevance of the *gas price surge*: The price of gas in Europe rose by 947 per cent in 2021 (21 December) although in January, natural gas prices in Europe fell to below 83 euro per megawatt-hour (-54.4 per cent from December).
• 2021 highlights the *fragility of global supply chains* with skyrocketing freight rates: in the last week of 2021 the Shanghai Containerized Freight Index (SCFI) averaged 5,047 points for the first time ever, showing an increase of 91 per cent on the same period in 2020. Freight rates on the Shanghai-Mediterranean route recorded an even greater increase (+103 per cent in 2021).
• More frequent *delays*: Before the pandemic, the containership capacity normally affected by delays accounted for 2 per cent, a figure that rose to 11 per cent in 2021.
• Shipping produces 2.4 per cent of CO_2 and more than 3 trillion US dollars is needed to achieve decarbonisation of maritime transport.
• *Sustainable investment* in shipping is keeping a good pace: globally 35 per cent of the orderbook refers to ships that use alternative fuels and engines.
• The *bunker business is growing*: there are 144 LNG bunkering ports active in the world and a further 94 are planned.

Mediterranean ports

• The *Far East-Europe* route has exceeded pre-crisis levels: in westbound directions 2021 volumes stood 2 per cent above 2019 "pre-Covid" levels, a marked rebound.
• *Suez* on the top: 20,694 ships utilised the route, a 10 per cent jump on 2020 with record-breaking revenues of 6.3 billion US dollars in 2021. Even more sustained

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. Paper prepared in the framework of the IAI-Eni Strategic Partnership.

growth will be shown, especially in energy: from a current 8 per cent of market share to 15 per cent in 2040.
• *Mediterranean container-ports will grow* even more: they should enjoy stronger growth in 2026, forecasting at an annual average of 3.6 per cent.
• Leading port in the Mediterranean area in 2021 was Tanger Med in Morocco with 7.2 million TEUs handled (+24 per cent on 2020).
• Mediterranean ports are improving their *competitiveness and attractiveness*; the Port Liner Shipping Connectivity Index (PLSCI) has increased by over 20 points since 2006. The gap with the ports of Northern Europe has been constantly diminishing.

Investments

• Marked increase in *foreign direct investments* (FDI) in the Mediterranean area: as *stock* of direct foreign investments, the Mediterranean area with 13 trillion US dollars ranked fourth in the world after Europe (excluding the south), North America and the Far East.
• Global FDI *flows* fell by 35 per cent in 2020 to 1 trillion US dollars, from 1.5 trillion in 2019. The relative resilience of project finance was due only to continued growth in *renewable energy projects*, which constitute more than half of project finance deals.
• *Egypt* was the largest *receiver of resources (FDI) in Africa*, albeit with a significant reduction in flows (-35 per cent) which were 5.9 billion US dollars in 2020. FDI to the country is still directed largely to natural resources: the discovery of the *offshore Zohr gas field*, the development of the *Baltim South West offshore project*, the *Kattameya field project* and the third phase of the *Kamose-North Sinai project* were announced as priorities.
• Several countries in the South Mediterranean area are *focusing on renewable* energies: *Morocco is in the lead* and is showing very positive signs, particularly in terms of production from wind farms. Of the 7.6 terawatt-hours (TWh) of renewable electricity produced in the country, over 60 per cent (4.7 TWh) comes from wind.
• *Belt and Road Initiative (BRI)* investments *in the Mediterranean*: the Mediterranean area accounted for 10 per cent of total BRI investments, with around *81 billion US dollars* in total interventions (*2013–21*). Most investments were focused on transport and logistics (30 per cent) and energy (24 per cent).
• *Investments in ports and port logistics crucial for China*: the Chinese strategy in the Euro-Mediterranean area has been implemented mainly through the government-controlled companies COSCO and China Merchant. Between 2013 and 2021, *port investments amounted to about 6.0 billion US dollars (11.7 if we include the first investments in Piraeus in 2009) across 12 ports*.

Example of top free zones

• Suez Canal Zone and Tanger Med are two examples of efficient free zones.
• *Suez Canal Zone*: investments allocated by the country over the last seven years amounted to approximately 18 billion US dollars in an area of 461 million square metres, four industrial zones and six ports including Port Said.
• Latest plan of special economic zones focused on locating the petrochemical

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industries in Sokhna zone, with investments amounting to *10 billion US dollars*.
• Egypt has put *green hydrogen projects among its priorities*. The projects of the year included working under the umbrella of the national strategy for the *manufacture of cars* as well as the ongoing negotiations to establish the *green hydrogen industry*.
• *Tanger Med*: second biggest free zone in the world in 2020. Tanger Med Zone is made up of four main ventures that form an integrated business proposition spanning automotive and manufacturing, logistics and offshore services. The zone generated 8.8 billion euro of exports and hosted about 1,000 export-oriented firms employing some 90,000 people.
• Operator Tanger Med Group is specialised in *automotive* activity. It is a *cluster*, where top original equipment manufacturers such as *Renault*, *PSA* and *Ford* operate. Italian automotive supplier *Magneti Marelli* stood out among the companies that pushed through big expansion of local operations.

Introduction

The ports of the Mediterranean area, despite their heterogeneity, are going through a moment of great development. Their role as a "transmission belt" between south and north, east and west is increasing, reducing the gap with the large northern European ports.

Their pivotal role has increased thanks to growing foreign investment in the area, which is often oriented towards green energy and the changing needs of the environment.

Also, China's Belt and Road Initiative (BRI) has contributed to boosting investment, with the Mediterranean as a focal point of activity that can play a leading role in connecting ports and territories. The development of ports as logistic nodes has sometimes made possible the development of important free zones capable of creating business both within and around them.

1. Recent changes in Mediterranean maritime economy: The shocks brought by the pandemic, the impacts on ports of the transformation in the world of energy, the environmental impact of the maritime sector

In 2021, the *world economy* marked a *return to pre-crisis numbers* (world GDP: +6.1 per cent in 2021 on 2020; trade volumes: +10.1[1]) *but the production structure does not seem to be the same* anymore and trade's overall strong performance covers

[1] International Monetary Fund (IMF), *World Economic Outlook*, April 2022, https://www.imf.org/en/Publications/WEO/Issues/2022/04/19/world-economic-outlook-april-2022.

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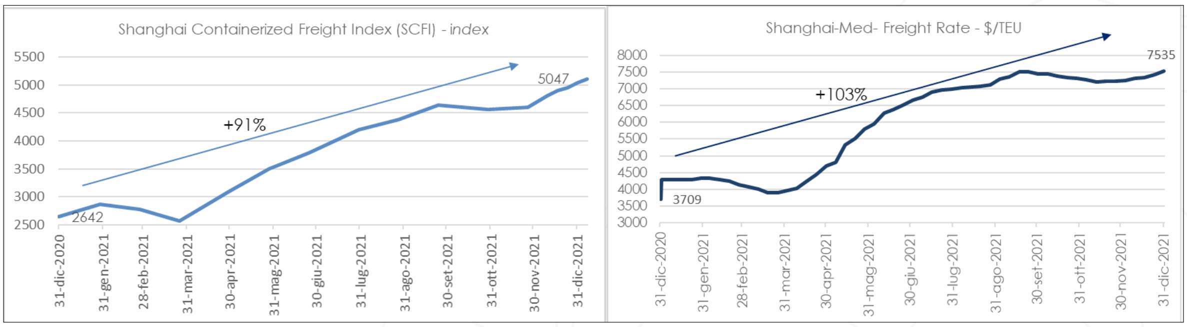
the unevenness of the recovery across countries and areas.

However, the outlook for the *global economy remains uncertain*. Fast rising inflation, persisting supply chain bottlenecks and uncertainty on the evolution of the Covid-19 pandemic, as well as the implications of Russia's war against Ukraine are conspiring to slow the pace of growth.

The *factors* that make the next two years (2022–23) uncertain are the *rise in commodity prices, the high volatility of freight rates, the growing scarcity of certain semi-finished products (which are affected by both supply factors and transport bottlenecks) and inflation*. The real emergency, however, concerns *energy* and in particular *natural gas*, the *price* of which in Europe, for instance, has *risen* by 947 per cent in 2021,[2] although in January 2022, natural gas prices in Europe fell to below 83 euro per megawatt-hour (-54,4 per cent from December). Price increases related to the Russian-Ukrainian conflict are also expected (20 April 2022: 96.4 euro).

The *increase in energy prices supports* also the *dramatic surge in freight rates*. Since the second half of 2020, container freight rates on the main trade routes have skyrocketed: the Shanghai Containerized Freight Index (SCFI),[3] one of the most widely used indices for calculating freight rates, averaged 5,047 points for the first time ever in the last week of 2021, up from 2,783 points in the same period in December 2020, with a 91 per cent increase. The freight rate on the Shanghai-Mediterranean route recorded an even greater increase (+103 per cent).

Figure 1 | The freight market: Comparison between SCFI and the Shanghai-Mediterranean route



Source: SRM on Clarksons.

[2] Trading Economics, *EU Natural Gas*, https://tradingeconomics.com/commodity/eu-natural-gas; see also "Spada (Assolombarda): la crisi energetica mina la ripresa", in *Industria Italiana*, 14 January 2022, https://www.industriaitaliana.it/?p=72144.

