

ISSN 2384-9398

GeoProgress Journal

Volume 11, Issue 2, 2024



GEOPROGRESS EDITIONS

NOVARA



Geoprogess Association

at University of Eastern Piedmont
Via Perrone 18 – 28100 Novara, Italy

For the earth's ecosystem and human communities progress

Geoprogess is a non-profit organisation founded in 2011 by professors from several Italian universities and scientific institutions with the aim at fostering knowledge, empowering humanity, and improving the quality of human resources, territories and the Earth's ecosystem. Among the activities Geoprogess is carrying out according to its mission, (www.geoprogess.eu), there is the publication of journals, at national and international level, and other kinds of writings, all of which are open access.

President: Francesco Adamo,

Board of Directors: Francesco Adamo, Vittorio Amato (Vice-Presidente), Lorenzo Gelmini (Treasurer), Alessandro Capocchi, Maria Giuseppina Lucia.

Board of Auditors: Patrizia Riva (President), Paola Vola, Chiara Morelli.

Donations to Geoprogess for supporting its editorial and solidarity activities

Consistent with the association's aims, this and other online publications of Geoprogess are open access but they obviously have a cost. The same is true for initiatives concerning the protection of natural environments, landscape, cultural heritage, mainly for development cooperation programs in poor countries.

For these reasons, we urge readers to make a donation to the Association and possibly join and make a personal contribution.

*You can send your **donations** through: Bank transfer to Geoprogess
(Novara, via Perrone 18) at INTESA SAN PAOLO, Fil. 55000, Novara
(Italy) BIC: BCITITMM
Code Iban: **IT75R0306909606100000016996***

ISSN 2384-9398

Doi: <https://doi.org/10.20373/2384-9398/11.2.2024>

GeoProgress Journal

Volume 11, Issue 2, 2024



GEOPROGRESS EDITIONS

NOVARA

GeoProgress Journal (ISSN 2384-9398) is an open access e-journal submitted to a double-blind peer review (www.geoprogress-edition.eu). It is edited by Geoprogress (non-profit association) in line with its strategic objective to increase and disseminate knowledge in order to contribute to the progress of humanity (www.geoprogress.eu).

The ***GeoProgress Journal*** is published by Geoprogress with the collaboration of the Università del Piemonte Orientale



and it is part of the free access online publication community of the University of Eastern Piedmont (UPO). The readers may download articles totally or partially but the source must be cited.

Copyright © Geoprogress Onlus
Via Perrone 18 - 28100 Novara.
E-mail: info@geoprogress.eu

Editorial Staff of the GeoProgress Journal

Editor in chief: Francesco Adamo, Emeritus Professor, Università degli studi del Piemonte Orientale (Italy)

Associate Editor: Daniela La Foresta, Professor, Università degli Studi di Napoli “Federico II”

International Scientific Advisory Board: Bjorn Asheim (Norway and Sweden), Huseyn Bagci (Turkey), Vincente Bielza de Ory (Spain), Vladimir Kolosov (Russia), Sergio Conti (Italy), Elena Dell'Agnese (Italy), Labadi Fadwa (Palestine), Claudio Minca (Netherlands), Julian V. Minghi (USA), Maria Paradiso (Italy), Petros Petsimeris (France), Stephane Rosiere (France), Christian Vandermotten (Belgium), Peter Wiltshier (United Kingdom), Rawal Darshana (India).

Editorial Board: Francesca Rota (Turin), Coord., Salvatore Amaduzzi (Udine), Margherita Azzari (Florence), Silvia Battino (Sassari) Maria N. Buonocore (Naples), Stefano De Falco (Naples), Carla Ferrario (Novara), Chiara Ferro (Naples), Marco Giardino (Turin), Giorgia Iovino (Salerno), Sonia Malvica (Sassari), Luca Ruggiero (Catania), Marcello Tadini (Novara), Angioletta Voghera (Turin).

Publishing Office: Stefania Albanese (Office Head), Chiara Zara (publishing Officer), Edoardo Ardizzone (Editorial officer), Murmora (Webmaster), Francesco Scalera (Webeditor), Ilaria Bruner (Webeditor).

Scientific Advisory Board

1) *Governance issues and rules, Political and Institutional Issues of Community Development, from local to global scale, International Co-operation:* Huseyn Bagci, Massimo Cavino, Massimo Coccia, Elena Dell’Agnese, Labadi Fadwa, Gianfranco Lizza, Sergio Marchisio, Stephane Rosiere.

2) *Social and Cultural Development Issues, and Policies:* Claudio Cerreti, Franco Farinelli, Piercarlo Grimaldi, Ciro Isidoro, Mirella Loda, Claudio Minca, Antonio Palmisano, Lida Viganoni.

3) *Natural Environment Issues and Policies for an Ecologically Sustainable Development, at regional and global scales:* Francesco Dramis, Paolo Billi, Egidio Dansero, Paola Fredi, Marco Giardino, Giorgio Malacarne, Fausto Manes, Antonio Rolando, Fabienne (Charlotte) Orazie Vallino, Aldo Viarengo.

4) *Regional and Urban Development Issues, and Planning Methodology:* Tullio D'Aponte, Fabrizio Aimar, Vittorio Amato, Grazia Brunetta, Cesare Emanuel, Roberta Curiazi, Silvia Grandi, Fabio Pollice, Vittorio Ruggiero, Franco Salvatori, Christian Vandermotten, Angioletta Voghera.

5) *Issues of Business Development, Strategy, and Regional Economy:* Bjorn Asheim, Elio Borgonovi, Maura Campra, Vincenzo Capizzi, Stefano Caselli, Maurizio Comoli, Sergio Conti, Francesco Favotto, Giovanni Fraquelli, Anna Menozzi, Gianfranco Rèbora, Mario Valletta, Peter Wiltshier

6) *Methodological and Technical Issues of Geographic Information and Spatial Analysis*: Margherita Azzari, Salvatore Amaduzzi, Maurizio Gibin, Andrea Favretto, Federico Martellozzo (Firenze), Gianfranco Spinelli.

7) *Energy Issues*: Federico Testa, Riccardo Basosi, Sue Roaf (Edinburgh), George Gross, Marco C. Masoero, Patrizia Lombardi, Emanuela Colombo.

Board of Referees

Professors, Researchers and Experts in the fields and specific topics of the manuscripts submitted for publication.

Headquarter of the Publishers: Geoprogess & DISEI-UPO, Via Perrone 18 – 28100 Novara; E-mail: 1) DISEI-UPO, stefania.albanese@uniupo.it ; 2) Geoprogess, info@geoprogess.eu

Table of contents

Editorial Note.....	9
---------------------	---

ARTICLES

The geopolitical crisis of the red sea - Maritime transport dynamics in the reorganisation of logistics chains	
--	--

<i>Andrea Gallo and Stefano Soriani.....</i>	13
--	----

Hydrocarbon revenues, human development, and economic policies: the Algerian case	
---	--

<i>Domenico Marino, Pietro Stilo and Bruno S. Sergi.....</i>	32
--	----

Fashion system in framework of the multi-level perspective: critical issues of the ecological transition	
--	--

<i>Monica Maglio and Concetta Riccio.....</i>	47
---	----

Food festival as a strategic cultural element for inner areas and local communities	
---	--

<i>Angela Cresta and Ilaria Greco.....</i>	70
--	----

Enhancing and promoting Pantelleria's heritage, what prospects for tourism?	
---	--

<i>Gabriele Casano, Stefania Mangano and Pietro Piana.....</i>	89
--	----

Editorial Note

This second issue of 2024 features articles that align with the Geoprogress association's goal of contributing to human progress. These articles examine various problems across different geographical scales.

The first two articles highlight the need for the energy transition to be gradual and implemented through globally agreed-upon programs, at least at a multilateral level. Without such coordination, there is a clear risk of further exacerbating conflicts and societal distress, rather than promoting progressive well-being.

