Three Seaport Development Paths: Salalah/ Duqm, Surat-Hazira/Mundra, and Dubai in the Indian Ocean World, 1970-2020

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by

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Under the Direction of Ghulam Nadri, PhD

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ABSTRACT

Seaport development in western India and the Arabian-Persian Gulf during the late 20th century experienced a momentous change. Driven by external catalysts and internal priorities, seaports jockeyed for position and advantage in an era of increasing globalization. The ports of this maritime region had the potential for intensive growth. The legal, business, and government structures of these ports shaped the strategies and pathways of development. This thesis addresses the seaport development paths taken by the Surat/Mundra port cluster located on the northwestern coast of India, Salalah and Duqm ports on the coast of Oman, and the United Arab Emirate port of Dubai, on the southern coast of the Arabian- Persian Gulf. It explores the similarities and distinctions of strategies and pathways to development and their evolution to the Seafront Industrial Complex or Seafront Complex status.

INDEX WORDS: Seafront industrial complex, Seafront complex, State/merchant driven development, Entrepreneurial capitalism, Resource nexus, Thalassology

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DEDICATION

I dedicate this thesis to my wife and best friend, Donna Marie. Through the hungry years and the weak and high winds, she has been the steady hand on the tiller.

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1 INTRODUCTION

1.1 The Seaport Development Boom 1970-2020

Aggressive seaport infrastructure building and enhancement was a postcolonial phenomenon in the vicinity of the Western Indian Ocean, The ports of Salalah and Duqm in Oman, the Surat and Mundra port cluster in Gujarat, India, and Dubai in the United Arab Emirates went through a phase of rapid development since the 1970s. This thesis is a comparative study of the strategies and pathways leading to the rapid development of these ports and their transformation into seafront industrial complexes or seafront complexes. This project aims to explore and explain the ports' development paths by first discussing the historical development of each of these and examining and analyzing the internal and external forces that shaped the development pathways and strategies and the ports' transformation during 1970-2020. Among the hypotheses to be evaluated is the question of whether these ports followed a seafront industrial complex model or evolved past industrialization to become seafront complexes instead. Economic historian Kaoru Sugihara describes the seafront industrial complex as originally consisting of an oil refinery, petrochemical and electricity plants in turn spawning other industries. Paralleling these industries is a planned commercial city supporting these endeavors.[1] I propose an evolution from seafront industrial complex to seafront complex, where the city is paramount, and the industrial base is in the supportive role. Additionally, this discussion will query the potential of a continuum linking the two.

This study explores the top-down, state-led infrastructure development as well as the bottom-up people-led growth and development of these port cities. It also addresses the question

[1] Kaoru Sugihara, "Varieties of Industrialization: An Asian Perspective." *Global Economic History*, Bloomsbury Academic, (2010), 207.

of environmental impact and sustainability. This thesis will assess how these seaports have engaged as a resource nexus and impacted their hinterlands. It also examines to what extent their development stories align with the New Thalassology interpretation. Historian Marcus Vink, in his approach to the Indian Ocean, identifies the New Thalassology as the ocean serving as the conduit linking the populations on its far-flung shores. He applies this use of the ocean as method in understanding the Indian Ocean world, similar to Fernand Braudel's treatment of the Mediterranean Sea.[2] The interconnectivity of the seaports is a consideration here, exemplified by their role in climate change and environmental sustainability.

This thesis proposes that these seaport developments were driven by a similar set of forces, while also following pathways influenced by their distinct local circumstances. The measurement of comparative success is possible using numerous data sets, such as revenues, shipment volumes, and diversification of economic activity. The data attests to the overall success of these seaports. Dubai, Salalah and Mundra ranked in the global top fifty ports as measured by total container throughput, and Duqm and Surat as outliers as they are presently in comparative youth as discussed below. Throughput is the term commonly used to measure total cargo containers movements of loading and unloading, and in 2020 Dubai globally ranked #11, Mundra #26 and Salalah #43.[3] The intent of this thesis is to research each development path, using the consideration of government leadership structure, historical context, the business organization approach, and the local requirements and strategies. The goal is to test the theory

[2] Marcus P. Vink, "Indian Ocean Studies and the New Thalassology." *Journal of Global History,* vol. 2(1), (2007), 41-62.

[3] *Informa Ltd. Website, 100 Container Ports 2021, Source Lloyds List.* https://www.lloydsList.maritimeintelligence.informa.com, (2022).

that different approaches can lead to similar outcomes, as well as unique results. What follows below is a discussion of the four most relevant external factors contributing to port development in the Indian Ocean region during this period. This chapter will define the concepts to be applied in the Analysis.

1.2 Four External Catalysts to Port Development in the Indian Ocean, 1970-2000

During the late 1980s and throughout the 1990s, four major developments greatly influenced and shaped the oceanic trade and transportation businesses.[4] These include i) the large increase in oil extraction, ii) containerization of ocean cargo, iii) the evolution of large, globalized public and private conglomerates engaged in shipping, seaport management and infrastructure investment, and iv) the emergence of supply chain management as a business science and its impact on ocean carriers, trade-lane management, and seaports. Oil exploration and extraction had a major impact on port development in the Arabian-Persian Gulfs. The inflow of petrochemical revenues after 1970, driven by the demand of the global marketplace, provided the Gulf states resources to be dedicated to seaport development. Without this financial boom, much of the development in the western Indian Ocean would not have occurred as it has during the period in discussion.

Geography and Environment Professor Brian Slack, in his essay "Pawns in the Game: Ports in the Global Transportation System," addresses the impact and partial loss of control the formation of these globalized conglomerates had on various ports and their government authorities.[5] His work is complemented by Geographers Caesar Ducruet and Sung-Woo Lee, in

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[4] Jeffrey Kinnier, "Oman's Ports and Special Economic Zones." In Allen Fromherz and Abdulrahman AL-Salimi *Sultan Qaboos and Modern Oman 1970-2020*, Edinburgh, Edinburgh University Press. (2022), 369-387.

[5] Brian Slack, "Pawns in the Game: Ports in the Global Transportation System." *Growth and Change*, vol. 24, (1993), 379-388.

their essay "Frontline Soldiers of Globalization: Port City Evolution and Regional Competition.""[6] Their contribution, along with management professor and transportation expert Trevor Heaver's essay contribution "The Implications of Increased Competition for Port Policy and Management", detail the jockeying for position among seaports to attract and accommodate the globalized management organizations and global and container lines, seeking advantage over regional port competition.[7] This discussion on mid to late 20th century port development and the impact of the middle east oil extraction financial boom is also joined by Michael Field, Theo Notteboom, W. Winkelmans, and Jean-Paul Rodrigue.[8] Containerization, which describes metal box containers stacked on flat vessels, commenced in the 1950s on the East Coast of the United States, and by the 1970s had spread throughout north Atlantic Ocean trade routes. Containerization refers to the technique of using a boxlike device in which a number of packages are stored, protected, and handled as a single unit in transit. Advantages of containerization include less handling of cargo, more protection against pilferage, less exposure to the elements, and reduced cost of shipping.[9] The advent of containerization revolutionized ocean transportation

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[6] Caesar Ducruet and Sung-Woo Lee, "Frontline Soldiers of Globalization: Port City Evolution and Regional Competition." *GeoJournal* vol. 67(2), (2006). 107-122.

[7] Trevor Heaver, "The Implications of Increased Competition for Port Policy and Management." *Journal of Maritime Policy and Management,* vol. 22(2), (1995), 125-133.

[8] Michael Field, "Rivalry Between States Leads to Lack of Cooperation and Wasteful Development." *Times,* vol. 16(3), (1970); Theo Notteboom and W.Winkelmans, "Structural Changes in Logistics: How do Port Authorities Face the Challenge." *Maritime Policy and Management,* vol. 28(1), (2001), 71-89; Theo Notteboom and Jean-Paul Rodrigue, "The Future of Containerization: Perspectives From Maritime And Inland Freight Distribution." *GeoJournal,* vol. 74(1), (2009), 10.

[9] Edward Hinkelman, *Dictionary of the International Trade: Handbook of the International Trade Community,* (1999).

globally, after a gradual, sporadic start.[10] By the early 1990s containerized cargo was adopted worldwide, and from this point forward rapid acceleration in both the number and size of container vessels occurred.[11] The unit of measure for a container is a TEU, and the first transatlantic container services by the 1960s were utilizing standard containers of twenty and forty-foot lengths, coupled with standardized lashing systems (a TEU is a twenty-foot container unit and a forty-foot container is equal to two TEU's).[12] These boxes needed sophisticated cranes and dock equipment. By the 1980s and 1990s, transnational container shipping lines were of vital importance to the development of Mundra and later Surat's Hazira port, Salalah and later on Duqm, and Dubai. It was during 1970-1990 when these ocean container shipping companies rapidly streamlined their trade routes, realigning for efficiency. It was also during this time when the ascendency of the large, globalized public and private conglomerates engaged in shipping, seaport management and investment was paramount. Break-bulk shipping, or loose cartons stowed directly in the ship's hold or belly, had declined dramatically worldwide as the process of containerization grew. Just prior to 1970, break-bulk cargo carriage began shifting to this more efficient containerization process.[13] Bulk cargo refers to lose materials such as grain and coal, and project cargo refers to large, bulky items such as tractors, large equipment and building materials; this type of cargo was relevant to infrastructure building and demand remained strong.

[10] Brian Slack, "Fifty Years of Organizational Change in Container Shipping: Regional Shift and the Role of Family Firms." *GeoJournal*, (2009), 23-24.

[11] Notteboom and Rodrique, "The Future of Containerization",10.

[12] Slack, "Fifty Years", 23-24.

[13] *World Shipping Council Website 2020.* https://wwwworldshipping.org/Glossary-of-Industry-Terms.

By the 1990s, container lines with their developed trade lane networks, Maersk Sealand, MSC, Coscon, APL, and Evergreen among others, were important to the next stages of development of the western Indian Ocean world.[14] These large global integrated logistics enterprises either merged or were joined by publicly, privately or jointly owned seaport management companies that were rapidly changing the face of global distribution. Their expertise included not only shipping, but also seaport management, investment and development, often combined under one umbrella. By 2011 the top five global port operators were Hutchinson Port Holdings (HPH), PSA International, APM Terminals, COSCO and DP World (to be discussed below).[15] These enterprises were engaged worldwide in planning, financing and building seafront industrial complexes. Often, they were more powerful than governments in determining seaport development strategies. Seaports were challenged with the choice of linking with these foreign entities or creating their own versions of conglomerates through government edict, market forces, or a combination of both.

Finally, as trade liberalization agreements became a worldwide phenomenon, the supply chain management (hereafter SCM) became the fully embraced business science SCM became a powerful driver in economic advance, including the strategic development of seaport cities, their surrounding environments, and their infrastructures. Private enterprises increasingly sourced inputs extraction, manufacturing and assembly to locations scattered worldwide, basing decisions on factors such as cost, labor, government incentives, as well as proximity to established and

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[14] Antoine Fremont, "Global Marine Networks: The Case of Maersk." vol.15, 431-442. This essay offers the story of Maersk during the above referenced transitional period. Also see Brian Slack, Antoine Fremont, "Fifty Years of Organizational change in container shipping: regional shift and the role of family firms." *GeoJournal,* (2009), 23-34.

[15] Amit A. Panda, Rupert Herbert-Burns, *Maritime Commerce and Security: The Indian Ocean: Ports.* Stimson Center. (2011). 69-70, 76-78.

emerging trade lane networks. In this environment seaports and their strategies were increasingly determined by decisions made in corporate headquarters scattered throughout the world.

The challenge for the ports in question was to make seaport infrastructure investments that would synchronize with this new containerized trade lane, port management and supply chain science driven reality. These locations had to offer a more comprehensive package than competitive seaports in the general vicinity. Meanwhile the requirement to bring development and prosperity to the broader hinterlands necessitated building breakbulk, bulk and project handling capabilities. Geography professor Brian Slack, in the essay "Pawns in the Game: Ports in a Global Transportation System," argues that port cities have been making exceptionally large investments but had less and less control over their destinies.[16] The major decisions affecting port traffic were increasingly made by shipping lines, logistics and port development entities whose activities are global in scale. All of these factors set the stage for the success or stagnation of each of the seaports.

1.3 Seafront Industrial Complex and Seafront Complex

Economic historian Kaoru Sugihara engages the concept of Seafront Industrial Complex (rinkai kogyo chitai), originating in post war Japan. Sugihara describes this concept as developing an all-encompassing port infrastructure where raw materials and modern finished goods are imported for processing, to be married with local and regional products allowing for exportation. This port infrastructure is also designed for exporting locally sourced raw materials, where applicable. Additionally, port infrastructure is built to accommodate higher level, technically advanced products and materials generated by trained labor in the nearby city linked

[16] Slack, "Pawns in the Game," 379-388.

to the seaport.[17] The infrastructure includes transshipment capabilities in the form of container and break-bulk equipment. The seafront industrial complex, as developed in Japan, South Korea and eventually throughout Asia, was well planned and coordinated, in contrast to the infrastructure in older ports.

This concept is part of the continuum of thought by Sugihara related to the distinct industrial development paths followed by the colonizing west versus that of east, southeast and south Asia between 1820 and 2010. Sugihara disputes the narrative that industrialization began in the West, and was pushed out to Asia, where western lessons were emulated through to 1945. Rather Sugihara proposes that there were two paths of industrial development, the "industrial revolution path," which started in Western Europe and the "industrious revolution path" which developed in East Asia. Sugihara identifies three phases of industrious/industrial revolution. The first phase saw China as more productive. Sugihara suggests this "industrious revolution" of labor productivity allowed for China to outperform the mechanical productivity of the west. "In the first phase the two paths developed independently of each other with broadly comparable results in terms of the standard of living. During this phase Asia successfully responded to natural resource constraints, particularly the scarcity of land, by developing a set of technological and institutional devices for full absorption of family labor."[18] In the second phase it was Britain's and eventually America's mechanical, capital intensive productivity that was more successful. During the third phase, Japan and eventually other Asian economies developed a "labor intensive, resourcing saving" industrialization, while absorbing the American technology

[17] Sugihara, "Varieties of Industrialization," 207.

[18] Kaoru Sugihara, "East Asia Path," *Economic and Political Weekly*, vol. 39(4), (2004), 3855-56.

model. Sugihara proposes there were two journeys of global industrialization, the American experience which developed capital intensive and resource intensive technology, and the east Asian experience which developed labor intensive and resource saving technology. Eventually in the pre-and post-World II period Japan and later other Asian countries acquired the highest level of western technology while retaining the East Asian institutional framework. This third phase permitted a more thorough exploitation of human resources than had been possible following the American path.[19]This third phase was the environment suitable for the emergence of the "seafront industrial complex."

Sugihara interchanges the terms "seafront industrial complex" and "seafront complex." This thesis proposes that these terms should be differentiated. A seaport that requires all the elements of seafront industrial complex for long term viability rightly should wear the moniker. The argument here is that it is possible for the seaport city to develop its high technology products and 21st century services, and provide the global marketplace with a competitive package, without a long-term reliance on industrial infrastructure. This scenario is best described by the term seafront complex. As discussed above, is there a continuum linking the two, or are they distinctive and separate paths of development?

1.4 Seaports as a Resource Nexus

The Oxford Dictionary defines nexus as a connection; a series of connections, a connected group, centralized; or focal point. It defines resource as a stock or supply of material or assets; a country's means of supporting itself; a source of helpful information; a strategy adopted in a difficult situation.[20] The concept of Resource Nexus is broadly applicable to the

[19] Sugihara, "Varieties of Industrialization," 207.

[20] *Compact Oxford English Dictionary,* Oxford, Oxford University Press, (2008).

sciences and the arts. R. Bleischwitz and M. Miedzinski define the resource nexus as referring to a spatial cluster designed by combining local, regional and global resources for efficient allocation of both human and natural capital.[21] According to Sugihara, the seaport industrial complex functions as a resource nexus. He defines resource nexus as the creation of a spatial cluster designed for combining specific sets of resources. In particular, local and domestic resources are efficiently combined with imported ones. As industrialization proceeded, the resource nexus began to reorganize the entire spatial allocation of human and natural resources in the country.[22] In this thesis I examine whether the seafront industrial complexes or seafront complexes studied, served as resource nexuses's or simply as points of transit or transfer. Were new and mutually beneficial relationships established between the port cities and hinterlands? Did the states promote and contribute to the growth of these port cities by providing resource intensive industries with trained labor? Did these western Indian Ocean, Arabian Sea world seaports evolve to the point that they became what Sugihara calls the seafront (industrial) complex or served as a resource nexus?

The New Thalassology and Global History The New Thalassology concept refers to the role of oceans as an important paradigm of interpretation. Historian Marcus Vink asserts its relevance to studying the Indian Ocean World history. Vink presents the new Thalassology as the use of social and economic themes versus pure political and diplomatic ones and offers this paradigm as an interpretation marrying the Annales and World history schools. The discussion in the analysis portion of this thesis addresses how the seaports measure in the debate over viewing

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[21] R. Bleischwitz, R., M. Miedzinski. "The Resource Nexus and Resource Efficiency: What a Nexus Adds to the Story." Edited by H. Lehmann, *Factor X. Eco-Efficiency in Industry and Science,* vol.32 (2018), 12.

[22] Sugihara, "Varieties of Industrialization," 207.

the Indian Ocean in a similar vein as the Atlantic World, the Mediterranean World, and the Pacific World.[23]

Sebastian Conrad describes global history as an approach of which its core concerns are mobility and exchange, with processes that transcend borders and boundaries. It takes the interconnected world as its point of departure, and the circulation and exchange of things, people, ideas and institutions are among its key subjects.[24] Connectivity between interregional arenas requires viewing relationships over space-time and climate; they are not controlled by contrived physical boundaries. Instead, these arenas exist due to the in-depth connectivity of communities linked by economic, cultural, religious, environmental and political ties over the medium- and long-term durée's. "Almost throughout the age of European colonialism, the Indian Ocean rim was characterized by specialized flows of capital and labor, administrative skills and professional services, and ideas and culture.[25]

Historian K.N. Chaudhuri offers the hypothesis of a vibrant economic pattern in the Indian Ocean basin, originating yet continuing with the arrival of Islam in India through to 1750. He challenges the Eurocentric view of the world's system of 1600 forward as the origin of this growth of meaningful global contact in the Indian Ocean world. "The Indian Ocean was an area of social and cultural diversity rooted in four different civilizations- the Iran/Arabic, the Hindu, the Indonesian and the Chinese. Seaborne trade, supplemented by the Central Asian caravan routes, created a sense of unity." With the arrival and spread of Islam, these civilizations were

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[23] Vink, " Indian Ocean Studies," 41-62.

[24] Sebastian Conrad, *What is Global History?* Princeton: Princeton University Press. (2015). 5

[25] Sugata Bose, *A Hundred Horizons: The India Ocean in the Age of Global Empire.* Cambridge, Harvard University Press. (2006).

linked with their past, and trade flourished. The idea of a common geographic space defined by the exchange of ideas and material objects was quite strong, not only in the minds of merchants but also in those of political rulers and ordinary people.[26.]

1.5 State- Driven and Merchant-Led Development

The analysis portion of this thesis will seek to determine how the port development strategies of each seaport was shaped by government initiatives and its relationship with the business community. Both the United Arab Emirates and Oman are monarchies, with slightly varying emphasis on absolute power. India on the other hand is a constitutional republic since 1947 and the government's approach and strategies towards seaport development have evolved from entirely state government led initiatives during the period of planned economy (1950-1980s) to a mix of state-led/owned and private initiatives, and to an increasingly private capitalist enterprise. While culture, theology and international affairs are well beyond the scope of this thesis, how these affairs have impacted seaport development will be discussed briefly wherever appropriate.