[3] The SCFI reflects the spot rates of the Shanghai export container transport market. It includes both freight rates (indices) of 13 individual shipping routes and a composite index.

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According to Clarksons,[4] severe disruption has proved a huge operational challenge, *putting supply chains* under great pressure and causing delays to cargoes and vessel sailings. Indeed, Sea-Intelligence reveals that before the pandemic, *containership capacity normally blocked by delays* accounted for 2 per cent, a figure that rose to 11 per cent in 2021.

It was with the pandemic of early 2020 (and the ensuing global health and economic crisis) that trends already underway accelerated (initially rapidly and now in slight reduction).

Logistics has been put under pressure by Covid-19. Some manufacturers and retailers (e.g., Amazon) are chartering ships while others (e.g., Walmart) are buying containers in order to keep product delivery times under control. In addition, other manufacturers (e.g., Ikea and Benetton) are diversifying their sources of supply of key components and finished products, reducing production in Asia and directing a large part of it to factories in the Mediterranean area (Turkey, Serbia, Egypt and Tunisia). Despite this effort, Ikea has been raising prices by an average of 9 per cent as it faces increasing costs in transport and raw materials. *We are currently witnessing a reshoring/nearshoring process aimed at ensuring shorter reaction time in case of global crisis or temporary trade stops*.

This translates into a challenge for the large maritime carriers and strengthens the process of vertical integration of shipping with production. At the same time, *this also makes the outlook better for short sea routes*.

This is why some believe that globalisation seems to be in decline, especially as governments are adopting measures (subsidies or tariffs) to protect markets to the benefit of domestic producers. Trade in alternative ideas, technologies and energy resources will become more prominent from 2022.

The drive for competitiveness intensified by the pandemic will increasingly push operators towards the technological transition. In fact, one of the most interesting aspects of the Covid-19 crisis is that, for some companies, the pandemic was more of an accelerator than an obstacle (*the pandemic has accelerated remote work, digital economy, supply chain enhancements and automation*).[5]

In addition, in the *maritime sector new technologies* (lithium batteries, new materials, rudder bulbs, Flettner rotors, wind kites, air lubrication systems, etc.) *allow for limiting fuel consumption*, thereby reducing the most important liability in the budget of maritime operators. Fuels produced from alternative sources will have

[4] Trevor Crowe, "A Spectacular Story Behind Seasonal Shopping", in *Clarksons Research*, 23 December 2021.

[5] Khalid Kark, Jagjeet Gill and Ted Smith, "Maximizing the Impact of Technology Investments in the New Normal", in *Deloitte Insights*, 3 February 2021, https://www2.deloitte.com/us/en/insights/focus/cio-insider-business-insights/impact-covid-19-technology-investments-budgets-spending.html.

an immediate impact in terms of CO_2 reduction and environmental sustainability. In the medium term, the need for ships powered by alternative fuels will engender calls for greater financial resources. The well-known company Drewry estimates that *more than 3 trillion US dollars is needed to achieve the decarbonisation of maritime transport*.

According to Clarksons,[6] *shipping produces 2.4 per cent of global CO_2*. As emissions regulatory measures and policy decisions continue to ramp up across the maritime sector, green technology will impact shipping with 4.5 per cent of the fleet on the water and 37.8 per cent of the orderbook in terms of tonnage (GT) currently capable of using alternative fuels or propulsion. In addition, Clarksons is projecting that 5 per cent of global fleet capacity will be alternative-fuelled by the start of 2023.

In addition, green port infrastructures are continuing to expand: currently there are 144 active liquefied natural gas (LNG) bunkering ports (and 94 planned facilities), while over 1,364 vessels have been fitted, or are set to be, with shore power connections.[7]

Currently, *shipping transports 90 per cent of traded goods, so there is a need to keep its emissions under control*. This necessity has prompted the International Maritime Organisation (IMO) to draw up a roadmap towards reducing consumption.[8] As far as Europe is concerned, on 14 July 2021 the European Commission adopted the "Fit for 55" climate package, which aims to make the 2020s a transformative decade for achieving the "climate neutrality by 2050" objective set by the European Green Deal. In particular, the package envisages reducing greenhouse gas emissions by 55 per cent by 2030 compared to 1990 levels, broadening and deepening the decarbonisation of Europe's economy and society.

In the coming years, there will be a series of market impacts associated with emission reduction strategies, from lower speeds, increased scrapping and "multi-level" fleet renewal, i.e., covering mechanical, hydrodynamic, wind and operational parts as well as fuel. In the long term, the energy transition is expected to have implications for trade.

In addition, Covid-19 has had and is having an absolutely unpredictable effect, rare as it is disruptive, so much so as to change the variables that determine the functioning of the economic system as a whole.

[6] Clarksons Research, *Market Updates: 'Green' Technology Uptake*, April 2022.

[7] Ibid.

[8] The new IMO 2020 regulation, raising the sulphur limit in fuel oil for ships from 3.50 per cent to 0.50 per cent, which came into force on 1 January 2020, prohibits the use of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship, unless it is equipped with a scrubber. The reduction strategy is progressive, with a reduction in intensity of CO_2 emissions by at least 40 per cent by 2030 and 70 per cent by 2050 compared to 2008. As regards greenhouse gases, a 50 per cent reduction by 2050 compared to 2008 has been set. The strategy will be reviewed by 2023.

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This situation is driven by a combination of rapidly increasing demand and pandemic-fighting measures across supply chains globally.

The boost in demand from the United States and Europe for domestic consumer goods such as computers, webcams, smartphones, etc., created by the lockdowns and enabled by monetary and fiscal stimuli, caused congestion in many ports (especially in the United States). At the same time, port activities also decelerated because of illness of dock workers due to Covid-19 infections and slowdowns in loading and unloading procedures (due to new security requirements linked to the pandemic).

In addition, the main global carriers (Maersk, COSCO, MSC, etc.) implemented a policy of supply control (ships available) through blank sailing (i.e., cancelling departures). All these factors have caused the blockage/delay of trade whilst also producing an increase in freight rates. This has led to an increase in commodity prices, energy products, semi-finished products and downstream products. In the long run, this increase in prices causes inflation to the detriment of more fragile countries.

Global carriers have also embarked on a process of integration of activities as shipping companies have created divisions operating in the terminal, logistics, rail and truck segments to reduce inefficiencies and increase economies of scale. Recent examples of integration are: (a) Maersk's deal to buy Hong Kong-based LF Logistics for 3.6 billion US dollars, which will help the Danish company to expand beyond its core ocean freight business[9] and (b) the proposal by MSC to acquire 100 per cent of Bolloré Africa Logistics, comprising all the Bolloré Group's transport and logistics activity in Africa, on the basis of an enterprise value of 5.7 billion euro.[10] This also attests to the strategic importance of the Mediterranean and North Africa for the maritime operator.

2. Positioning of Mediterranean countries in maritime connection: Logistical efficiency and investment growth strategies (FDI)

Latest data shows that in 2021 volumes stood 2 per cent above 2019 "pre-Covid" levels,[11] a marked rebound, on *the westbound Far East–Europe* trade routes. This confirms the centrality for the global economy of the *Mediterranean area* which, despite covering only 1 per cent of the world's seas, accounts for *20 per cent of global shipping traffic, 27 per cent of container shipping line traffic*[12] *and 30 per*

[9] Jacob Gronholt-pedersen and Stine Jacobsen, "Maersk Makes 'Big Bet' on Asia with $3.6 Bln Logistics Deal", in *Reuters*, 22 December 2021, https://www.reuters.com/article/lf-logistics-ma-maersk-idCNL1N2T708C.

[10] Bolloré Group granted to MSC Group an exclusivity until 31 March 2022.

[11] Clarksons Research, *Container Intelligence Monthly*, Vol. 23, No. 12 (December 2021).

[12] SRM on World Shipping Council.

cent of oil and gas[13] north-south and east-west flows (including pipelines).

The *Suez Canal* is at the core of this area. Approximately *12 per cent of global trade passes through it*, 30 per cent of all global container traffic[14] and over 1 trillion US dollars' worth of goods per annum. In 2021, *20,694 ships utilised the route*, a 10 per cent jump on 2020 with record-breaking revenues of 6.3 billion US dollars in 2021 also thanks to a 6 per cent increase in fees (except for liquefied natural gas vessels and cruise ships).

The canal's location also makes it a key regional hub for shipping oil and other hydrocarbons. It enables the transfer of an estimated 7–10 per cent of the world's oil and 8 per cent of liquefied natural gas. Approximately one million barrels of oil traverse Suez daily. The *Suez Canal succeeded in becoming a major route for global energy trade, as it doubled its share from 4 per cent in 2005 to 8 per cent in 2019, with 15 per cent forecast by 2040*.[15]

To carry on the development strategy and reduce its bottleneck, the Suez Canal *will be further enlarged*. The expansion project will end in July 2023 and will improve the ship navigation by 28 per cent on 2021.[16]

These data represent a clear demonstration that this passage remained strategic for the world economy even during the dramatic year of the pandemic. The canal serves especially the ports around it, namely the ports of the Mediterranean area and the Red Sea.

