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Revisiting Geo-Economic Values of the Yangtze River Economic Belt

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Abstract

After 2020, China's development conditions and environment will undergo tremendous changes and China must seek out new and appropriate geostrategic solutions to accommodate such adjustments. We believe that as it is relative to China's economic development environment, the most critical strategic step now is to restart the construction of the Yangtze River Economic Belt on a large scale. Such a project should be based on high standards of environmental protection, and the focus should be on promoting the economic development of the western end of the Yangtze River Economic Belt and construct a balanced east-west economic space along the Yangtze River Economic Belt to hedge against the huge impact that will be caused due to great changes in the external environment on the Chinese economy. In addition, this can also balance China's economic growth, expand consumption space, and stimulate consumption growth, while promoting and achieving a healthy transformation of China's economy and society. Such an economic construction must be sequential because resources are limited; the construction sequence is not only determined by vision and blueprint, more importantly it is also decided by the changes and trends of the development environment. China is now facing a severe and very rare geopolitical situation, with high potential risks. The most developed export-oriented economic region of China's economy, that is, the southeastern coastal area, is under increasing pressure from the external market. This external pressure is transforming the institutional pressure mechanism, causing the living space of enterprises in the southeastern coast to become increasingly narrow and harder to rebound. Under this circumstance, expanding China's consumer market and tapping new market space has become a crucial policy point.

An important development policy of China, "Western Development", i.e. the development of the western region of China, has been proposed for many years, and now it has been strengthened again. In fact, China has recently released version 2.0 of the Western Development plan. The Yangtze River Economic Belt is also an important development strategy that has been proposed in the past. The problem and challenge is that as the external geopolitical situations becomes more complicated, the risk of austerity in the external market has greatly increased, and the economic development space of the original export-oriented economy may be under pressure, which requires

China's development focus to be greatly adjusted. In the future, China will shift its focus primarily towards the Mainland market, as well as to the central and western markets of China.

How then, can China achieve such a policy shift? During the period of rapid growth in China, it is enough to provide policy development goals. Resources, including technology, industry, and capital, will follow the policy vision and goals one after another, and the investment of resources can be self-adjusted through market trial and error. Yet, the current situation is very different. The investment of resources will be increasingly restricted and restrained, because the increasingly obvious risk factors impose more restrictions, forcing technology, capital and industry to require clearer policy development goals and to locate practical policy paths. Thus, the regional development problems of the Yangtze River Golden Waterway began to appear. In this policy research report, we believe that if the development of the Yangtze River Golden Waterway can smoothly resolve the critical problem of the Three Gorges Dam, it will become the leader in the Yangtze River Economic Belt and in the development of the western region, as well as proving to be an effective means of opening-up the central and western markets of China. All these are conducive to the balanced development of the east and west ends of the Yangtze River Economic Belt.

Currently, the gap in GDP added value between the east and west ends of the Yangtze River Economic Belt in China is about RMB 12 trillion, and there is an obvious "two times difference". Once China has achieved a basic balanced development on the east and west ends of the Yangtze River Economic Belt, China, the market space in the central and western regions of China will gain a huge burst in development momentum. Not surprisingly, after the space in the western market matures, the added value of the new GDP in three years will be almost equivalent to the total scale of the current national local debt. The development space and potential are huge, and the prospects are extremely promising.

Through this policy research report, we hope to build and define a new type of development relationship between the Western Development, the Yangtze River Economic Belt and the Yangtze River Environmental Waterway based on geostrategy and redefining the original development concept. Under the new geographical situation, we aim to explore a new space for China's future economic growth, and more importantly, we hope this can provide a reliable and effective starting

and breakthrough points to create and lay the foundation for the growth of China's overall public welfare supply.

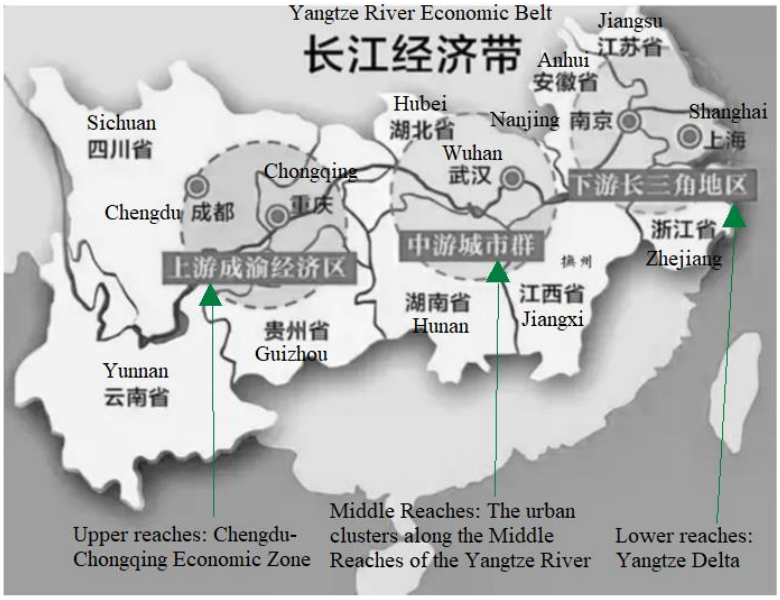
Any findings, explanations, and conclusions in this policy research report are the opinions of the authors only. The policy research report is for policy reference only and does not reflect the views of any unit. Unless otherwise noted, the data in the report are public. The authors of this report cannot guarantee the complete accuracy of any data or information disclosed and are not liable for any consequences resulting from the use of such data by others.