For example, ports at or near Surat, Salalah and Dubai in modern day India, Oman and the UAE have a long history of cross-cultural interaction and trade. Chaudhuri explains the realization of the Europeans in the early 17th century that a vibrant trade between China and along the Indian Ocean coasts, including the Arabian Gulf, long predated their arrival on the scene. It did not take the English and the Dutch long to discover that the commercial economies of China and India held the key to the flow of goods across the Indian Ocean. The close commercial connection between Gujarat, Malabar, and the Middle East took the English and

[26] K.N. Chaudhuri, *Trade and Civilization in the Indian Ocean: An Economic History from the Rise of Islam to 1750.* Cambridge: Cambridge University Press,(1985). 21

Dutch in the direction of the Red Sea and the Persian Gulf.[27] China and its Belt and Road Initiative (BRI) will be included, reflecting trade ties well before the late 20th century. Camile Lons, along with colleagues Jonathan Fulton, Degang Sun and Naser Al-Tamini offer insight on the BRI. It is China's most important foreign policy, development centered initiative, and reflects its engagement with the Middle East and Indian Ocean region as a top priority. Emphasizing political and facilities connectivity, unimpeded trade, financial integration and people to people bonds, the BRI is a factor to consider in a future iteration of this thesis.[28]

1.6 Environmental Degradation and Long-Term Sustainability

This study examines how environmental sustainability concerns have impacted the development of the Surat-Hazira/Mundra, Salalah/Duqm, and Dubai seaport complexes. This concern serves as a link to the topics summarized above. Historically, interconnectivity was evident in the patterns of migrations in the Indian Ocean basin that were controlled by the environment and by the sea and the resultant weather. "The influence of the climate was pervasive. The wind system known as the monsoons brought the whole area within the operation of a single global variable."[29] This study evaluates the impact of climate change and sustainability as an interconnective aspect of the seafront complex and seafront industrial complex of each locale under consideration. The analysis will address the impacts of climate change as a regional variable, potentially comparable to the historic impact of the monsoon winds. The analysis will address the developments impacting these seaports in the 1970-2020

[27] Chaudhuri, "Trade and Civilization", 90-92.

[28] Camille Lons, Jonathan Fulton, Naser Al-Tamimi, "China's Great Game in the Middle East". *European Council on Foreign Relations.*(2019). 10.

[29] Chaudhuri, "*Trade and Civilization."*

period, environmental degradation concerns and the globalization of logistics and supply chain networks. It also evaluates the impact of the massive infrastructure building and the rapid expansion of the built-environment in these seaport complexes on climate change. Geography Professor Eric Chu calls for "processes of prioritizing adaptation against development needs and implementing options that are cocreated among public and civic actors."[30] This is juxtaposed with T. Heaver who argues port management needs to get in the game with globalized shipping routes and privatization of seaport ownership, resulting in less control and government revenue.[31] These interpretations will be considered in the analysis.

2 SALALAH AND DUQM PORTS - OMAN

2.1 Sultan Qaboos and the "Blessed Renaissance"

"Sultan Qaboos, ruler of Oman for almost 50 years, has died. The popular Sultan modernized Oman and played an outside role in world diplomacy. His funeral is likely to be a scene unimaginable almost anywhere else. Among the foreign dignitaries who will mourn Sultan Qaboos of Oman, whose death was announced on January 10th, will be those from America and Iran, longtime enemies that recently traded blows in Iraq. Also present will be leaders from Israel and Palestine, which conflict dates back even further. The rulers of Saudi Arabia and the United Arab Emirates, (UAE) will rub shoulders with that of Qatar, a country that it severed ties with years ago. The guest list alone will be a tribute to a rare statesman in a troubled region."[32]

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[30] Eric Chu, "The Political Economy of Urban Climate Adaptation and Development Planning in Surat, India." *Environment and Planning C: Government and Policy,* 34(2), (2016). 281-298.

[31] T. Heaver, "The Implications of Increased Competition for Port Policy", 125-133.

[32] *The Economist.* April 11,2020.. https://www.economist.com/middle-east-and-africa/2020/01/11/sultan-qaboos-ruler-of-oman-for-almost-50-years-has-died.

This report published in 2020 in the magazine *The Economist* highlighted Sultan Qaboos's diplomatic skills. While the Sultan was an absolute monarch beloved by his people, this article paid scant attention to the developmental success of Oman under his leadership. The development of seaport infrastructure in Oman during the fifty-year reign of Sultan Qaboos was a result of his government's vision, strategic planning, and action. It was also impacted by a dosage of good fortune and good timing. Rather than a case of "if you build it, they will come," Oman's seaport and economic zone development carried significant risk of failure. The success of Omani ports to date, and their future potential, is testimony of Qaboos's leadership in perilous waters.

Seaport development reflects Oman's engagement with broader international trends such as globalization. Local and geo-political forces, both within the jurisdiction of Oman and beyond the Sultan's scope of influence, have shaped seaport development initiatives. Exemplifying this are the Omani port cities of Salalah and Duqm, with their associated Duqm Special Economic and Salalah Free Zones. These seaports represent Oman's increasing engagement with global trade through the reign of Sultan Qaboos. According to the Encyclopedia Britannica, a Free or Foreign Trade Zone (FTZ) is "an area within which goods may be landed, handled, manufactured or reconfigured, and reexported without the intervention of the customs authorities…Free-trade zones are organized around major seaports, international airports, and national frontiers—areas with many geographic advantages for trade. Examples include Hong Kong, Singapore, Colón (Panama), Copenhagen, Stockholm, Gdańsk (Poland), Los Angeles, and New York City…The primary purpose of a free-trade zone is to remove from a seaport, airport, or border those hindrances to trade caused by high tariffs and complex customs regulations.[33]

[33] *Encyclopedia Britannica Website.* https://www.britannica.com/money/free-trade-zone

Salalah, the largest city and traditional capital in the Dhofar Governate, is located on Oman's southeastern coast of the Arabian Sea. Today it is a containerized seaport for supplies and manufactured goods, ranking it among the top fifty worldwide.[34] The seaport's affiliated Salalah Free Zone offers an extensive range of trading, storage, assembly, and transit services. Salalah Port's expansion experience served as a foundation for the seaport development of Duqm in 2010. Duqm, in the Al-Wusta Governate and possessing a deep natural harbor, is a new but growing port city to the east of Salalah on Oman's mid-Arabian Sea coast. The recent Duqm Special Economic Zone is poised for significant growth, ready to take advantage of its access to major shipping lanes. Over the past fifty years, both Duqm and Salalah and their opportunity zones were designed and developed to provide trade services to the western Indian Ocean world, and beyond.

This Chapter will address the context and historiography of Oman's seaport development, and the role Salalah played in influencing the development at Duqm. Referencing the pre1970s environment, this chapter will set the stage for the strategies followed and agencies created to conduct long term plans for these two seaports. The chapter explores the role of strategic planning, Oman's centralized approach, national pride, and the strong influence of Islamic theology inspired leadership. Finally, it examines the sustainability and environmental impact of Salalah and Duqm.

[34] *Lloyds List Website. One Hundred Ports 2020.* https://lloydslist.maritimeintelligence.informa.com/one-hundred-container-ports-2020.(Salalah ranked #44 in container tonnage in 2020, #51 in 2019.; *World Shipping Council Website.* https://www.worldshipping.org/about-the-industry/global-trade/ports. Salalah ranked #53 in 2015.

2.2 Pre-1970 Foundation

"As you will see from your files the provision of port facilities has been the Cinderella of the Civil Development Budget for the last five years."[35] This mid-1960s characterization of Muscat's silted up harbor reflected the backwardness and isolation of Oman's basic infrastructure. This condition was indicative of the similar lack of investment and development Dhofar had experienced under Qaboos's predecessor, a factor in the insurrection in this governate against the Sultanate of Oman beginning in 1965. Historian J.E. Peterson attributes the willingness of Sultan Qaboos's government to attack the social and economic problems of Dhofar as both a cause for the cessation of the civil war, as well as a result of the ended conflict.[36] Sultan Qaboos, in his first National Day Speech of 1971, called the building process an exacting one, with much challenging work and sacrifice needed to overcome the obstacles and difficulties before Oman.[37] Known for its ancient and medieval trade in frankincense, Salalah in the 1960s was off the radar of most global commerce, and its port facilities were an extension of its original early common era Khor Rori and Al Badid ports. These ports were sparingly modified for the arrival of occasional steamship services in the nineteenth century but were silted over and limited in functionality, evidenced in the UK government agent's report on these conditions and recorded in the Arabian Gulf Digital Archive.[38] With the end of Sultan Said bin

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[35] *Arabian Gulf Digital Archive.* https://www.agda.ae/en/catalogue/tna/fo/1016/94. Letter to British Consulate General, Muscat, from E.A.W. Bullock, Esq., Ministry of Overseas Development, London.

[36] J.E. Peterson, "Guerrilla Warfare and Ideological Confrontation in the Arabian Peninsula: The Rebellion in Dhufar." *World Affairs*, (1977), vol.139(4), 295.

[37] *Oman Info Website, The Royal Speeches*.16. https://www.OmanInfo.om.

[38] *Arabian Gulf Digital Archive.* https://www.agda.ae/en/catalogue/tna/fo/1016/94. The recorded notes of the United Kingdom political agent Chauncy's description of his visit to Salalah in April

Taimur's reign in 1970, Oman's transition towards modernity was dramatic, not just in the capital Muscat, but also in Salalah.[39] Upon his ascension, Qaboos invested in Dhofar in order to win the hearts and minds of the Dhofaris, to break them away from the Yemeni led, Soviet Union-inspired and supported revolution. Through a combination of military success, funding from the UK government and British banking sources, a strong anti-communist and radical Islamist stance, and a rigorous focus on employing Dhofar Omanis in infrastructure, Oman's government, with assistance from international partners including the British, Qaboos ended the insurrection by the middle of the 1970s. Dhofar was fully incorporated into the Sultanate of Oman. Qaboos's timing was propitious.

2.3 Salalah Port: The Turnaround 1971-1990

"In the history of world trade there has probably never been an upheaval quite so sudden and so sharp as that in the Middle East in the last five years."[40] This report in the London Times of 1977 characterized the recent years of war, oil embargo, and price surge in the Middle East as catalysts for the economic boom among the Gulf nations. The boom resulted in an increased

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1950 offers a snapshot of the rudimentary capability of the Raysut port of this era. "Next morning, therefore, two shoxe bonts each rowed by six men, and somewhat rezeritable for the fact that their planks were sew together with string and lined with skin, care at 9:30 a.m. to take off Woods-Ballard and me and the luggage." They were rowed to the beach after spending 24 hours offshore.

[39] Frauke Heard-Bey, "Inside Oman. Abu Dhabi, the United Arab Emirates and the Gulf Region: Fifty Years of Transformation." *Gerlach Press.* (nd), 29. "In the 1960s Oman was a closed country to the extent that archaeologists working near the Buraimi oasis on a site near Hili in Abu Dhabi territory could not inspect tumuli…a mile from Oman, for fear of being shot at."

[40] Michael Baily, "The Great Freight Race." *London Times,* October 28: vol.2, (1977).; For contemporary reporting on the surge in imports and resulting clogging of the gulf ports, the poor inland infrastructure, and the role of private entities in charting the corrective course, see Hilaire Gomer, "Middle East: Harbours to Match the New Riches." *Times,* November 22: (1977). 31

demand for consumer, manufactured, and infrastructure related goods, amid chaotic delays caused by the sub-par ocean, surface, and air logistics capabilities throughout the Gulf neighborhood. During 1971-1990, Oman, new to the oil production arena, experienced a 733% increase in import value, which is substantially higher than the growth rates in its neighboring countries.[41]

Sultan Qaboos's strategy from the mid-1970s positioned the port at Salalah as a major component in the Indian Ocean trade system. Salalah would soon rise to a strong position as a transshipment seaport, attractive due to location and planned infrastructure and poised to play a significant role in the rapidly reconfiguring global trade. Salalah was to also serve as the gateway and main national load center for southern Oman. Sultan Qaboos's first budget in 1971 allocated funds for infrastructure building in Salalah's local Raysut Port. By 1973, with measurable progress recorded, Sultan Qaboos addressed the improving port in his annual National Day Speech.[42] Between 1971 and 1974, even as it fought the insurgency, the Government of Oman invested $11.5 million on the project and deepened this port as a first phase, to accommodate vessels with drafts up to thirteen feet. This modernization effort improved the port's capabilities for handling break-bulk shipments.[43] This was followed by a phase two project primarily consisting of equipment investment and planning expenses for the activities mentioned below, which yielded an annual capacity of one million metric tons of break-bulk cargo, as planned for in Oman's first Five-Year Development Plan. This initial five-year outlook included a "very

[41] Gomer, "Middle East," addressing between 1971 and 1974.

[42] *Oman Info Website, The Royal Speeches*, https://www.OmanInfo.om. 27.

[43] *Salalah Port Website 2020*. https://salalahport.com.om.

ambitious, balanced, and studied plan based on utilizing the various resources of society in order to reach the target of the economic development…and formed a higher council of economic development under our presidentship."[44] This initial plan was to be revised and proclaimed every five years thereafter and incorporated into the Twenty-Year Visions: these visions were long term goals addressed by strategic plans set-in five-year increments.

Between 1975-1980, the government allocated $129 million for Phase Two of the project, which included the port development of Raysut and Salalah. While these expenditures were initially government investments, future activities migrated to a joint public/private joint ownership, as detailed below. The subsequent Five-Year Plans progressively launched Salalah on its aggressive growth trajectory.[45] Despite the impediments caused by regional conflicts, oil price decline, and recession effects on Gulf shipping, slowing the initial progress in the development of Salalah's Raysut Port, and Oman generally, the development plans were not given up.[46]

Building the seaport alone was not the endgame. Oman created the foundation for nurturing and supporting private production, state-run and joint ownership enterprises, beyond shipping and the extraction and export of oil. According to one analysis from the 1980s, Sultan Qaboos and his ministers avoided many of the expensive mistakes made by Mexico, Venezuela,

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[44] *Oman Info Website, The Royal Speeches*. https://www.OmanInfo.om. 36.

[45] *Salalah Port Website 2020.* https://salalahport.com.om. During 1981 and 1982, Phase Three of Raysut Port established a Container Terminal equipped with a 35-ton gantry crane, costing $9 million, and supporting the government's second Five-Year Plan to further the country's economic growth via international maritime transportation.

[46] A.R. Walker, "Recessional and Gulf War Impacts on Port Development and Shipping in the Gulf States in the 1980s." *GeoJournal (Springer)*. vol.18(3), (1989), 273-284.

and other more advanced nations suddenly inundated by petrodollars. They did not try to "buy" an industrial base overnight, but rather developed it with private sector engagement.[47] This infrastructure effort characterized the strategic balance of Sultan Qaboos's state leadership engagement and the encouragement of a mixed/market capitalism to reach both domestic and international goals. Sociologist and globalism specialist M.D. Litoniua offers a concise and applicable treatment of capitalism, using the early United States debate between Jefferson and Hamilton. In the modern world, there are two ways of organizing and managing an economy: via the mechanism of the market (capitalism/market) or through the power of the state (socialism/state).These serve as opposite points on the spectrum, and each economy occupies a point on this line, and a mixture of the two can occupy any point.[48]

While many companies wish their usage of FTZ's to remain anonymous to gain competitive advantage, there are contemporary examples of success in technology, pharmaceuticals, manufacturing and food processing, among other industries in Salalah. Examples include Equinix, Inc. the world's digital infrastructure company, announced plans in February 2022 to build a brand-new data center in the city of Salalah. The data center is being

[47] Mark N. Katz, "A New Dawn?" *The Wilson Quarterly*, vol.11(1), (1987). 64-77.

[48] M.D. Litonjua, "State vs. Market: What kind of Capitalism?" *International Review of Modern Sociology*, (2013), Vol. 39 (1). 55.
In the political economy of Thomas Jefferson, competition in free markets among great numbers of producers who lack the power to manipulate prices to their own benefit is assumed to minimize costs, prices to individuals, and lead to minimal government interference. Hamilton proposed a developmental state which encourages the private and public sectors as collaborators in a single national project of maximizing the military security and well-being of the community by means of technological modernization. The market is good to the extent that it helps necessary national industries and bad to the extent that it hurts them. Government is not the enemy of the private company, but its sponsor and partner.

built in cooperation with Omantel, the regional leading wholesale carrier of the Middle East, and will be commercially and operationally managed in full by Equinix.[49] The inauguration of Phase I of Phelix Pharmaceutical's new factory in January 2023 will operate an area of over 16,000 sqm in SFZ. Once all phases are completed, the total investment will ultimately cover around 110,000 sqm and will produce a range of medications, including antivirals, diabetes and heart medication, blood thinners and pain killers, as well as other specialized nutritional products.[50] The volume of daily output of Al Jood Food Factory, specialized in the production of sweets and liquid tahini, stood at 100 tons, making the unit the third largest factory of its kind in the world.[51] Other examples in cement production and logistics operations are described below.

An early and sustained component of Qaboos's strategy was to creatively use the Limited Liability Corporation (LLC) as the favored manner for business organization. LLCs allowed for investors to own a company which became a building block for a larger combination of investors; a combination where the Governate of Oman provided overall direction. Two examples of the LLC structure offer insight to the Omani strategy. Seven Seas Group LLC, the well-known and renowned group, was incorporated in 1984 and steadily grew into a large collection of LLCs with diverse operations. Similarly, Modern Shipping Services LLC, of the

[49] *Times of Oman Website,* Equinix to build first data centre in Salalah in partnership with Omantel - Times of Oman.

[50] *Times of Oman Website,* Phase 1 of Philex Pharmaceutical's new factory opens in Salalah Free Zone - Times of Oman.

[51] *Times of Oman Website,* Al Jood Tahini Factory Figures as World's Third Largest Sweets Unit | Times of Oman - Times of Oman.

Seven Seas Group of Companies, was established in 1995 and considered one of the pioneering shipping companies in Oman.[52]

2.4 Salalah Port: Catching Up with Other Ports, 1991-2000

Oman's opportunity zones in Salalah, and later in Duqm, were developed to attract national and international investment. Tax exemptions, relaxed regulations, and ownership control of up to 100%, and applying the real estate concept of usufruct were incentives to national and foreign investors. By the 1980s there was traction: Raysut Cement Company in Salalah, and the Rusail Industrial Estate outside Muscat emerged as production/assembly centers for products, such as water pumps, air conditioners, car batteries, and furniture, most of which were formerly imported from abroad.[53] It was the intent of Sultan Qaboos's government to replicate this Rusail activity in the free zones of Salalah and Duqm.

By the mid-1990s three berths were constructed at Raysut Port, cementing Salalah as center stage in Oman's strategy to spur economic development. This strategy was implemented via joint government/private infrastructure investments, highlighted by the Maersk-Sealand and APM Terminal Ports Agreements of 1996 and 1997. The Sultanate of Oman, Maersk Line and APM, coupled with private institutions, jointly invested in the development of Raysut Port's new world class Container Terminal, which was inaugurated in November 1998. These investments

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[52] *Sealand of Oman Website 2020.* https//:www.sealandoman.com/about-us/. About us | Sea Land Shipping (sealandoman.com). The current Chairman, His Highness Sayyid Shihab Bin Taraq Al Said is an important member of the Ruling Royal family of the Sultanate of Oman. Also see Modern Shipping Services LLC. Website. http://modernshipping.com.