Along the Mediterranean coasts there are 18 ports with an annual throughput of more than 1 million twenty-foot equivalent units (TEUs) each. These ports can generate a significant flow of economic and working activities as well as logistics development. During the period 1995–2020 these ports grew at an average annual rate (CAGR)[17] of 7.4 per cent, a remarkable performance which was also possible thanks to the growing role of the Suez Canal.[18]

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[13] SRM, *Italian Maritime Economy 2021*, July 2021.

[14] New Zealand Embassy in Cairo, "The Importance of the Suez Canal to Global Trade", in *MFAT Market Intelligence Reports*, 18 April 2021, https://www.mfat.govt.nz/en/trade/mfat-market-reports/market-reports-middle-east/the-importance-of-the-suez-canal-to-global-trade-18-april-2021.

[15] "Egypt's Suez Canal Targets 15% Share of Global Energy Trade by 2040 – Statement", in *Reuters*, 12 January 2022, https://www.reuters.com/business/energy/egypts-suez-canal-targets-15-share-global-energy-trade-by-2040-statement-2022-01-12.

[16] The southernmost section of the canal, which is 30 km long, is being widened 40 metres eastward and deepened from 66 feets (20 metres) to 72 feets (22 metres). See "Suez Canal Expansion Due to Finish in July 2023", in *Reuters*, 16 January 2022, https://www.reuters.com/business/suez-canal-expansion-due-finish-july-2023-sca-chairman-2022-01-16.

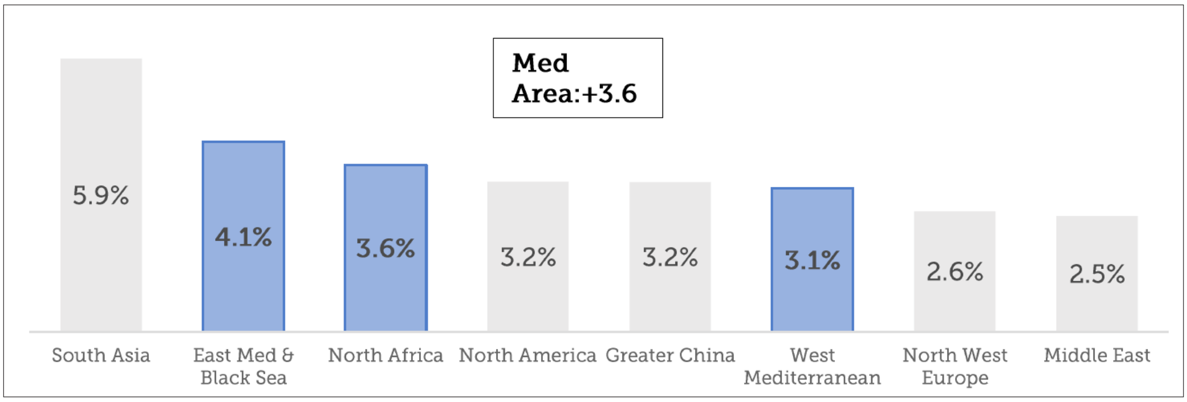
[17] Compound annual growth rate (CAGR) is the annualised average rate of value growth between two given years, assuming growth takes place at an exponentially compounded rate. The CAGR between given years X and Z, where Z – X = N, the number of years between the two given years, is calculated as follows: CAGR, year X to year Z = [(value in year Z/value in year X) ^ (1/N)-1].

[18] SRM, *Italian Maritime Economy 2021*, cit.

IAI PAPERS 22 | 07 - MAY 2022 ISSN 2610-9603 | ISBN 978-88-9368-244-2

According to forecasts,[19] ports in the *Mediterranean area collectively should enjoy stronger growth by 2026* – with an expected annual average of 3.6 per cent.[20] Despite the war – due to the relevance of East Mediterranean ports such as Piraeus – the East Mediterranean and Black Sea area will perform even better (CAGR to 2026: +4.1 per cent) than the macro region, ranking as the second area of the world after South Asia. North Africa will be the third area in the world in terms of growth rate (CAGR to 2026: 3.6 per cent) and the West Mediterranean the sixth (CAGR to 2026: 3.1 per cent).

Figure 2 | Forecast of container growth in the world: CAGR 2021–26 on TEU



Source: Drewry Maritime Research.

3. Maritime connectivity trend in the Mediterranean

In the current era of growing competitiveness, the main challenges and risks that ports and the shipping industry will face in the near future are related to logistics efficiency and *maritime connectivity*.[21] They are essential not only for export and economy but to guarantee the productivity of supply chains. According to the Port Liner Shipping Connectivity Index (PLSCI),[22] *Mediterranean ports have improved*

[19] Drewry, *Container Forecaster*, 1st Quarter 2022.

[20] CAGR for 2021–26.

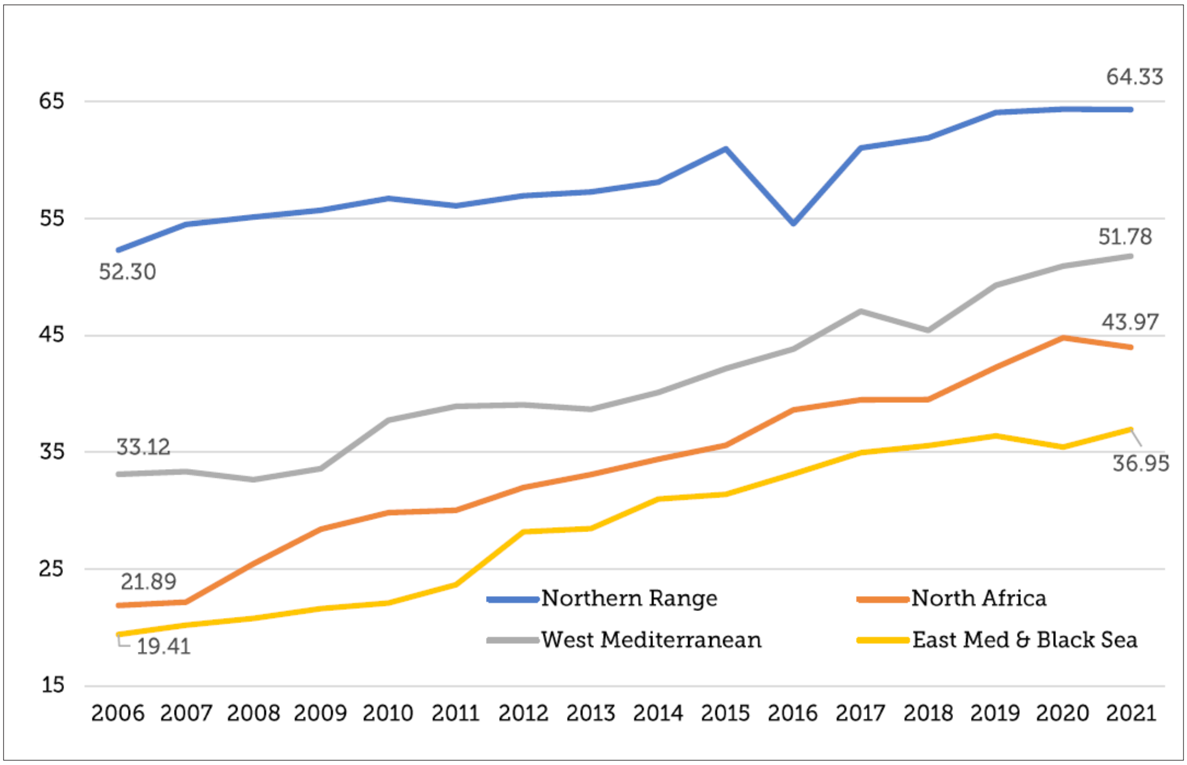
[21] The aim is to understand how well countries are connected to global shipping networks. Countries' access to world markets depends largely on their transport connectivity, especially in regard to regular shipping services for the import and export of manufactured goods. The quality and accessibility of ports and roads affect logistics performance. Access to global shipping and air freight networks and the quality and accessibility of ports and roads affect logistics performance. Maritime transport is the backbone of international trade and a key engine driving globalisation.

[22] An indicator from the United Nations Conference on Trade and Development (UNCTAD) that measures maritime connectivity. It is generated from six components: (a) the number of scheduled ship calls per week in the port; (b) deployed annual capacity in twenty-foot-equivalent units (TEU): total deployed capacity offered at the port; (c) the number or regular liner shipping services from and to the port; (d) the number of liner shipping companies that provide services from and to the port; (e) the average size in TEU of the ships deployed by the scheduled service with the largest average

ISSN 2610-9603 | ISBN 978-88-9368-244-2

their efficiency in the last years but are still far from the best-performing North European ports in the global ranking (see figure 3).

Figure 3 | Comparison among ports Northern Range, North Africa, West Mediterranean, East Mediterranean and Black Sea, 2006–2021



Source: SRM on UNCTAD, *Port Liner Shipping Connectivity Index, Quarterly*, cit.