Chapter 1: Introduction

In September 2016, with the announcement of the outline of the *Yangtze River Economic Belt Development Plan*, the Yangtze River Economic Belt officially has the legal positioning in China. The outline of the plan focuses on the protection of the ecological environment of the Yangtze River and creates a new regional spatial pattern with "one axis, two wings, three poles, and multiple points". Shanghai, Wuhan, and Chongqing are important transportation hubs along the Yangtze River and become "one axis" to promote the gradient development of the Yangtze River economy from the coast upstream. "Two wings" stands for the Shanghai-Ruili Highway and the Shanghai-Chengdu Highway, it will facilitate the connectivity of transportation within the region and enhance the capacity of urban population and industrial agglomeration at important nodes in the hinterland of the north and south. The entire Yangtze River Economic Belt covers 11 provincial-level regions, including Shanghai, Jiangsu, Zhejiang, Anhui, Jiangxi, Hubei, Hunan, Chongqing, Sichuan, Yunnan, and Guizhou, covering an area of about 2.05 million square kilometers, taking up 21% of the country’s total. The population and economic aggregate of the Yangtze River Economic Belt both occupy over 40% of the country’s total. It has an important ecological status, strong comprehensive strength, and great development potential.

In terms of the planning goals, the outline of the plan sets two strategic goals: By 2020, the ecological environment will be significantly improved, significant progress will be made in driving innovation, strategic emerging industries will take shape, and world-class enterprises and industrial clusters will be cultivated; By 2030, the fully functional "golden waterway" along the Yangtze

River will be fully established, an innovative modern industrial system will be fully set-up, and it will play a more important exemplary leading and strategic supporting role in the country's economic and social development.



(Picture: ANBOUND)

Since 2016, the status of the Yangtze River Economic Belt in China's overall economic development has declined. The economic focus and investment are more aiming at the construction of several key areas such as the Greater Bay Area. The spatial layout and economic development of the Yangtze River Economic Belt are lagging behind. Among the 140 million pieces of information about the Yangtze River Economic Belt, nearly 100% are content that emphasizes green and protection, which indicates that the economic development of the entire Yangtze River Economic Belt is still in the early stage of environment protection. We believe that with the dramatic changes in the internal and external environment of China’s economy and the huge impact of the novel coronavirus outbreak on China’s economy, the current situation of the Yangtze River Economic Belt is unsatisfactory. With the deepening of the protection works of the Yangtze River, it is necessary to enter the second stage of development as soon as possible to form a significant supporting role for China's future economy.

Chapter 2: The First Stage of the Yangtze River and Issues Encountered

Regarding the development of the Yangtze River Economic Belt, the leaders of the Central Committee of the Communist Party of China once pointed out that since the reform and opening up, the ecological functions of the Yangtze River basin have been seriously degraded[1]. The "two kidneys" of the Yangtze River, Dongting Lake, and Poyang Lake are frequently hit by droughts; nearly 30% of the important lakes are still eutrophicated; the Yangtze River's bio-integrity index has reached the worst "no fish" level. Industries along the Yangtze River have a strong development momentum and a large pollutant discharge base. Wastewater, chemical oxygen demand, and ammoniacal nitrogen discharge account for 43%, 37%, and 43% of the country's total, respectively. The problems of misuse, overuse, excessive use, and extensive utilization of the Yangtze River coastline and ports are still prominent. Environmental risks and hidden dangers are prominent in the river basin. 30% of polluting enterprises in the Yangtze River Economic Belt are located within 5 kilometers around the drinking water source, and their production, storage, and transportation areas are alternately distributed. The annual throughput of hazardous chemicals in trunk ports has reached 170 million tons, more than 250 kinds, and the transportation volume is growing at an annual rate of nearly 10%. At the same time, some new problems have emerged, such as the frequent illegal dumping of hazardous solid wastes across regions, and the increasing risks and hidden dangers of the shift of polluting industries to the middle and upper reaches.

According to a June 2018 report of the National Audit Office[2], the total area of the 11 provinces of the Yangtze River Economic Belt is about 2.05 million square kilometers, including 967,000 square kilometers of forests and 148,000 square kilometers of lakes and wetlands. The region has set up 3,065 nature reserves and scenic spots, covering a total area of 387,000 square kilometers. In 2017, water resources totaled 1.34 trillion cubic meters and the total water consumption was 247.587 billion cubic meters. Governments at all levels have stepped up efforts to protect the ecological environment. In 2016 and 2017, a total of RMB 251.824 billion was

[1] Xi Jinping's speech at a symposium on promoting the development of the Yangtze River Economic Belt, Qiushi Journal, April 26, 2019 http://www.xinhuanet.com/politics/leaders/2019-08/31/c_1124945382.htm

[2] Announcement of the National Audit Office http://www.audit.gov.cn/n5/n25/c123511/content.html

invested in related fiscal funds, of which RMB 172.212 billion came from the central government and RMB 79.612 billion came from local governments.