The first article, by Andrea Gallo and Stefano Soriani, explores the reorganization of maritime transport following the closure of the Suez Canal. It employs a methodology commonly used for analyzing business processes. The results underline the fragility of an integrated global transport system, with spillover effects on both transport flows and strategic nodes. Assuming that the globalized economy will persist and continue to grow, and acknowledging that transport innovations will likely be limited, it becomes evident that geopolitical turbulence in strategic locations will play an increasingly crucial role in shaping transport flows.

The second article, by Domenico Marino, Pietro Stilo, and Bruno S. Sergi, highlights Algeria's vulnerability and dangerous dependence on hydrocarbon revenues, based on a literature review and econometric analysis. The paper emphasizes the urgent need for economic diversification to reduce vulnerability to the global energy market's volatility.

The third paper, by Monica Maglio, addresses the ecological transition, not only energetic, in the fashion industry considered one of the most polluting sectors globally. It particularly focuses on changes in consumer behaviour, asserting that consumers play a key role in driving this change. The paper expresses concern that the ecological transition could exacerbate inequalities in consumer access to eco-friendly clothing, which would be unjust. However, given that social inequalities in this system are already very large, it is difficult to imagine that they would be destined to worsen with the ecological transition.

The issues affecting the internal areas of Italy – which continue to depopulate and age – rightly attract the attention of Italian scholars and politicians. In an attempt to alleviate these problems, various solutions are proposed, often centered around tourism. While tourism can indeed make a considerable contribution under certain conditions, it is rarely enough to reverse the decline in areas benefiting from tourist flows unless it is integrated with other local activities. The same applies to most remote areas, such as the smaller islands.

Angela Cresta and Ilaria Greco, focus precisely on the consideration of tourism's capacity to promote other local activities, in particular through the valorisation of food festivals. Their paper, based on the case study of the Irpinia Mood Food Festival (Avellino), aims to highlight how such festivals, beyond their ability to attract tourists and excursionists, can serve as strategic cultural elements for the development of high-quality food and wine production, as well as for the enhancement of local people and communities.

Finally, Gabriele Casano, Stefania Mangano, and Pietro Piana analyze tourism on the island of Pantelleria, a prestigious tourist destination. With careful planning to preserve its main attractions and foster greater integration with local agricultural and artisanal activities, as well as scientific, technical, and cultural initiatives, Pantelleria has the potential for sustainable and long-lasting development.

ARTICLES

The geopolitical crisis of the Red Sea - maritime transport dynamics in the reorganisation of logistics chains

Andrea Gallo*

Stefano Soriani

Abstract

The interdiction of the Suez Canal due to attacks by the Houthi armed group off the Strait of Bad El-Mandab in the Southern Red Sea and the consequent reorganisation of transport, which was rerouted to the Cape of Good Hope, are explored in this contribution. The methodology presented, commonly used for the analysis of business processes, is adapted in an instrumental way, in order to elaborate a scenario analysis on three different time levels: the pre-crisis situation, the current state and finally future perspectives. The results highlight the fragility of an integrated transport system on a global scale, which has a spill-over effect both on the organisation of transport flows and on the various strategic nodes. Moreover, the current crisis which is affecting the Suez Canal and more generally the Middle East Region confirms the importance that geopolitical turmoil is playing, and it is expected to play in the near future in the reorganisation of transport flows both at global and regional scales.

Keywords: Red Sea Crisis, Re-Routing, Scenario analysis, Transport Dynamics

1. Introduction

Since its opening in 1869, the Suez Canal has been a milestone artery of global east-west trade connecting the Far East to continental Europe, linking the Mediterranean Sea and the Red Sea, creating a direct route without the need to circumnavigate Africa via the Cape of Good Hope (Fletcher, 1958). The geopolitical relevance of this choke

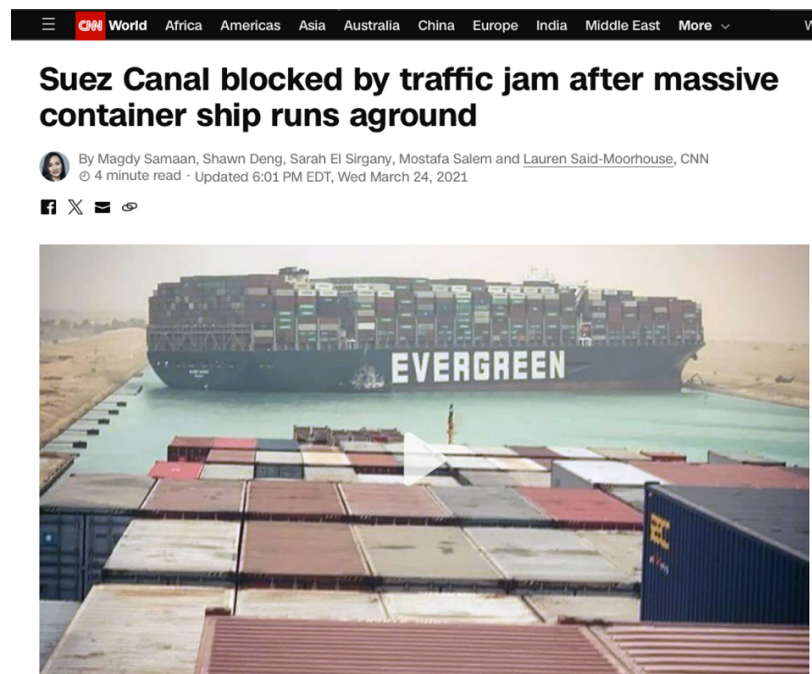
* Andrea Gallo. Department of Economics, University of Venice Ca' Foscari, Dorsoduro, 3246, 30124, Venice (Italy); Department of Economics, Accounting, Mathematics and Statistics "Bruno De Finetti" (DEAMS), University of Trieste, Via A.Valerio 4/1, 34127, Trieste, Italy. E-mail: and.gallo@unive.it

This contribution is the result of a common reflection and elaboration; however, in its drafting, Stefano Soriani wrote paragraph 1, Andrea Gallo wrote paragraphs 2, 3, 4, 4.1, 4.2, and 4.3, and the two authors wrote paragraph 5.

This study was funded by the European Union - NextGenerationEU, in the framework of the GRINS - Growing Resilient, INclusive and Sustainable project (GRINS PE00000018 - CUP H73C22000930001), National Recovery and Resilience Plan (NRRP) - PE9 - Mission 4, C2, Intervention 1.3. The views and opinions expressed are solely those of the authors and do not necessarily reflect those of the European Union, nor can the European Union be held responsible for them.

point is of prime importance as, in recent years, around 12% of global trade traffic transit through the Suez Canal, due to the significant reduction in transportation time and costs, which we shall present in detail below (Schøyen, Bråthen, 2011).

Given these considerations, we can already infer the strategic importance in the dynamics of goods transport flows that the Suez Canal assumes, but at the same time, we must also point out the vulnerability of this choke point, which has been highlighted historically in several situations: the Suez crisis of 1956 is the first glaring example, where, due to geopolitical tensions in the area, in particular related to the nationalization of the canal by the Egyptian President Nasser, it remained closed until early 1957, or during the 'Six Day War' in 1967, when, following the occupation by Israeli military forces of the Sinai Peninsula, the eastern shore of the Suez Canal was occupied and in response, the Egyptian authorities blocked access to the canal for the next eight years, until June 1975 (Alexander, 1992). In chronological order, the fragility of the Far East - Europe route was further highlighted by the blockage of the canal in March 2021, when the container ship named Ever Given, over 400 meters long, ran aground in the canal, causing navigation to be blocked for six days (Gerson, 2023). The footage of the blocked ship, which was broadcast around the world, highlighted the dependence of world trade on this passage. Figure 1 allows us to observe the primary effects of a blockage of navigation along the canal, where the use of Automatic Identification System (AIS), the integrated vessel tracking systems, allows us to observe the congestion that this incident created, with extremely evident repercussions on both the supply of finished products and the supply chains of raw materials and semi-finished products, effectively crippling the European production fabric for a few days (Khan, Rahman, 2021).