Figure 3 shows the maritime connectivity (measured by the PLSCI) between four competitor groups of regional ports: Northern Range, North Africa, West Mediterranean, East Mediterranean and Black Sea. To conduct this analysis, we have considered the PLSCI performances of the top 40 ports[23] of the Euro-Mediterranean area between the fourth quarter of 2006 and the fourth quarter of 2021.

vessel size; (f) the number of other ports that are connected to the port through direct liner shipping services. A direct service is defined as a regular service between two ports; it may include other stops in between, but the transport of a container does not require transshipment. See UNCTAD, *Port Liner Shipping Connectivity Index, Quarterly*, https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=170026.

[23] Northern Range: Belgium, Antwerp; Belgium, Zeebrugge; Germany, Bremen; Germany, Hamburg; Netherlands, Rotterdam; France, Le Havre. North Africa: Egypt, Port Said; Morocco, Tanger Med; Egypt, Alexandria; Egypt, Damietta; Egypt, El Sokhna. West Mediterranean: France, Marseille; Spain, Barcelona; Spain, Valencia; Spain, Algeciras; Italy, Genoa; Italy, Gioia Tauro; Italy, La Spezia. East Mediterranean and Black Sea: Greece, Piraeus; Greece, Thessaloniki; Israel, Ashdod; Israel, Haifa; Turkey, Izmir; Turkey, Mersin; Malta, Marsaxlokk; Slovenia, Koper; Lebanon, Beirut; Ukraine, Odessa; Turkey, Ambarli; Russian Federation, Novorossijsk.

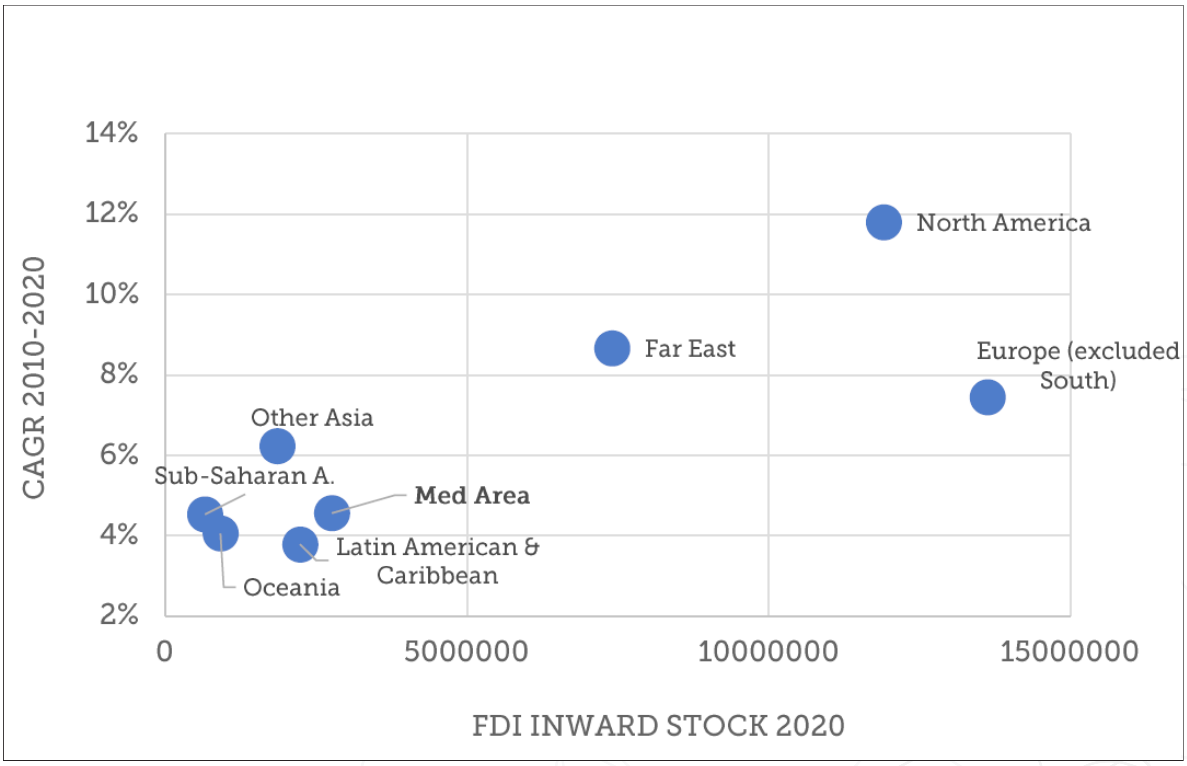
ISSN 2610-9603 | ISBN 978-88-9368-244-2

During that period, North African ports gained more than 10 points on Northern Range and, also, West Mediterranean and East Mediterranean and Black Sea ports reduced their gap with Northern Range ports by 6.6 points and 5.5 points respectively (figure 3).

Thus, we are witnessing a progressive process of convergence in the four groups of ports. This is also due to a progressive growth of investment in the Mediterranean area.

As *stock of FDI*, the *Mediterranean area* with 13 trillion US dollars *ranked fourth in the world* after Europe (excluding the south), North America and the Far East. At the same time, in the last ten years this area recorded an average annual growth rate (CAGR) of 5 per cent.

Figure 4 | An analysis of FDI inward stock by area of the world: Who grew faster? (FDI inward stock – million US dollars 2020 and var % 2010–2020)



Source: SRM on UNCTAD.

FDI flows were deeply affected by the Covid-19 pandemic and its related economic and health consequences, especially in the Mediterranean area.

Global *FDI flows* fell by 35 per cent in 2020, down to 1 trillion US dollars from 1.5 trillion in 2019. The relative resilience of project finance can only be ascribed to

IAI PAPERS 22 | 07 - MAY 2022 ISSN 2610-9603 | ISBN 978-88-9368-244-2

continued growth in renewable energy projects, which make up more than half of project finance deals.

Compared to the global flows, FDI inflows to the Mediterranean area contracted more markedly in 2020: -62 per cent in a year from 97 billion US dollars to 37 billion. As a result, the market share of Mediterranean countries in worldwide FDI inflows declined from 6.4 per cent in 2019 to 3.7 per cent in 2020. Even if most countries of the region were affected, foreign investment inflows were particularly impacted in "energy-dependent economies" such as Italy.

Within the Mediterranean area, Southern Europe plummeted by 68 per cent from 83 billion US dollars to 27 billion while North Africa contracted by 27 per cent (thus less than the worldwide figure, -35 per cent) to 10 billion US dollars, down from 14 billion in 2019. Egypt was the largest incomer of resources in Africa, albeit with a significant reduction (-35 per cent) to 5.9 billion US dollars in 2020. Egypt, like other hydrocarbon-producing countries, has sought to diversify its economy and boost its status as a favoured FDI destination. Attempts to promote FDI diversification include the recent agreement to activate the 16 billion US dollars Saudi-Egyptian investment fund that lists tourism, health, pharmaceuticals, infrastructure, digital technologies, financial services, education and food as priority sectors.

Despite this, FDI to Egypt is still directed largely to natural resources. *The discovery of the offshore Zohr gas field*[24] in the Eastern Mediterranean region has reinforced the pattern. In 2020, the *development of the Baltim Southwest offshore project*,[25] the *Kattameya field project* and the third phase of the Kamose–North Sinai project were announced as priorities. According to UNCTAD, "the momentum for regional FDI is expected to grow over the coming years. Policy pressures for strategic autonomy, business resilience considerations and economic cooperation will boost regional production networks."[26] Ports, infrastructure and inland connection – competitive and sustainable – are also EU key priorities outlined in the Next Generation EU.

The infrastructural context of the Mediterranean region is widely diversified because there have been massive port and inland infrastructure *investments*. The Mediterranean area has witnessed the development of new transshipment hubs since the mid-1990s located at strategic maritime locations in the Med. Leader port in the Mediterranean area in 2021 was Tanger Med in Morocco with 7.2 million

[24] Zohr gas field is located in the 3,752 km^2 Shorouk Block, within the Egyptian Exclusive Economic Zone (EEZ) in the Mediterranean Sea.

[25] Baltim South West offshore project is an Eni Project. Eni, through its subsidiary Leoc, has a 50 per cent interest while BP holds the remaining 50 per cent interest of the contractor's stake in the development lease of Baltim South. The project is executed by Petrobel, the Operating Company jointly held by Eni and the state corporation Egyptian General Petroleum Corporation (EGPC) on behalf of Medgas, jointly held by contractor (Eni and BP) and EGPC.

[26] UNCTAD, *World Investment Report 2021*, June 2021, p. 29, https://unctad.org/webflyer/world-investment-report-2021.

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TEUs handled thanks to the opening of Tanger Med 2, thereby recording steep growth (+24 per cent).

Table 1 | Top 10 ports in the Mediterranean 2021 and % var 2020/21 (data in TEUs)

Port	2020	2021	Var 2020/21 (%)
Tanger Med	5,771,221	7,173,870	24
Valencia	5,414,983	5,630,000	4
Piraeus	5,437,000	5,320,000	-2
Algeciras	5,105,800	4,789,000	-6
Port Said*	4,009,672	3,865,320	-3.6
Barcelona	2,957,700	3,516,000	19
Gioia Tauro	3,193,364	3,146,533	-1.5
Marsaxlokk	2,440,000	2,970,000	21.7
Ambarli	2,887,807	2,932,000	2
Genoa	2,352,769	2,574,795	9

Note: (*) estimated on COSCO Terminal.
Source: SRM on Alphaliner, *Weekly Newsletter*, various years; Port authorities.