[53] Katz, "A New Dawn?", 64-77. 1987. Usufruct is the legal right granted by the land and facility owner conferring complete use of the property for a set, and usually very long period, paying only fees and taxes. The advantage for international entities was the ability to invest over the long term without real estate purchase and ownership responsibilities.

established Raysut Port as a container transfer location on the wider global transportation network, and in 1999 the seaport set a world record for productivity with more than 250 berth moves per hour.[54]

In 2000, Salalah Port LLC was named as the joint government-private entity assuming control of Raysut Port. This public-private consolidation of port activities in Salalah was further strengthened that same year, when bunkering (full-service ship maintenance and fueling services) facilities reached completion, and the soon to be operational General Cargo Terminal came under the Salalah Port LLC management.[55]

2.5 Salalah Port: Staying Competitive, 2001-2020

By 2002, container volumes in the Salalah Port Container Terminal exceeded the initially anticipated capacity.[56] This would recur, tempered by continued efficiency gains. Anticipating further growth, Oman continued to act, and by 2003 Salalah's expansion project for two new berths and a new breakwater gained approval. That same year 2 million TEU's transited through Salalah Port's facilities. Productivity in unloading and uploading full containers continued to set efficiency records, and the three-berth capacity success led to plans for fourth and fifth berth additions, completed by 2007. With the fifth berth fully operational by 2008, more than three million TEU's processed through Salalah Port facilities that year. Concurrently, Salalah Port's capabilities in handling break-bulk, bulk (grains, coal), and project cargo (including large equipment and infrastructure building materials) also expanded. Raysut Cement, the joint government-private enterprise constructed as a productive industrial component of the

[54] *Salalah Port Website 2020.* https://salalahport.com.om.

[55] *Salalah Port Website 2020.* https://salalahport.com.om.

[56] *Salalah Port Website 2020.* https://salalahport.com.om.

greater Salalah zone, required better cargo handling capabilities. The Salalah Port entity responded by constructing the General Cargo Terminal in 2002, supported by additional material handling equipment at berth-side. This action fed the infrastructure projects in Oman's coastal points and hinterlands. Commencing from an already growing volume of 800,000 tons annually by 1998, Salalah Port managed 1.7 million tons of break-bulk, bulk and project cargo in 2002. By 2008, this volume doubled to 3.4 million tons, and it rose to 7.2 million tons over the next decade. This growth is remarkable because it occurred despite global economic headwinds during this period and a global trend of break-bulk contraction.[57]

The addition to infrastructure development, making it a Free Trade Zone was a part of the strategy. Oman positioned the Salalah Free Zone as an attractive location for chemicals, manufacturing, assembly and raw and refined material processing. The Salalah Free Zone, established by a decree in 2006 and owned by the Omani government, was a free trade zone for infrastructure and support services in trading, distribution, warehousing, manufacturing, assembling, processing, packaging and logistics companies.[58]According to Economist Yesenn El-Radhi, public expenditure in Oman started to exert substantial impact on economic development patterns at a much later time than other GCC countries. The start of oil production in 1967 led to a strong upswing of public revenues over the following decades.[59] This reflected the late start Oman experienced in capitalizing on its oil reserves. This expenditure in turn created the environment for private Limited Liability Corporations discussed below, under

[57] *Salalah Port Website 2020*. https://salalahport.com.om.

[58] *Zawya Website 2020.* https://zawya.com/mena/en/company/Salalah_Free_Zone.

[59] Yesenn El-Radhi, "Oman: A Late Non-Oil Economic Blooming Caused by Rising Public *Oil* Rents." *Economic Diversification in the Gulf States*, Gerlach Press. (2018), 156

governmental guidance, to prosper. In 2008 the Oman-US Free Trade Agreement was signed to attract US investment in the Salalah Free Trade Zone. The stipulation in the agreement that thirty-five per cent of the volumes exported to the United States from the Salalah zone would be of local origin encouraged Omani manufacturing. This effort bolstered the Omani economy, encouraging the employment and management of Omani nationals as part of the Omanization program.[60] Examples of companies formed during this period are Sea Land Shipping & Logistics Services LLC and Seven Seas Shipping & Logistics LLC.[61] These organizations, built on the Limited Liability model, joined logistics and port services companies brought under one umbrella in the following decade.

By the 2010s, Salalah Port was handling Panamax generation vessels (Panama Canal suitable), positioning it to process most of the world's container carrying capacity. In 2011, Oman introduced the new Twenty-Year Vision Plan (2011-2030), which had a major impact on Salalah Port. The master plan envisioned Salalah Hub including a railway connection and distribution center.[62] In the following year, the government authorized the expansion of the General Cargo Terminal (GCT) with new bulk handling equipment.[63] This new expansion plan

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[60] *Salalah Port Website 2020.* https://salalahport.com.om. Also see Oman Ministry of Information Website. https://www.mol.om/His-Majesty-Speech/. Speech of November 11, 2008.

[61] *Sealand of Oman Website.* https://www.sealandoman.com/about-us/. About us | Sea Land Shipping (sealandoman.com) Sea Land Shipping & Logistics Services LLC., an Oman headquartered shipping agency and logistics company, was established in 2008, belonging to the Seven Seas Group family. Similarly, Seven Seas Shipping & Logistics LLC. was established in 2009 for taking care of the freight forwarding activities of the shipping division and represented FedEx Trade Network in Oman.

[62] *Salalah Port Website 2020.* https://salalahport.com.om. Also, food reserve and processing centers among warehousing and other logistics facilities, and liquid storage along with dedicated facilities aimed to accommodate small and medium sized entrepreneurs.

[63] *Salalah Port Website 2020.* https://salalahport.com.om.

sought to enhance the port's capacity for handling over six million tons of liquid products such as natural gas. Parallel to this development, Salalah Port's handling capacity increased to twenty million tons per year of dry bulk commodities in 2012. The results were impressive and led to further development.[64]

In 2016 Salalah Port contracted with Cavotec SA to install eight vessel floatation and security units on the new sixth berth at the Container terminal to secure ships during the monsoon season. This was completed in time for Salalah to attain the highpoint of 3.9 million TEUs processed in 2017.[65] In 2020 Salalah Port launched its connectivity to the proposed national rail network. The multibillion-dollar railway project, conceived as part of the wider Gulf Cooperation Council (GCC) rail network, will open up prospects for freight forwarding through the Salalah Port.[66]

In 2020, the last year of Sultan Qaboos's reign, Salalah Port accommodated 122 weekly arrivals of container vessels.[67] Maersk alone accounted for twenty-three of these port callings per

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[64] *Salalah Port Website 2020.* Upon going operational in 2015 was a more than doubling in non-containerized volume, and Salalah Port's break-bulk, bulk and project cargo by 2018 reached 16.2 million tons. The sixth berth addition, and its accompanying material handling investment, supplemented this increased volume processed in the new deep-water General Cargo and Liquid-Bulk Terminal. This trend of general cargo expansion continued to buck global trends. Finally, 2018 brought plans for the Container Terminal to add three million TEU's to capacity.

[65] *Salalah Port Website 2020,* Cavotec was installing sixteen additional units on berths three and four at the Container Terminal by 2017.

[66] *Salalah Port Website 2020.* As a superhighway for-rail based freight, the network was planned to enhance connectivity between Salalah and the major population centers and markets of the GCC. When the network comes into service, Salalah has the potential to become a major gateway for the GCC for fast moving consumer goods and other high value commodities. Salalah Port anticipates a significant upsizing of their capabilities as a liquid hub serving the markets of East and India.

[67] *ASYAD Website 2020.* https://www.asyad.om/freight/direct-lines-to-Oman.

week.[68] However, Salalah still faces the challenge of efficiently handling the Super-Post-Panamax vessels, especially the Very Large Container Vessel Class (VLCV), suitable for only fifty seaports globally. Business Gateway reported in 2019 that Salalah requires significant investment to meet these new demands and the Tanfeedh Initiative of Oman's government was tasked with the upgrade, which remains in process.[69] The National Program for the Promotion of Economic Diversification and Implementation (the Tanfeedh) was a component of the 2016-2020 Five-Year Plan, rolling into the strategy outlined in the Twenty-Year Vision. [70]

The development of Salalah Port over the fifty years of Qaboos's reign, while impacted by events beyond his scope of influence, held to the four fundamental principles of human and natural resource, infrastructure and state institution enhancement, under the umbrella of God's love. Upon his passing, Qaboos's leadership, vision and results positioned Salalah Port and Oman to compete in the twenty first century, bringing the private sector to the forefront in creating sustainable employment opportunities to the Omani citizenry.

2.6 Salalah's Influence on Duqm Port 2010-2020

The 2000s also saw a rapid development of Oman's Duqm seaport. Lessons of the Salalah and Free Trade Zone were applied to the Duqm project. The Port of Duqm Company was as a joint 50/50 venture of the Consortium Port Antwerp (CAP) and the Government of the Sultanate of Oman. As evident in other arrangements the Omani government made with

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[68] *Maersk Website 2020.* https://www.Maersk.com.

[69] *Business Gateways News Website 2020.* https://businessgateways.com/news/2019/05/13/Upgrade-key-to-attracting-mega-container-ships.

[70] *The Business Year Oman Website 2020.* https://www.thebusinessyear.com/Oman-2019/development-plan/inside-perspective

international sources, the relationship with CAP allowed for world class guidance from Europe's second largest port management organization. Critically, the engagement with CAP served as an excellent source for investment in Duqm's development, while maintaining the Sultanate's direct influence.

The development of the Duqm Port was led by the Special Economic Zone Authority of Duqm (SEZAD), the oversight management arm of the Omani government. The SEZAD was responsible for the planning and construction of the city of Duqm, including the seaport and the special economic zones within it.[71] The SEZAD also led the buildout of the Special Economic Zone in Duqm, accommodating assembly and supply chain enhancements for potential local and international companies. SEZAD was the driver of Duqm as Oman's Seafront Industrial Complex, a critical component of Oman's Vision 2040 goal. Sultan Qaboos assigned Haitham bin Tariq al-Said head of the Oman Vision 2040 Committee in 2016, with a plan deliverable by 2019.[72] This committee's mission statement, the foundation for the future Five-Year Plans for Oman, recognized the economy and society must no longer rely on non-renewable resources but on innovation and knowledge. Investments in opportunities triggered by regional and international dynamics, and based on eight drivers, including infrastructure and logistics

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[71] Sugihara, Kaori, "Varieties of Industrialization." Also, Giorgio Riello, *In Global Academic History*. New York. Bloomsbury Academic.(2010). The "Seafront Industrial Complex" embodies the development and enhancement of seaports beyond import/export activities. This model led to the successful development of north, eastern and southeastern Asian seaports; these seaports have successfully linked the oceanic and hinterland elements. SEZAD was accountable for the Duqm Industrial Land Company (DILC), the emerging site of planned manufacturing, natural resource collection and enhancement. The DILC was responsible for developing the 2000 hectare (4949 acre) set aside for heavy manufacturing and petrochemical developments, located near the Duqm refinery for oil extraction.

[72] Yoel Gozanky, Efraim Halevy, "The End of the Qaboos Era." *Institute for National Security Studies*. (2020). Haitham was ultimately named Qaboos's successor.

enhancements, were the way forward.[73] The key to maintaining this strategic direction and the emphasis on youth set by the ninth Five-Year Development Plan, was the need to develop dynamic leaders with new competencies. Leaders functioning in an integrated institutional and economic framework, supporting the Oman's Vision 2040 imperatives of preserving environmental sustainability, establishing modern infrastructure, and an integrated physical system, were of paramount importance.[74]

In 2016, the government formed the ASYAD (Arabic proper name meaning versality, enthusiasm, creativity) to better handle the logistics and fiscal management of its seaports. ASYAD was the centerpiece of Oman's ambition to reclaim its 2000-year-old regional trade leadership and establish the country as one of the world's top ten logistics hubs by 2040. Historian Calvin H. Allen, Jr. dates Omani copper trading activity to before the common era. "Contacts between India and the coast of 'Uman' probably began very early in the commercial history of the Indian Ocean when maritime trade was conducted between Sumer and the Harappan civilization of the Indus valley." Allen signals more confidence in proving Omani trade from the 15th century forward.[75] Similarly, the Times of Oman declared in January 2023 "The Omani-Egyptian relations have derived their strength from the deep-rooted history

[73] *Oman Vision 2040 Website.* https://www.2040.om/wp-content/uploads/2020/12/Oman2040-En.pdf.2020.

[74] *The Business Year Oman Website 2020.* https://www.thebusinessyear.com/Oman-2019/development-plan/inside-perspective.

[75] Calvin H. Allen, Jr., " The Indian Merchant of Masqat." *Bulletin of the School of Oriental and African Studies,* vol 44(1), (1981), 39.

documented by evidence before approximately 3500 BC, and they are witnessing a constant development.[76]

ASYAD Group brought together sixteen logistics companies and joint ventures under one entity, improving performance, creating efficiencies, and offering economies of scale. The Group included three deep ports (Sohar, Duqm and Salalah) and three free zones supporting Oman's five airports, a new rail network and a world class road network.[77] This term is used directly by the ASYAD Group, without specifics, and "world class" presumably would be roads, bridges, seaports and airports comparable to the best examples of these globally. Oman's recently developed Banyan Customs System allowed for ASYAD to electronically handle customs transactions and served as the cornerstone to the Muscat Compact of 2019. This agreement linked Oman to global customs systems.[78] AYSAD offered Oman an opportunity to provide training and employment to Omani youth, an issue highlighted by Oman in response to the Arab Spring. In August 2012, the Sultan announced a royal directive mandating the speedy implementation of a national job creation plan for thousands of public and private sector jobs.[79] Given the large population of youth in Oman (44% under age 15), continued focus on providing for education, jobs and career growth was a domestic challenge for Oman.[80] In 2012, Sultan

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[76] *Times of Oman Website,* Egyptian President's visit to boost trade and investment with Oman - Times of Oman

[77] *ASYAD Website 2020.* https://www.asyadgroup.com?about-us/.

[78] *AYSAD Website 2020.* Video on Logistics Services in Duqm.

[79] Anthony Cordesman, Max Markusen, Eric P. Jones, "Oman: Stability and Instability in the Gulf Region in 2016." *Center for Strategic and International Studies* (CSIS). (2016).

[80] *United Nations Office For the Coordination of Humanitarian Affairs Website*. https://unocha/oman.

Qaboos encouraged both the private sector and individual Omanis to create job opportunities for the Omanis.[81] The Sawaed Initiative underway in Duqm, Salalah and Sohar since 2016 encourages young Omanis to study logistics operations to build a versatile workforce for this lucrative and sustainable career path.[82]

China's 2013 strategic plan to expand its power globally was institutionalized in the Belt and Road Initiative (BRI). This movement set to spread China's economic might in regions where it was vulnerable to competing western military and economic interests, using trade and capital investment as soft economic power.[83] The BRI allowed for the Sultanate to utilize an alternate avenue for development expertise and financial backing, without jeopardizing Oman's relationship with the west. Thus, western companies such as Maersk and APM were selectively utilized in the initial development of container capabilities in Salalah, while the BRI played a significant role in the subsequent development of Duqm, reflecting Oman's strong emphasis on neutrality and ability to thread the diplomatic needle.[84]

By 2018 the Port of Duqm was positioned to play a key role as a catalyst in the commercialization of the vast mineral resources of the Al Wusta region. An example was the

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[81] *Oman Ministry of Information Website.* https://www.mol.om/His-Majesty-Speech/. Speech of November 12, 2012.

[82] *ASYAD Group Website 2020.* https://www.asyadgroup.com?about-us/.

[83] Camille Lons, Jonathan Fulton, Naser Al-Tamimi, "China's Great Game in the Middle East". *European Council on Foreign Relations.* 2019. The BRI in the Middle East is well discussed among scholars and practitioners. Also see Muhammad Abbas Hassan, "Growing China-India Competition in the Indian Ocean." *Strategic Studies*. Institute of Strategic Studies, vol.39(1). 2019; Daniel J. Kostecka, "Places and Bases: The Chinese Navy's Emerging Support Network in the Indian Ocean." *Naval War College Review* 64 (1). (2011). 59-78.

[84] *Times of Oman Website 2021.* Oman's balanced foreign policies praised by Chinese ambassador - Times of Oman

completion of the Liquified Natural Gas plant's first phase in 2018. Another area of development was the Special Economic Zone of Duqm, designed for supply chain related activities such as assembly, manufacturing, and export of Omani finished goods and other products. Included in this economic zone was the China-Oman Industrial Park, where the financial and development expertise of the BRI is in full swing today. In 2018, Oman Wanfang, the master developer of the Industrial Park in Duqm, commenced ten projects with a total investment of $3.2 billion, with twenty-five more in the pipeline for completion by 2028-2030.[85] By 2019, China provided several training courses in a diverse range of topics for nearly four hundred Omanis, free of cost. In November 2022, the first industrial investment became operational. Duqm Hongtong Piping LLC's plant commenced production with an eye on domestic, regional, and international markets.[86] The mid 2021 forecast for Duqm to manufacture transit buses within the SEZAD, with components locally and internationally sourced, commenced a few months late, in November 2021.[87] The evolving port at Duqm manifests Oman's strategy to turn its eastern coast into an entrepot for the interior Arabian peninsula. Tied into the global logistics network and linked via road and rail infrastructure to Oman's hinterland and to points throughout the GCC, Duqm is an important part of Oman's 2040 Vision. Duqm, it is anticipated, will serve as a departure point for products from the surrounding areas of Central and Northern Oman and the

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[85] *Oman Observer Website.* https://www.omanobserver.om/3.2-billion-invested-industrial-park/. The first ten planned projects ran the gamut from a building materials marketplace, and production plants for methanol, electricity, desalination and bromine. Also planned are factories for non-metallic composite pipes used in oilfields, solar panels and equipment, high-mobility utility vehicles, oil and gas fields, and even a five-star hotel in Duqm.

[86] *Timesofoman.com/*article/108466-first-factory-in-china-oman-industrial-city-at-duqm-opens.

[87] *Oman Observer Website*, https://www,omanobserver.om/more-chinese-firms-eye-industrial-park-in-duqm/.

Arabian peninsula. Duqm is being developed as a neutral business site, where trade and naval support operations from all nations would be welcomed, but strict political neutrality would be maintained. Duqm's Arabian Sea location is suitable for avoiding potential conflicts inherent in the Straight of Hormoz; it is also well located to support the efforts against piracy impacting the Arabian Sea trading nations and companies.[88] Duqm in mid-2021 launched its full bunkering and support apparatus.[89]

Another feature of the Duqm seaport development initiative is the capability enhancement to handle large-proportioned project cargo. Duqm is the only port in Oman capable of handling such cargos because other ports of the GCC cannot transport project cargo over land into Oman.[90] Duqm Port is designed as both an origin/destination and point of transshipment. It is well situated for expansion and poised to become the port where Super post-Panamax container vessels, representing the largest container ships and tankers in the world, can dock.[91]

Duqm Port's ongoing development reflects Sultan Qaboos's commitment to provide sustainable employment for Oman's citizens through public/private engagement and a legacy that the current Sultan and the government seek to carry forward. The state institutions built during his reign produced both economic growth and renewed focus on social improvement. Oman has benefitted from the dual track of natural resource extraction and sustainable economic

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[88] *Port of Duqm Website 2020*. https://www.portofduqm.om.

[89] *Times of Oman Website 2021*. Pact signed to operate, maintain bunker terminal facility in Duqm port - Times of Oman.

[90] *Times of Oman Website 2021*.

[91] *Times of Oman Website 2021*. With depths of at least eighteen meters (58 feet) guaranteed through the approach to the wharf, the initial port arrangement at Duqm is positioned to accommodate 21st century commerce.

development not linked to oil and gas. Duqm Port has adhered to Qaboos's four fundamental principles.

2.7 The Environment and Positioning for the Future

Although challenges remain, the Government of Oman under the leadership of Qaboos built a sustainable infrastructure to meet its ultimate goals as stated in the Five-Year Development and Twenty-Year Vision plans. Among the variables impacting Oman's desired outcomes are local and global economics, geopolitical considerations within the Gulf Cooperation Council, the surrounding western Indian Ocean world and beyond, the evolution of the ongoing Omanization project and responses to local social pressures, and the differentiation of Oman through both actual growth and comparative position. But the potential end game, the anticipated social and economic results, could be significant once these ports are at their full capacity.