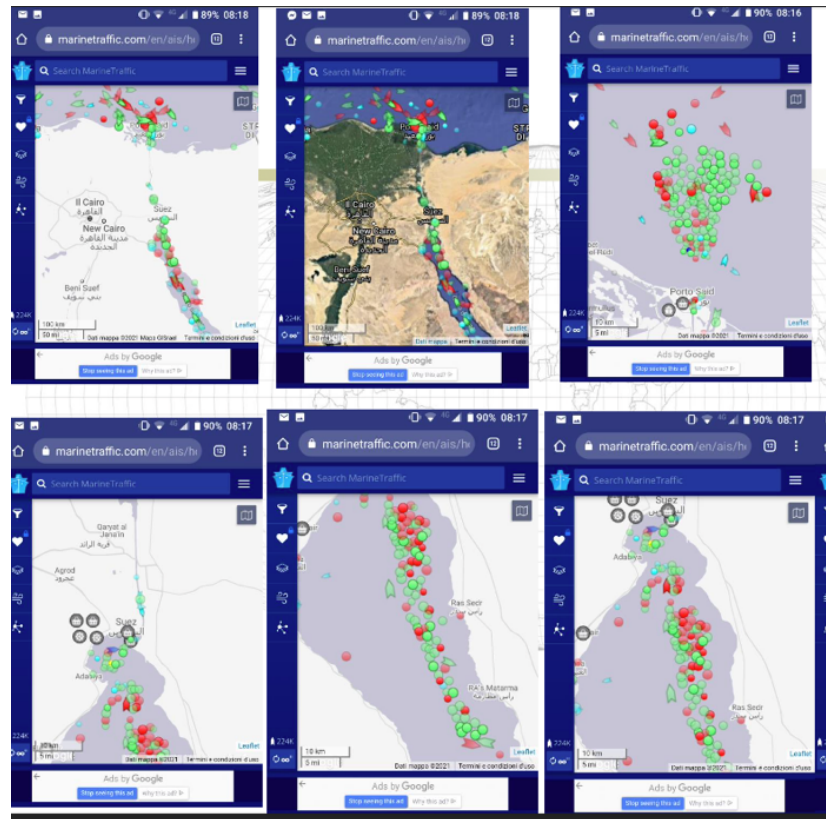


Figure 1: Consequences of the Evergreen Suez Canal blockade crisis. Figure A, reports from international news agencies. Figure B, consequences of the canal blockade with reference to the AIS of ships.

Source: <https://www.cnn.com> ; <https://www.marinetraffic.com/en/ais/home>. Last accessed: 10/07/2024

The considerations outlined above provide the framework explored within this article. Indeed, the Suez Canal is a key route for logistics chains between Far Eastern manufacturing districts and European markets (Amato, Lanzau, 2016). However, since 19 October 2023, a new threat has fallen on the route through the Suez Canal. The Red Sea crisis began as the Houthis movement in Yemen launched missiles and armed drones against Israel, demanding the end of hostilities in the Gaza Strip as part of the Israeli-Palestinian conflict. Since then, the Houthis have also started military action against merchant and military ships in the Red Sea, initially flying Israeli flags, and later indiscriminately bombing ships belonging to all pro-Israel coalition countries. The militants of the Houthi movement, who oppose Yemen's internationally recognized government, have controlled a considerable part of the country's territory along the Red Sea coast since 2014. Shortly after the start of hostilities between Israel and Hamas, the Houthi armed group in fact began attacking the merchant ships of various countries transiting the Red Sea, and in particular in the Bab el-Mandeb Strait, a global economic chokepoint as it functions as the southern maritime gateway to Egypt's Suez Canal. In the light of this serious security threat, the near totality of maritime traffic has decided to reschedule their voyages by crossing the Cape of Good

Hope and circumnavigating Africa, preferring an extremely longer, but at the same time safer route.

This contribution proposes to study the implications that this geopolitical crisis is having on trade on a global scale, highlighting the economic, and strategic consequences through a scenario analysis. In detail, the contribution is organized as follows: in the second section, the events that occurred from October 2023 to June 2024 are presented in detail, while the following one presents the methodology, we've used to capture the main implications of the Suez crisis on both the logistics chains and the most involved transport nodes. In the fourth section we present the results and the discussion while in the last one the main conclusions are raised.

2. The Suez Crisis - The Evolution of Events

To analyse the current crisis in the southern Red Sea, one has to start with a brief historical premise. There has long been an ongoing conflict arising from the ongoing civil war in Yemen between the internationally recognized government and the militias of the Houthi group. While the first is mainly supported by Saudi Arabia and an international coalition, the second has the backing of Iran and of the troops loyal to former president Ali Abdullah Saleh (Palik, 2017).

In 2014, Houthi militias successfully conquered major ports and cities along Yemen's Red Sea coast. What began as a civil war, confined to Yemen alone, soon escalated into a regional conflict, with a Saudi-led military intervention in support of the government in March 2015 (Ahram, 2022). The main purpose of the intervention was to ensure the security of the Bab el-Mandeb Strait: a bottleneck at the southern entrance to the Red Sea. The Bab el-Mandeb represents the access corridor to the Red Sea. The Strait makes even more evident the strategic importance of the Gulf of Aden, where most major world powers, starting with China and the United States, maintain a military presence, traditionally affected by high levels of piracy (Schofield, 2014). International cooperation initiatives and regional laws have not been successful in improving the security situation in the Gulf.

Against this backdrop, maritime incursions by Houthi militias have taken place since 2015, which, through the use of combat drones, cruise missiles, speedboats and mines (Abdullah and Singh 2018), have exploited the tightness of the Bab el-Mandeb Strait to launch sporadic attacks against commercial vessels.

Israel's military action against Hamas in Gaza in mid-October 2023 effectively set off a chain reaction, with Yemen's Houthi militias declaring war against Israel. The armed group that controls the western part of Yemen, including most of the Red Sea coast near the Strait of Bab el-Mandeb, then began a sabotage and guerrilla action against merchant vessels in passage near the coast of the strait¹.

Although the Houthis initially claimed that they only targeted cargo ships travelling to or from Israel or Israeli-owned ships, the escalation soon became visible, with the involvement of ships from countries that supported Israeli actions in Gaza becoming more and more evident. In mid-December 2023, security threats escalated to the point

¹ Source: <https://unctad.org/podcast/precarious-passage-red-sea-ship-attacks-strain-supply-chains> Last accessed: 10/11/2024

where Maersk², MSC³, Evergreen⁴ and other shipping companies started to reroute their traffic through the Cape of Good Hope, choosing to circumnavigate the entire African continent rather than transit the Gulf of Aden and the Strait of Bab el-Mandeb. At the meantime, a maritime coalition was launched to defend maritime transport against attacks.

When the lack of security in the region began to damage international shipping and trade, a growing international reaction emerged, led by the United States. On 18 December 2023, US Secretary of Defence Lloyd Austin issued a key statement, explicitly referring to freedom of navigation and initiating Operation Prosperity Guardian⁵, aimed at safeguarding free trade and free transit in the surrounding waters of the Yemeni peninsula. Since the beginning of January 2024, the situation has become even more pronounced due to the intensification of attacks by the Yemeni armed group. In the time span between October '23 and June '24, there have been roughly 120 Houthi-led attacks on ships in transit in the southern Red Sea⁶.



Figure 2: Houthi Attacks on January 20th, 2024.