Barcelona grew by 19 per cent in 2021 by strengthening its position in transshipment but also improving its gateway cargo. Genoa recorded a +9 per cent trend in 2021 also thanks to the nearby port of Vado Ligure. The COSCO-owned port of Piraeus lost its second position in the Mediterranean ports ranking to Valencia. Algeciras reported lower volumes in sharp contrast to the dramatic growth of the opposite Tanger Med. In addition, the feeble reduction estimated in Port Said in 2021 (see table 1) did not affect its upward performance in 2017–2020. Thus, Port Said on the Suez Canal confirmed its strategic importance to Egypt. In addition, LNG – which the country currently produces at its Damietta LNG plant near Port Said and the Egypt Liquefied Natural Gas (ELNG) export terminal at Idku near Alexandria – also makes the country strategic in the LNG sector. In fact, Egypt's LNG exports skyrocketed to 830,000 tons in October 2021 from an August low of 220,000 tons.[27]

Several *countries in the South Mediterranean area are also focusing on renewable energies* such as solar and wind power as a means to meet the growing demand for electricity. Among them, Morocco is in the lead and is showing very positive signs, particularly in terms of production from wind farms. Of the 7.6 TWh of renewable electricity produced in the country in 2019, over 60 per cent (4.7 TWh) comes from wind.[28] In total, renewable energy sources (RES) power generation accounted for

[27] Pat Davis Szymczak, "North Africa Builds Back with the Rise of Egypt and East Med Gas", in *Journal of Petroleum Technology*, 1 December 2021, https://jpt.spe.org/north-africa-builds-back-with-the-rise-of-egypt-and-east-med-gas.

[28] IEA database.

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18 per cent of Morocco's total power generation in 2020.[29]

The South Mediterranean region could become crucial for creating sustainable mobility throughout the Euro-Mediterranean area. A shift to more sustainable forms of energy (such as green diesel, gas and hydrogen) will be essential on both sides of the Mediterranean to ensure a green mobility market and achieve the ambitious de-carbonisation targets set by the European Commission and most countries in the area.[30]

The central issue is investment flows. Some countries welcome the presence of foreign partners, such as China, which are able to invest in their infrastructure. This need fits well with China's Belt and Road Initiative.

4. China in the Euro-Mediterranean area: Interests, priorities and outlook. A map of some of the main port terminals

The Chinese strategy carried out in the context of the *Belt and Road Initiative in the Euro-Mediterranean area has given a boost to infrastructure*.

The BRI, launched by President Xi Jinping in 2013, consists of two components: a Silk Road Economic Belt – a trans-continental passage that links China with Europe by land – and a 21st-century Maritime Silk Road, a sea route connecting China's coastal regions with Europe through Southeast Asia, the Middle East and North Africa. China's strategy in the Mediterranean is to locate key hubs along the main routes that also give the country the possibility of contact with inland areas.

Between 2013 and 2021, *total investments in BRI countries* reached 838 billion US dollars.[31] In particular, in 2021 they *remained stable on the previous year at around 60 billion US dollars* although this figure is almost halved compared to that of 2019.

BRI investments (stocks) were not equally distributed across all regions. After Asia (48 per cent) and sub-Saharan Africa (20 per cent), the Mediterranean area was the third largest in the world in terms of concentration of BRI investments and accounted for 10 per cent of total investments, with approximately 81 billion US dollars in total interventions (2013–21).

[29] IEA, *World Energy Balances 2021*, August 2021, https://www.iea.org/reports/world-energy-balances-overview.

[30] See also: Alessandro Gili, "Infrastrutture: verso un Mediterraneo più verde?", in *ISPI Commentaries*, 23 December 2020, https://www.ispionline.it/it/node/28761.

[31] SRM on AEI, *China Global Investment Tracker*, cit. CGIT database could confirm 114 countries, while China lists 144 countries joined the BRI. On this issue see Christoph Nedopil Wang, "China's Investments in the Belt and Road Initiative (BRI) in 2021", in *Green FDC Briefs*, January 2022, p. 26, https://greenfdc.org/?p=4762.

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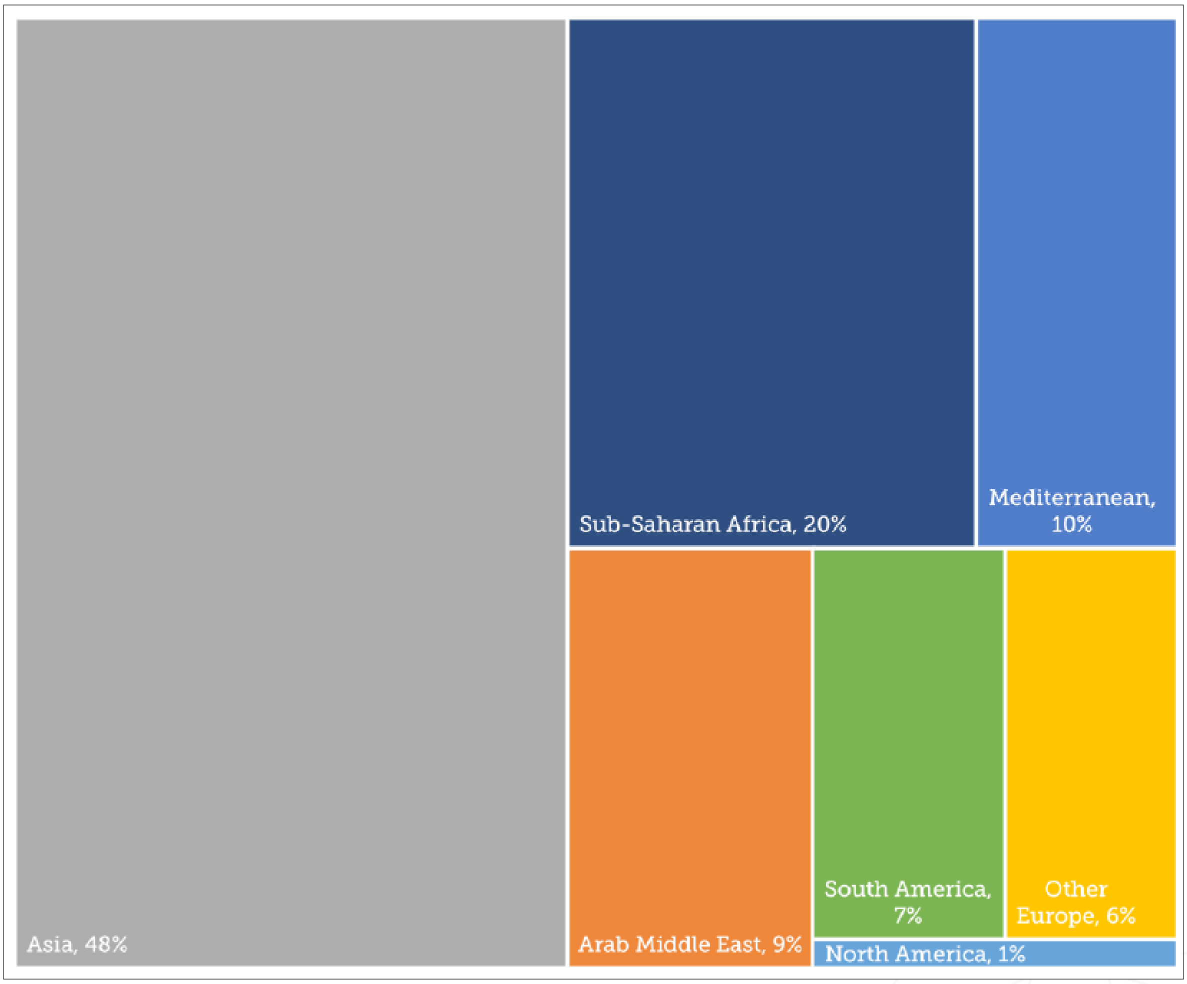
Figure 5 | BRI investments market share by area 2013–2021



Source: SRM on American Enterprise Institute (AEI), *China Global Investment Tracker*, https://www.aei.org/china-global-investment-tracker.

In 2021, *the Mediterranean area saw an investment increase of 266 per cent* (well above global levels, which are stable), bringing flow values back to those of 2019 (albeit far from 2014–16 levels).