Analysis of data from the United Nations Conference on Trade and Development (UNCTAD), supplemented by World Bank data, covering the period 2003-2019, confirms Oman's success execution of its seaport development plans and its strategic engagement with the broader global economy during the nearly 50-year rule of Sultan Qaboos. Container port traffic data confirms the first 30 years (1970-2000) of infrastructure modernization cemented the position of Oman as the number three GCC seaport host, measured by throughput, behind the UAE and Saudi Arabia. By 2000, Salalah Port established itself as an important factor in the trade network of global logistics firms, and the plans for Duqm were well underway.[92]

[92] *United Nations Conference on Trade and Development (UNCTAD) Website.* https://unctadstat.unctad.org/. Also see *World Bank Website.* https://databank.worldbank.org/databases

Importantly, UNCTAD's data from its Liner Shipping Connectivity Index, with 2004 as its baseline, vindicates Oman's strategy and implementation during the first thirty years.[93] But the infrastructure strategy did not propel Oman demonstrably beyond regional or global trends.[94] Salalah's current inability to efficiently process the Very Large Container Vessel class due to dredging and financial constraints, remains a potential drag on future progress.

However, Sultan Qaboos's strategy created the path forward. Oman's neutral and diplomatic approach helped global trade. Regionally, good relationships with GCC partners, and the resulting rail and road program connecting the seaports and hinterlands, once completed, would be a major advantage for Oman. Assuming the continuation of the Banyan Customs System and its coordination with those of the region, combined with the cost and time efficiencies anticipated and Duqm's and Salalah's geographic advantages, Oman is poised to benefit from growth throughout the region. Oman's good relationships with India, the European Union, and the United States, while taking measured advantage of the Chinese presence, is of strategic importance. "We currently live in a world of overlapping policies and interests, but our international cooperation is in line with the Sultanate's higher interests and in line with our contribution to the establishment of world security and prosperity."95 Omanization, the

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[93] *UNCTAD Website*. Oman's score of 24.6/100 in 2004 improved to 52.0/100 by 2019. This score performance, compared to the UAE's 39.0/100 (2004) and 71.5/100 (2009) results, and those of Saudi Arabia's 36.2/100 (2004) and 63.0/100 (2009), indicate Oman remained competitive with the other 2 GCC container seaport powerhouses (consistently these three represent 92-94% of container activity in the GCC).

[94] *UNCTAD Website.* Between 2000-2019, Oman's container traffic grew by a multiple of 4.27, compared to Saudi Arabia's 5.9, and the UAE's 3.79. Further, Oman's growth multiplier trailed the GCC's average of 4.64, India's 6.96, and South Asia's 6.6, but was higher than Egypt's 3.88, or the global volume multiplier of 3.54.

[95] *Oman Ministry of Information Website.* https://www.mol.om/His-Majesty-Speech/. Speech of November 11, 2008.

encouragement of local economic actors and Omani ownership and business ventures, exemplified in the Sawaed project to build logistics and supply chain expertise among its citizenry, will likely continue to be a focus of the infrastructure development plans of the current sultan and the government. Oman has performed well as measured against the imperatives of its 20 Year Visions, lending credibility to the argument that the supporting 5 Year Plans will enforce accountability in preserving environmental stability as stated in the Oman Vision 2040.

3 SURAT-HAZIRA AND MUNDRA PORTS – INDIA

3.1 Gautam Adani and India's Economic Liberalization

"Gautam Adani's incredible rise continues. The Indian infrastructure mogul became the richest Asian billionaire in history (in sheer dollar terms) earlier this month–and he's kept on climbing." Forbes Magazine on February 22, 2022, noted that Adani had passed Warren Buffett to become the fifth richest person in the world, with a net worth of $ 123.7 billion. Adani is the founder and chairman of Adani Group, a port energy and media conglomerate with six publicly traded companies in India, all of which had substantial growth in 2021. The Adani Group has led aggressive expansion into renewable energy, media, airports, seaports and other diverse business entities.[96] The Adani Group World Headquarters is in Ahmedabad, 178 miles north of Surat's port of Hazira and 182 miles east of Mundra Port. Both ports are on the northwestern coast of India in the state of Gujarat.

[96] Chase Peterson-Withorn, "India's Gautam Adani Passes Warren Buffett To Become World's 5th Richest Person." *Forbes*, April, 23, 2022. https://www.forbes.com/sites/chasewithorn/2022/04/23/indias-gautam-adani-passes-warren-buffett-to-become-worlds-5th-richest-person/

Surat has a long history of trade and seafaring throughout the Indian Ocean world. Its peak activity as a transportation hub and exchange beehive for products originating in the Indian Ocean world occurred during the Mughal empire, and the growth of European trade under the Dutch and English East India companies.[97] During its peak, Surat served as the conduit for trade into the northern Indian hinterland, with overland connectivity to points north through modern day Pakistan, Afghanistan, Turkmenistan, Iran and Iraq. Surat was not only an entrepot, where products were imported and exported, distributed and collected. It also served as a location for mining, extraction and production. Surat declined in the late 18th century as Bombay (now Mumbai) emerged as India's major seaport and entrepot.[98] Today, while Surat has long been considered a port city in stagnation or decline, losing its trading business to Mumbai and other western Indian ports, it ranks as India's eighth largest population center with a booming economy. Renowned for diamond cutting and polishing, textile production and manufacturing, Surat has invested significant capital into its port infrastructure. The actual port linked to Surat is Hazira, operated by the publicly held Adani Ports Logistics organization. Yet Surat remains viewed as a second-tier port city, with suboptimal connectivity to the trade lanes evolved in the latter half of the 20th century. Paradoxically, Surat was India's first IT Smart City.

Mundra Ports today is India's largest port complex, outflanking perennial leaders of India on both east and west coasts. Its rise has been exponential due to the Adani Ports and Special Economic Zone Ltd.'s investment and strategy. In 2015, several of India's ports, such as the ports in Jawaharlal Nehru Mumbai, ports in the west, and Chennai, Visakhapatnam, and Kolkata,

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[97] Ashin Das Gupta, *The World of Indian Ocean Merchant, 1500-1800: Collected Essay of Ashin Das Gupta*, Compiled by Uma Das Gupta (New Delhi: Oxford University Press, 2001).

[98] Ashin Das Gupta, *Indian Merchants and the Decline of Surat, 1700-1750* (New Delhi: Manohar, 1994)

ports in the east of India all ranked the world's top one hundred container ports based on total throughput. Mundra was not on the list.[99] Six years later, Mundra was at #26 in the global port ranking, after experiencing a 19.5% growth over the year prior and outpacing Jawaharlal Nehru which was ranked #39 with a 12.4% decline.[100] While the rankings were somewhat skewed due to the impact of the Covid 19 pandemic, Mundra was #1 in India in 2019 and 2020 as well. This rapid evolution from a small, local and largely silted over port of insignificance to Adani Port's Indian crown jewel, is linked to Gujarat's growth in economic output during the latter years of the period under review. The shift in direction of Indian development philosophy towards entrepreneurial creation was also fundamental to this evolution.

3.2 Context, Parameters and Surat/Gujarat's pre-1990 Foundation

Unique to Surat, Mundra and India in general, the nation's status in the mid-20th century was chaotic. Independence from British rule in 1947 left an impoverished and violently broken nation, recovering from the empire's increasingly state-controlled war economy. India's infrastructure was in tatters, with roads, ports, railroads and overall urban and rural systems of water provision and waste disposal in disarray. The resulting poverty, disease and demand for resolution was extreme. Additionally, the industrial base was practically nonexistent, beyond that required for supporting the export-oriented demands, aided by selective imports, of the British Empire's mercantilist scheme. According to historian Tirthankar Roy the regulation of business after 1947 had little to do with the sentiment to reduce inequality and concentration of power. It was owed in Jawaharlal Nehru's time to a dislike for foreign capital, and later in Indira Gandhi's

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[99] *Lloyds List - One Hundred Ports*. (2020). https://lloydslist.maritimeintelligence.informa.com/one-hundred-container-ports-2020

[100] *Informa Ltd. Website 2022. 100 Container ports 2021, Source Lloyds List*. www.lloydslist.maritimeinteligence.informa.com

time to a fear of capitalists as a political lobby. Because bad faith underlay regulation, it did not succeed. “The story revolves on the *capacity of the state* to attain economic growth and development through its own efforts alone. Certain parts of the shared historical legacy in 1950-indigenous entrepreneurship, bureaucracy, and the army, for example-contributed positively to this capacity. But in their desire to speed up industrialization with their own resources, the states weakened, even destroyed, certain other parts of the shared legacy, including foreign enterprise and a commercial heritage that had strived on trade openness. That disastrous choice impaired the state’s capacity to manage development. The states also underestimated the scale of the geographical challenges of agricultural change.”[101] Roy adds “national policy (after 1947) prioritized the production of machinery and chemicals in India and devalued traditional activities like textiles and trade. Breaking with the past, the regime increased the role of the state and reduced the role of the world economy as the driver of economic development.[102]

This scenario occurred in the global environment of recovery, conflict and the onset of the Cold War. After World War II, with the struggles between the western democracies and their capitalist systems versus the rapid spread of socialism and communism led by the Soviet Union and shortly thereafter China, Indian economic strategy was at a crossroads. The new nation, requiring action and the demands for results, was doing so while entrapped in this geopolitical and economic climate. The challenge was to generate growth, but also to determine which development system was best suited for the disarray at hand.

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[101] Tirthankar Roy, 2017. *The Economy of South Asia: From 1950 to the Present.* London: Palgrave Macmillan. 16-17

[102] Tirthankar Roy, 2018, *A Business History of India: Enterprise and the Emergence of Capitalism from 1700.*Cambridge: Cambridge University Press. 153.

As in other post World War II scenarios, India's independence left its new leadership with a fundamental choice. Should the capitalist system followed by the previous rule of the British be pursued. Or were the socialist trends evolving in Europe and Asia at the time more adaptable to the crisis in India. Where would the international funding, guidance and support to help India get on its feet come from? The new government needed to determine if India was better off with government-led initiatives of building its own industry, infrastructure, and business systems or with a private entrepreneur-driven capitalist system. Deciding which route to pursue would directly impact planning for infrastructure strategy.

India's path in the second-half of the 20th century and into the 21st is the story embracing one pathway and then evolving to the second as described above. The government's initial pursuit was in the direction of state ownership of the means of production and its distribution. However, eventually a move towards free market capitalism took hold, with a resulting hybrid system of development. The author and retired Indian official Govind Bhattacharjee succinctly presents the context of India's economic development in the second half of the 20th century. By the late 1940s, early 1950s the decision was made. He writes, " To Prime Minister Nehru, the only way to overcome the endemic poverty and food crisis that bedeviled post-independence India was through establishing overwhelming state control over the means of production and distribution, in the Soviet style, to serve broad macro-economic objectives of achieving higher economic growth, self-sufficiency in production, import substitution and long-term equilibrium in foreign trade, besides meeting other socio-economic obligations."[103]

[103] G. Bhattacharjee, "Nature and Scope of the Public Sector in India and the World." In G. Bhattacharjee, *Public Sector Enterprises in India: Evolution, Privatization and Reforms.* Mathura Road: Sage Publications Pvt Ltd., (2020). 49.

Tirthankar Roy describes the period between 1930-1980 as dominated by state-driven industrialization. During the late 1970s and early 1980s, the accumulation of capital and increased competitiveness in the small-scale, labor-intensive industries, coupled with the unexpected devaluation of the Indian currency, led to export-oriented growth. From 1980 forward, a gradual revival of private entrepreneurial engagement occurred followed by a somewhat aggressive liberalization of the economy since the 1990s. The government began to eliminate regulations and tariffs and promote private ownership of enterprises and industries formerly under the government control. Reversing the trends of low exports during 1950-1970, the Indian economy became export oriented by the early 1990s. The export percentage of GDP, consequently, increased.[104]

Historian Garrett Menning offers an interesting example during the 1980s-1990s. The large state-owned industry of synthetic textile manufacturing in Mumbai was weighed down by bureaucracy, labor issues and regulations and was supplanted by small independently owned and operated rivals in Surat. He relates the story of disorganized capitalism in Surat's production of synthetic textiles known as art silk. This pure, decentralized capitalism consists of small family operations of power weaving, using traditional methods of exchange, financing and relationships based on trust, without the weight of regulation. These businesses produce and export world-class products without any knowledge of modern management practices. They are employing rapid turnaround, lean manufacturing, and outsourcing techniques to overcome the limitations imposed by the disorganized or decentralized nature of capitalism.[105]

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[104] Roy, *A Business History of India*,

[105] Garrett Menning, "India's Other Path: Disorganized Capitalism in Surat." *Current History.* vol. 97(622), (1998), 385-391.

By the 1990s the export categories were not just for industrial and labor-intensive traditional manufacturing and textile clothing industries, but increasingly the knowledge industry, with software and outsourced technical support functions leading the charge. Multinational companies were welcomed, and the education system was reoriented towards the future needs of these global entities. India also capitalized on the shrinking of the transportation transit times and the lowering of communication costs brought on by global competition. Roy notes that from 1950-1970, foreign trade declined in importance in India, saw a slight uptick between 1970-1990, and then a surge after 1990. He further reports "(global) market integration today (2012) is similar to the colonial pattern of integration in reliance on multiple axes of trade, capital, and labor, with significant externalities flowing in the shape of knowledge exchange. After lying low for nearly a century, India-Asia trade has risen again." [106] During this time period the orientation of trade towards the Soviet Union and the eastern bloc fell, while increasing with the western and Asian economies. In 1991 India embarked on a new direction. Bhattacharjee explains the new policy prioritized liberalizing industries from "all regulatory devices and controls", to increase competitiveness, support small businesses, encourage competitiveness among industries, and reducing public sector ownership of firms to 26%.[107] Prime Minister Nehru's vision of state-led economic development in the 1950s and economic liberalization some 50 years later, in which private businesses, such as the Adani Group, played an increasingly vital role, encapsulate the evolution of India's economic development and, by extension, of Surat/Hazira and Mundra ports.

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[106] Tirthankar Roy, 2012. *India in the World Economy: From Antiquity to the Present.* New York: Cambridge University Press. 238, 249

[107] Bhattachaejee, "Public Sector Enterprises", 51.

3.3 Adani Group

This thesis approaches the seaport development of greater Gujarat through the dual lenses of Surat/Hazira, Mundra, and the private Adani Ports and Special Economic Zones Ltd. (APSEZ). This organization is a subsidiary of the Adani Group; Adani Group is a conglomerate formed in 1988, with multinational reach, engaged in aerospace, logistics, port infrastructure development, defense, financial services, real estate, agribusiness, natural resources, and energy. In 2022, the Adani Group had an annual revenue of $13 billion. There are six primary subsidiaries of Adani, each listed on the Mumbai and National Stock Exchanges. APSEZ is by far its largest component and will be discussed below, with focus on the Mundra and Hazira ports in Gujarat.

Adani Enterprises Ltd. is the financial arm of the group, focused on investment and the discovery of opportunities to engage the other subsidiaries. Adani invests its capital and coordinates with state entities for appropriate government incentive funding. Adani Green Energy Ltd. develops renewable energy infrastructure for domestic and foreign international consumption. It was established in 2015. Adani Power Ltd. commenced in 1996; It builds and maintains power plants throughout India, as well as overseas. Among its subsidiaries is the Mundra Power Special Economic Zone Ltd., which is coordinated with the Mundra port discussed below. Adani Power as of 2014 was the largest power generating company in India.

Adani Total Gas Ltd. is a distribution and pipeline infrastructure development organization, with both individual and industrial customers in northwestern India. Adani Total Gas Ltd. also services the transportation sector, providing liquefied gas products. Similar to Adani Power. this liquefied gas distribution infrastructure is tied into the ports of Mundra and Hazira. Finally, Adani Transmission Ltd. is an electric power distribution organization, requiring

oil, natural gas, and coal imports for generation purposes. This subsidiary has linkages to the APSEZ ports of Mundra and Hazira.

Adani Group engages its subsidiaries not as standalone operations but as integrated units operating in concert. New opportunities in green, environmentally sensitive development are assumed to be part of the Adani Group's portfolios.[108]

3.4 Adani Ports and Special Economic Zones: Mundra and Hazira 1994-2020

Adani Ports and Special Economic Zones (APSEZ), a subsidiary of the Adani Group, conducts the business of developing, operating and maintaining port infrastructure. The company operates the Mundra Port and Hazira Port and their infrastructure facilities including the multiproduct special economic zone.[109] APSEZ in two decades has built and managed multiservice ports infrastructure and services across India, becoming the country's largest private port operator and an end-to-end logistics provider. APSEZ operates in a competitive market, and their thirteen strategically located ports and terminals represent 24% of the country's ports' capacity. APSEZ operates in India, Singapore and Australia. In fiscal year 2020, the India region accounted for 95.7% of the company's total revenue, but future plans are to increase the international presence.[110]

The year 1991 was a turning point in the history of the Indian economy. Liberalization generated a tremendous increase in competition from India based companies and multinationals,

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[108] Topka Idea. 2021. *Adani Group of Companies List.* April 19. https://www.topkaidea.com/adani-group-of-companies.

[109] MarketLine Inc. 2020. *Adani Ports and Special Economic Zone Ltd: Company Profile.* London: John Carpenter House.

[110] *Adani Ports. 2022. Adani Ports Hazira Port.* Adani Ports.com.

in almost all industrial sectors. Economist B. Karunakar in 2012 identified 144 companies as beneficiaries of India's new openness as a result of the country's departure from its state dominated economy. These organizations in the 1990s reflected the management practices and successful results found among other players during that period's global rebound. Using strict criteria, the initial 144 companies evaluated was narrowed down to twenty-three and then eventually to seven exceptional organizations. Karunakar discovered these companies followed business models based on strategy, execution excellence and leadership.[111]

While the Adani Group was not among these companies in 2012, the following years would prove Adani Port Ltd. embraced a similar business model.[112] The history of the Adani Ports and Special Economic Zones (APSEZ) commenced in 1994, early in India's liberalization transition, when the Gujarat Maritime Board approved an Adani proposal to build a new jetty in the local transshipment, small port of Mundra. Immediately Adani Port Ltd. began construction on two multi-purpose berths and the buildout of Terminal One. Within four years the berths were operating. In 1998, the Adani Port Ltd. and the Gujarat Port Infrastructure Development Company merged to form the Gujarat Adani Port Ltd. (GAPL). Within 12 months, active

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[111]B. Karunaker, *Corporate Champions: Excellent Companies of India.* New Delhi: Sage Publications. 2012.

[112] The APSEZ and Mundra Port timeline presented here is adapted from the following sources: MarketLine Inc. 2020. *Adani Ports and Special Economic Zone Ltd: Company Profile.* London: John Carpenter House.; Global Energy Market. (2020). *Mundra Port*. Retrieved from Global Energy Market: https://www.gem.wiki/Mundra_Port#History; World Port Source. (2022, August). *Port of Mundra*. Retrieved from World Port Source: http://www.worldportsource.com/ports/review/IND_Port_of_Mundra_1652.php; Amruta Talawadekar, (2020, August). *Mundra Port-History behind the largest container port in India*. Retrieved from Maritime History Association: https://www.mhsindia.org/mundra-port-history-behind-the-largest-container-port-in-india/

construction was completed on multipurpose berths three and four, opening by the end of 1999 at Terminal One.

These developments led to additional steps, including the signing of a concession agreement to operate the port. This operating concession concluded with the Gujarat Maritime Board, empowered the GAPL not only to operate and maintain the port at Mundra, but also to plan its future development. The significance of this agreement rested in establishing a privately held business organization with full seaport development power in cooperation with the state government. The strategy was to use port construction and operations as a launchpad for further development activities. The organization recognized the importance of synchronizing ports construction and operations with industrial endeavors.