Since 2016, a total of 152 meetings have been held in 11 provinces along the Yangtze River Economic Belt, formulating or revising 293 regulations, and 159,900 party and government officials have served as river chiefs and lake chiefs. A total of 665 special operations were carried out to investigate and deal with 97,800 cases of illegal dumping, unauthorized discharge, indiscriminate use of land, deforestation, and other illegal activities; 4,147 cases and 2,635 persons were transferred to judicial organs for handling, effectively curbing ecological and environmental damage. According to data from relevant departments, the capacity of sewage treatment and garbage disposal in 11 provinces has increased by 8% and 11% respectively in the past two years. Some phased work in the treatment of water and air pollution has been well accomplished. A total of 2,486 non-compliant enterprises have been banned in all provinces, accounting for 99.84% of the banned list. About 90% of industrial clusters at or above the provincial level have built centralized sewage treatment facilities. Based on the data provided by 11 provinces, the total discharge of major pollutants, including chemical oxygen demand, ammoniacal nitrogen, sulfur dioxide, and nitrogen oxide, was cut by 2.97%, 4%, 9.24%, and 3.97% respectively in 2017 over the previous year. The good water quality rate examined by the national surface water environmental quality monitoring and assessment was 73.9%, 0.6 percentage points higher than that of the previous year, and that inferior Grade V water quality (3%) was 0.3 percentage points lower than that of the previous year.

However, the National Audit Office found that so far, there are still many problems in the ecological environment protection of the Yangtze River Economic Belt and related fund management and use.

1) By the end of 2017, a total of RMB 1.256 billion yuan of special funds for water pollution prevention and control, and rocky desertification comprehensive management, had been deposited in relevant local financial departments in 8 provinces, and RMB 821 million had been deposited in project authorities and implementing units, both of which lasted more than one year.

2) From December 2013 to January 2018, 8 local government departments and their subordinate units illegally used RMB 25.08 million of funds related to ecological and environmental protection, mainly to make up for administrative expenses and other project expenditures. 5 county-level local governments repeatedly declared a special fund of RMB 1.056 million for restoring farmland to forests.

3) 197 pollution control and ecological restoration projects in 10 provinces have not started (or completed) on schedule, and 19 projects in 5 provinces had poor results after completion.

4) By the end of 2017, 24,100 small hydropower plants had been built in 10 provinces, with a minimum distance of only 100 meters, and the development intensity is relatively huge. During the 12th Five-Year Plan period, the number of new small hydropower plants built in 5 provinces exceeded the planned installed capacity. There are 930 small hydropower plants in 8 provinces that started construction without environmental impact assessment; 6 provinces have built 78 small hydropower plants after the designation of nature reserves. In addition, there are 426 abandoned power stations and barrages in 7 provinces that have not removed. In 7 provinces, 86% of the 6661 small hydropower plants with ecological discharge facilities have not realized online monitoring of ecological flow. Excessive development has resulted in 333 rivers with a total length of 1,017 kilometers being drained to varying degrees.

5) Seven provinces, cities, and counties broke through the national and provincial examination and approval systems by setting up 249 development zones (of which 8 zones were newly established since 2016), covering 4.47 million mu. Among these, 72 development zones have been constructed for more than 5 years, but the completion rate is less than 50%. Also, they are 10 development zones overlapped with basic farmland by 27,700 mu. There are 62 development zones located in key ecological function zones or overlapping with prohibited zones, 18 of which were established or expanded after the implementation of the national plan for functional zones.

6) 501 units in 10 provinces draw water without license, and 60 units draw water in excess of quota. By the end of 2017, 667 non-compliant shoreline projects in 7 provinces had not been rectified.

7) Since 2016, there have been 21 new or expanded chemical and papermaking projects in 3 provinces that have not gone through the approval procedures such as environmental impact assessment or capacity replacement.

8) The lack of supervision on the illegal sale of electrofishing devices on the internet has contributed to illegal electrofishing. In the past four years, a total of 34,600 cases of illegal electrofishing occurred in 11 provinces, with an average annual growth rate of 8.8%. Among them, 149 cases occurred in rare fish reserves, where mullet and other rare fish were “electrocuted”, and more than 30 people died.

9) Five major lakes of China, including Dongting Lake and Poyang Lake, which have been continuously improved for a long time, still have class IV or below water quality in 2017 due to poor management and other reasons.

10) 75 development zones did not carry out environmental impact assessment as required by the law; 106 development zones are not equipped with centralized sewage treatment facilities; 70 development zones have built centralized sewage treatment facilities but have not installed online monitoring devices nor connected with environmental protection departments as required; the sewage treatment effect of 46 development zones is poor due to inadequate pipe network.

11) By the end of 2017, 118 urban sewage treatment plants in sensitive areas in 9 provinces had failed to meet the level A discharge standards according to national requirements. Due to insufficient sewage treatment capacity and damage to pipe networks, 224 million tons of sewage in 6 provinces were not effectively treated or discharged into rivers in 2017.

12) By the end of 2017, 9 landfills or incinerators in 3 provinces were operating above capacity; the clearance of 132 informal garbage dump sites without anti-seepage measures in 2 provinces

has not been completed; a total of 2.857 million tons of leachate from 20 landfills or transfer stations in the 5 provinces was discharged into the urban pipe network or surrounding water bodies, and 1.97 million tons of leachate was still stored in the landfills. 48 landfills or incinerators in 7 provinces failed to store, transfer or dispose of hazardous wastes as required, and 6 landfills or incinerators in 4 provinces failed to dispose of medical waste as required.