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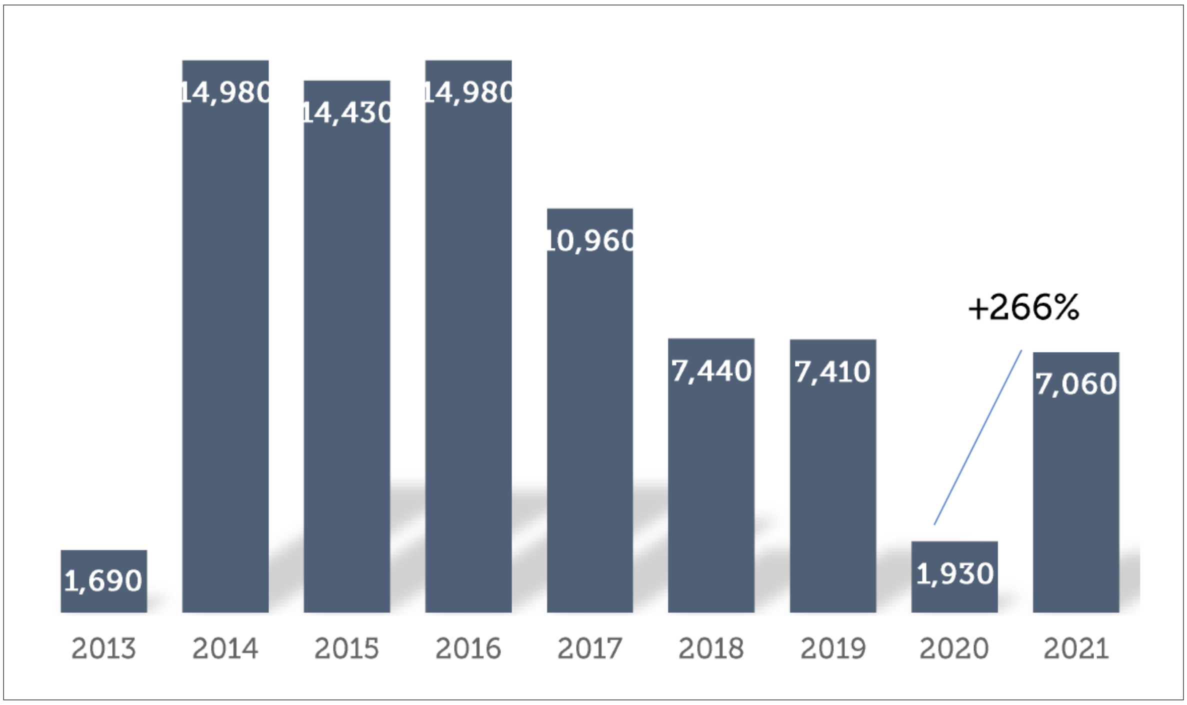
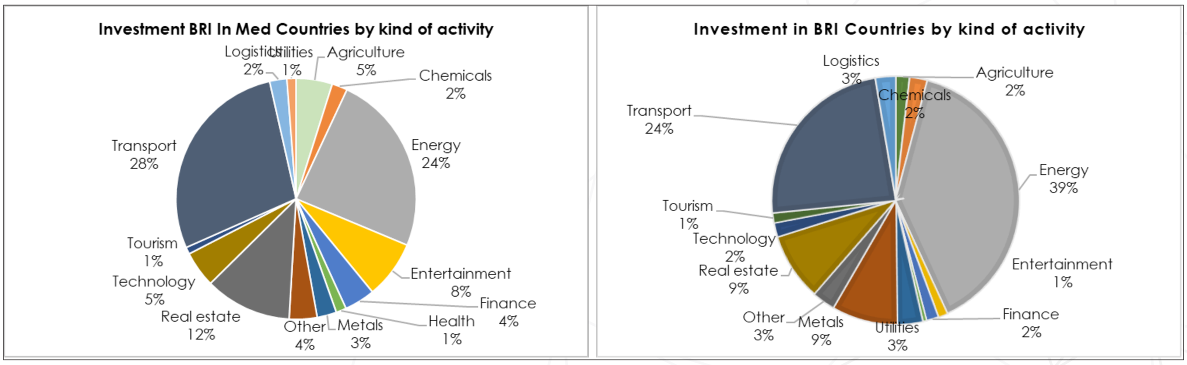
Figure 6 | BRI investment in the Mediterranean area, 2013–2021 (million US dollars)



Source: SRM on AEI, *China Global Investment Tracker*, cit.

In the *Mediterranean area most investments (stock) were focused on transport and logistics (together equal to 30 per cent) and energy (24 per cent)* while at a global level the largest share is dedicated to energy (40 per cent).

Figure 7 | BRI investments by type



Source: SRM on AEI, *China Global Investment Tracker*, cit.

China has worked towards building a global state-controlled terminal network allowing the sharing of costs, services and synergies, with a central junction in

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the ports. Ports are considered logistical hubs along the main trade routes[32] and in addition they offer an excellent position to reach important inland markets. Considering this, when analysing investments in the Mediterranean area, in particular along the Asia-Europe route, it is necessary to widen the scope by considering some investments made in Northern Europe[33] and in the Persian Gulf, specifically in the United Arab Emirates. The Chinese strategy carried out in the Euro-Mediterranean area was implemented mainly through the state-owned companies COSCO and China Merchant between 2013 and 2021 and *ports investments amounted to about 6.0 billion US dollars (11.7 if we include the first investments in Piraeus) across 12 ports in 10 countries*.

China's shift of interest to the Mediterranean area began even before the start of the BRI and in particular with an investment in 2007 of 150 million US dollars to purchase a 20 per cent equity interest in the Suez Canal Container Terminal at Port Said in Egypt. An even more relevant milestone occurred in 2009, when COSCO managed to obtain a 35-year terminal concession for Pier 2 and Pier 3 of Piraeus in Greece.[34] According to the agreement, COSCO would operate in Piers II and III of the container terminals with a total lease of 5.8 billion US dollars.[35] The Mediterranean entry operation through Piraeus was interrupted for a period due to political instability in Greece but then later resumed more decidedly with the BRI.

To focus on more recent BRI investments, early operations include a 2013 action in which China Merchants Holdings and the French Company CMA CGM announced the completion of the sale and purchase of the 49 per cent equity stake in Terminal Link, which owned nine terminals in the Euro-Mediterranean area – among which Marseille and Malta.[36] In May 2015 investments were made in the Israeli ports of *Haifa*, for the 25-year concession of the terminal, and *Ashdod*[37] for the construction[38] of the terminal, each one amounting to 950 million US dollars. These were followed by the September investment in *Ambarli* in Turkey for the purchase of 64.5 per cent of Kumport Terminal in Ambarli for 920 million US dollars, another

[32] See also Paul Tae-Woo Lee et al., "Strategic Locations for Logistics Distribution Centers along the Belt & Road: Explorative Analysis and Research Agenda", in *Transport Policy*, No. 116 (February 2022), p. 24-47.

[33] Although not properly referred to as BRI.

[34] "Update 2-Piraeus Port Names Cosco Provisional Tender Winner", in *Reuters*, 12 June 2008, https://www.reuters.com/article/greece-port-cosco-idINL1245511020080612.

[35] The data is reported by AEI, *China Global Investment Tracker*, cit. On the issue see also Frans-Paul van der Putten, "Chinese Investment in the Port of Piraeus, Greece: The Relevance for the EU and the Netherlands", in *Clingendael Reports*, 14 February 2014, https://www.clingendael.org/node/4705. Figures that could add up to those previously highlighted.

[36] Container Handling Zeebrugge at Zeebrugge (Belgium); Antwerp Gateway at Antwerp (Belgium); Terminal des Flandres at Dunkirk (France); Terminal de France and Terminal Nord at Le Havre (France); Terminal du Grand Ouest at Montoir (France); Eurofos at Fos (France); Somaport at Casablanca (Morocco); Eurogate Tanger at Tangiers (Morocco); Malta Freeport Terminal at Marsaxlokk (Malta).

[37] Currently managed by Shanghai International Port Group.

[38] The construction was assigned to China Communications Construction and today the port is managed by TIL.

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important acquisition on the entry point to the Black Sea.

The *acquisition by COSCO of 67 per cent of the Piraeus Port Authority* (PPA) represents the most visible strategic move of Chinese interests in the Med, increasing the number of big players in the competitiveness of the ports in the Mediterranean area. This was the first time that a Chinese company had taken over the operation of a port overseas.[39] According to the concession, the agreement will expire in 2052. In June 2016, COSCO took an initial 51 per cent share of 320 million US dollars in the port authority after the Greek government decided to privatise it. There was also a master plan to invest other resources into the Piraeus Port. To this end, in 2019 the Chinese shipping giant invested an additional 370 million US dollars in projects towards the development of the PPA. More recently, in 2021, COSCO paid 110 million US dollars for the additional share (interests included) to reach 67 per cent ownership of the PPA.[40] Thus, the investment totalled 430 million US dollars (320 million in 2016 and 110 million in 2021 for the stake in the PPA) to which a further 370 million needs to be added for the renegotiated masterplan of 2019. As COSCO Shipping chairman Xu Lirong said, the expansion is part of a plan to

> build the Port of Piraeus into a regional logistics distribution center by launching new shipping routes, improving the supporting facilities and measures, and actively developing the China-Europe Land-Sea Express Service. The company aims to help the Port of Piraeus strengthen its position as a major port in the Mediterranean.[41]

COSCO's investment greatly boosted the activity of the Port, which became the second Mediterranean container port in 2020 and the third in 2021 (see table 1). Its position as a barycentric junction towards Central Europe on one side and the Balkans on the other is now consolidated. There is little doubt that the Greek port of Piraeus is pivotal in the Chinese strategy.