In 2002, Gujarat Adani Port Ltd. entered into a contractual relationship with Govind Singh Refineries (GGSRL). The agreement positioned the company to operate crude oil handling facilities at the port of Mundra. In 2002 similarly, the company signed agreements with the Indian Oil Corporation (IOC) for the construction and operation of a single point mooring (SPM) facility and for crude oil handling at Mundra. This facility became operational in 2005. Meanwhile Adani Ports Ltd. was in negotiation with the Gujarat Maritime Board to construct a container terminal in another portion of the harbor. Container Terminal One was built and was operational by the end of 2003. Upon the construction and operation of these facilities, a full merger of Adani Ports Ltd. with Gujarat Adani Ports Ltd. was consummated in 2005, taking the latter moniker.

Besides port construction and operational management aimed at crude oil imports and attracting containerized cargo, Gujarat Adani Ports Ltd. added liquid and chemical products to its portfolio. In 2006, the private organization Mundra Special Economic Zone Ltd., already

engaged with the import and export of these products, merged with Adani Chemicals Ltd, another company under the rapidly expanding Adani Group umbrella. These two were then merged with Gujarat Adani Port Ltd., and the completed company became Mundra Port and Special Economic Zone, or MPSEZ. This combination was designed to not only bring the existing Adani operations at Mundra under single management, but to prepare for further expansion. During 2006, the special economic zone at the port of Mundra was announced and two new berths to Terminal 2 became operational to manage bulk cargo. Two more berths were added to this Terminal in the following year. The double stack container train began to operate as well.

The year 2007 inaugurated the import coal operations of the MPSEZ. Imported coal was required to power the electricity plants throughout greater Gujarat. Tata Power signed an agreement with the MPSEZ to provide port operations and distribution of coal. Exemplifying MPSEZ's capitalization on increased industrial production in India of foreign brand automakers, the company contracted with Maruti Suzuki India Ltd for automobile exports. By 2008, the MPSEZ industrial zone was managing a broad array of products and services.

By 2009, MPSEZ was expanding beyond Mundra to ports throughout India. Beyond MPSEZ's home country, acquisitions and joint agreements were also made with international companies and organizations, which includes projects like port construction in Indonesia, a development project in the Belgian port of Zeebrugge offering a European footprint, and the planning, construction and management of a maritime city in Malaysia. In 2012 MPSEZ changed its name to Adani Ports and Special Economic Zone Ltd. known as APSEZ Ltd. Under the APSEZ corporate umbrella, terminal facilities, port operations, and economic zones throughout coastal India were merged. APSEZ entered into joint agreements with international firms, such

as CMA of France, to build and operate terminals, including in 2014 the joint venture agreement for a fourth container terminal at Mundra. This agreement followed a 2013 joint venture with MSC Mediterranean Shipping, based in Geneva, Switzerland, to operate a new container terminal. This jointly owned facility was named the Adani International Container Terminal Private Ltd. (AICTPL), in Mundra Port.

Subsequently, APSEZ continued its acquisition strategy and purchased marine infrastructure and logistics organizations throughout India. Acquisitions occurred within the Adani organization as well, exemplified by the Adani Logistics Ltd. internal blending acquisition of Adani Enterprise Ltd., an Agri-logistics business. Additionally, in 2019, APSEZ invested 8.3 billion U.S. dollars to expand the Mundra port capacity. Another element of the APSEZ expansion involved acquisition of coal mines in Australia, supported by four accommodating cargo ships, providing a steady stream of product to process through Mundra port and delivery to the power company customers. The Abbott Point Coal Terminal in Australia was leased directly to the Adani Group for $2 Billion for 99 years, and eventually became the largest coal exporting port in the world, with handling capacity of as much as three hundred million tons to four hundred million tons a year.[113]

The APSEZ port of Mundra today is described as an infrastructural marvel, acting as a major economic gateway catering to the northern hinterland of India with multimodal connectivity. About 60,000 people, most of them migrants, live in the port of Mundra, supporting the port and its special economic zone.[114] Mundra Port, with deep berths

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[113] *Global Energy Market Website*. (2020). *Mundra Port*. https://www.gem.wiki/Mundra_Port#History

[114] *World Port Source Website. Port of Mundra*. http://www.worldportsource.com/ports/review/IND_Port_of_Mundra_1652.php

accommodating the world's largest bulk carrier, project and container vessels in the world, is supported with state-of-the-art infrastructure and connectivity with the global trade lane systems referenced above. The port is capable of handling all types of cargo, including bulk cargo, such as fertilizer, agricultural products, and extracted minerals, simultaneously with world-class efficiency and processing speed.

Mundra Port is also a major containerization location, well positioned to enter the world's top twenty-five ports. Mundra's 4 container terminals have a combined capacity of 7.5 million TEU, a capacity ranking in the global top tier. By 2021, more than thirty-five shipping services operated from Mundra, offering global coverage. Mundra Port is also capable of unloading the Very Large Crude Carriers (VLCC) and the world's largest Ultra Large Crude Carriers (ULCC). Mundra has the infrastructure connectivity to provide transportation of imported crude oil to refineries in north India through its cross-country pipeline network. Mundra port with multiple berths has pipelines from jetty to tank farm that ensures the safe and efficient handling of liquid cargo, such as vegetation oil chemicals and petroleum and refined oil and lubricant products. This portion of Mundra's infrastructure enables the storage of 4.6 million liters of liquid product. Roll on roll off capabilities for the export and import of automobiles, buses, and trucks allow Mundra to accommodate the production of these vehicles from sites throughout northwestern India and support infrastructure for the importation and distribution of related products.[115]

Adani Hazira Port Ltd. traces its affiliation to APSEZ, when the Adani organization attained an agreement with the independent Hazira Port Ltd. in 2012 for the development of a

[115] *Adani Ports.com.* 2022. "Mundra Port." https://www.adaniports.com/Ports-and-Terminals/Mundra-Port.

non-LPG gas infrastructure for ship handling, gas storage and distribution facilities.[116] Hazira is on the outskirts of Surat in southern Gujarat. Today Adani Hazira Port Ltd. is a miniature version of Mundra Adani Port, offering the same array of cargo handling capabilities across the bulk, liquid, coal and ocean container services. However, this port is still a work in progress. APSEZ approached the development of these capabilities at Hazira using the tool of five-year plans, built into a 15-year master plan. The first phase called for the creation of five berths dedicated to containers, bulk cargo, and liquefied natural gas (LNG). This phase allowed for two berths dedicated to container handling, one for LNG, and two for bulk cargo including coal. The 15-year plan included infrastructure improvements dealing with larger liquid cargo handling and storage facilities, other dry and general bulk cargo, and roll on roll off terminal facilities for automobile handling.

In 2013, this plan called for the addition of seven new berths, also designated by function. Proposed infrastructure improvements included deepening of the channel and supporting facilities for easier access, and additional arterial road networks connecting the port to national and local road and rail networks. In 2016, Adani Hazira Ports Ltd. proposed an outer port expansion adding nineteen new multi-purpose berths to the twelve already approved in 2013, bringing the total number of planned berths to thirty-one. This port expansion was approved in 2017 by India's Ministry of Environment, Forest and Climate, pending Adani Hazira Port Ltd.'s successful environmental impact assessment and successful fending of legal challenges from competitors. Construction is currently underway, as of November 2021. APSEZ's 2020 Annual

[116] MarketLine Inc. 2020. *Adani Ports and Special Economic Zone Ltd: Company Profile.* London: John Carpenter House.

Report and 2022 website still list only six operating terminals at Adani Hazira Port Ltd.'s facilities.[117]

3.5 Sustainability and the Future

Since 2004, the issue of environmental degradation was at the center of all port development plans in Surat and greater Gujarat. The catalyst for such attention was the global awareness of and horror over the shipbreaking industry carried out at Alang, across the Gulf of Khambhat from Surat and Hazira. Highlighted by the Michael Kot film in 2004, the manual tearing apart of obsolete oil tankers, container carrying ships, and passenger liners brought severe water, ground and air pollution to the shores of Alang. The film brought into focus the labor abuse and extraordinary fatality rate endemic to the manual tearing apart of ships.[118] Alang had emerged as the world's largest ship breaking location after European and American environmental legislation either outlawed the practice or included such strict regulations that ship owners sought and found a less restricted locale. Shipbreaking brought negative attention to the Indian government and the flagrant violation of United Nations requirements. Subsequently, increased attention on the effects of shipbreaking initiated numerous corrective measures.[119]

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[117] The Adani Hazira Port Ltd. timeline presented here is adapted from the following sources: *Adani Ports. 2022. Adani Ports Hazira Port.* Adani Ports.com.; Journal of Commerce. 2016. "Adani Operated Hazira Terminal in India doubles annual throughput." *JOC Online.* February 17.:2016. "Growing Hazira, India port gets new rail service." *JOC Online.* February 17.; FRPT Infrastructure Snapshot. 2022. "At a Cost or Rs 19000 Crore, Gautum Adani Will Double Size of Hazira Port." *FRPT.* July.

[118] Michael Kot. 2004. *Shipbreakers.* Film, Alang.

[119] Kent N. Gourdin, "Shipbreaking: The Dark Side of Global Commerce." *Defense Transportation Journal* vol.69 (4) 2014, 5.; Also see: Holly H. Hillyer, "The Hard Reality of Breaking Up: The Global Transboundary Movement of Ocean Vessel Demolition and Waste." *Vermont Journal of Environmental Law*, vol.13 (4),(2012). 755-795.; Mike Crang, Alex Hughes, Nicky Gregson, Lucy Norris, and Farid Ahamed, "Rethinking governance and value in commodity chains through global recycling

The economic liberalization processes that began in India in the early 1990s encouraged entrepreneurial action through the loosening of regulation, and the shipbreaking events occurred while APSEZ was launching its expansive growth at Mundra and Hazira. The backlash required consideration in the strategic planning for the Gujarati ports as well as activities throughout India. As we have seen, the APSEZ strategy focused on construction, dredging, the processing of oceanic ships (with their own pollution concerns), the importation of oil, gas, and coal and the focus on power generation and inland transportation development. These activities produced their own environmental challenges and APSEZ and the Adani Group needed to address these challenges in their strategic planning.

Within a decade, the Adani Group established guidelines for environmental compliance in all its business units, including APSEZ. While the sources of fuel required to operate the ports, generate the power and distribute it efficiently were still environmentally threatening, company regulations were baked into the strategy to improve the conglomerate's footprint. APSEZ mandated an energy and emission policy across all of its sites. The intent was to limit emissions through the utilization of renewable energy sources within the port infrastructure, aiming to gradually reduce the use of fossil fuels over the medium and long term. APSEZ also addressed waste management by following the five principles of reduce, reuse, reprocess, recycle and recover. In 2020, APSEZ committed within its facilities to aim for zero waste to landfill, incineration, unauthorized disposal and effluent discharge. It committed to building a sustainable

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networks." *Transactions of the Institute of British Geographers* 38 (1). (2013). 12-24.; Pandya, Herbert-Burns, and Kobayashi, *Shipbuilding*, ; Dinesh C. Sharma, (2006). "French Ship Exposes Gaps in Regulations." *Frontiers in Ecology and the Environment*, vol. 4 (1): 6.;Sahu, Geetanjoy, 2014. "Workers of Alang-Sosiya: A Survey of Working Conditions in a Ship-Breaking Yard." *Economic and Political Weekly* 52-59.

supply chain with its vendors, identifying environmental, social and government (ESG) related risk within the supply chain, and to coordinate with its vendors to eliminate it. APSEZ also has a policy of localizing its vendor community, in order to stimulate its growth.[120]

4 DUBAI – UNITED ARAB EMIRATES

4.1 Majid Al Futtaim and Dubai's Merchant Elite

Majid Al Futtaim, 87, Developer Who Brought Dazzle to Dubai, Is Dead, exclaimed the *New York Times* obituary headline on January 16, 2022. Al Futtaim, the head of the Al Futtaim Group, was heralded for his substantial role in developing Dubai as the home of the world's tallest building (the Burj Khalifa) and an endless line of shopping malls and super markets (for example, the Mall of the Emirates and its indoor ski slope) during the gulf region's economic boom from mid-2000s to mid-2010s. Majid Al Futtaim was a member of the elite Dubai merchant class who became fabulously rich during this boom, and his family had been early advocates of independence from Britain's nominal control over Dubai (and elsewhere in the Gulf).[121]

This old guard merchant's elite bargain with Sheikh Rashid bin Saeed al-Maktoum, of supporting the monarchy in exchange for the ruler allowing them to profit handsomely while adhering to his strategic direction and absolute, non-democratic power as detailed below. This arrangement serves as a synopsis for Dubai's explosive development between 1970 and 2020.

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[120] *Adani Ports Website 2022.* "Policies/Energy and Emissions." *Adani Ports.com.* https://www.adaniports.com/-/media/Project/Ports/Investor/corporate-governance/Policies/Energy-and-Emission-Policy.pdf.

[121] *New York Times.* 2022. "Majid Al Futataim, 87, Developer Who Brought Dazzle to Dubai, Is Dead." January 16: 23.

Anthropologist Ahmed Kanna succinctly describes this arrangement.[122] Dubai, in this period, rapidly evolved into a nodal point in the Arabian Gulf and the western Indian Ocean world. It developed into a global logistics, service, information processor, and financial powerhouse, rivaling Singapore and Hong Kong. This chapter discusses the historical context in which this emirate developed. This includes a discussion of the centralized approach of the government, including the legal mechanisms built to facilitate and organize the emirate's business culture and the role of the merchant elites.

Dubai Holdings was the foundation for the emirate's real estate, tourism, and entertainment development, an investment juggernaut. Established in 2004, Dubai Holding was the investment entity tasked with building the city's infrastructure as a necessary component of the economic vision of Dubai. Dubai Ports World (now DP World) and its affiliated Ras bin Rashid and Jebel Ali Ports and Free Zones have played a significant role in the implementation of the overall Dubai development strategy by encouraging the importation of goods, infrastructure materials, and human resources to Dubai. Additionally, this chapter will describe Dubai's financial, technology and media realm. Built upon the foundation provided by Dubai Holdings and facilitated by the infrastructure supplied by DP World, Dubai's technological offerings are the mainstay of Dubai's reputation as the "city of gold." This chapter will conclude with a focus on Dubai's environmental issues and questions of sustainability. Dubai's success has produced negative consequences in the environmental realm, and no evaluation of its current position among the world's entrepots is complete without addressing these issues. This chapter

[122] Ahmed, Kanna, *The City as Corporation.* Minneapolis: University of Minnesota Press.(2011). 47,110

will argue that Dubai's rise to prominence was not accidental and had more than one catalyst, including the strategy of which reliance on familial and elite ties was a key component.

4.2 Context and Parameters and Dubai's pre-1970 Foundation

Afshin Molavi, an author and researcher on global geo-political risk and geo-economics with focus on the Middle East, succinctly captures the story of the Dubai miracle of the last 70 years. "Dubai understood early on that it needed to move beyond trade (and oil) to become a world class global hub. … Today, Dubai earns less than 10% of its GDP from oil income, owing to a highly successful diversification plan that began in earnest in the late 1950s under the leadership of Sheikh Rashid Al Maktoum, then ruler of Dubai. At the time he realized his city state would not grow as a Trade Center unless he expanded local infrastructure for shipping. That model would stick over the years. Dubai leaders would make heavy bets on huge infrastructure projects aimed at attracting business. They would do it right: state of the art, free of corruption, and world class. In such fashion Dubai would build major shipping ports, airports, free trade zones, telecommunications, Internet bandwidth, and roads that today form the backbone of the Emirates infrastructure. Of course, with members of the ruling family involved in key businesses, the lines between the public and the private in the world of Dubai Inc. are thin."[123]

In his study of the Dubai model of development, economist Martin Hvidt proposes nine key parameters of Dubai's development path. These parameters offer insight into much of Dubai's historiography by encapsulating its important aspects. Hvidt's work is an important foundation for this thesis, and the intent is to expand upon his work. These parameters characterize Dubai's growth in the period under review. According to Hvidt, the nine parameters

[123] Afshin Molavi, 2005. "Dubai Rising." *The Brown Journal of World Affairs,* vol. 12 (1): (2005), 103-110.

include the following: i) Government-led development (ruler led), ii) Fast decision making and fast track development, iii) Flexible labor force, iv) By-Pass of Industrialization-creation of a service economy, v) Internationalization of service provision, vi) Creation of investment opportunities, vii) Supply-generated demand (first mover"), Market positioning via branding, and ix) Development in cooperation with internal powers.[124]

Dubai has followed the philosophy of creating a first mover mentality, rather than waiting for somewhere else to develop the next new product or process. Dubai's success involves the internationalization with the service economy created in Dubai, inserting the emirate's advantage into the global flow. The emirate is global in nature, and its economic impact and engagement is not bound by borders. Another parameter involves the creation of investment opportunities for both the Dubai merchant class and the international investment community. Attracting foreign direct investment is an integral component of Dubai's development strategy. Hvidt identifies the market positioning of Dubai via aggressive branding as a mechanism to connect the other parameters and a catalyst in its own right. Finally, solidifying Dubai's global identity has been accomplished by encouraging interaction with, and employment of, international partners, who contribute world class value to Dubai's endeavors.[125]

The early 20th century witnessed Dubai becoming a destination for Persian traders who were encouraged and welcomed by Shaik Said bin Maktoum. Dubai became the home of a new multinational merchant class. Initially, these merchants came on a short visit, but as the 20th century proceeded, their residency became permanent. By the 1930s, this merchant class, along

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[124] Martin Hvidt, 2009, "The Dubai Model: An Outline of Key Development-Process Elements in Dubai." *International Journal of Middle East Studies*, vol. 41, (2009), 407.

[125] Hvidt, "The Dubai Model," 397-418.

with the traditional merchant elites of Dubai, experienced business challenges due to the pearling and Great Depression collapses. The ruling al-Maktoum dynasty too faced challenges from the reformists who aspired to political participation, power sharing and freedom. The latter's expectations, which included instituting an advisory council (Majlis) to veto the Ruler's policies and programs, had a brief moment of success in 1938-1939. The council was shortly ended, as the ruler with British support became uncomfortable with such participation. However, this brief engagement set a critical foundation for the developments of the 1950s and beyond, when the al-Maktoum dynasty offered, via a grand bargain, access to vast riches and monopolistic control to the business elite, in exchange for acceptance of absolute government power resting with the ruler.