Source: <https://www.bbc.com/news/world-middle-east-68031732> last accessed: 08/07/2024

² <https://www.maersk.com/news/articles/2023/12/21/announcement-of-charges-in-relation-to-red-sea-gulf-of-aden-situation-from-far-east-asia#:~:text=On%205%20January%202024%2C%20Maersk,Hope%20for%20the%20foreseeable%20future.> Last Accessed: 06/10/2024

³ <https://www.msc.com/en/newsroom/customer-advisories/2023/december/msc-palatium-iii-incident-in-red-sea---rerouting-suez-traffic-to-cape> Last Accessed: 06/10/2024

⁴ https://www.evergreen-marine.com/emc/latestnews/jsp/EMC_NewsDetail.jsp?lang=en&newsId=NEWS2023122200017237 Last Accessed: 06/10/2024

⁵ <https://www.defense.gov/News/Releases/Release/Article/3621110/statement-from-secretary-of-defense-loyd-j-austin-iii-on-ensuring-freedom-of-n/> Last Accessed: 06/10/2024

⁶ <https://acleddata.com/yemen-conflict-observatory/red-sea-attacks-dashboard> Last Accessed: 06/10/2024

3. Methodology

To deal with the complex geopolitical scenario, in relation to the disruptive consequences of the crisis in the Red Sea on traffic flows, which have been shifted to the route that circumnavigates Africa by rounding the Cape of Good Hope, the proposal of this contribution is to adapt in a geographical context an approach commonly used for the analysis and management of business processes called "Business Process Reengineering" (Gunasekaran, Kobu, 2002). This approach suggests to divide the analysis of the productive system into three different phases: the first is called 'as is', i.e. the identification of existing processes; the second phase called 'Current State Map', i.e. the in-depth understanding of these processes by considering the main factors behind the changes; and the third phase commonly referred to as 'to be', aimed at developing concrete objectives (Buytendijk et al., 2010).

In this sense, the methodology presented aims to translate this methodology, widely used in business process analysis, into a geopolitical scenario analysis application framework (Gilbert, 2000).

In this case, the first component of the scenario analysis will be named "as was" scenario instead of "as is," in which the situation prior to the Suez Canal intercession due to the Houthi attacks is detailed.

The second phase of the analysis is aimed at understanding the ongoing trends, using the "Current State Map."

Finally, the different strategic factors that could affect the future scenario with regard to the traffic transiting the Suez Canal and the possible consequences both on the different port systems and on the routes and strategic choices made by the major shipping companies will be considered, in the phase that is called the "to be scenario." The methodology expressed is shown in Figure 3 presented below, where we can see how the scenario analysis is related to specific temporal periods.

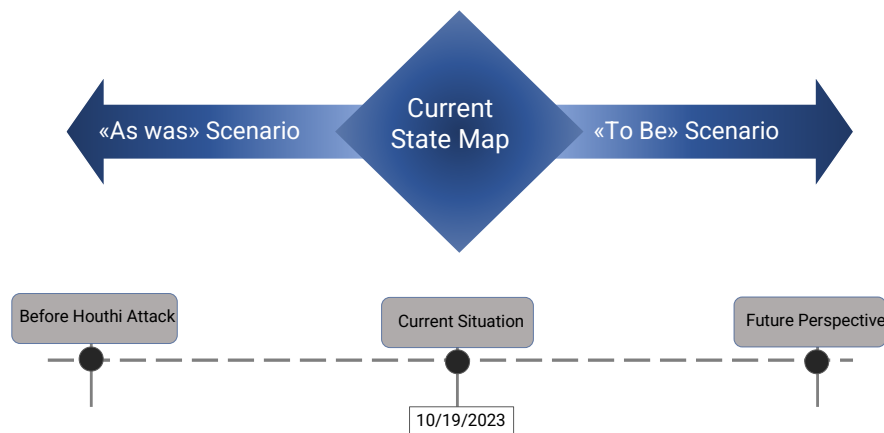


Figure 3: Schematic representation of the methodology used.

Source: Elaboration of the Authors.

In this instance, the "Business Process Reengineering" model has been adapted and reintroduced in a geopolitical environment, replacing the "As is" component, i.e., the starting condition with "as was," since the starting condition that is aimed to be

analysed was the situation before the attacks by the Houthi, which occurred as seen earlier in mid-October 2023. This component focuses on the detailed description of the situation regarding the transport dynamics across the Southern Red Sea before the military escalation in the Bab el-Mandeb Strait.

The second phase of the analysis, referred to as the "Current Position Map" abbreviated CPM, is aimed at depicting and visualizing in detail the transportation dynamics in the study area, and especially with regard to the implications related to vessel re-routing and the economic, environmental, and logistical implications of using the route that transits the Cape of Good Hope versus the traditional use of the Suez Canal.

The third and final phase of analysis, the so-called "To Be Scenario" thus represents the conclusive part of the analysis and is aimed at presenting reflections and considerations on the wide range of implications that the Red Sea interdiction is generating.

4. Results and Discussion

The decision to convoy almost all commercial traffic through the Cape of Good Hope route due to the Houthi attacks in the Red Sea has set off a series of highly complex and interconnected chain reactions that will be analysed in this section, having short- and medium-term repercussions.

The most obvious effects attributable to this reorganization of global logistics chains involve the extension of transoceanic routes from the Far East to European markets by more than 7000 nautical miles and the subsequent increase in travel time and transportation costs (Notteboom et al. 2024).

Second, the reorganization of transport has peripheralized the role of Mediterranean ports from intercontinental transport dynamics. These considerations are highlighted in Figure 4 below, where AIS route data for transit ships on 12/01/2023 (Fig. 4A) and 01/02/2024 (Fig. 4B)⁷ are shown.

Following the methodology presented previously, we will then go on to introduce for the different scenarios the main features and the various types of transitions that the crisis in the Southern Red Sea has generated, starting from the stationary condition occurring before the outcome of the Israeli-Palestinian conflict and the subsequent armed intervention by Yemen's Houthis against ships sailing through the Bab el-Mandeb Strait, then analysing the current situation, and finally going on to consider what are the future prospects in relation to traffic dynamics.

⁷ <https://unctad.org/publication/navigating-troubled-waters-impact-global-trade-disruption-shipping-routes-red-sea-black> Last Accessed: 13/10/2024

