

Construction Building of Belt and Road Initiative in the Middle East: How Does BRI Affect the Country Economy

Hanyu Chen, Jin Dai, Weijie Tang, and Luyao Xu

Abstract—Connecting Asia, Africa and Europe, the Middle East is the transport hub of the eastern and western hemispheres and the transport network at the eastern and western ends of the Eurasian continent. It is located at the intersection of the Belt and Road Initiative. Middle Eastern countries account for more than half of the world's proven oil reserves and about a quarter of the world's oil output. At present, China and Middle East countries have established several corporations at different field, which collectively referred as the Belt and Road initiative project. One of the most important part that this project contains is the build of constructions, including basic infrastructure, mineral industry and the development of innovative constructions such as the 5G tower. These projects help Middle East countries better trade on their global markets and the project itself also brings future benefits and investment to the country. With more basic construction developed in the future, the economic and trade relations between China and Middle East countries will be further strengthened.

Index Terms—Digital silk road, mineral trade, oil trade.

I. INTRODUCTION

The Middle East is an essential area that connects the three continents of Asia, Europe, and Africa and the two oceans of the Atlantic and Indian Oceans. It is also the place where China's 21st century Maritime Silk Road and Silk Road Economic Belt meet. Due to the unitary economic structure in the Middle East, many countries rely heavily on oil and gas resources for economic development and lack of sustainability. Besides, with the increasing speed of construction and technology development, China has an increasing consumption on crude oil and gas as well. The Belt and Road Initiative could bring a win-win situation for both sides as it helps Middle East countries on broadening the trading markets such as digital markets, basic construction, financial markets and builds a convenient transportation way for China to crude oil and gas.

The ancient Silk Road has long linked China with countries in the Middle East. As four ancient civilizations, ancient China and Ancient Egypt met on the Silk Road a thousand years ago. Alexandria was once a trade hub

connecting ancient Europe with the East. The Suez Canal, which connects the Indian Ocean and the Mediterranean, extended the maritime Silk Road to the Ancient Roman Empire. Until now, China's trade with middle Eastern countries has never stopped, in 2020, Saudi Arabia was the top crude oil provider to China and Iraq on the third place. Also, technology support and digital trading from China to Middle East countries was never stopped as well. The following part will analyze the basic and advanced construction building on BRI project and its merit and demerit on specific Middle East countries.

II. RAILWAY CONSTRUCTION

The infrastructure of the Middle East area developed well after the Second World War. Some countries' economies have developed rapidly. For instance, by producing oil, Saudi Arabia earns an enormous amount of money for infrastructure investments. Through technological innovation, Israel has a robust economy to support infrastructure. However, the Middle East is struggling against the imbalanced development of infrastructure due to the geopolitical influence. Iraq, Afghanistan, and Iran have economies and infrastructure in behindhand for intricate reasons, including war, international sanctions, and foreign policy. Since many countries in the Middle East are in the early stages of industrialization, urbanization, and there is an enormous demand for infra-structure. Due to the peculiarity of topography in the Middle East of environmental reasons, there are vast deserts and hills, and land transportation depends primarily on roads. According to National Security and Anti-Terrorism Information, railway transportation has the advantages of saving transportation costs, high efficiency and speed compared with road transportation under this topography [1].

This determines that the railway is more suitable for trade between Middle Eastern countries. However, rail density among Middle Eastern countries is generally quite low. While some countries in Middle East have a high density of railways, their efficiency, speed, and quality are comparatively lower than average. This is a significant opportunity for China's "One Belt One Road" policy to achieve a win-win mutual benefit around infrastructure. According to Keynesian theory, investing in infrastructure stimulates the economy by increasing demand and reducing the unemployment rate. Furthermore, the industries clusters and regional clusters produced by infrastructure will reduce the transportation cost of enterprises, promote the improvement of regional employment level, and influence

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the industrial layout. This will promote the urbanization and industrialization of the region. The level of China infrastructure is very high, and for the Middle East region, the geographical location is relatively convenient for import and export, which can promote trade exchanges between countries. The lack of railways and roads has cut off their access to goods from the outside world, so they need a strong assistant in the infrastructure territory. So, China is the most suitable country for them in their improvements both geographically and economically.