Anthropologist Ahmed Kanna argues that this exchange was no bargain at all and was instead achieved by the Al Maktoum rulers first through the forceful repression of the reformist movement, and then with the coming of the oil wealth, financially co-opting the reformist merchant leaders.[126] The burgeoning focus on port development required business expertise, and the merchant acceptance of monarchal governmental control in exchange for guaranteed riches was set. Historian Frauke Heard-Bey emphasizes the linkage between the development of the port and the Dubai port committee of merchants, which eventually became the coordinating body for many subsequent projects, and then the advisory committee to the Ruler. She writes, "Between 1959 and 1961, the foundation was also laid for a system whereby most community services were undertaken by private companies; this feature in turn helped in later years to make the economic structure of Dubai appear very different from that of the other members of the

[126] Kanna," *The City as Corporation",* 110

federation. Many of the services which had become desirable or necessary for the city state were not provided or organized by government or municipality but by private companies."[127]

The engagement between Dubai and the United Kingdom prior to 1970 also set the context for the development of Dubai afterwards. Historian Uzi Rabi offers a clear summary of Britain's 'special position' in the Gulf, which offers an important background to Dubai's origin, dynamics, and legacy. Essentially, Britain found it advantageous to regulate and conduct the external affairs of the Trucial States (formerly referred to by the UK as the 'Pirate States') after 1843, while allowing each state to manage and administer its internal and inter-state affairs. The exception occurred when inter-emirate feuds prompted British intervention. It was important to the United Kingdom throughout the 19th and 20th centuries to protect its access and control of the Gulf, as it was a critical highway between East and West, and thus vital to the health of the British Empire's naval and economic interests. The series of agreements and long-lasting truces made by the UK and the various sheikdoms during this time span were intended to keep India trade booming, the UK's enemies and competitors at bay, and peaceful relations among the Trucial States. On the world stage the Dubai port city was a minor economic contributor in the first half of the 20th century and the United Kingdom gained no major advantage from the protectorate.[128] Other than oil concessions in non-productive wells and military/naval stationing

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[127] Frauke Heard-Bey, *From Trucial States to United Arab Emirates.* London: Motivate Publishing. (2004). 259-260

[128] Uzi Rabi, 2006. "Britain's 'Special Position' in the Gulf: Its Origins, Dynamics and Legacy." *Middle Eastern Studies. vol.*42 (3), 351-364.

requirements, the UK had little incentive to aid in the development of port infrastructure, until the offshore oil production of the 1960s resulted in cooperation, guidance and investment.[129]

British private interests, however, desired Dubai to grow as a business and tourist destination. After World War II, Britain remained closely engaged in the Gulf, and was instrumental in financially supporting the evolving economies of the Gulf states. British banks and the private sector, encouraged and supported by the British government offered consulting, financing, engineering, logistical, managerial expertise and specialized labor support.[130] British direct naval and political involvement in the Gulf ended in the late 1960s-early 1970s but its financial and services engagement continued. This transition was most notably marked by the seven emirates of the Trucial States, including Dubai, combining into the United Arab Emirates in 1971. With relatively little oil to export compared to its neighbors but blessed with a natural harbor and location near the entry to the Persian Gulf, Dubai had geographic advantages awaiting exploitation. By the 1970s, this scenario of relative insignificance of Dubai, as well as the Gulf, had changed. As described above and similar to Salalah, Dubai also experienced an

[129] Dubai Trade Review. 1969. "Welcome to Dubai." *Times*, Mar 3: XVI. “With the confirmation in February, 1967, of oil in commercial quantities 60 miles off its coastlines at a single well flow rate of probably 15,000 barrels a day dubai’s future appears even brighter.”Also see The National Archives. 1966. *Dubai: Proposed Deepwater Harbour.* Correspondence, Reports, Kew: The National Archives.

[130] This history is treated by a number of scholars. See Heard-Bey, *From Trucial States,* 238-269. Also see Kanna, 2011, *The City as Corporation.*; *Dubai Perisan Gulf: concession agreements, corrrespondance and papers.* http://discovery.nationalarchives.gov.uk/details/r/C203608, Kew: The National Archives.; Fatma Al-Sayegh, 1998. "Merchant's Role in a Changing Society: The Case of Dubai." *Middle Eastern Studies,* vol. 34 (1),(1998), 87-102; Rabi, "Britain's 'Special Position”, 351-364.

increased demand for port infrastructure. This, together with the oil boom and geopolitical forces contributed to the rapid development of Dubai port infrastructure.

4.3 Dubai's Centralized Approach 1970 - 2020

Heard-Bey argues that by 1963 the coordination between the ruler (government) and the merchant elites was in effect and that in Dubai infrastructure planning was not just a response to the immediate needs of the community but an outcome of ambitious ideas about the development of Dubai.[131] The government-merchant collaboration greatly contributed to the shaping of Dubai's self-identity. Kanna proposes that Dubai was not only a Maktoum family led corporation; a political dictatorship which simultaneously allowed for economic opportunity. The Al Maktoum family constructed a new homogeneous conception of Emirati identity, one that shifted its emphasis from transnational hybridity to ethnic purity within a defined national space with royal family as the principal protector of the nation's boundaries and cultural identity.[132] This family governed the city as a corporation. Molavi attributes Dubai's pre-1970 economic development to the royal family's "good leadership and good governance."[133] According to Molavi, Dubai's economic success was a "success story fueled by liberal trade policies, visionary leadership, and modernized education, with little or no popular political participation and no visible desire for greater democracy… Dubai has become a competing lodestar to the democracy model…this is the secret to Dubai's success, an intangible that cannot easily be replicated: good leadership and good governance at critical moments in her history."[134]

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[131] Heard-Bey, 2004. *From Trucial States,* 261.

[132] Kanna, *The City as Corporation,* 14.

[133] Molavi, "Dubai Rising" 103-110.

[134] Molavi, "Dubai Rising," 103-110.

Notwithstanding the bargain between the ruler and the merchant elites, there were challenges and complications. The latter, who were not of Emirati ancestry were welcome for their expertise and contribution but not included as full citizens of Dubai. Dubai's citizens comprise only about 20 % of the city's total population. Thus, in the construction of the Emirati cultural identity discussed above, 80% non-citizens, who were critical for the Emirate's economic success, were excluded. Anthropologist Neha Vora argues that Indian business elites in Dubai played a significant role in both bounding the state as distinct from the economy and legitimizing its power. She focuses on the forms of citizenship and subjectivity produced in Dubai and how the legitimacy of the state relied not just on the recruitment of citizen subjects, but also on those who were excluded from belonging like Indian elites in Dubai. She writes, "[N]eoliberal narratives and practices of economic freedom by elite expatriates masked the ways in which foreign elites are complicit with the state in producing social and economic hierarchies that benefit both citizens and elite expatriates, while maintaining a structure of labor migration that significantly disadvantages the majority of foreign residents living in the United Arab Emirates."[135]

According to Vohra, the greatest irony in the case of Dubai is that expatriate Indian elites, well established in the Gulf under the benevolent protection of the ruling families and favored with lucrative economic opportunities, are actually at risk of losing their special status in the UAE if democratization takes place. Thus, these expatriates are just as invested as the sheiks in maintaining monarchical rule. Their futures also rely upon the maintenance of a firm

[135] Vora, Neha, "Unofficial Citizens: Indian Entrepreneurs and the State-Effect in Dubai, United Arab Emirates." *International Labor and Working-Class History*, vol. 79 (1), (2011). 122.

citizen/foreigner binary as it proffers generous benefits to citizens while masking the preferential treatment of certain expatriate populations by the government.[136]

The government structure that oversaw the planning and execution of development projects included merchant elites in an advisory role. They advised the ruler on the issuance of development-related laws and decrees. The ruler, however, had the sole authority to issue such laws and decrees, form committees, and appoint chair or president of those committees. Laws were written with the introduction of "We, Maktoum bin Rashid Al Maktoum, the Ruler of Dubai, do enact the following law(s)," or similar declaration. Dubai's economic growth was an outcome of primarily state-driven development strategies and initiatives supported by merchant capital investment. It was based on a rapid-fire approval and development strategy, fueled by petrol-dollars and significant reliance on foreign labor. This strategy expedited the process and brought immediate expertise and experience to the fore at all skill levels.

Reflecting the family corporation approach to the economy of Dubai, the regulation establishing Dubai's Chamber of Commerce and Industry was clearly aimed at avoiding western style litigation practices and encouraging conciliation and arbitration. This business-friendly approach was a clear representation of the fast-track character of the family corporation of the Al- Maktoum leadership. The Dubai Chamber of Commerce and Industry itself was established in 1975, the result of Dubai Law #2 of 1975, Law of the Dubai Chamber of Commerce and Industry, serving as the foundation for subsequent business and government relationship laws in the city state.[137] This law was modified twenty years later 19 years later in the Decree No.2 of

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[136] Vora, "Unofficial Citizens," 122-39.

[137] Dubai Law No, 2 of 1975. Law of the Dubai Chamber of Commerce and Industry." *Arab Law Quarterly.*

1994 Approving the Dubai Chamber of Commerce and Industry Commercial Conciliation and Arbitration Regulation, which succinctly outlined dispute resolution processes to be upheld. "The Dubai Chamber of Commerce and Industry has established the following regulation with the aim of serving the aforementioned circles in the area of settlement of commercial disputes by means of conciliation or arbitration."[138]

The Dubai Law No. l of 1992 established the Economic Department for the Emirate, with broad ranging powers, including the power to oversee economic growth in the country.[139] While this law might seem to contradict the reality of Dubai as a thriving market economy with few guardrails, in fact it crystalized a balance between the powerful ruler setting strategy and the equally robust merchant class reaping financial success. This balance is captured by Heard-Bey and Hvidt among others, in their description of the Dubai economy. Historian Fatma Al-Sayegh argues that the ruling family and the business sector of Dubai came to an equilibrium of sorts, where the balance between the two were more or less equalized. "This development began with the merchant community gaining powerful positions through the control of valuable economic resources which in turn provided political influence; it evolved through the emergence of a new economic structure where power was systematically divided between merchant community and the ruling family."[140]

This reality of the merchants getting significant leeway to pursue private, profitable entrepreneurship in exchange for supporting a non-democratic monarchy setting national

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[138] Decree No. 2 of 1994 Approving the Dubai Chamber of Commerce and Industry Commercial Conciliation and Arbitration Regulation." *Arab Law Quarterly* 406-420.

[139] Dubai: Law No. 1 of 1992. 1993 *Arab Law Quarterly* vol. 7 (4): 299.

[140] Al-Sayegh, "Merchant's Role." 87-102.

strategy, is echoed by Martin Hvidt. “Another noteworthy feature of the Dubai economy is that despite massive government involvement, significant parts of it operate on market terms. Dubai is the home to a large private sector in trade and retail that embraces purely capitalistic principles and has made Dubai the third largest re-exporter in the world after Hong Kong and Singapore.[141]

This structure was successful in the environment of Dubai’s moderate political climate. Bolstered by the lack of religious extremism, market innovation beyond oil production, Open Skies agreements which encouraged competition with Dubai’s Emirates Airlines, and an entrepreneurial culture, Dubai by the 1990’s was well on the way to explosive growth. The combined agency of Dubai’s government, the agency of the local population within the state, and the expansion of national bureaucracies to manage most aspects of economy all contributed. Some considerations discouraging development included the extraordinary power of these state bureaucracies, the creation of an economy built on a global consumer ethos (the Las Vegas of the Middle East), the social ills caused by stratification, and the hierarchical society in most aspects, challenging the belief elsewhere that economic expansion was best achieved in a democracy.[142]

We now turn to the results of this structure. The bargain between the Maktoum family and the merchants gave autocratic political power to the Ruler, and the economic power and the ownership of business enterprises, to the merchant class. The manifestation of this city corporation (or family corporation) can be found in the authorities established by the emirate to

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[141] Hvidt, “The Dubai Model”, 409

[142] Lee, Eric, 2005. "Dynamic Dubai: An Oasis of Growth." *Harvard International Review* 27 (1): 12-13.; Also Molavi, "Dubai Rising." 103-110.; William Morehouse, "Letter from Dubai: Globalization on Steroids." *The American Scholar* 78 (1), (2009). 6-10.

build out and operate the infrastructure developed in the logistics, city development, and technology arenas, among others. The merchant elites, through 60-70 entities, operated the real estate and logistics activities in the 1960s to 1980s. In 2005 and 2006 respectively, these merged into two giant holding companies: Dubai Holding and Dubai World. Each encompasses its own banks, investment institutions, government run companies, service providers and property development. The interaction of the al-Maktoum family, the merchant elite class, and the large service employment sector of Dubai are evident, as are the parameters Hvidt has identified as foundational.

4.4 Dubai Ports World: Ras bin Rashid and Jebel Ali 1970-2020

Awash in petroleum income, Dubai's trajectory led to the development of two seaports, Ras bin Rashid and Jebel Ali. Joining the existing Dubai International Airport, opened in 1959, was the second modern and expansive Maktoum International, opened in 2010. Maktoum International was planned to be the world's largest airport, linked directly with the Jebel Ali Port and Free Trade Zone. Both airports and the two seaports were brought under the umbrella of Dubai Ports World Organization. In 2005, it was renamed as DP World with a portfolio of cargo logistics, port terminal operations, maritime services and free trade zones.

According to Eckart Woertz, Director of the GIGA Institute for Middle East Studies at the University of Hamburg, DP World is a Dubai-based global conglomerate. With its eighty-two marine and inland terminals present in over forty countries, the DP World processes in excess of seventy-five million TEUs, about 10% of global container traffic. After 2016, DP World's engagements beyond port operations expanded greatly. Through acquisitions and internal growth, it has added capabilities up and down the value chain. Dubai World Central logistics hub is a prime example through its combination of sea, air, and land transportation. It

was projected that by 2020, Emirates Airlines and the developing passenger rail network, would serve 250 million passengers annually. This projection had to be moderated due to competition and global political and economic re-alignments.[143]

The foundations of Dubai's second half of the 20th century port development were laid in the late 1960s. In 1969, *The Times of London* proclaimed the progress made in Dubai's port development. It wrote, . "[T]he energetic ruler, Sheikh Rashid bin Saeed Al Maktoum, has concentrated during the last eight years on measures to improve the trading capacity of Dubai, notably the deepening and stabilizing of the Creek and to the entrance to provide anchorage for coasters up to eight hundred tons. The custom wharves in the Creek are continually being expanded."[144] By 1974, the sights were set on making Dubai a free port and a business center for the entire Gulf, not just a free zone in competition with others in the neighborhood. The plan included two free zones comprising a free port, with light industry and storage near the Port Rashid (of interest to Japan based electronics firms with distribution hopes) and another with heavier industries to south of the Jebel Ali area. This free port plan included increasing the number of berths at Port Rashid from 16 to 30, free storage, and no import taxes on food products. Meanwhile the free port section of Jebel Ali was imagined supporting the heavy industries of natural gas production, oil refinery, and infrastructure supporting both domestic and export markets, steel mills, and capabilities to support ocean container and tanker repair

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[143] Eckart Woertz, "Logistics and Economic Development in the GCC." In *Resources Blessed: Diversification and the Gulf Development Model*, by Giacomo Luciani. Gerlach Press. (nd)

[144] Dubai Trade Review. 1969. "Welcome to Dubai." *Times*, Mar 3: XVI.

businesses. Dubai free port planners imagined using iron imported from India in exchange for petroleum products from the UAE.[145]

The evolution of Ras Rashid Port was underway by 1975, and the Times of London chronicled that development in a report by Tim Owen. While the previous Dubai port had served as an entrepôt for places as far away as Muscat, it was limited due to its depth, and by the mid-1970s other ports were in the beginning stage of development. But the new Ras Rashid Port had already invested in expansions and the discovery of offshore oil coupled with an increasing demand for imports based on the oil's exploitation led to installation of fifteen berths for cargo ships by 1975.[146]

Dubai over the past 25 years has emerged as a true entrepot, rivaling Singapore and Hong Kong. Dubai's engagement in the global logistics network and presence as an information and service economy, while moving beyond industrialization, induced further growth. In the wake of the global monetary crisis of 2008-2009, delays occurred at construction projects in ports of the Gulf region. At Jebel Ali port, the construction of a planned third terminal was put on hold by DP World. During the economic crises, Dubai's Jebel Ali Free Zone was recognized as a strong port alternative. Companies doing business in the Persian Gulf and with the UAE were attracted to the Jebel Ali due to its established infrastructure.

In 1991, Gulf region legal consultant, Rolf Meyer-Reumann, reported on the history of the Jebel Ali Free Zone by detailing the six primary decrees establishing it, commencing with the Federal Law No. 1 of 1979. This law, similar to others in Dubai, succinct and reflecting a

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[145] Ralph Izzard, "Sights set on making Dubai a Free Port and business centre of Gulf." *The Times Digital Archive*, May 23, 1974, VIII.

[146] Tim Owen, 1975. "New Plans for Port Rashid." *The Times Digital Archives*, June 19: IX.

corporate bias, was the foundation to others which followed. Supplementing these laws were those including the Establishment of the Free Zone Authority in Jebel Ali Port of 1985, the Business Activities in the Free Zone in Jebel Ali Port of 1986, and the capstone Management and Maintenance of Jebel Ali Port Company (JAPCO) Law of 1986. He called attention to the advantages of Jebel Ali's Free Zone, including permission for 100% foreign owned subsidiaries and freedom to hire local or international labor with no restriction and less hassle. Capital gains or profits from investment could be exported without restriction or taxation, and no income taxes and no corporate taxes levied for the first 15 years (a renewable privilege at the Ruler's discretion). By 1989, 250 companies including sixty-five manufacturers and fifty trading companies were registered, growing to more than three hundred by 1991.[147] By 2007 Jebel Ali Free Zone (JAFZ) in Dubai was a rapidly growing industrial park with over 4500 trading, manufacturing, service, and distribution companies.[148]

Dubai's Law No. 2 of 1996 established the Free Trade Zone for Dubai's International Airport. Using the same managerial structure as found in other laws and decrees, Law No. 2 set up the authority and leadership, physical boundaries, license requirements, and services both of a technical nature and regarding labor. Significantly, this law detailed the actual activities of the Free Zone and in so doing set the strategy for Dubai Free Port. The Free Zone was to accommodate the reexport of foreign goods, allowing for free storage in the meantime. It also provided mechanisms and procedures for importing free zone products into Dubai. Packaging of products developed within the free zone was anticipated and encouraged. Importantly, the

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[147] Rolf Meyer-Reumann, "The Jebel Ali Free Zone in the Emirate of Dubai: A Commercial Alternative after the Gulf Crisis." *Arab Law Quarterly* 6 (1991)(1): 68-78.

[148] M.A. Maraqa, A, Ali, and N. Khan, "Modeling Selected Quality Parameters at Jebel Ali Harbour, Dubai-UAE." *Journal of Coastal Research*, vol. 50, (2007)794-799.

establishment of light industry with a focus on technology products was a top priority. The law also called for setting up commercial services, such as banking, insurance, air transportation. Consisting of 22 brief but encompassing articles, the Law No. 2 explained how the Free Zone would work, tax exemptions for companies and individuals operating in the zone, compliance requirements (albeit limited), the roles and requirements of limited liability corporations, the extended rights of foreigner companies operating within the free trade zone, and overall the power of the ruler to adjust the laws specific application every 5 years.[149] This and other similar laws reflect the government's emphasis on prompt responses or reactions facilitating Dubai's future and sustainable development. The role played by these free zones and their interconnectivity with the global supply chains and route alignments were integral to Dubai's development strategy.

Road congestion was a major issue for Dubai. It impeded work productivity causing a 3.5% drop in the emirate's GDP by 2009. Subsequently, Dubai widened and improved crucial arteries for construction and commuter traffic, such as the Al-Khail Road running parallel to Emirates Road, the central traffic axis of the city state. Dubai also planned and began implementation of rail lines for a better internal connectivity as well as connection with the other Emirates of the UAE.[150] While these lines were of sub optimal usage initially, the long-term plan was to ameliorate the congestion and pollution problems caused by the usage of private automobiles.

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[149] "Dubai Law No. 2 of 1996 Establishing the Free Trade Zone in Dubai International Airport." 262-265. *Arab Law Quarterly.* 1997.

[150] Woertz, "Logistics and Economic Development,"

4.5 Dubai Holding 2005-2020

Dubai Holdings was mandated, by laws and decrees, to manage large-scale development projects. Dubai Holdings was the mechanism to ensure the present requirements of the Emirate. It was also the one entity responsible for building a sustainable future economy across multiple business sectors. As this mission proceeded, the expertise applied in Dubai began to be applied to locations worldwide. Dubai Holding's mission was to generate the capital required for building out the infrastructure, using private entity firms such as Al Futtaim Group to build a destination unlike anywhere else in the world. Hotels, shopping malls, entertainment venues, plush residential apartment complexes, top-end commercial office towers, world class restaurants, and resort villages were the categories Dubai Holdings was responsible for developing and completion.[151]

4.6 Finance, Media and Technology

The story of Dubai's development would be incomplete without a discussion of the Dubai International Financial Center (DIFC). The DIFC was established in 2004 by Federal Decree Number 35 issued by Prime Minister and Crown Prince of Dubai, Zayed bin Sultan Al Nahyan, in his capacity as the President of the UAE[152] Dubai Law No. 9 of 2004 established three legal mechanisms to operate the DIFC. The Dubai International Financial Authority oversees the strategic development, operational management and planning of the DIFC. It is also

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[151] *Dubai Holding Company Website.* https://dubaiholding.com/en/who-we-are/?csrt=17759576624928445058.