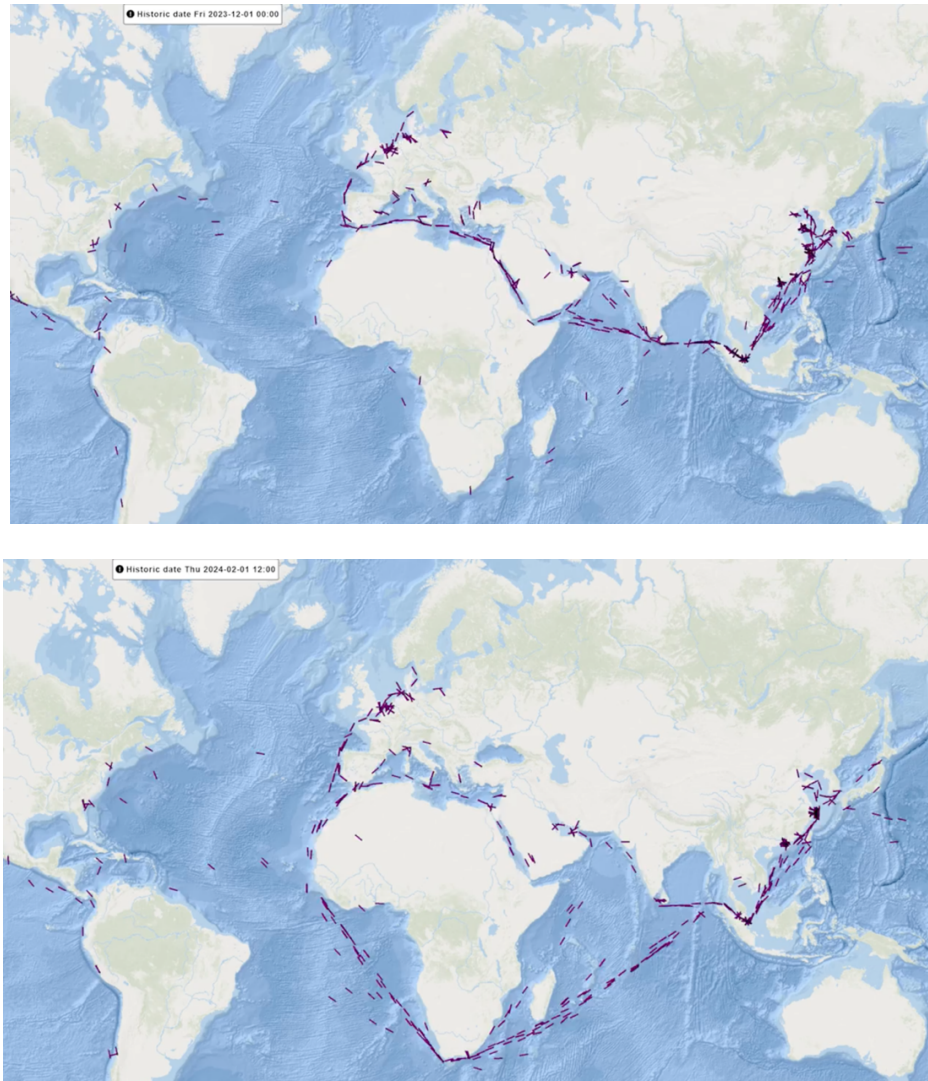


Figure 4: Route travelled by vessels before and after the Suez Canal crisis.
Source: <https://unctad.org/publication/navigating-troubled-waters-impact-global-trade-disruption-shipping-routes-red-sea-black> Last accessed: 20/12/2024

4.1 “As Was” Scenario

The "pendulum" routes, identifiable as the routes that commonly connect three different port ranges, and the "Round the World" routes that represent circum-equatorial transport services that call on a limited number of transshipment hubs (Rodrigue, 2020), represent one of the main ridges of global trade while assuming a pivotal role in linking the main supply points of the Far East and the European market. In this context, traffic flows transiting through the Suez Canal, accounted until the crises broke out for a share of between 12 and 15 percent of global trade volumes, and according to data from the U.S. Energy Information Administration⁸, as reported by

⁸ <https://www.eia.gov/todayinenergy/detail.php?id=61025> Last Accessed: 21/12/2024

Notteboom (Notteboom et al 2024), more than 100 million barrels of oil passed through the Strait of Bab el-Mandeb daily, accounting for about 8.7 percent of world demand. The time and cost efficiency of the route through Suez also allowed for highly optimized supply chain management, with heavy reliance on just-in-time logistics, enabling European companies to maintain low inventory levels and respond quickly to changes in demand and any short-term market shocks. However, this dependence on the Suez Canal also represented a point of vulnerability.

In the pre-Suez crisis framework, the Mediterranean Sea port system was characterized by a non-homogeneous set of ports. Indeed, we can see how this basin is dotted with a multitude of different ports of call, from established large ones to a wide range of medium and small ports, each with specific characteristics. In this context, locational and strategic dynamics intersect within the hinterlands served and the different commodity categories handled. This combination of different types and sizes of ports, aided by the presence of a large hinterland, has led to the creation of a uniform space. (Slack, 1985). There are numerous studies in the literature that have explored the dynamics of competition and development of port systems on a regional scale or with reference to the port system and its vulnerabilities (Kenyon, 1970; Song 2002). The dynamics of transport flows in the Mediterranean basin have been covered in the literature in several studies (Ridolfi 1999, Zohil e Prijon 1999, Ferrari 2006). Since the opening of the Suez Canal, The Mediterranean Sea played an extraordinarily important role as a natural backbone for trade flows connecting the Far East to continental Europe. However, this maritime and coastal area is bordered by two choke points: the Strait of Gibraltar to the west, which is called upon to fulfill the role of a junction with the Atlantic Ocean, and the Suez Canal to the southeast, which is the most efficient route for handling the movement of goods on the east-west route. Already Notteboom and Rodrigue in 2009 (Notteboom, Rodrigue 2009) noted how this basin was the key intersection in relation to global and regional trade flows. The importance of this maritime region is reflected in the complex and articulated port network that has developed in response to this need. Port infrastructure along the Mediterranean coasts has been carefully planned and developed to facilitate the efficient movement of goods and facilitate international trade (Fancello et al. 2021). The interconnectivity among Mediterranean ports, along with their proximity to major trade routes, has generated a highly specialized and highly interconnected port system (Tadini, 2019).

These peculiarities have generated a steady increase in the traffic volumes operated by the different ports, rising from a share of about 34.9 million TEUs in 2010 to 50.7 million in 2022 for the whole area (SRM, 2023; Gallo, 2024A).

The strategic role of ports in the Med area, is evident not only from a perspective of traffic dynamics, but also from the investment and vertical integration strategies implemented by the various Shipping Companies. These represent the most prominent players in the shipping industry as they take on the role of decision-makers in routing choices and ports to scale. Port and terminal selection is an extremely complicated and also crucial decision-making process in the logic of shipping dynamics (Mangan et al., 2008). Several studies have examined this process from various perspectives, focusing especially on understanding the factors that influence the strategic decisions of Shipping Companies. Lam and Dai (2012) identified several factors that play a crucial role in port and terminal selection by shippers and logistics service providers, with competitive prices for port services representing one of the main considerations.

This reflects the competitive nature of the port industry and the need to reduce transportation costs to improve overall profitability. However, in recent years, shipping companies have begun to adopt powerful vertical integration strategies, investing significant financial resources in terminal operations, acquiring equity stakes in terminal companies or taking direct management of the various terminals (Slack et al., 1996; Soppé et al., 2009; Zhu et al 2019; Huo et Al., 2019). The choices to expand the value chain through investments in the various terminals aims to bring several benefits to the shipping industry, from reducing port costs, to optimizing and streamlining the operational management of its trades, and finally to stabilizing revenues (Brooks et al., 2014; Notteboom et al. 2017). In fact, this increasing trend has led the various shipping companies to establish subsidiaries aimed at acquiring a stake or direct control in the various port terminals. In particular, we can note how Maersk has established APM Terminals, MSC utilizes Terminal Investment Limited (TIL), CMA CGM has established Terminal link, and China COSCO Group COSCO has established the holding company Shipping Ports Limited. It should also be pointed out that, several shipping companies often collaborate with several established terminal operators including some of the largest market players on a global scale (PSA, Hutchinson Port, DP World, Eurogate) (Notteboom, Rodrigue, 2012). The proposed vertical integration strategies of the different companies appear to be different: on the one hand, Maersk and MSC, through their subsidiaries APM Terminals and TIL Terminal Investment Limited, have adopted an extremely aggressive strategy through the acquisition of or participation in a variety of small-medium and large ports, with an extremely widespread distribution over the entire Mediterranean region. On the other hand, CMA-CGM and Cosco have decided to invest significant resources on a few carefully selected ports that are still able to occupy strategic positions in the Mediterranean basin. The most relevant example in this regard is the case of COSCO, which acquired the entire equity stake in the Port of Piraeus, creating a key node in their transport network on a global scale. This can also be seen with the significant increase in traffic volumes transited through Piraeus, which has seen an expansion of its trades from 800 thousand TEUS in 2010, to over 5 million in 2022⁹, but at the meantime we can observe how CMA-CGM has also conveyed its investments to the port of Marsaxlokk (Malta), significantly increasing traffic volumes, reaching handling over 3 million TEUs per year¹⁰.

These considerations are structural in order to understand the centrality assumed by the Mediterranean ports also from the perspective of the leading maritime transport market players, both from the perspective of transit transshipment hubs to be scaled up to reach the Northern Range ports and with reference to the Mediterranean basin's port gateways, such as Valencia, Barcelona, Ambarli (Istanbul) or Genoa.