Etihad Rail is the longest railway in the Middle East. The railway project is expected to be a sustainable and efficient alternative to freight and passenger transport in both urban and rural areas of the The United Arab Emirates (UAE) [2]. Rail facilities have a significant contribution to reducing transport emissions, and it will boost trade and social development in the UAE and the Entire Arab Gulf Cooperation Council (GCC). China Railway Construction Corporation Limited (CRCC) helped them to build tunnels and many different sections of the railway in the Etihad Rail project and built lots of freight stations to improve the life qualities of those countries. The rail freight terminal project is an important part of the UAE and the entire Gulf rail network, covering the country's major industrial centers, manufacturing centers, logistics centers, densely populated areas, and key ports. The completion of the project will continue to expand and improve the rail freight network, consolidate its position as a regional freight hub and strive to become a global logistics hub [3].

According to the Keynesian theory, the multiplier effect of infrastructure investment on economic growth creates demand that multiplies output in other sectors. Therefore, when the economy is in recession, many countries in the world usually take the public expenditure of large-scale infrastructure construction and maintenance as a policy tool to stimulate the economy, which can not only greatly ease the pressure of domestic employment and overproduction, but also stimulate domestic investment demand and play a buffer role in the decline of private investment.

In the 20 years from 1990 to 2010, public sector investment in the Middle East played a significant role in stimulating economic growth and employment. The Middle East infrastructure sector, which includes construction and infrastructure services, employs 20% of the region's workforce, about 18.2 million people, with about 11 million employed in construction and the remaining 7.2 million in infrastructure services. In infrastructure services, the transport and communications sector are the main employment sector, accounting for 7 per cent of the total employment, while the electricity and water sector accounts for about 1 per cent. To be sure, middle Eastern countries also differ in the number of people employed in infrastructure. For example, The construction and infrastructure sectors in Iran employ more than 40 percent of the national workforce, compared with just 11 percent in Egypt and Yemen [4].

Because of poor domestic infrastructure and economy, so the assistant to the Middle East should focus more on rail transport than road transport, such as the medium oil exporting countries such as Iran, Algeria and Egypt oil importer due to insufficient funds, insufficient recognition, political instability and policy mistakes, lead to ageing

infrastructure development lags behind, restricted the economic development. For example, Egypt's road and railway systems are outdated and in urgent need of upgrading. In particular, the railway is not capable of carrying only 5% of the freight. So, if we solve the freight problem, we can make the country's economy grow faster and the national standard of living better.

III. DIRECT AND INDIRECT BENEFIT OF BRI ON GCC COUNTRIES

A. Direct Benefit

Because of the geographical position and historical political issue, Middle East countries always facing a problem on building industrial constructions and their local market is lacking diversified product due to the desert environment in surrounding. Therefore, Middle East countries are largely relying on the global economy market. According to the data collected by world bank, the GNI per capita of China increased over three times from 1990 to 2000, and the increasing trend never stopped until 2020 when the COVID pandemic steps in. This shows a sign which living standard and per capita income of China has increased from 1990, and more citizens from China could afford to purchase vehicle. The increasingly demand on personal vehicle and industrially used crude oil from China made the global transactions between China and countries of GCC becomes more and more frequently. Zhang analyzed the relationship of GCC countries with China in the belt and road initiative project on crude oil transactions. The author introduced some beneficial of the BRI project with graphic evidence that both the GCC countries and China economy was better off. Tingting also compared each member of the GCC countries separately and also explained the outer and inner factors of China that affect the increasingly transaction amount of the crude oil. Additionally, Tingting mentioned some possible challenges that may happened further to China diplomatic and firms that may conduct importing and exporting the crude oil [5].

Nowadays, China imports over 30 percent of its crude oil and 10 percent of its natural gas from GCC members. In 2004, the two sides signed the Framework Agreement on Economic, Trade, Investment and Technical Cooperation. On February 22, 2019, the International Cooperation Center of the National Development and Reform Commission (NDRC) and the Saudi General Administration of Investment jointly hosted the China-Saudi Arabia Investment Cooperation Forum. Thirty-five bilateral cooperation agreements worth more than \$28 billion were signed. And in 2020, China has become the GCC's largest trading partner, but there is still potential for growth in trade and investment, and a free trade agreement between China and GCC countries will help achieve this goal. Worth to notify that, as crude oil's worldly demand raptly growth, its price has increasing which as well increased the income from exports for GCC members.