13) By the end of 2017, there were sewage outlets, farms, and other construction projects located in 56 level-I protection zones of drinking water sources in 9 provinces. The water quality of drinking water sources in 7 cities and 71 towns in 3 provinces failed to meet the standard.

14) By the end of 2017, 56,100 underground storage tanks (52% of which should be rectified) in 10 provinces had not been replaced by double-layer tanks or underwent anti-seepage transformation; there are 348 small coal-fired boilers of 10 tons or less in 3 provinces that have not been phased out; there are 8 small papermaking and electroplating enterprises in 2 provinces have not been shut down; there are 46 livestock and poultry farms above designated size in 3 provinces' prohibited areas have not been shut down, and 413 farms in 3 provinces have not built pollution control facilities.

The report of the National Audit Office shows that despite the efforts of all provinces along the Yangtze River Economic Belt in promoting green and environmental protection, there are still many problems. The Yangtze River environment protection has achieved certain results on the basis of "no large-scale development", but the problem has not been effectively solved, and the environmental defects along the Yangtze River basin have not been fundamentally reversed. From the past model of "development first, then treatment" to the model of "treatment first, then development", the Yangtze River Economic Belt has now ushered in a new turning point, that is, the new model of "development while getting treatment". It is necessary for the Chinese government to seek more balanced and environmentally-based policy solutions during the critical period of the 14th Five-Year Plan.

Chapter 3: Changes in China's External Geopolitical Environment

Since the reform and opening-up, China has enjoyed peaceful and stable development environment for a long time. If some minor conflicts are not counted, then the peaceful and stable development environment has lasted 40 years since 1979. Over the past 40 years, China's GDP has grown from RMB 454.5 billion to RMB 100 trillion today. For China, the total GDP of 100 trillion yuan is an obvious turning point in the world's geopolitics. The problems and development environment China will face in the future will be very different from the past.

1) US's National Defense Strategy

On January 19, 2018, the US Department of Defense released the 2018 National Defense Strategy (NDS)[3]. At 11 pages, this published NDS is approximately 80% shorter than the non-public version of NDS. The idea of the NDS is based on the Trump administration's National Security Strategy released in December (2017). NDS is also the first report issued by the Pentagon in 10 years. It was produced by Former United States Secretary of Defense Jim Mattis and was one of three national security reports issued by the Trump administration. Later that year, the US military released the National Military Strategy by Joe Dunford, the chairman of the Joint Chiefs of Staff, which detailed how the US military would operate within the framework of the National Defense Strategy. Therefore, despite the different titles, these three reports lay the foundation for the future relationship between China and the United States and the overall competitive situation.

The most representative of these three reports is the NDS, which mainly analyzes and evaluates the strategic environment facing the United States, highlighting the challenges of competition with great powers such as China, Russia, and other countries, and putting this challenge ahead of terrorism. The report believes that China and Russia want to shape a world consistent with their centralized model, with veto power over other countries' economic, diplomatic, and security decisions. For the first time, the report clearly defines that strategic competition between nations is now a national security priority for the United States, not terrorism, and that China has become a strategic competitor for the United States. On the 40th anniversary of

[3] Also known as the "Mattis Report"

China's reform and opening up, the US has for the first time explicitly defined China as a "strategic competitor", which is an intriguing start.

2) US-China Trade War

On August 18, 2017, the Office of the United States Trade Representative (USTR) initiated an investigation against China (Section 301 investigation) under Section 301 of the Trade Act of 1974. Since then, the US-China trade war has lasted for nearly three years. During this period, there have been four rounds of tariff increases from both sides. It was not until the first phase of the agreement was signed between China and the United States on December 13, 2019. However, on February 10, 2020, the USTR announced that it would no longer recognize 25 countries, including China, India, South Africa, and Brazil as "developing countries," effectively ending the status that China had enjoyed for decades.

The brief process of the US-China trade war is as follows:

On May 19, 2018, China and the United States issued a joint statement on bilateral trade negotiations in Washington. According to the Chinese side, both sides had reached a consensus not to engage in a trade war and stop imposing additional tariffs on each other. But soon after that, US National Economic Council Director Larry Kudlow said "they will meet many of our demands" and spoke of the possibility of China buying "at least US$ 200 billion more" in goods, a claim the Chinese Foreign Ministry quickly denied. However, on May 21, the US Department of Commerce announced anti-dumping and countervailing duties on Chinese steel products exported to the US through Vietnam. On May 29, the White House ratcheted up the pressure by announcing that it would still impose 25% tariffs on US$50 billion worth of Chinese goods, showing Kudlow's claim to be true. In the course of the US-China trade war, the United States seized on ZTE's sales of equipment to Iran and North Korea, which opened the door to sanctions against Chinese companies[4]. Until July 12, 2018, the US Department of Commerce announced that it had signed an agreement with ZTE. Under the agreement, sanctions and trade bans will be lifted after ZTE pays a US$400 million deposit in escrow and accepts other conditions from the US.

[4] The US sanctions on ZTE were actually a strategic test, and the results of the test were obviously favorable to the US side, which in turn took a series of sanctions and restrictive measures against Huawei.

Since then, the trade war between the United States and China has continued to escalate.