Against this background, the World Container Index (WCI) contributes to monitor and evaluate the recent evolution of the shipping industry. As a point of fact, it provides an import picture on the main trends of container freight rates on various global trade routes; in particular, it sheds light upon the fluctuations in transportation costs for major shipping routes between Asia, Europe and North America (Fakhr-Eldin, Notteboom, 2013). If we consider the Shanghai-Genoa and Shanghai-Rotterdam

⁹ <https://www.statista.com/statistics/1415001/container-throughput-port-of-piraeus/> Last Accessed: 11/12/2024

¹⁰ <https://www.maltafreeport.com.mt/about-us/accomplishments-2/traffic-volumes/> Last Accessed: 14/12/2024

routes¹¹ we can see that during the 2012-2020 period, the cost of handling a container was fluctuating between \$1,800 and \$2,200. The picture has dramatically changed due to Evergreen's blockade of the Suez Canal in 2021 and the consequences of the global covid-19 pandemic. The two events underlined the intrinsic fragility of the global transportation and logistics system, which had become years after years more and more integrated. In particular, the covid-19 pandemic completely disrupted the previous pattern, skyrocketing these costs, which touched a peak of \$13,765 on Oct. 7, 2021, due as much to the problems associated with the handling of goods at the docks, particularly in East Asian ports, as to the misplacement of empty containers stranded at destination ports. The trend then showed a significant reversal, with a steady decline in freight costs until October 26, 2023, when the Shanghai-Genoa freight rate reached \$1.344.

4.2 Current State Map

With intensified Houthi-led attacks off the coast of Yemen, the near-totality of commercial ships in transit have decided to take the alternative route by crossing the Cape of Good Hope and circumnavigating Africa. This alternative route results in the extension of the Far East-Europe passage by about 7,000 nautical miles, adding between 10 and 12 days of sailing compared to the Mediterranean route through Suez (Wright, 2024¹²).

The extremely insidious sailing conditions have determined that all major shipping companies have reorganized their operations using the route to circumnavigate the African Continent, however, this strategic choice has generated a series of consequences that we will now try to analyse.

The unexpected rearrangement of logistics chains due to the crisis in the Southern Red Sea and the consequent increase in delivery times have suddenly pushed up transport costs, due to increased fuel consumption and higher operating costs, but this is only the tip of the iceberg compared to less obvious but more impactful difficulties on production processes. Downstream in the production chain, companies operating under the just-in-time production model may find themselves without the raw materials and semi-finished products needed to complete their production cycles, causing interruptions and delays (Mackelprang, Nair, 2010).

While upstream, the pile-up of goods awaiting shipment or awaiting processing could saturate available warehouse capacity, causing further logistical problems. Global supply chains would be disrupted, leading to delays in the delivery of critical components and materials. This results in reduced availability of finished products and could lead to shortages of goods in European markets, affecting both consumers and businesses. In this context, factories may have to slow down or stop production due to the lack of raw materials. Delays in food imports could lead to shortages of certain products in supermarkets. Due to the law of supply and demand, product shortages and increased transport costs could inevitably lead to higher prices for end consumers.

The effects on the cost of transport linked to the handling of goods on the Far East-Europe corridor are extremely evident in relation to the World Container Index

¹¹ <https://en.macromicro.me/collections/4356/freight/44756/drewry-world-container-index> Last Accessed: 16/12/2024

¹² <https://www.ft.com/content/007e8ec6-7124-4e11-b40f-9863bf64df0c> Last Accessed: 13/12/2024

considered above. Even considering the strong volatility of container freight in recent years associated with disruptive events, we can see that from October 2023 to July 2024, the price for transporting a container from Shanghai to Rotterdam increased by 800%, from USD 1004 to USD 8048. This increase is partly justified by the associated costs of transport in relation to the increase in distance and consumption, but above all it can be attributed to an increase in the costs of insurance for ships and cargo and the tricky handling of empties during a time of reorganisation of supply chains (Ma et al., 2023). In fact, we can see that already during the Covid-19 pandemic, several ports saw an increase in containerised traffic volumes due to the reorganisation dynamics of empty containers by major shipping lines (Kuźmich, 2022; Russell et al., 2022). Further evidence related to the Red Sea crisis is that it has drastically reduced the centrality of Mediterranean ports in relation to global trade flows. The re-routing of traffic from the Suez Canal through the Cape of Good Hope has effectively turned the Mediterranean Sea into a region unsuitable for catalysing global flows. At this point in time, the only access route to the Mediterranean Sea is through the Strait of Gibraltar, and from this perspective, it becomes uneconomical in terms of time, distance and cost to exploit the Med ports as compared to the Northern Range ports. In this sense, it is evident that global trade traffic will be mainly convoyed to the ports of the Spanish Range (Gallo 2024B), i.e. the ports of Valencia, Barcelona and Algeciras and the port of Tanger Med, with a significant reduction of transshipment traffic volumes in the Mediterranean basin (Assoporti, 2024). At the same time, it is evident that a share of transshipment traffic has been lost on the main Mediterranean hubs, due to the uneconomical use of these ports and the increase in distances. If to some degree the northern Italian gateways are managing to maintain their market shares by strengthening their medium- to short-range services, the three main transshipment hubs in the central-eastern Mediterranean area such as Gioia Tauro, Marsaxlokk and Piraeus are instead experiencing a phase of systemic depression¹³.

4.3 “To Be” Scenario

This section aims to present some reflections on the reverberations that this new geopolitical crisis in the Gulf of Aden has provoked, and the implications not only in terms of efficient supply chain management, but also on the locational dynamics of the production and supply locations of raw materials and semi-finished products.

By definition, the high level of integration and complexity of logistics systems makes this an extremely fragile environment, where all it takes is one puzzle piece out of place to blow up the entire chain operation. In this context, exogenous factors play an extremely relevant role, as unpredictable and disruptive events are capable of affecting the efficient management of traffic flows on a global scale at any time (Sellari, 2024). These observations, however, emphasize a fundamental question: is the Red Sea crisis a structural or a conjunctural crisis? The answer to this question is the cornerstone of the considerations that will be presented in this section.

The most obvious answer to the question that has been posed above is that the current crisis is a conjunctural crisis that arose as a spillover from the Israeli Palestinian conflict. However, this answer is accompanied by some implications: a cessation of hostilities in the area of the Strait of Bab el-Mandeb by the Houthis would have as its

¹³ <https://www.lloydlist.com/LL1148603/Red-Sea-rerouting-hits-east-Mediterranean-transshipment-hubs> Last Accessed: 16/12/2024

primary effect the re-routing of commercial ships that would return to using the Suez route, reaffirming the centrality of the Mediterranean ports as evidenced by the trend of constant growth in traffic volumes presented before. The reorganisation of traffic flows would probably be accompanied by a significant reduction in transportation costs, as has been the case with all the crises that have occurred in recent years. Accepting the hypothesis that this crisis would be a cyclical crisis, a return to a condition similar to the situation prior to October 2023 is to be expected.

Attention should instead be paid to what the implications of considering this crisis as systemic might be. In recent years, there have been several disruptive events that have severely affected supply chain management on a global scale. The Covid-19 pandemic and the consequent lockdown of several Worldwide ports first, the consequences of the container ship *Ever Given* running aground in the Suez Canal in 2021, water shortages restricting access to the Panama Canal, the Russian Ukrainian conflict, and last in chronological order the Israeli Palestinian conflict are just some of the unpredictable events that have heavily influenced transport flow management. The succession of these events makes clear the fragility and vulnerability of this logistical and production system (Rusinov et al., 2021; Merk et al., 2022; Wan et al., 2023). From this perspective, it is possible to assume that in the near future, several businesses will start to consider the possibility of shortening value chains through reshoring and nearshoring trends of both production activities and supply markets (Barbieri et al., 2018; Hartman et al., 2017) in order to mitigate the vulnerability associated with the occurrence of exogenous events. However, it must be considered that the leverages driving industrial location processes always gravitate under the influence of cost efficiency, and in particular with respect to labour and raw material costs (Kim, Do Chung, 2022). Therefore, it might be possible that the main near-shoring operations in the near future will take place to countries where the economic fabric and labour costs will be competitive with the current origin markets (Ellram, 2013).