B. Indirect Benefit

Among the existing 5 economic corridors, CCWAEC and CEPC has not only benefited the targeted country, but also the surrounding Middles east countries as they are the

investors of the project. China’s BRI project contains many large financial projects that would benefit the local basic constructions. Such as the oil pipeline project of Kazakhstan, Roland-Holst made an assertion that such project for building basic construction would lower 40% of the import crude oil cost. And meanwhile, he mentioned that the BRI investments from surrounding countries will expected to increase the overall efficiency of energy supply by 2.5 percent in 2030 [6].

C. Mineral Resources

Mineral resources are one of the most important material bases for the development of a country, having great significance in the growth of industry, trade cooperation, and political interaction. The complex geological structure of Afghanistan caused its rich mineral resources. There have been over 1400 categories discovered, some of which are among the top of the world, such as copper, iron ores, and rare earth. For example, the copper mine called Aynak has a total amount of copper metal as high as 11.33 million tons. In addition, the value of undeveloped mineral resources is up to US \$ 3 trillion [7].

Since the beginning of the Belt and Road Initiative in the Middle East, a lot of assistance has been offered to Afghanistan by China in mining exploration. At present, dozens of companies such as China National Petroleum Corporation, HUAWEI Technologies Corporation, and many companies have participated in the contact of Afghan mining projects, which is represented by the Aynak Copper Mine located in south Kabul. By the end of 2014, China’s direct investment stock in Afghanistan had reached US \$ 518 million, and the number of project contracts had been as high as US \$ 968 million in total, accompanied by the complete turnover of US \$ 638 million [8]. The construction building for mineral resources has contributed a lot to the economic development in Afghan.

In recent years, the government in Afghan tries to make the mining industry a pillar industry of the national economy. Afghanistan had a low level of development in the mineral industry with a huge potential (Table I) [9]. Since the development of the Belt and Road Initiative, all kinds of mineral exports account for an increasing percentage of the national economy. In 2019, the exports volume of Other Coal reached US \$ 69.5 million, ranking Top 5 products exports. The discoveries and exploration brought by Belt and Road Initiative are making Afghan gradually becoming the new mineral industry center around the world [10].

TABLE I: THE POTENTIAL VALUE OF MAIN MINERAL RESOURCES

Mineral type	Potential value/billion dollar
Iron	4209
Copper	2740
Niobium	812
Cobalt	508
Gold	250
Molybdenum	239
Rare Earth	74
Asbestos	63
Silver	53
Potash	51
Aluminium	44
Total	9042

Meanwhile, due to the demand for transports and

exportation, the development of mineral development in the Belt and Road Initiative also brought some certain opportunities to railway and highway traffic construction. The connection of mineral transportation lines between Iran and Afghanistan makes the status of energy channel more obvious connecting East, West, South, and Middle Asia, which has promoted the international status and development of the economy.

IV. NEO GENESIS TECHNOLOGY

Qi et al. focus on the energy intensity of countries along the BRI and the role of China. Qi et al. use panel smooth transition regression method to research on how bilateral trade of China and BRI countries affects. The empirical results demonstrate that scale effects of BRI contribute to the energy intensity convergence of BRI countries. Moreover, the technology spill over from trade plays crucial rule in energy intensity convergence process. Backward countries can narrow the technology and energy efficiency gap with countries along the BRI by introducing or learning advanced technologies to improve efficiency from advanced countries through trade. Trade is conducive to the production or sustainable development of the whole BRI region through the channels of scale effect and technology spill over effect. It can improve the overall energy efficiency or help the development of backward countries [11].

A. New Energy Resource

Due to geographical reasons, the Middle East has abundant and easily available exploit oil and gas. However, due to geopolitical reasons, most countries in the Middle East are still developing countries that mainly rely on the export of oil and natural gas. According to the 2021 index of economic freedom, Kuwait’s oil and natural gas account for nearly 60% of GDP and 92% of export revenue [12]. Iraq oil accounts for more than 85% of government revenue [13]. The extreme dependence on the use and export of oil and natural gas has led these countries to face the problems of single energy, volatile economy, and political instability. According to the Impact of COVID-19 on the Iraqi Economy written by the United Nations Development Program (UNDP), the impact of the pandemic and the fluctuation of oil prices have exacerbated Iraq’s economic difficulties. The employment rate has already increased beyond its 2018 level of 10%.