[152] Zayed Bin Sultan Al Nahyan, 2004. *Federal Decree Number 35 for the year 2004 To Establish Financial Free Zone in Dubai.* June 27. https://www.difc.ae/application/files/9214/5449/7479/Federal_Decree_No_35_for_the_year_2004_English.pdf/5355.

responsible for the development and administration of laws and regulations other than those related to financial services. The Dubai Financial Services Authority (DFSA) is an independent regulator of DIFC's financial and related services. The DFSA supervises regulated companies and monitors their compliance with laws and rules. The Regulatory Law, DIFC Law No. 1 of 2004, grants the DFSA its powers as a financial services regulator. DIFC courts operate within a common law framework to ensure the highest international standards of legal procedure and dispute resolution. The DIFC Courts adjudicate all civil and commercial cases.[153]

Dubai's encouragement of world class facilities for tourism, its government-owned Emirates Airlines, hotels, restaurants, and entertainment centers, were aimed at ensnaring global business travelers. Among Dubai's specialties, the technology services were a critical component of its success, and global companies and their presence in Dubai are integral to the mix. Linkages of these multinational firms to real estate development in the Dubai Internet City and the Dubai Media City locales typify the government's broad strategy.

The Dubai Technology, Electronic Commerce and Media Free Zone Law No. 1 of 2000 established and detailed the responsibilities of the Media Authority, the strategic plan of the Media Free Zone, the limitations on activities considered illegal, and the protections afforded to technology and media firms residing in the zone. The objectives of the Media Authority were to promote Dubai as a center for technology, electronic commerce, and media. Additionally, the Media Authority was empowered to propose and advocate for passage of laws and regulations which would protect data, property and intellectual rights, and the establishment of research centers and a university.

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[153] *Dubai Law No. 9 of 2004.* https://www.difc.ae/business/laws-regulations/.

Most impressive were the expansive and all-encompassing businesses and activities to be conducted in the media zone. These included all activities related to the design, development, use and maintenance of everything related to information technology, up to and including assembly, packaging, import, export, storage, plus all warehousing, logistics and distribution services. Supportive business activities, such as insurance, call centers, banking and employee support, and lifestyle enhancing services, were all envisioned to be within the scope of the Dubai Technology and Media Free Zone. As an improvement of previous free zone laws of Dubai, Law No. 1 of 2000 allowed for "…all products bought, manufactured, produced or developed in the free zone shall be exempt from customs duties, and shall not be subject to any customs duties or other fees when exported."[154]

4.7 Sustainability

The environmental sustainability of the Dubai development model is an open and controversial issue. As this seaport is celebrated for its modernity and avoidance of the many painful and antiquated developmental steps taken out of necessity by other ports and entrepots, it is important to focus on the environmental impacts resulting from Dubai's late 20th and early 21st century growth explosion. Dubai's leadership has not been oblivious to environmental issues. In 1969, the *Times* reported, "Dubai's low-lying situation has always raised problems of sewage and drainage, but these have been closely studied and the first stage of a comprehensive Sewerage and Sewage Disposal Scheme for the capital should be nearing completion by the end of 1970. This stage involves the laying of ten ½ miles of pipes and the construction of a sewage

[154] "Dubai Technology, Electronic Commerce and Media Free Zone Law No. 1 of 2002." *Arab Law Quarterly* 15 (4): 411-417. 2000

treatment plant. Further extensions are planned to follow on the main scheme as the new residential and industrial suburbs spring up."[155]

But the larger environmental degradation issue remains. The port development activities, the Maktoum International Airport, the multilane highway and roadway infrastructure encouraging automotive and heavy vehicular traffic, are all stains on the storybook picture of this development model. Port activities related to the loading and unloading of tanker vessels, large container ships, as well as the bunker services and activities related to repairing ships in dry dock at both Ras Rashid and Jebel Ali ports, all require petrochemicals and various contaminants. Discharge of treated wastewater from industrial processes, navigation activity discharge by ships at sea or nearby, and projects of others in the Arabian Gulf, were considered additional factors affecting water quality. The two international airports are a source of significant hydrocarbon pollution. Oil and natural gas extraction and the pipeline transport movement of these products are also of environmental concern. The dredging of the harbor and creek produced significant sand and earth, products which are used in the development of unused land in Dubai. There have been environmental impacts related to this relocation of sand. Additionally, the drilling for oil offshore has the potential for leaks that would impact the fragile coastal environment.

By 2007, at the peak of Dubai's development, the Journal of Coastal Studies published the result of evaluations indicating Jebel Ali harbor was receiving discharge consisting of several untreated industrial and sewage effluents. Environmental engineers M.A. Maraqa and N. Khan of Dubai, and A. Ali of Australia conducted a series of water quality experiments, following up on previous studies tracing the inflow of contaminants and the outflow or flushing of Jebel Ali

[155] Dubai Trade Review. 1969. "Welcome to Dubai." *Time of Londons,* Mar 3: XVI.

Harbor. The previous determination was the Jebel Ali harbor flushing time of solutes varied from a few months to a few years, given the eddy-like circulations in net flow distribution.[156]

Water discharged into the harbor was required to adhere to the effluent quality criteria set out in the environmental requirements established by the JAFZ authority. However, it was determined that a further expansion of industrial activities would increase discharge flow rates into the harbor, requiring stronger criteria enforcement. This expansion, port activities and ongoing plan projects in the vicinity of the harbor are expected to increase pollutant loading beyond the capacity of the water body to absorb. As determined by the bottle-like nature of the harbor, in which limited mixing takes place, further exacerbates the water quality deterioration at the harbor. It was made clear that efforts directed towards better management of harbor water quality require identification and quantification of pollutant loadings from the unknown sources.[157]

Gulf News in 2017 characterized the key challenges Dubai needed to overcome. These challenges included diversifying the Emirate's fuel mix without affecting total emissions. Relatedly, Dubai faced the challenge of reducing car ownership and controlling the size of its fast-growing vehicle fleet. Regarding sanitation, Dubai required a concomitant and costly expansion of the sewage networks and treatment plants. Changing the common perception by city planners and the general public that dry lands and deserts are wastelands with little value to society was recognized as important to overturn. Dubai needed to mitigate the long-term effects of completed offshore development schemes on its shoreline and marine ecosystems. Finally,

[156] Maraqa, Ali, and Khan, "Modeling Selected Quality Parameters." 50, 794.

[157] Maraqa, Ali, and Khan, "Modeling Selected Quality Parameter," 794-799.

tackling the impacts of desalination on the marine environment was identified as a vital step towards sustainability.[158]

5 ANALYSIS: SALALAH/DUQM, MUNDRA/HAZIRA, DUBAI

5.1 Methodology

This analysis will test the primary hypothesis asserting a difference between the sea front industrial complex proposed by Sugihara and the sea front complex suggested in the first chapter. The argument is that the seafront industrial complex has as its primary feature industrial production and city/hinterland support as its end game with a supportive cast of city and port infrastructure. By contrast, the proposed idea of seafront complex claims evolution beyond the industry stage, either consciously or not, and its primary feature is an economy based on a service and technology orientation. The city itself and its productivity is the primary feature in the seafront complex, with industry and the port infrastructure as the less celebrated, or at best co-starring participants sharing the limelight. It is important to examine the extent to which the nature of the complex (industrial production, or without industrial production, or with a combination of both, play a role in contributing to or benefiting from global trade and finance. It is equally important to discuss on the basis of these case studies whether there is a continuum from one status to another, or if they are two distinct and unrelated paths.

In this chapter, I employ a two-step process. First, I apply the concepts and questions mentioned in Chapter One to each seaport and highlight both commonalities and differences. Step one addresses how the four external catalysts impacted the development of the three

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[158] *Gulf News Website.* Dubai faces sustainability challenges. https://gulfnews.com/uae/environment/dubai-faces-sustainability-challenges-report 1.210107.

seaports or port clusters during 1970-2020. This includes an analysis and evaluation of the government structures in each locale, the relationship between government and business, the role of theology, national pride, secular profit motive, and international relationships, and whether a new relationship between the city and the hinterlands was mutually beneficial. The concept of resource nexus is applied to determine if each port/port cluster served as a resource nexus, or as points of transit with less complexity.

The second step tests the alternative of seafront industrial or seafront complex against the three narratives (Salalah/Duqm, Surat/Mundra, and Dubai) presented above, to determine where each seaport under consideration belongs.

5.2 Port Interaction with External Catalysts

Salalah Port's degree of interaction with the four external catalysts impacting seaport development is a significant component of its growth story. The oil extraction boom, the evolution of containerized cargo, the consolidation of port development and management conglomerates, and the component and product sourcing greatly impacted by modern supply chain management science carried significant leverage in Salalah's and eventually Duqm's port infrastructure and global commercial engagement. As we have seen Salalah was a backwater in 1970, and internal Omani motivations alone to improve its position would not have been enough for rapid development. While Sultan Qaboos had the reason and support to bring stability and growth to the Dhofar region, the oil boom and geopolitical events involving the Middle East and the Persian Gulf gave considerable energy to fuel his quest. The parallel emergence of containerization with Oman's developmental plans at Salalah and elsewhere were coincidental, yet vital to the energy behind port and infrastructure development.

The trade route realignments during the mid-1980s and late 1990s were also coincidental to Salalah's growth, but very impactful to the future of the seaport. Salalah's location allowed for consideration as a connection and exchange point in the port-trade network realignment. Oman's willingness to engage Western and Asian expertise in port development was indeed timely. Once the trade lanes were established, location and motivation was advantageous for Oman to seize the benefits of the explosive growth in containerization volumes. Thereafter, Duqm was envisioned, positioned and developed to continue Salalah's momentum, although it is still a port and city in relative infancy. Aided by its close proximity to the Straits of Hormuz, its deep natural port and capability to reach the Omani hinterlands with outside project cargo, Duqm is poised to capitalize on the four identified external catalysts.

Mundra and Hazira reacted to the four external catalysts in a similar fashion as the ports on the Omani coast. However, due to the size of coastal Gujarat's population and its economic output, these ports and others along India's West Coast were more likely to be included, or considered for inclusion, in most port plans spurred by these catalysts of trade lane realignments and port infrastructure consolidation during the late 20th century. Gujarat's demand for imported oil, gas, and coal was impacted by the energy boom in a reverse manner from the other two geographies under consideration. The population and growing chemical export industry, coupled with import and export of automobiles and trucks, demanded significant infrastructure development, including power generation and improved rail and road infrastructure. It is important to note that local ports along Gujarat's coast were not guaranteed a place in the realignment race. These local ports in 1970 were numerous, but also in the same general condition as Salalah and Duqm were in 1970. Mundra and Hazira were two among many, and their propulsion into the trade lane mix was tied at first to the Gujarati government and then to

private entities such as the Adani Group determining these sites to be the best locations for development.

The Adani Group was a late entry to the competition in the northwestern Indian Ocean world, as its engagement at Mundra did not fully materialize until the beginning of the 21st century, thus trailing the expansions in both Oman and the United Arab Emirates. But while Adani was late to the game it was quick to recover and catch up to the pack. The port of Mundra development was fast, aggressive, and all-encompassing. APSEZ's move to Hazira, similar to Salalah's impact on Duqm, did not occur until the 2010s. Mundra quickly positioned itself as a top global port in size and volume by the late 2010s' and its meteoric rise was faster than the other two ports or port clusters discussed here. Meanwhile Hazira lagged in size, but growth has commenced: Similar to Duqm, its development is only now underway, and its contribution is more a vision of the future than a present reality. Given the last 20 years of Gujarat's emergence as a global economic powerhouse, the ports of Mundra and Hazira have emerged as fully engaging the four catalysts of energy extraction through its import demand, containerization, trade lane realignment, and supply chain management.

Dubai's reaction to the four stimuli of oil, containers, seaport development/management conglomerates and supply chain management is also complete. Unlike the other seaports in question, Dubai was envisioned as a global city with global interaction once oil was discovered and strategically pinpointed by the United Kingdom. Dubai's engagement in the transportation and logistics revolution of the second-half of the 20th century began in 1959 with the development of Dubai airport. During the 1960s, the port was outfitted for oil exploration and export with support from the British government and banking interests. Given Dubai's location and its transshipment potential to ports throughout the Persian Gulf, the Al-Maktoum leadership

and its merchant elites developed a strategy for its rapid expansion as a tourist and business destination city. By the 1970s, the combined leadership and merchant elites were planning for Dubai to become the entrepôt for the Persian Gulf. These factors put Dubai on a development trajectory ten-fifteen-years ahead of other ports under consideration.

Dubai's relatively small oil resources, compared to the other emirates, led to the recognition by the government that for the city to emerge as the Persian Gulf entrepôt, development beyond oil extraction and export was vital. While the pre-1970 condition of the port of Dubai was similar to those of the other ports, by the mid-1970s expansion plans were in full rollout. By 1975, as is noted above, Dubai port had fifteen berths, a significant leap forward ahead of the other locales. Today, less than ten percent of Dubai's GDP is generated by oil extraction and export. As indicated above, Dubai's GDP is generated by services, financial exchange, technology, activities related to re-exportation, management fees collected from global activities related to DP World, among other income streams. That more than ninety percent of GDP is non-oil and export activities does not negate the importance of oil and exports; rather it substantiates how far reaching the new Dubai economy has become. This has been described and referenced above by Hvidt, Lee, Woertz, Molavi and Morehouse. The path to this result required direct engagement with containerization and the evolving supply chain management catalysts. As presented above, Dubai encountered the port infrastructure development scenario head on by forming its own entity and fueling its expansion with a rapid and sustained effort to lead internationally. While Oman and India saw internal creation of port development and management organizations, often with the assist of foreign providers, only Dubai, to date, has truly broken out in this endeavor as a central core competency on the world stage. Today DP World ranks among the top five globally in that arena.

5.3 State/Business Development Structure

Oman's government structure is a powerful monarchy, and all development strategies and actions were coordinated through Sultan Qaboos's leadership and direction with input from the business community. The decrees from the Sultan set the goals and established the agencies to identify projects, to strategize their development, and to take these plans to completion. The business structure consisted of limited liability corporations combined with others to form large organizations, some of which were partially or fully state owned. International private LLCs participated under the guidance of Oman's strategic direction. LLC ownership was the aggressive incentive process of the sultanate of Oman creating the foot soldiers of implementing the development strategies, inclusive of its seaports.

Oman's devout yet moderated Islamic faith tradition offered a huge boost to the country's development momentum. Many proclamations to the Omani people, evidenced in the Royal Speeches, were made in sincere terms of devotion to Allah. Omani citizens were required to work in his glory and honor, exerting themselves to achieve the aggressive goals set out by Sultan Qaboos.[159] This genuine, affirmative and moderate effort by the Omani government and its people served as its own catalyst in propelling development forward. In turn it generated a sense of national pride infused with civic affirmation of the direction the sultanate was taking. Although, profit was indeed a motive, which is evident from the structures of limited liability corporations and the concept of usufruct described above, building a successful component of the infrastructure for Oman was considered patriotic, theologically fulfilling, and rewarding. Oman's relationship with the outside world was one of diplomatic balance, accepting both the guidance and support from western allies and local neighbors, while also exhibiting generosity towards

[159] *Oman Info Website, The Royal Speeches*.

relationships with China and with the nonaligned world. This diplomatic comfort with compromise was its own catalyst for the port development.

Greater Gujarat including Surat/Hazira and Mundra remained under the influence and restrictions from a socialist state powered and ownership distribution model well into the 1980s.Liberalization of the economy began in the 1980s and the benefits of that liberalization on the development of seaports was not realized until the late 1990s. But that liberalization did wonders to the opportunities of entrepreneurial creativity with the government taking steps on an ongoing basis to remove regulatory obstacles for private enterprise.

The Adani Group and its subsidiaries seized upon this regulatory relaxation. While the state and national governments were easing their ownership restrictions, they had not completely relinquished regulatory powers. As a result, APSEZ required Gujarat government approval for its expansion plans for Mundra and Hazira. But once such approval was granted, APSEZ was aggressive in its growth and profitable in its activities.[160] The disorganized capitalism of small entrepreneurs in Surat thrived under this relaxed environment. India, given its size and economic output, was less reliant on international guidance and assistance in building its industrial base and port infrastructure. The Belt and Road Initiative of China, an important ingredient in Omani port and to overall Persian Gulfport infrastructure development, was viewed as a threat to Indian economic dominance in the north western Indian Ocean world. India's relationship with the nonaligned world, as well as its increasing cooperation with western governments, served as a support for the country's infrastructure development.

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[160] *Adani Ports Website. 2022. Adani Ports Hazira Port.* Adani Ports.com.; *Journal of Commerce.* 2016. "Adani Operated Hazira Terminal in India doubles annual throughput." *JOC Online.* February 17.:2016.

Similar to Oman, Dubai's government structure is that of a powerful monarchy. The Al-Maktoum dynasty in the 20th century eventually reached an understanding with its merchant community. This merchant community was made-up of family elites, both traditional merchants from Dubai and immigrants. The ruling family and merchant elite's nexus oversaw the development of the state and city of Dubai as a corporation where the business structure resembled that of a standard corporation. The bargain between the ruler and the merchant elite was such that the elite would gain control of the business world as long as they did not challenge the monarchical powers of the Al-Maktoum family. Again, similar to Oman, the strategy for development including port development originated from the top, driven by the Al-Maktoum Ruler. Once that strategy and direction was plotted, the actual job of running the state corporation was assigned to the business elites. A unique feature of the Dubai model is the rapid-fire decision-making process by which development projects and strategies were quickly approved for execution.

Of particular interest is the structure of the legal business process in Dubai, designed to eliminate litigation and protect the family corporation approach of the economy. The Dubai Laws were essentially strategic directions from the ruler through the specific authorities operated by government officials representing the business elite. These laws were then turned into actions by individual companies. These companies were primarily privately owned or joint state-private enterprises.

Driving Dubai's momentum was an intense sense of national pride. Defining the city as corporation, the Al-Maktoum family constructed a new homogeneous conception of Emirati identity focused on ethnic purity and the family-state protecting the identity and boundaries of the city of Dubai. Theology played a minor role as compared to the developments in Oman.

Given Dubai's position of neutrality, relations with the West are tolerated and China's Belt and Road Initiative has been given limited access to the port's infrastructure success.

5.4 Resource Nexus

Bleischwitz's and Miedzinski's definition of resource nexus refers to a spatial cluster designed by combining local, regional, and global resources for efficient allocation of both human and natural capital. Oman's seaport development successfully engaged with this concept for both ports, initially with a heavy reliance on regional and global resources. The human capital included not only the Omani citizenry but also migrant workers from places throughout the northern Indian Ocean basin. Global resources such as port development guidance and financing were critical to Oman's seaport development. Salalah engaged with the global port network design expertise and trade lane network realignments, attracting carriers from points well beyond the Indian Ocean and products from throughout the world. Additionally, its industrial infrastructure built in special economic zones supported not only the hinterland of Dhofar and southern Oman but has also begun exporting certain products to global customers.[161]

Salalah's contribution to the hinterlands of Dhofar were considerable in bringing jobs and training opportunity related to the Salalah Free Zone. Programs such as Omanization sought to create employment for Omani nationals. The Sawaed Initiative, thus, aimed at training Omanis in the emerging logistics business to mitigate the grievances arising from the Arab Spring. But Oman is challenged with slack employment with citizens seeking meaningful careers while relying on international migrants for staffing lower wage positions.

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[161] *Times of Oman Website.* https://timesofoman.com
ASYAD Website. https://www.asyadgroup.com?about-us/; *Salalah Port Website 2020*. https://salalahport.com.om.

Salalah city's relationship with the hinterland of Dhofar improved with an updated infrastructure and jobs. The jury is still out on whether the city has been provided with the needed talent to qualify as a full-blown seafront industrial complex or seafront complex. Serving as a transshipment point for containers in the global trade network in itself does not enhance the city/port-hinterland relationship, although this is a powerful positioning tool to accommodate increased import and export activity should the Salalah Free Zone expand in volumes due to increased economic activity and the resultant demand for container space. The arguments made for Salalah here are applicable to Duqm as well. Salalah and Duqm both reflect a three-tiered bazaar nexus of sorts of local manufacture being supported by regional trading networks and supported by global financing.