On June 16, 2018, the USTR released two detailed lists of US tariffs against China. The first list includes 818 goods of the initial 1,333 Chinese goods released in April, which is worth about US$34 billion in imports, and began to be implemented on July 6. The second list contains 284 newly proposed Chinese goods with an import value of approximately US$16 billion.

Subsequently, the Customs Tariff Commission of the State Council of China announced to imposes a 25% additional tariff on 659 US goods worth US$50 billion. Of these, 545 goods worth US$34 billion, including agricultural products, automobiles, and aquatic products, which would be subject to additional tariffs as of July 6, 2018. The implementation timing of additional tariffs on the remaining US$16 billion worth of Chinese goods was announced separately. China's Ministry of Commerce also announced that all economic and trade agreements reached between the two sides would be invalidated at the same time.

In the early morning of May 6, 2019, US President Donald Trump announced on his Twitter account that tariffs on US$200 billion worth of Chinese goods would be raised from 10% to 25%, which took effect on May 11. Trump also claimed that "negotiations on a trade agreement with China are still going on, but it's too slow." On May 10, the US Customs and Border Protection announced to imposes a 25% tariff on more than 5,700 Chinese goods worth US$200 billion.

On May 13, the USTR released a new list of tariffs on about US$300 billion worth of Chinese goods and sought public comments. The list includes 3,805 goods and will be subject to tariffs of up to 25%. On May 16, President Donald Trump signed an executive order declaring a state of emergency, allowing the United States to ban companies that are owned or controlled by "foreign adversaries" from providing telecommunications equipment and services. The US Department of Commerce announced that it had added Huawei and 70 other companies to its list of export-controlled entities, ordering unapproved US companies not to sell products and technology to Huawei.

On August 1, US President Donald Trump twitted that "Trade talks are continuing, and during the talks the US will start, on September 1, putting a small additional tariff of 10% on the remaining US$300 billion of goods and products coming from China into our country. This does not include the US$250 billion already tariffed at 25%." Trump also accused China of failing to deliver on promises to buy more US agricultural products and ban fentanyl exports to the US. By this stage, it's safe to say that all trade between the US and China has fallen into a US-China tariff war.

The situation then gradually improved. On December 13, 2019, China and the United States have agreed on the phase one economic and trade agreement. The US agreed to halve new tariffs on US$120 billion worth of Chinese products to 7.5% within 30 days, but the 25% tariffs on US$250 billion worth of Chinese goods would remain unchanged and likewise China's tariffs on US$110 billion worth of US goods would remain unchanged as well. China pledged to increase its imports of US agricultural products, energy products, manufactured goods, and service products over the next two years by no less than US$200 billion from the 2017 base figure. This means that most of the US's trade requirements have been met.

The above-mentioned events in the US-China trade war are only a rough overview. Such a large-scale tariff war is extremely rare in the post-World War II global market. The world's multilateral trading system is in a slump. The World Trade Organization, once the dominant player in the world trade market, is so ineffective that the best it could do was allow China to retaliate with tariffs on US$3.6 billion worth of US goods. In this trade war, the US targets not only China, but also Europe, Japan, South Korea, Canada, and Mexico. Due to the pressure exerted by the US, US President Donald Trump said after meeting with then European Commission President Jean-Claude Juncker on July 26, 2019 that the US and Europe agreed to work together to eliminate all tariffs, subsidies and trade barriers for non-automotive industrial products and achieve "zero tariffs and zero subsidies". During the meeting, both sides agreed to suspend the implementation of any new tariff measures, which of course represented a concession of Europe in the face of US pressure. Canada and Mexico were also under great pressure to accept the US terms.

The reality of the current world trade market has led to an unparalleled sinister world trade situation, and the advantages of Countries in the "buyer’s side" are evident from its geopolitical

advantages[5]. The increasing pressure has forced the production-oriented countries such as China, which is positioned in the "seller's side", to adjusting its global market strategy in the future to adapt to the new global market situation.

3) The COVID-19 Outbreak and the Reshuffling of Economy

The COVID-19 pandemic has caused an extremely serious economic crisis. The cumulative number of confirmed cases worldwide now exceeds 5 million, with 332,500 cumulative deaths. As a result of the pandemic, the economy, traffic, and shipping were closed, and the economy of most countries in the world is virtually in a dormant state, thus forming a serious economic crisis. At the same time, as the coronavirus originated in Wuhan, China, the outbreak has also caused confusion in the world's public opinion, as well as accusations against China.

The International Monetary Fund (IMF)'s World Economic Outlook warns of the risk of a widespread recession as precautionary measures are taken around the world to contain the coronavirus outbreak. "We anticipate the worst economic fallout since the Great Depression of the 1930s," said IMF Managing Director Kristalina Georgieva. The World Economic Outlook's latest update in April pointed out that its forecast of global real GDP would fall by 3% in 2020 compared with the same period last year, a much steeper decline than the 0.1% fall in global real GDP during the global financial crisis in 2009.

In addition, the IMF predicts that if the world can witness a gradual recovery from the pandemic in the second half of 2020 and adopt policy measures globally to prevent bankruptcies, unemployment, and system-wide financial strains, the global economy will have a partial recovery in 2021. However, economic activity will still be hit hard, as the cumulative loss to global GDP between 2020 and 2021 is expected to be about US$9 trillion, more than the combined economies of Japan and Germany.

[5] ANBOUND once pointed out in its research report that it is the buyer who will have the say in the future world market, because of global overproduction and competition.