From the considerations just presented, the regions of Mediterranean Africa and the Middle East can be regarded as an ideal possible location to relocate companies close to the markets of continental Europe, and in a strategic position to minimize the risks associated with events capable of destabilizing global markets. However, the recent geopolitical turmoil that is affecting the region can represent a fundamental conditioning factor to the capacity to grasp these opportunities. From this perspective, the crucial issue is how long the current conflict will last and the political effects it will produce both at regional and global scales in the medium and long terms.

Finally, as the events that have already been unfolding since the outbreak of the Houthi crisis in the Southern Red Sea continue, it is to be expected that the ports of the Spanish Range, such as Valencia, Barcelona Algeciras and Tanger Med, will become increasingly central, given their strategic position as fundamental intersections for both intra-Atlantic flows and traffic from the Far East, capable of catalysing both traffic in transit to northern Europe and traffic entering the Mediterranean Sea through the Strait of Gibraltar.

5. Conclusion

This contribution has attempted to reconstruct the complex geopolitical situation that has begun to undermine the stability of the transport system linking the Mediterranean Sea to the seas of the Far East since the fourth quarter of 2023. The repeated and

disruptive attacks by armed Houthi militias against ships transiting the waters close to the Strait of Bab el-Mandeb led to a reorganisation of the routes through the Cape of Good Hope circumnavigating Africa.

These events have confirmed the geopolitical relevance of this choke point and, as a result, the fragility and vulnerability of global logistics chains. It is also important to remind that the recent resurgence of the Middle East crisis, well testified by the Israeli occupation of Gaza, the Israeli military actions against Hezbollah in South Lebanon and the Houthi attacks represents from a chronological point of view just the last factors of a series of disruptive events that have severely affected in recent time the supply chain management both at global and regional scales, such as the Covid-19 pandemic and the consequent lockdown of several Worldwide ports first, water shortages restricting access to the Panama Canal, and the Russian-Ukrainian conflict. To this perspective, the today's Middle East crisis and the ineffectiveness of multilateral efforts (UN, G20, G20, UE) and regional fora (among the others, the Arab League and the Gulf Cooperation Council) in providing the conditions to improve the political stability in the region, close a period of unprecedented growth in maritime traffic along the Bab el-Mandeb Strait and Suez Canal.

Against this background, our study has considered the implication of the recent Middle East crisis for the evolution of maritime flows by adapting a 'Business Process Reengineering' model to the geopolitical context. This model made it possible to break down the analysis into three different phases: the scenario analysis prior to the attacks, the mapping of the current situation called the 'Current State Map' and finally, the future prospects.

The most immediate impact of this crisis has been the increase in transport times and costs, as shown by the World Container Index proposed by Drewry¹⁴. More interesting from a geographical perspective is that this crisis raises the issue, still open today, of the possible risk of increasing marginalization of almost all the Mediterranean ports in intercontinental transport dynamics, in particular as far as the transshipment activity is concerned, with the exception of the ports belonging to the Spanish Range, which are assuming an increasingly important strategic role as the 'entry point' from which new Mediterranean feeder services can be organised.

However, in order to fully understand the intrinsic reasons for this crisis, and to understand the prospects for future development, both in terms of traffic and the location dynamics of companies, the conjunctural or systemic nature of the crisis was investigated.

By bringing together the various factors considered, it was therefore possible to draw a comprehensive picture of the implications of the geopolitical crisis in the Red Sea, presenting the main implications in the short term and some thoughts on what might happen in the long term.

At this stage, three main inter-related considerations can be raised according to previous arguments.

Firstly, the Suez Canal crisis and its impacts on the organization of maritime flows confirms once again the importance of geopolitics in the evolution of the shipping industry at global scale. Geopolitics has always played a key role as a conditioning factor in the evolution of maritime flows, in particular with regard to the functions

¹⁴ <https://www.drewry.co.uk/supply-chain-advisors/supply-chain-expertise/world-container-index-assessed-by-drewry> Last accessed: 22/12/2024

performed by choke points; and this is particularly the case of the Suez Canal, as confirmed by a long series of crisis that has taken place since 1956. At the same time, it is clear that the effects of the current crisis on the global and regional transport systems will be different depending on whether it will be conjunctural rather than structural. However, it is possible to argue that the “return of geopolitics” as a key element capable of conditioning the evolution of global trade contributes to make much more complex and uncertain the business environment in which major market players operate.

Secondly, the evolution of the geopolitical scenario is going side-by-side with new challenges in the geo-economic sphere, such as the return of protectionism, the crisis of multilateralism and the risks of increasing fragmentation of the world economy in regional blocks (WTO, 2023; Bremmer and Kupchan, 2023). Even though the possible outcomes of above trends can be hardly foreseen today, the combined working of geopolitical and geo-economic turmoil can represent new factors of disruption of global logistical chains, with possible dramatic effects on shipping and port industries at global and regional scale. And so, not to mention the today unpredictable impacts of climate change and of the design and implementation of new climate governance schemes for the shipping industry, which are unanimously regarded as new factors of disruption both at global and regional scales.

Thirdly, the Middle East and Suez Canal crisis can have profound effects at regional scale: on one side, the “rediscovery” of the Cape of Good Hope routes raises the question of the further possible marginalisation of the Mediterranean Sea, thus stopping the positive effects that the increase in East Asia-Europe maritime flows had in past decades in re-balancing the Northern Range - Med traffic structure. On the other side, the current crisis is producing today important effects at regional scale, acting as a beneficial factor for West Med - Spanish ports, at the expense of Italian and East Mediterranean ones. To this respect, the present geopolitical situation and the spectrum of impacts it is producing, would appear to reaffirm that only in a very simple geographical representation the existence of a ‘single’ Mediterranean can be given for granted, while in reality the Mediterranean shows contradictory and very often non-converging waves of change.

References

- Abdulla K. A., Singh J. S. H. (2018), The Influence of Geography in Asymmetric Conflicts in Narrow Seas and the Houthi Insurgency in Yemen, *MJIR| Malaysian Journal of International Relations*, 6(1), pp. 84-90.
- Ahram A. I. (2022), Rebel oil regimes and economic governance: the case of the Houthis in Yemen, *Conflict, Security & Development*, 22(6), pp. 589-607.
- Alexander L. M. (1992), The role of choke points in the ocean context, *GeoJournal*, 26, pp. 503-509.
- Amato V., Lanzau, G. G. (2016), The Mediterranean as a Hub of Maritime Trade and the Role of the New Suez Canal, *Sphere of Politics/Sfera Politicii*, 24, pp. 86-102.