Applying the resource nexus definition to the two Adani ports offers both similarities with and distinctions from Oman's ports. The Indian ports perform as resource nexus locations, combining the local resources of labor and mined natural resources. An important consideration in discussing efficient allocation of these resources is the powerful labor component of these ports as compared to those in Oman and Dubai. The size of the population both on the coast and the hinterland of northwestern India far surpasses the coastal and hinterland populations of Oman and the United Arab Emirates. In order to satiate the robust demands for both manufacturing and maintaining a living standard, a strong port and hinterland connection is required. The magnitude of the population differential highlights the demand component of support required. Demand acts as a powerful catalyst for port and connectivity infrastructure.

Given these conditions, the port infrastructure projects at Mundra, and later Hazira, were designed as substantial import operations. Power generation and subsequent distribution grid networks required imports of project cargo as well as road and rail networks. Powering these

plants necessitated oil, liquefied natural gas, and coal imports. These resources, in turn, required separate pipeline networks. Fuel consumption requirements of growing industrial production added to the demand. These factors together rendered Mundra and Hazira ports into seafront industrial complexes. These complexes are capable of offloading substantial amounts of natural resources and providing storage and pipeline connectivity to the distribution networks. The geographic reach of these networks was vast, satisfying the large population of northwestern India.

The totality of this demand-driven economy qualifies Mundra and Hazira ports to be identified as resource nexuses. But Hazira and Mundra combine local, regional and global resources through industrial output as well. The resources exported, such as textile goods, industrial diamonds, and other locally mined products, along with automobiles and trucks, provided the revenue to compensate for the imports. These export-oriented activities enabled employment opportunities for both local and regional populations.

Thus, these Adani ports are active in the export shipping business, embracing containerization as well as project, bulk, and roll on, roll off capabilities. Mundra and Hazira container interaction includes not only transshipment but import and export capacity utilization as well. In other words, the containerization facilities of these two ports are more than mere transfer locations. The utilization of globally available expertise and affiliation, beyond the local and regional labor absorption described above, is another example of Mundra as a resource nexus. This APSEZ port is engaged with globally based container, bulk and cargo ships, tanker and port expertise organizations, rivalling the world’s busiest ports.

The question of whether Mundra and Hazira have forged a new relationship between the city and the hinterlands is difficult to answer. Mundra city is made-up of 60,000 inhabitants,

most of whom are migrants supporting the operation of the seaport and its economic zone. While this employee resource is functional in nature, it is hard to determine at this stage whether it is a thriving, multi-talented collection of expertise, changing the relationship between city and hinterland. For both Mundra and Hazira there is mutual benefit between the cities and the hinterlands, as the ports do provide the resource intensive industries with trained labor. Surat's industrially produced textiles are exported from Hazira to foreign markets is an example of mutually beneficial port-hinterland relationship in Gujarat.

Similar to the Omani and Indian ports, Dubai emerged as a resource nexus during the 1970-2020 period. Dubai's utilization of human and natural resources in an efficient manner was based on the mixture of local, regional and global inputs. As in the analysis of Mundra and Hazira, Dubai established significant inland connectivity via power transmission and port development. All the ports in question have built multifunctional seaports and free trade zones encouraging local product manufacturing and multinational corporation industrialization. Each of the port/port clusters has utilized local labor and relied on familial or ethnic ties to varying degrees. Each of the seaports has relied on natural resource extraction, either in the production of oil, various petrochemical products, or extractive mining of minerals and materials. As we have noted, both the Omani ports and Dubai have relied on the export of petrochemical products, while the Indian ports have served as import receivers of this bonanza. Also, in the case of all five ports, international support for port development and free zone has been present. In Dubai's case, that support came from ties to the United Kingdom, including financing and strategic planning. In the containerization arena Dubai has served primarily as both a transshipment complex and an entrepôt for its significant free zone complex. In short, Dubai is considered similar to the others by the definition of resource nexus.

Dubai can also be viewed in a different manner, given the true breath of its technical and economic development beyond the city and emirate boundaries. Dubai's labor capital is limited, reinforced by significant Indian Ocean world and Southeast Asian manpower. The manual labor needs are met by this migrant labor, similar to Oman, while Indian ports can rely on their regional population. The difference is on the professional level. Unlike Mundra and Hazira, Dubai's labor force includes managerial and technical expertise gleaned from well-educated and global populations. Dubai has succeeded in attracting the well-trained labor required to meet its ambitious goals. Regarding connectivity to the hinterlands, beyond the United Arab Emirates and port cities throughout the Persian Gulf, Dubai's city to hinterland impact can be defined as reaching far flung hinterlands well beyond its physical location. Similar to the Omani and Indian ports, Dubai built a transportation complex involving both sea and air infrastructure on a scale similar to Mundra and much larger than the others. Similar to only the limited offshore reach of the Adani Group, Dubai Holdings and its subsidiary DP World has built port complexes and hinterland reaching infrastructure throughout Africa, the Middle East, Southeast Asia, Central and South America, and even Europe and the United States.[162] While the extent of port development by DP World varies by location, Dubai's city to hinterland relationships, beyond physical infrastructure, are in a different league. This league includes the financial, technical and managerial expertise located in the Dubai city center. The physical hinterlands of Dubai have been enhanced by the Dubai Holdings and DP World developments and infrastructure. One could define this relationship as new. There is certainly a new relationship between the city and the hinterlands benefiting both parties, with the hinterlands described as locations worldwide

[162] *DP World Website*, DP World | Smart Trade & Logistics | Parks & Economic Zones | Ports & Terminals

taking advantage of Dubai's information age offerings. Multinational firms outsource entire high-level functions to firms in Dubai's financial center, and the creativity of Dubai's technical experts is reflected in product development on a worldwide basis, ranging from aerospace to contemplating green technologies.[163]

5.5 Applying the New Thalassology Debate to Climate Change

Earlier, Marcus Vink's scholarship, linking the Indian Ocean world to the New Thalassology and the debate which ensued, was introduced as a concept to be queried and incorporated in this thesis. Essentially Vink's argument was the "100 frontiers" which characterized the societies and civilizations touching the Indian Ocean's vast shorelines should be evaluated as a singular Indian Ocean World, in a comparable manner as applied to the Mediterranean World and Atlantic World interpretations of history. The New Thalassology can be referenced as viewing oceans as method in presenting and interpreting history i.e., Oceans acting as the unifying and consistent force tying together broad swaths of humanity over prolonged periods of time, the longue durée. The challenge to Vink's assertion that there is an Indian Ocean world of interconnectivity was vibrant in 2007 and remains so today, given the seemingly vast variety of human experience over this land and ocean scape and its purported disconnection.[164]

This thesis supports the argument of Vink's proposal. While the seafront and seafront industrial complexes addressed in this thesis show limited direct connectivity, their overall and individual contributions as well as detraction impacts point to an undeniable interconnectivity.

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[163] Hvidt, "The Dubai Model," 397-418.; Woertz, "Logistics and Economic Development"

[164] Vink, " Indian Ocean Studies," 41-62.

Serious pollution caused by cement plants, ocean vessel waste and fuel discharge, construction of coal and hydrocarbon electricity generation and infrastructure distribution systems, plague Salalah/Duqm, Mundra/Hazira and Dubai. The impacts of rapid construction and sprawl in the service of population support, land and air combustion engine emissions, land reclamation, port dredging operations, and the resultant destruction of underwater vegetation habitats and depletion of marine life, are but a few of the negative commonalities facing these port complexes. This thesis joins the proposition that climate change caused by environmental abuse be considered as the replacement of wind as the single global variable, or at least a major one, linking far flung locales through the connectivity of oceanic contact, in this case the Indian Ocean World.

Climate change commitments for corrective action on these environmental degradations by the complexes of this report are also examples of connectivity and acknowledgment of a commonality, even if enforced by international pressure and government mandate. Salalah and Duqm are included in Oman's commitments enshrined in its 2040 Imperatives strategy and required to enforce the Five-Year Plans requirements designed to fight climate change through sustainable actions. HSBC Bank of Oman characterizes Oman's Vision 2040 as focusing on a diversified economy, sustainable cities and the development of aquatic resources and tourism, underscoring the sultanate's desire to achieve growth that is in line with global ESG standards.[165] Regarding Oman's Vision 2040 and the Sultanate's commitment to linking sustainability to the core of this long term strategy, Sultan Qaboos's successor Sultan Haitham bin Tarik declared: "The vision focuses on reshaping the roles of and relation between the public, private and civil

[165] *HSBC Bank Oman SAOG (HSBC Oman) Website.* https://www.business.hsbc.co.om/

sectors to ensure effective economic management; achieve a developed, diversified and sustainable national economy; ensure fair distribution of development gains among governorates; and protect the nation's natural resources and unique environment,"[166]

Faced with backlash due to environmental degradation in coastal Gujarat, and cognizant of the possibility of legal repercussions, APSEZ seized the initiative and established guidelines for environmental compliance by the mid-2000s. While Mundra and Hazira were still deeply committed to oil, natural gas and coal energy consumption, efforts to transition to renewable energy sources and reduce waste and pollution were baked into management practices. The APSEZ commitment to the global ESG movement enshrines these practices, while also offering positive public relations, as highlighted by the business media publication MarketLine in its 2020 summary of the company.[167] Dubai's predicament facing environmental challenges created by its meteoric growth is compounded by its global footprint. As described above, Gulf News in 2017 documented Dubai's sustainability challenges on a local scale. The solutions generated by the Dubai miracle will reflect its rapid fire, best in class and first on scene energy, and will reject acting locally and in isolation.[168]

Broadly, environmental degradation witnessed in Oman's, India's and Dubai's sea ports were not unique to these. The global trade routes and their assets created climate damaging pollution well beyond the facilities of these ports. Thus, the solution transcends the mitigation actions of these locales. Recent literature has addressed the interaction of trade, economics, policies and history with the overwhelming impact of climate change and the environmental

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[166] *Oman Vision 2040 Website.* https://www.2040.om/Oman2040-En.pdf

[167] MarketLine Inc. 2020. *Adani Ports and Special Economic Zone Ltd: Company Profile.* 22-23

[168] *Gulf News Website.* Dubai faces sustainability challenges.

consequences of the rapid industrial growth in this region. Tirthankar Roy's recent work, *Monsoon Economies: India's History in a Changing Climate,* links the mid-20th century's efforts to control the impacts of flooding followed by drought due to cycle of the wet and dry seasons. These mitigations assured wider access to water, encouraging farming success, industrialization, and urbanization. But the environmental price was significant. Activists railing against greenhouse gas and over consumption, however, should recognize the importance of water availability. "In a dry region (India), there is a trade-off between welfare and the environment. Asking water-stressed individuals to consume less is not a persuadable response to the problem. Cooperation and regulation are necessary…So are science and capitalism."[169]

Journalist and novelist Amitav Ghosh is recognized for weaving critical environmental, social, political and economic critiques and solutions into his Indo-nostalgic fiction. This fiction seeks to interact with the changing globalized world. Ghosh's *The Nutmeg's Curse: Parables for a Planet in Crisis,* exemplifies this approach. He argues the project of muting and subduing the earth in the process of industrialization unleashed violence against societies as well as the planet. Various revolts against "…the project of reducing the Earth to a clockwork mechanism in which every kind of being was brutishly mute, except for European elites and Euro-descended colonists." Ghosh calls for a "Vitalist Politics" reflecting Mahatma Gandhi's anti-mechanistic approach as a component of building a more sustainable Indian society.[170]

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[169] Tirthankar Roy, 2022. *Monsoon Economies: India's History in a Changing Climate.* Cambridge: Massachusetts Institute of Technology, 175.

[170] Amitav Ghosh, *The Nutmeg's Curse: Parables for a Planet in Crisis*. Chicago, The University of Chicago Press. 2021, 229-235.

5.6 Seafront Industrial Complex, Seafront Complex, Three Development Paths

This thesis proposes a subtle yet distinct variation between seafront industrial complex and seafront complex. This thesis also proposes the potential for a continuum from seafront industrial complex to seafront complex. This thesis maintains that between 1970-2020, Salalah/Duqm, Mundra/Hazira and Dubai followed three distinct paths to their present state with many similar features. Most of these differences were subtle, but some were dramatic. Each of these ports/port clusters is thriving in the 2020s with positions of varied importance on the global trade/containerized routes depending on advantages each has in terms of infrastructure and management practices, providing or receiving the energy boom benefits, and access to a supply chain managed market. Each qualifies to some degree of resource nexus status, impacting the city/hinterland relationship with ranging entrepot success, and has an identifiable government/business relationship process. Each contributed to climate change, and to varying degrees each began efforts to ameliorate its practices. Each entered the new millennium with positive trajectories, and each can be defined as a seafront industrial complex, seafront complex, or somewhere on the continuum of pre-seafront industrial complex to seafront complex.

Oman's seaports of Salalah and Duqm followed a powerful monarchical, theology inspired, merchant elite favored, top-down approach, and have entered the seafront industrial complex phase as defined by Sugihara. Because of the development of the Salalah Free Zone, support oriented employment grew in the city. Duqm was designed as a sea front city, with the anticipated position similar to Dubai as Oman's seafront complex as its own special zone evolves. But neither city reached that status as of 2020. Oman's 2040 Initiative details the strategy and plans for the combination of Salalah, Duqm and Sohar to attain global top ten status as a logistics and supply chain hub. Assuming Oman reaches that goal, no doubt at least one of

the city centers in Oman would grow closer to rivaling Dubai. Given the latter's head start, this is a tall order. While Oman is similar to the UAE in terms of relative population and thus potential of local hinterlands reach, Dubai impacts global hinterlands due to the spread of DP World and its expertise.

The Dubai ports of Jebel Ali and Ras bin Rashid followed a top-down approach spearheaded by the ruling family and supported by the merchant elites. The difference with Dubai centers on the fact that Jebel Ali and Ras bin Rashid have been replicated to seaports throughout the world due to the business practices of DP World. The argument made here is that the Dubai experience has transcended the seafront industrial complex as defined by Sugihara. Instead, Dubai city itself has become the epicenter of a management, technology, services, and white collar /business resource nexus, supported by the industrial complexes it helped develop on a worldwide basis. This thesis argues that Dubai is a seafront complex, where the city is the star and the primary attraction is specialized labor, management talent, and global connectivity, supported by world class infrastructure built during the industrialization phase.

The Adani seaports at Mundra and Hazira followed a republican, socialist evolved to quasi liberalized, entrepreneurial, disorganized capitalistic, bottoms up approach, and have entered the seafront industrial complex phase, but with weak city centers at Surat and Mundra. This thesis argues that the spirits unleashed by economic liberalization propelled rapid development reigniting the capitalism underlying the Indian economy historically. Contrasted with the top-down models of Oman and Dubai, the bottoms up approach of liberalized India reflected well on the trade and interconnectivity legacy of the western Indian Ocean world prior to the era of European colonization, signaling strong future potential. The disorganized capitalism of Surat as described by historian Garrett Menning and defined above, while

successful, barely qualifies as a center point of seaport development at this stage, and Mundra itself operates as an office function supporting the industrial complex there.

Summarizing, both the Omani and Indian ports qualify as seaport industrial complexes, albeit with relatively weak city centers, placing them with distance to travel on the continuum towards seafront complex status. Dubai qualifies as a seafront complex, a true city of technology and innovation supported by its infrastructure and global reach. All three seaport/seaport clusters have traveled individualized paths to attainment.

6 CONCLUSION

This thesis proposes two principal arguments and one supplemental. The first principal argument involves the concept of seafront industrial complex as proposed by historian Kaoru Sugihara. Sugihara describes this concept as developing an all-encompassing port infrastructure where raw materials and modern finished goods are imported for processing, to be married with local and regional products allowing for exportation to the global marketplace. This port infrastructure is also designed for exporting locally sourced raw materials, where applicable. Additionally, port infrastructure is built to accommodate higher level, technically advanced products and materials generated by trained labor in the nearby city linked to the seaport. The infrastructure includes transshipment capabilities in the form of container and breakbulk equipment. The seafront industrial complex, as developed in Japan, South Korea and eventually throughout Asia, was the proof statement of this concept.

This thesis argues that the five seaports to varying degrees attained the status of seafront industrial complex between 1970-2020. Dubai, Salalah, and Mundra thrive today with seafront cities, nearby free trade zones, and roadway, air and rail infrastructure in full operation. These three seafront ports rank in the global top fifty for oceanic cargo throughput. Meanwhile, Duqm

and Hazira are works in progress, have attained minimal status as seafront industrial complexes, are poised for future growth, and mirror in complexity if not size the larger three complexes.

However, this thesis argues the seafront industrial complex concept of Sugihara can be expanded to address the differentiations, both obvious and subtle, between the most mature and least developed of the five seaports studied. This thesis argues there is a status beyond seafront industrial complex that better describes what occurred. The semantics of this mature stage, whether it be called seafront complex, seafront technical complex, seafront industrial and technical complex, or some other designations are less important than affirming this distinction. This thesis has endeavored to identify that difference using the term seafront complex. As described above this thesis sees Dubai as a seafront complex, where its city and industrial infrastructures, and free zone operations are support mechanisms for an advanced information age business center with global results, reaching far beyond its physical boundaries and traditional hinterlands. The other four seafront industrial complexes might strive for the status of Dubai or might not. But the distinction is obvious, and this thesis has proposed the separate category; seafront complexes such as Dubai, Hong Kong, and Singapore, while resting on seafront industrial complexes as foundation, are of distinct importance to late 20th and early 21st century globalization.

The second principal argument proposed is the five ports/port clusters followed three distinctive paths of development to their status of either seafront industrial or seafront complexes. The research above shows the importance of each nation's influence on the development path taken. There were many similarities to these development paths, strongly impacted by the government structure, the business climate, and the top down or bottom-up strategic planning of the national scene. The research presented and analysis offered show

Oman's seaports of Salalah and Duqm following a powerful monarchical, theology inspired, merchant elite favored, top-down approach. Likewise, the Dubai ports of Jebel Ali and Ras bin Rashid followed a powerful monarchical, nationalistic, merchant elite favored, city as corporation, top-down approach. The Adani seaports at Mundra and Hazira followed a private entrepreneurial, disorganized capitalistic, and bottoms up approach. Each complex faced and reacted to the external catalysts of the oil boom, containerization, port development and management conglomerates, and the supply chain driven science, and intensive globalization. Each complex was affected by its postcolonial past prior to 1970. While the port and free zone development model of Oman is potentially transferable, the models followed by the Adani Group and DP World are proven as globally applicable. The distinction here is the question whether a globally active seafront industrial complex or seafront complex development model is better served by a host country that is a democracy or powerful monarchy. Research has presented the argument supporting the monarchical, top-down approach of Dubai as more conducive for efficient expansion, as DP World has proven worldwide. The counterargument is that the Adani Group, operating in a competitive national environment controlling only 24% of the Indian market, is capable of replicating DP World's results globally, albeit on a smaller scale to date.

The supplemental argument of this thesis is the long-term influence of the Indian Ocean, Arabian Gulf, and Persian Gulf World history of trade and cultural engagements as foundational to the seaport development strategies and end results presented here. Using environmental degradation and the need for sustainability planning as an example, this thesis maintains and joins the proposition that climate change caused by environmental abuse be considered as the replacement of wind as perhaps the single global variable effecting oceanic trade. This thesis supports the arguments of the New Thalassology being inclusive of the Indian Ocean World as

an entity to be studied and interpreted. The seaport development models and results presented here vindicate Marcus Vink's argument that the one hundred frontiers representing the societies touching the Indian Ocean's vast shorelines are linked. Finally, this thesis, through its analysis of each seaport's resource nexus activity, is the proof statement of the continuity, interconnectivity, and long-term ebb and flow of Braudel's longue durée, applied to the Indian Ocean World.

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