A report from the UN Department of Economic and Social Affairs takes a similar view, with its latest research suggesting that the global economy could contract by close to 1% or 0.9% this year as a result of the COVID-19 outbreak. The study pointed out that if global restrictions on economic activity persist into the third quarter of this year and fiscal responses fail to support household income and expenditure, the global economic output could shrink further[6]. From a comprehensive perspective, the coronavirus outbreak and the international relationship related to China will be very complex, which may last far longer than expected. As a result, the pressure on China will increase, which will constitute a turning point for China's future development. China's economic restart would not be smooth and unimpeded.

Obviously, the current situation requires that China, when considering and drawing up a blueprint for its future development, to give priority to an effective and realistic redefinition of the development environment and adopt effective transformational thinking on the issue of development strategy. The long-lasting changed environment and the increased pressure are the fundamental basis for transformational thinking. After all, disruptive change is happening, and things will not return to what they used to be in the past. It is an unrealistic development logic if one were to do things according to older plans and without transformational thinking as if nothing had happened.

From a geostrategic point of view, we are now in the stage of anti-globalization within the process of globalization. Globalization is a trend that has been evolving and advancing. It is also a process of restructuring the social and economic structures within countries. However, the process of this restructuring is not consistent among countries, and so are the stages of social and economic development. Therefore, countries impose restrictions on each other while interacting with each other, thus leading to the emergence of the stage of anti-globalization. This stage of anti-globalization will last for some time and cannot be quickly resolved. Of course, it could be simply understood as the end of the era of globalization.

[6] United Nations Department of Economic and Social Affairs, April 1, 2020: https://www.un.org/development/desa/zh/news/policy/covid-19-impact-2020-global-gdp.html

Today's understanding of globalization has gone far beyond the previous world's academic consensus on globalization. Although globalization is complex issue and worth studying, one thing is certain that China will face a prolonged period of continuous contraction of external market space in this stage of anti-globalization. Therefore, it is necessary for China to adjust its development direction promptly and instead seek the growth of its own market space to cope with the contraction of the external market space, so as to offset the negative impact of the external market.

Chapter 4: The Driving Factors of Geo-Economic Policy

In the process of China's economic policy evolution, the first geo-economic policy proposed was the "Development of the Western Region in China", or "Western Development" plan. This is a major geostrategic measure with geopolitical significance[7], which aims to narrow the gap in economic development between the eastern and the western part of China while simultaneously enhancing the comprehensive economic strength of the central and western regions. The provinces and regions implementing "the development of the western region in China" policy are Inner Mongolia, Shaanxi, Ningxia, Gansu, Xinjiang, Qinghai, Tibet, Chongqing, Sichuan, Guizhou, Yunnan, and Guangxi, which in total account for 71.4% of the country's land area.

In the context of the "Western Development" plan, a large number of railways, hydropower and electric power as well as oil and gas pipelines were completed in the central-western region. However, the problem is that the gap between China's central and western provinces and cities in the southeastern coast is still very large. The economic status of the central and western regions in China's overall economic structure has not undergone any fundamental changes, and as such there is still an imbalance in development between the eastern and western regions of China. The main reason for this situation is that a large amount of surface resources and project investment cannot cooperate with the endogenous drivers in the economic environment of the western provinces and cities. Although the input and force are strong, the foundation still proves to be quite weak. The development of endogenous drivers in western provinces and cities is not something that can be

[7] On June 17, 1999, Jiang Zemin, then General Secretary of the Communist Party of China, put forward the concept of "Western Development" at a symposium on the reform and development of state-owned enterprises in the five northwestern provinces and regions held in Xi'an.

achieved overnight. Without the progressive transfer of industrial groups as well as long-term cooperation and infiltration of the internal market economy, changes in the economic environment will be very slow, and only a small part of the society related to large investment projects will benefit from the development of the western region in China.

In the evolution of China's geo-economic policy, the second concept proposed was the "Belt and Road Initiative" (BRI) and the substantial development of the southeastern coast. In September 2013, President Xi Jinping visited Kazakhstan and proposed to jointly build 'The Silk Road Economic Belt', which was the beginning of the BRI. The BRI is China's most influential regional economic cooperation strategy since 2000. Its policy formation background is very complicated, but it is roughly based on China's serious overcapacity problems and the need to resolve and expand market space. For more information, please refer to research reports issued by ANBOUND over the years.

The origin of the term "Belt and Road" is as follows: The "Silk Road Economic Belt" becomes known as the "Belt" part, while the "21st Century Maritime Silk Road" becomes the "Road" part of the name. The specific formation of the two has a sequence, which is related to the judgment of the strategic environment within and outside of China, especially the strategic environment in which China is located. The implementation of the entire BRI has spanned two terms of governments and many unsatisfactory problems have accumulated during that period. Especially in recent years, The BRI has shown obvious digression, gradually evolving into a large investment dominated by central enterprises, forming a relatively high debt level, questionable efficiency and frequent international complaints.

However, looking at the building of the BRI, the biggest problem may lie within China itself. At that time, the main consideration was the needs of an export-oriented economy. The layout of key investments and key projects continued to expand along the southeast coast. On the surface, it still bears the appearance of the "One Belt One Road". However, when looking at the investment distributions, it is obvious that there are only "roads" with no "belts", and the benefits to the western economy is relatively limited. The overall implementation of the plan and actual layout are based on the assumption that the external international environment will not undergo major changes and

adjustments, which has led to the BRI essentially evolving into a large-scale development of the southeast coast, further increasing the volume and weight of the export-oriented economy of the southeast coast, emphasizing on the external more than the internal. As a result, the western provinces and cities are lagging even further behind compared to its southern counterpart in terms of development.