- Assoporti (2024), Port Infographic, report tecnico, Rodolfo Gianpieri, Massimo Deandrei, Alessandro Panaro, Anna Arianna Buonfanti, Tiziana Murgia, Marina Ripoli (Eds.), Italian Port Association, Assoporti.
- Barbieri P., Ciabuschi F., Fratocchi L., Vignoli M. (2018), What do we know about manufacturing reshoring?, *Journal of Global Operations and Strategic Sourcing*, 11(1), pp.79-122.
- Bremmer I., Kupchan C. (2023), Top Risks 2023, Eurasia Group, New York.
- Buytendijk F., Hatch T., Micheli P. (2010), Scenario-based strategy maps, *Business Horizons*, 53(4), pp. 335-347.
- Ellram L. M., Tate W. L., Petersen K. J. (2013), Offshoring and reshoring: an update on the manufacturing location decision, *Journal of Supply Chain Management*, 49(2), pp. 14-22.
- Fakhreldin A. M., Notteboom T. (2013), Indexing container freight rates: A step towards a market pricing stability mechanism, *International Forum on Shipping, Ports and Airports (IFSPA) 2013: Trade, Supply Chain Activities and Transport: Contemporary Logistics and Maritime Issues*, Hong Kong Polytechnic University, pp. 208-220.
- Fancello G., Serra P., Aramu V., Vitiello D. M. (2021), Evaluating the efficiency of Mediterranean container ports using data envelopment analysis, *Competition and Regulation in Network Industries*, 22(3-4), pp. 163-188.
- Ferrari C., Parola F., Morchio E. (2006), Southern European ports and the spatial distribution of EDCs, *Maritime Economics & Logistics*, 8, pp. 60-81.
- Fletcher M. E. (1958), The Suez Canal and world shipping, 1869-1914, *The Journal of Economic History*, 18(4), pp. 556-573.
- Gallo A. (2024), The Dynamics of Containerized Transport in the Mediterranean Sea, In: Gervasi O., Murgante B., Misra S., Rocha A.M.A.C., Garau C. (Eds.), *Computational Science and Its Applications – ICCSA workshop 2024*, LNCS 14824 Cham, Springer-Verlag, 2024, pp. 273-285.
- Gerson A. (2023), Stranding of the mega-ship ever given in the suez canal: Causes, consequences, and lessons to be learned. In Lutmar C., Rubinovitz Z. (Eds.), *The Suez Canal: Past Lessons and Future Challenges*, Cham: Springer International Publishing, pp. 231-252.
- Gilbert A. L. (2000), Using multiple scenario analysis to map the competitive futurescape: A practice-based perspective, *Competitive Intelligence Review: Published in Cooperation with the Society of Competitive Intelligence Professionals*, 11(2), pp. 12-19.
- Gunasekaran A., Kobu B. (2002), Modelling and analysis of business process reengineering, *International journal of production research*, 40(11), pp. 2521-2546.

- Hartman P. L., Ogden J. A., Wirthlin J. R., Hazen B. T. (2017), Nearshoring, reshoring, and insourcing: Moving beyond the total cost of ownership conversation, *Business Horizons*, 60(3), pp. 363-373.
- Huo W., Chen P. S. L., Zhang W., Li K. X. (2019), International port investment of Chinese port-related companies, *International Journal of Shipping and Transport Logistics*, 11(5), pp. 430-454.
- Kenyon J. B. (1970), Elements in inter-port competition in the United States, *Economic Geography*, 46(1), pp. 1-24.
- Khan I. A., Rahman S. (2021), Review and analysis of blockage of Suez Canal region due to giant container ship, *Marine Technology Society Journal*, 55(5), pp. 39-43.
- Kim Y. G., Do Chung B. (2022), Closed-loop supply chain network design considering reshoring drivers, *Omega*, 109, 102610.
- Kuźmicz K. A. (2022), Impact of the COVID-19 pandemic disruptions on container transport, *Engineering Management in Production and Services*, 14(2), pp. 106-115.
- Lam J. S. L., Dai J. (2012), A decision support system for port selection, *Transportation Planning and Technology*, 35(4), pp. 509-524.
- Ma H. L., Leung L. C., Chung S. H., Wong C. W. H. (2023), Insurance incentive to shippers by a container port: Issues of risk management in supply chain finance, *Annals of Operations Research*, 331(1), pp. 121-139.
- Mackelprang A. W., Nair A. (2010), Relationship between just-in-time manufacturing practices and performance: A meta-analytic investigation, *Journal of Operations Management*, 28(4), pp. 283-302.
- Mangan J., Lalwani C., Fynes B. (2008), Port-centric logistics, *The International Journal of Logistics Management*, 19(1), pp. 29-41.
- Merk O., Hoffmann J., Haralambides H. (2022), Post-COVID-19 scenarios for the governance of maritime transport and ports, *Maritime Economics & Logistics*, 24(4), pp. 673-685.
- Notteboom T., Haralambides H., Cullinane K. (2024), The Red Sea Crisis: ramifications for vessel operations, shipping networks, and maritime supply chains, *Maritime Economics & Logistics*, 26(1), pp. 1-20.
- Notteboom T., Rodrigue J. P. (2009), The future of containerization: perspectives from maritime and inland freight distribution, *GeoJournal* 74, pp. 7-22.
- Notteboom T., Rodrigue J. P. (2012), The corporate geography of global container terminal operators, *Maritime Policy & Management*, 39(3), pp. 249-279.
- Palik J. (2017), "Dancing on the heads of snakes": The emergence of the Houthi movement and the role of securitizing subjectivity in Yemen's civil war, *Corvinus Journal of International Affairs*, 2(2-3), pp. 42-56.

- Ridolfi G. (1999), Containerisation in the Mediterranean: between global ocean routeways and feeder services, *GeoJournal*, 48, pp. 29-34.
- Rodrigue J. P. (2020), The geography of transport systems, New York, Routledge.
- Rusinov I., Gavrilov I., Sergeev M. (2021), Features of Sea Freight through the Suez Canal, *Transportation Research Procedia*, 54, pp. 719-725.
- Russell D., Ruamsook K., Roso V. (2022), Managing supply chain uncertainty by building flexibility in container port capacity: a logistics triad perspective and the COVID-19 case, *Maritime Economics & Logistics*, 24(1), pp. 92-102.
- Schofield C. (2014), 12 Securing the World's Most Dangerous Strait? The Bab-Al Mandeb and Gulf of Aden, *Navigating Straits*, 12, pp. 268-298.
- Schøyen H., Bråthen S. (2011), The Northern Sea Route versus the Suez Canal: cases from bulk shipping, *Journal of Transport Geography*, 19(4), pp. 977-983.
- Sellari P. (2024), Centralità e resilienza: il caso del Mediterraneo nel trasporto marittimo, *GEOTEMA*, 73, pp. 69-84.
- Slack B. (1985), Containerization, inter-port competition, and port selection, *Maritime policy and management*, 12(4), pp. 293-303.
- Slack B., Comtois C. and Sletmo, G. (1996), Shipping lines as agents of change in the port industry, *Maritime Policy and Management*, 23(3), pp. 289-300.
- Song D. W. (2002), Regional container port competition and co-operation: the case of Hong Kong and South China, *Journal of Transport Geography*, 10(2), pp. 99-110.
- Soppé M., Parola F., Frémont, A. (2009), Emerging inter-industry partnerships between shipping lines and stevedores: from rivalry to cooperation?, *Journal of Transport Geography*, 17(1), pp. 10-20.
- SRM (2023), The Suez Canal. The impact of the war and the pandemic on the maritime routes, an analysis of the port competitiveness indicators, the role of Egypt in global trade and the development of the SCZone, online report, Massimo Deandreis, Dante Campioni, Alessandro Panaro, Michele Formenti, Anna Arianna Buonfanti, Consuelo Carreras, Olimpia Ferrara, Samer Halim, Dario Ruggiero (Eds.), *SRM*.
- Tadini M. (2019), A Geographical Overview of the Suez Canal Freight Flows: an Impact on the Mediterranean Sea and the Genoa port, *Bollettino della Società Geografica Italiana*, 14, pp. 15-30.
- Wan Z., Su Y., Li Z., Zhang X., Zhang Q., Chen J. (2023), Analysis of the impact of Suez Canal blockage on the global shipping network, *Ocean & Coastal Management*, 245, 106868.
- World Trade Organization. (2023), WTO Annual Report 2023, Technical Report, Geneva, Switzerland.

- Wright R. (2024), Red Sea Security Fears Cut Container Shipments Through Suez Canal, *Financial Times*, January 10th, 2024.
- Zhu S., Zheng S., Ge Y. E., Fu X., Sampaio B., Jiang, C. (2019), Vertical integration and its implications to port expansion, *Maritime Policy & Management*, 46(8), pp. 920-938.
- Zohil J., Prijon M. (1999), The MED rule: the interdependence of container throughput and transshipment volumes in the Mediterranean ports, *Maritime Policy & Management*, 26(2), pp. 175-193.