The abundant sunshine and desert in the Middle East led to the potential advantage of developing renewable energy with high efficiency and low cost. Renewable energy can provide reliable power supply and fuel diversification for the Middle East, thus enhancing energy security, reducing the risk of fuel leakage, and reducing the economic dependence on exported fuels. In addition, renewable energy can reduce carbon emissions, protect important national resources, increase employment opportunities, and reduce unemployment.

BRI plays an important role in helping countries along the line get rid of the problems of single energy and political instability. Beijing’s Silk Road Fund has invested in renewable energy projects in the Middle East. For example, two photovoltaic solar facilities in Jordan, the 200MW Kon Ombo project in Egypt and the Dubai’s 950mw CSP Mohammed bin Rashid al Maktoum Solar Park project. It

dramatically facilitates renewable energy development in the region which takes advantage of the special geographical factors in the Middle East, including sufficient sunlight and adequate wind resources. Qi believes that this will promote the development of renewable energy in the Middle East, improve the energy intensity of countries along the Middle East and reduce the cost of energy use [14].

B. Digital Silk Road

According to Eyck Freymann, author of *One Belt One Road*, China's focus "is shifting from traditional infrastructure to high-tech cooperation and digital services." According to Metcalfe's law, the more users a network has, the greater the value of the network as a whole and of each computer within it. The digital economy is playing an increasingly important role in promoting global economic growth [15].

The Digital Silk Road (DSR) is a new cooperative development road based on the development of technology and communication, which has helped improve the life of the countries along the Belt and Road, especially the e-commerce industry. Taking advantage of the convenience brought by the Internet of Things, China exports small commodities and imports products from countries along the way, promoting economic and trade exchanges among countries. Some domestic companies such as Alibaba, have built an entire e-commerce ecosystem in the Middle East using their platform benefits [16].

The ecological system in the front of a global outbreak has played a vital role, for example, because of the limitation of home quarantine, people can only stay at home, while the consumption desire is satisfied by the electricity industry, never leave home can buy high quality products, increasingly cross-border electricity to meet rising demand from domestic residents of new channels. On the one hand, with the support of new cross-border e-commerce models, new forms of business and new technologies, consumers can buy high-quality goods from all over the world with a click of a button. On the other hand, by importing more diverse products from overseas, consumers will have access to a wider range of suppliers and more competitively priced products, further unlocking consumption potential and boosting economic recovery after epidemic.

For digital construction, Digital Silk Road (DSR) is now working on the establishment of digital base stations, undersea fiber optic cables, and the introduction of recent network technologies. Butch stated the "Digital Silk Road" which is a new part of the BRI project that helps middle east countries to build up digital construction such as submarine cable and 5G signal tower. He mainly focused on the Iran-China BRI projects and explained how Iran could benefit from this project by stating the trade policy between China and Iran. It also mentioned the electrical and railway construction build on Iran which is invested by China. In additionally, Butch also mentioned some considerable challenges on this project such as using Chinese workers are cheaper than local workers in Iran which creates the unemployment problem.

According to the research of Telegeography, there are currently seven submarine cables connected with Pakistan, including 4 of them were go through India. The cables were

jointly developed by a few companies, including telecom companies in India, Egypt and Pakistan. Pakistan has long sought to build new Internet connections to speed up the internet communication. The Pakistan-East Africa undersea cable that DSR is building will connect Pakistan to Kenya via Djibouti, and Europe via a land cable system, creating a new digital economy highway for Africa and Central Asia. The cable will provide the shortest direct Internet route between participating countries and greatly reduce the time needed to transmit Internet data. Meanwhile, the Special Communications Organization (SCO) from Pakistani army, is about to lay fiber-optic cables between Rawalpindi and the port cities of Karachi and Gwadar. This project which costing \$240 million is now collaborate with China's Huawei Technologies, and over 850 kilometers of the northern side cable is already in used since 2018

V. CONCLUSION

This project evaluates the relationship between Belt and Road Initiative and Middle East countries' economies. The analysis includes infrastructure, mineral, oil reserve construction, and advanced technology construction. It states that Belt and Road Initiative has tremendous assistance towards the regional economy and industry development. These findings illustrate the Belt and Road Initiative's impact and can be served as a base for future studies on the Belt and Road Initiative's influence on China. Furthermore, this research has explored many questions in need of further investigation—for instance, the impact of corruption, bureaucracy, and terrorism on BRI. More broadly, further work is needed to determine the impact of the "Belt and Road" initiative on the geopolitics of the Middle East.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

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