[39] Qianqian Liu and Polyxeni Davarinou, "Sino-Greek Economic Cooperation: COSCO's Investment in the Port of Piraeus", in *IDS Bulletin*, Vol. 50, No. 4 (December 2019), p. 109-124 at p. 110, https://doi.org/10.19088/1968-2019.141.

[40] The deal came as COSCO Shipping Ports saw revenues at Piraeus surge more than 16 per cent in the first half of 2021 to 139 million US dollars, partly due to higher tariffs. See Keith Wallis, "COSCO Boosts Piraeus Port Ownership amid Investment Plans", in *JOC Port News*, 27 October 2021, https://www.joc.com/node/3681117.

[41] COSCO Shipping chairman Xu Lirong, quoted in: COSCO, *COSCO Shipping Completes Acquisition of All 67% Stake in PPA with the Letter of Closing II Shares Arrangements Exchanged*, 25 October 2021, http://en.cnshipping.com/art/2021/10/25/art_6923_211843.html.

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Table 2 | COSCO investments in Piraeus Port

Year	Type	Amount ($)
2009	Obtain a 35-year terminal concession for Pier 2 and Pier 3 of Piraeus	5.8 bn
2016	Initial 51% shareholding in the port authority	322 m
2019	Investments of the masterplan partially approved	370 m
2021	Additional 16% share in the port authority (reaching 67% of share)	110 m

Source: SRM on AEI, *China Global Investment Tracker*, cit. and various sources.

Chinese investments continued in May 2016 with COSCO's acquisition of 35 per cent of Eurogate in *Rotterdam* for 140 million US dollars – another strategic piece held by China in the first European container port.

In October 2016, *Abu Dhabi* Ports awarded COSCO a 35-year concession to build and operate the terminal at Khalifa Port, Abu Dhabi's main port. It will be the second terminal at Khalifa. According to data, the concession is valued at around 738 million US dollars in total. The two companies will establish a joint venture, with CSPL SPV (a subsidiary of COSCO) being entitled to 90 per cent of the voting rights. The terminal was inaugurated in December 2018.

In October 2016, COSCO and Qingdao acquired 40 per cent and 9.9 per cent, respectively, from Maersk in the *Vado Ligure* terminal, near the city of Genoa in north-western Italy, for almost 100 million US dollars.[42] Vado Ligure ranks as the first semi-automated port in the country. The port system comprises two integrated terminals – Vado Gateway and a reefer terminal, both run by APMT. The Vado Gateway Terminal has been in operation since 12 December 2019. The concession agreement has been awarded by the Western Ligurian Port Authority for 50 years. This represents an important moment for Italy, given its significant sea trade with China. Indeed, China is the first country for Italian seaborne imports, with Italy-China import-export by sea amounting to 28 billion euro in 2020.

Operations continued in 2017 when COSCO acquired 51 per cent of Noatum Port Holdings, whose major assets include the *Bilbao and Valencia* terminals in Spain, for 230 million US dollars. In particular, the large port of Valencia that oversees the commercial traffic through the Strait of Gibraltar is another focal point of the Chinese strategy.

In November 2017, COSCO Shipping ports completed a 76 per cent share purchase of *Zeebrugge* Terminal from APM for 42 million US dollars, and as a consequence took over 100 per cent shareholding of the Port of Zeebrugge, which is the second-largest port in Belgium.

[42] Elaboration SRM on AEI, China Global Investment Tracker, cit. and Raoul de Forcade, "Vado Ligure avvia il maxi-terminal da 900 mila container", in *Il Sole 24 Ore*, 13 December 2019.

China's strategy did not stop and continued with significant investments, with a surge in operations in 2021. In September, the *Haifa* Bayport terminal officially started operation after six years of construction. The new Haifa Bayport terminal will be operated by China's state-owned Shanghai International Port Group according to a 25-year contract. The Haifa Bayport was built with an investment of 1.7 billion US dollars (initial 950 million[43] plus further 750 million) that includes advanced infrastructure and technology.

In September 2021, COSCO paid 76 million US dollars to Hamburg Hafen und Logistik (HHLA) for a 35 per cent stake in Container Terminal Tollerort (CTT) in the Port of *Hamburg*, expanding the Chinese shipping giant's terminal network in Europe. In addition, COSCO Shipping Ports also agreed to take on CTT's 34 million euro debt to HHLA, bringing the total value of the deal to 116 million US dollars.

This could also have an impact on the Italian port of Trieste because HHLA also has an interest in that facility. In September 2020, HHLA signed an agreement to acquire a 50.01 per cent stake in the Piattaforma Logistica Trieste terminal.

In addition to Chinese investments, there are *other examples of foreign investments in Italian ports* such as the *German Eurokai in La Spezia*, *Singapore's PSA in Genoa* or the *Turkish Yilport in Taranto*.

Figure 8 | Constant growth of COSCO and China Merchant strategic investments in the Euro-Mediterranean area

43 See 2015 initial investment.

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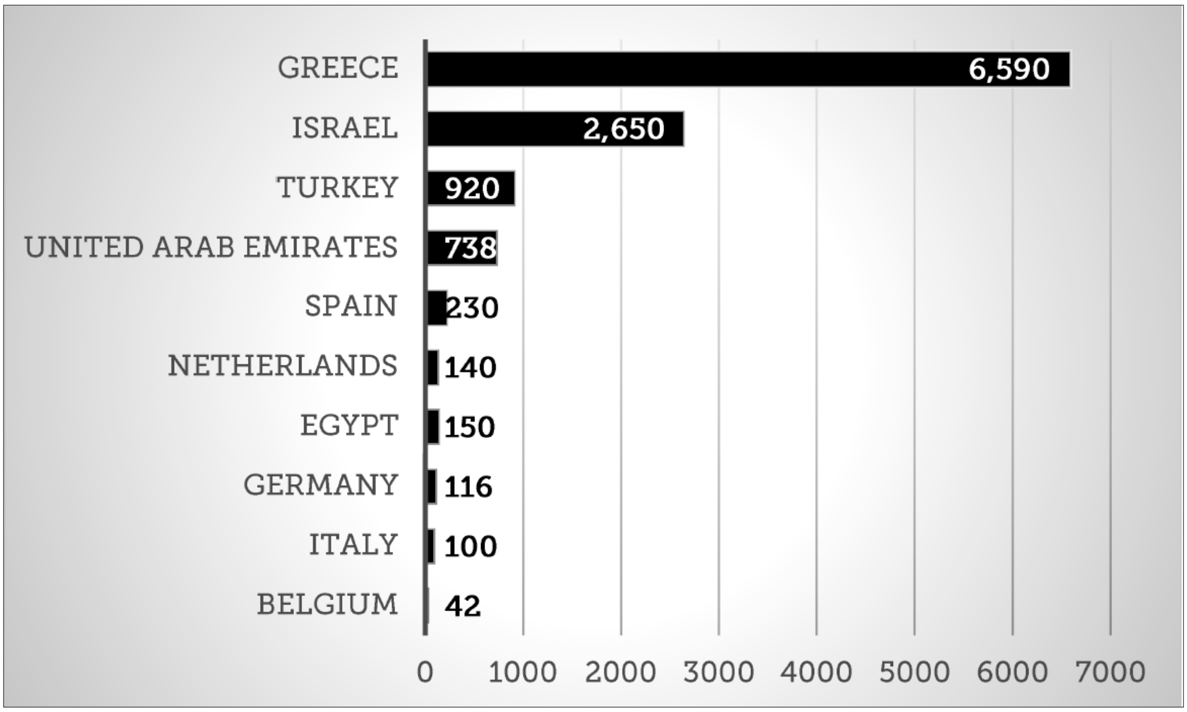
Figure 9 | COSCO and China Merchant investments by Euro-Mediterranean countries (million US dollars)



Note: Antwerp, Marseille, Malta (value not included).
Source: SRM on AEI, *China Global Investment Tracker*, cit. and various sources.

5. Suez Canal Zone, Tanger Med and Mersin: Three examples of efficient free zones

One way in which countries can *be resilient to financial shocks* and help trade stability is *focusing on free zones*. The growth of investments (public and private, as well as direct foreign investments) generates new services and new activities. On this topic, three case studies can be introduced as examples of efficient free zones: the Suez Canal Zone in Egypt, the Tanger Med in Morocco and the Mersin in Turkey.