In the process of policy evolution, the third important geo-economic policy is the current concept of the Greater Bay Area and regional economic construction. On October 18, 2017, Xi Jinping proposed for the first time in the report of the 19th National Congress of the Communist Party of China to implement a coordinated development strategy among regions. Since then, he has repeatedly emphasized the issue of regional economic layout during inspections, thus forming a series of strategic arrangements involving spatial structure and urban agglomerations. Among them, the most popular one is the Guangdong-Hong Kong Macau Greater Bay Area.

The Guangdong- Hong Kong-Macau Greater Bay Area was first mentioned in the BRI document jointly issued by the National Development and Reform Commission, Ministry of Foreign Affairs, Ministry of Commerce under The State Council of China in 2015, and was included in the Government Work Report delivered by Premier Li Keqiang in 2017, but the actual launch was in 2019, when the Central Communist Party of China and the State Council announced the *Outline Development Plan for the Guangdong-Hong Kong-Macau Greater Bay Area*. This plan was issued by the General Office of the State Council and it has 11 chapters in total, including background, overall requirements, spatial layout, and expediting infrastructural connectivity. It proposes that the four central cities: Hong Kong, Macau, Guangzhou and Shenzhen should be the core engines for development. It emphasizes the construction of the Guangdong-Hong Kong-Macau Greater Bay Area as a major strategic deployment of the national development blueprint. The goal is that, “by 2022, the combined strength of the Greater Bay Area should increase substantially, the cooperation among Guangdong, Hong Kong and Macau should be deepened and strengthened; by 2035, the Greater Bay Area should become an economic system and mode of development mainly supported by innovation, and the markets within the Greater Bay Area should basically be highly connected”.

On the surface, the economic aggregate of the Greater Bay Area is huge. It is the fourth largest bay area in the world after the metropolitan area in New York, San Francisco Bay Area and the metropolitan area in Tokyo. In 2017, its GDP exceeded RMB 10 trillion, making it in the 11th place of global ranking, and it may very well become one of the most economically active area in China. The problem is that the situation in Hong Kong is complex and volatile. The core engine of the Greater Bay Area may change at any time, casting a lingering shadow on the prospects for the construction of the Greater Bay Area and bringing long-term uncertain effects, as well as shaking the foundation of the development of the Greater Bay Area. From the perspective of the prediction and judgment of the geographical situation, the optimistic results from the development of the Greater Bay Area may be far less realistic, but it would be more pragmatic to prevent the situation in Hong Kong from affecting the social and economic development of the entire province of Guangdong.

Therefore, from the perspective of evolution regarding these large-scale development policies with larger impact, China should take note from its previous policy experience. For future development, especially large-scale development plans, there are three important issues: the first is the prediction of the development environment. The changes in the development environment involves the foundation, direction and prospects, and it must be objective. This is not necessarily something that involves assumptions but must instead be rationally predicted and professionally judged. The second is the sequence. This dictates the priority of construction, investment, and policy supply, and it is also a matter of development direction. Development resources are always limited, so things should be done sequentially, placing emphasis on priority. It is common that there are insufficient funds for urgent matters, yet more than enough funds for the matters that are not the topmost priority. The third is the dynamic factor. Strategic layout, strategic direction, and strategic goals cannot be just an ontological argument because whether it can be done in the end and how effective it is must depend on in-depth system analysis, and on the realization of dynamic factors.

In particular, it should be pointed out that China's past geo-economic policies were very large in scale, but the construction sequence was not taken seriously, the industrial development principle has been insufficiently grasped, in addition that there was lack of attention concerning

the importance of progressive transfer of industries. Such phenomenon of blindly chasing after a goal with no heed being paid to inclusive social and economic benefits continue to exist. The industrial development principle and the progressive transfer of industries are the factors most closely related to the prosperity of the market economy. The real endogenous driving force in the economic environment is industry, and the prosperity of industry will lead to economic prosperity. However, only the general economic prosperity of western provinces and cities can prove the success of the policy. Therefore, in the future, the development of the western region in China and large-scale construction plans should not just clarify the construction goals, but rather there should be a driver of industrial prosperity, as well as a channel for the progressive transfer of industries to the western region.

Hence, the formation of the market, the industrial chain, and the economic prosperity highly crucial.

Chapter 5: New Space in the Yangtze River Economic Belt

The Yangtze River Economic Belt has always been one of the most important industrial corridors in China. Although this region contains large service industry cities like Shanghai, from the perspective of regional economy, the core of the economy is manufacturing. Steel, automobiles, electronics and petrochemicals are among some of China's main advanced industries that are gathered here, not to mention this is also where a large number of high energy large-capacity, high tech industries and large enterprises are concentrated. In addition, the fundamental position of large-scale agriculture also ranks first in the country, the output of grain, cotton, and oil in the 9 provincial cities along the river accounts for more than 40% of the country. Therefore, the characterization and definition of “regional economy” and “city” should be significantly different in nature. Regional economy can make mistakes unless it clearly highlights this difference of economic nature. It is also worth noting that the factor advantage of the Yangtze River Economic Belt matches the manufacturing and success of production to a very high degree with its success primarily attributable to human resources. The Yangtze River Basin is one of the cultural cradles of China, with a gathering of talents, advanced science and education, advanced technology and management. In particular, cities of science and education such as Shanghai, Nanjing, Wuhan,

Chengdu, Chongqing, etc., have gathered a large number of top-quality resources in China and laid a foundation of solid talent for the sustainable economic development of the region.