It was important to create retro-ports where industrial and manufacturing activities were established alongside numerous logistics functions in the special economic zone (SEZ) environment. Creating an active and functional zone makes it possible also to intervene during periods of crisis. The free zones, through tax credits and orientation to re-export, allow authorities to follow the dynamics of the market through policies of prices for promptly responding to market requests. For example, in 2021 the Egyptian General Authority for Investment and free zones introduced several measures to support its base of tenants during the pandemic, including allowing free zone projects to sell 50 per cent of their products in the

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local market and extending deadlines for submitting financial statements by six months.[44]

A positive model, in terms of employment growth (100,000 direct jobs opportunities),[45] is the *Suez Canal Zone (SCZ)* in Egypt where the investments allocated by the country over the last seven years amounted to approximately 18 billion US dollars in an area of 461 million square metres, with four industrial zones and six ports including Port Said.[46]

Fourteen industrial developers are operational in the Zone, among them *Chinese and Russian investors*. *Chinese realised the TEDA zone* in the Ain-Sokhna Industrial Zone. The project involves two phases of activity. The first involves a 1.34 km^2 area (infrastructure and road network works completed in 2017 with total investments of 1 billion US dollars), whereas the second includes a 6 km^2 area (under development). TEDA City includes Chinese plants producing textiles, plastics, motorcycles, recycling, etc.[47]

The *Russian industrial zone* is being built in East Port Said for logistics industries. The project's total area is 5.25 km^2, of which 2.8 km^2 comprises industrial buildings and projects built in this area, so that the rest of the area can be used to establish residential, commercial and recreational complexes for the workers in the region. Total investments are estimated at 6.9 billion US dollars. The zone is expected to generate 35,000 direct and indirect job opportunities.[48]

After the 2020 pandemic, the SCZ implemented its investment plan[49] in a clear signal that times are changing even in this part of the Mediterranean, with a specific orientation towards energy and green. The new decisions improved the business climate and the settlement of some specific industries in the country. The country's policy, linked to the SCZ investment plan, led to many actual investments in the zones of Sokhna and Port Said.

In 2021, the SCZ became instrumental within Egypt's petrochemical strategy. Egypt focused on locating petrochemical industries in the Sokhna zone, with investments

[44] fDI Intelligence, *Global Free Zones of the Year 2021*, October 2021, p. 13, https://www.fdiintelligence.com/content/download/80335/2619225/file/fDi%20October%202021%20free%20zone%20suppl.pdf.

[45] SCZone, *SCzone's Strategy to Attract Investment and Localize Industries*, October 2021, https://sczone.eg/uplibrary/SCZONE_Presentation_-INTEGRATED-ROUTE-_-ONE-DESTINATION-_-EXPO2020Dubai.pdf.

[46] SCZone, *Presentation at 5th Policy Lab INSME*, 12 October 2021, http://www.unido.or.jp/files/9_SCZONE-Strategy-2020-2025-Oct-20th-2021.pdf.

[47] Alexbank and SRM, *The Suez Canal. Evolution of Traffic and Current Trend in Ship Movement during the Covid-19 Pandemic, Competitiveness Indicators and the Role of Industrial and Infrastructural Development Projects*, 2021.

[48] Ibid.

[49] "SCZone Reveals Its Achievements in 2021 Report, Investments Exceed $10B", in *EgyptToday*, 17 January 2022, https://www.egypttoday.com/Article/3/111936/SCZone-reveals-its-achievements-in-2021-report-investments-exceed-10B.

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amounting to *10 billion US dollars*.[50] This plan seeks to achieve high added value in this industry, meet the needs of the local market and reduce import volumes of those products while also creating export opportunities for the produced materials.

Egypt has put *green hydrogen projects among its priorities*. The projects include working under the umbrella of the national strategy for the *manufacture of cars* as well as the ongoing negotiations to establish *green hydrogen* projects in conjunction with Egypt's hosting the COP27 Climate Summit in November 2022. Jointly with the summit, Egypt plants to launch its first green hydrogen plant in November 2022.[51] In addition, in 2021, the SCZ signed a contract to develop Sokhna port with an estimated investment of about 1.27 billion US dollars.

Another case is *Tanger Med Free Area*. It ranked second in fDI'S 2020 Global Free Zones,[52] a significant result because it was the first time that an African free zone achieved such a high position in the ranking. This attests to the tremendous rise in the network of zones developed by operator Tanger Med.

Tanger Med Zones comprises four main ventures that form an integrated business proposition spanning automotive and manufacturing, logistics and offshore services.[53] The zone generated 8.8 billion euro of exports and hosted about 1,000 export-oriented firms employing some 90,000 people.

Operator Tanger Med Group is specialised in automotive activity. It is a cluster, where top original equipment manufacturers such as Renault, PSA and Ford have been active in adding a 24,000-sq-metre automotive logistics platform and carrying out a first 120 ha expansion of the Tanger Automotive City. Italian automotive supplier Magneti Marelli stood out among the companies that pushed through major expansion of local operations.[54]

These free zones are clear examples that if maritime infrastructures are managed so as to cooperate rather than compete they can be open to a plurality of foreign investors and become integrated into global trade flows.

Another case of a growing free zone is *Mersin Free Zone* in Turkey near the Mediterranean port of Mersin (second container port in Turkey after Ambarli). The

[50] SCZone, *Suez Canal Economic Zone 2021 Highlights 'Headway to Empowerment' SCZone 2021 Investments Exceeded $10 Billion*, 17 January 2022, https://sczone.eg/?p=19703.

[51] "Egypt to Open First Green Hydrogen Plant in November 2022", in *Fuel Cells Works*, 14 December 2021, https://fuelcellsworks.com/news/egypt-to-open-first-green-hydrogen-plant-in-november-2022.

[52] fDI Intelligence, *Global Free Zones of the Year 2020*, October 2020, https://www.fdiintelligence.com/content/download/78975/2597788/file/fDi%20Global%20Free%20Zones%20of%20the%20Year%202020.pdf.

[53] The Tanger Free Zone, Tanger Automotive City, Tetouan Shore and Tetouan Park.

[54] Tanger Med Zones website: *Key Figures*, https://www.tangermedzones.com/en/?p=20; fDI Intelligence, *Global Free Zones of the Year 2020*, cit.

free zone realised a trade of 3.3 billion US dollars in 2021 with a 33 per cent increase on 2020. Today Mersin Free Zone employs 9,600 people, with a trade value of 3.8 billion US dollars. The 396 companies present there are mainly operating in textile, paper manufacturing and products, and metal. Due to its very important geographical location, 682 different products are traded with 106 countries from Mersin Free Zone. This shows the versatility of trade from the region.

Conclusions

The Mediterranean ports and their logistics are increasingly relevant for the world economy as well as for Europe and Italy.

Logistic competition is continuously evolving, which encourages countries to grow their infrastructure. Specific elements are the strategic hub of Suez – with about 20,000 ships transiting every year and high relevance for Italy as 80 billion euro in national seaborne import-export passes through the Canal – alongside mega-ports which are investing in the enhancement and strengthening of their free zones.

The Mediterranean, although overlooked by many, is also the transit sea of 27 per cent of strategic maritime routes for containers, and this is an indicator of the interest that major carriers have in participating in the vast business represented by the management of international trade. Nevertheless, it would be reductive to only mention competition based on the great ports of the basin, and this is why this work has also analysed Northern European ports, which play a key role in oil traffic, bulk goods (i.e., metals and wheat) and containers in the Mediterranean.

The most important port challenge has always been that of allowing ships to dock somewhere in the Mediterranean rather than pass through Gibraltar before a final call at Northern Range ports. This challenge has inherently commercial connotations and may shift an economy's balance. For instance, recall how important it is to have a port that can handle big containerships while offering the integration with air and road intermodal systems.

Undoubtedly the gap between big Northern European ports and those of the Mediterranean is being bridged. This seems to be the result of considerable infrastructural investment deployed thanks to increased awareness of the importance of ports on the part of certain countries – including Italy, which has changed its stance despite a historical neglect of the implementation of a programme aimed at modernisation and strengthening of ports.

It is no coincidence that, in the last few years, ports in the Mediterranean basin have been characterised by significant investment by numerous players from the sector of terminal management. A focus on Italy, for instance, has illustrated the cases of the German HHLA in Trieste and Eurokai in La Spezia, Singapore's PSA in

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Genoa, the Turkish Yilport in Taranto and the Chinese investment in Vado Ligure linked to the Belt and Road Initiative.

SRM has estimated a total of 6 billion US dollars' worth of Chinese investment in port terminals with strategic importance. As the geographical map clearly indicates, there is a pincer movement aimed at routing China's international traffic in Europe through investment in the Northern Range (Rotterdam, Hamburg, Antwerp), East Mediterranean (Port Said, Ambarli and Israel), West Mediterranean (Valencia) alongside a mega transshipment hub in Piraeus whose importance has been extensively debated.

The Chinese strategy of entry points for its traffic is being pursued through COSCO, which is continuously investing both in megaships and in the great alliance named OCEAN Alliance whose members include the French CMA CGM and the Taiwanese Evergreen. The winning model in traffic management is in fact that of controlling not only the terminal but also the shipping liner and the land logistic side (the so-called phenomenon of vertical integration).

The future of ports remains intertwined with many parameters and appears hard to predict. What can be said is that the outlook will be influenced by a model that can be defined as PORT 6.0 where the presence of six drivers determines competitiveness. These can be summarised as follows: *innovation* (including the digitalisation of berths and communications with the vessel), *internationalisation* (the ability to attract international traffic through efficiency and availability of docking space), the *attraction* of manufacturing investment (through the support provided by free zones), *sustainability* (where many global ports are working to contribute to the reduction of emissions), *intermodality* (to improve connections with inland areas) as well as *research and workforce training* (operating in the constantly evolving maritime sector requires high-level skills and continuous cooperation with the academic world).

Updated 28 April 2022

IAI PAPERS 22 | 07 - MAY 2022 ISSN 2610-9603 | ISBN 978-88-9368-244-2

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