The cities along the Yangtze River Economic Belt are densely populated and the potential market space is vast. However, in the past, the uneven consumption levels at the east and west end of the Yangtze River Economic Belt have not been highlighted. According to incomplete statistics, taking data from 1995, the 9 provincial cities along the Yangtze River contain 216 large and small cities, accounting for 33.8% of the total number of cities in the country; with an urbanization level of about 50%, 21% higher than the national average; an urban density of 2.15 times the national average. Due to the dense population in this area, the relatively high level of residents' income, and the considerable consumer demand, it is undoubtedly very attractive to domestic and foreign investors. In the future, it will fully develop into a major consumer center with great potential to support China's future economic growth.

GDP Data of Provinces and Cities along Yangtze River Economy Belt, 2019					
National Ranking	Area	Annual Gross Regional Product (billion yuan)			2019 GDP Growth Rate
		2019	2018 (before revision)	2018 (after revision)	
-	Yangtze River Economic Belt	457805.45	402985.11	4203026.77	6.9%
2.	Jiangsu	99631.52	92595.4	93207.6	6.1%
4.	Zhejiang	62352	56197	58003	6.8%
6.	Sichuan	46615.82	40678.13	42902.1	7.5%
7.	Hubei	45828.31	39366.55	42021.95	7.5%
9.	Hunan	39752.12	36425.78	36329.68	7.6%
10.	Shanghai	38155.32	32679.87	36011.82	6.0%
11.	Anhui	37114	30006.82	34010.9	7.5%
16.	Jiangxi	24757.5	21984.8	22716.51	8.0%
17.	Chongqing	23605.77	20363.19	21589	6.3%
18.	Yunnan	23223.75	17881.12	20881	8.1%
22.	Guizhou	16769.34	14806.45	15353.21	8.3%

Source: Internet, sorted by ANBOUND

GDP Data of Eastern Chinese Province and Cities, 2019					
National Ranking	Area	Annual Gross Regional Product (billion yuan)			2019 GDP Growth Rate
		2019	2018 (before revision)	2018 (after revision)	
-	Eastern Areas	511161.43	480995.77	476378.1	6.2%
1.	Guangdong	107671.07	97277.77	99944.7	6.2%
2.	Jiangsu	99631.52	92595.4	93207.6	6.1%
3.	Shandong	71067.5	76469.7	66649	5.5%
4.	Zhejiang	62352	56197	58003	6.8%
8.	Fujian	42395	35804.04	38687.77	7.6%
10.	Shanghai	38155.32	32679.87	36011.82	6.0%
12.	Beijing	35371.3	30320	33106	6.1%
13.	Hebei	35104.5	36010.3	32494.6	6.8%
23.	Tianjin	14104.28	18809.64	13362.92	4.8%
28.	Hainan	5308.94	4832.05	4910.69	5.8%

Source: Internet, sorted by ANBOUND

GDP Data of Western Chinese Province and Cities, 2019					
National Ranking	Area	Annual Gross Regional Product (billion yuan)			2019 GDP Growth Rate
		2019	2018 (before revision)	2018 (after revision)	
-	Western Areas	205185.15	184302.14	189156.06	6.7%
6.	Sichuan	46615.82	40678.13	42902.1	7.5%
14.	Shaanxi	25793.17	24438.32	23941.88	6.0%
17.	Chongqing	23605.77	20363.19	21589	6.3%
18.	Yunnan	23223.75	17881.12	20881	8.1%
19.	Guangxi	21237.14	20352.51	19627.81	6.0%
20.	Inner Mongolia	17212.5	17289.2	16141	5.2%
22.	Guizhou	16769.34	14806.45	15353.21	8.3%
25.	Xinjiang	13597.11	12199.08	12809.39	6.2%
27.	Gansu	8718.3	8246.1	8104.07	6.2%
29.	Ningxia	3748.48	3705.18	3510.21	6.5%
30.	Qinghai	2965.95	2865.23	2748	6.3%
31.	Tibet	1697.82	1477.63	1548.39	8.1%

Source: Internet, sorted by ANBOUND

Finding new development space is always an important direction of the geo-economy. As the time and the environmental conditions are different, so the definition of the Yangtze River Economic Zone, especially the value cognition, should also be different. Several of China's large-scale economic development plans were launched relatively early, and now the geographical environment, as well as the hypothetical scenarios and conditions of the development plan have undergone drastic changes. Therefore, re-definition and re-understanding in this situation is very necessary. This is a sufficient and necessary condition for China to seek and achieve intelligence development.

The development of the east and west ends of the Yangtze River Economic Belt is severely imbalanced. A rough calculation shows that at the east end of the Yangtze River Economic Belt, a place where China's reform and opening-up took the lead, has the most economically developed region in China, namely Jiangsu, Zhejiang and Shanghai. The total GDP of these three places was RMB 18.7 trillion in 2018. At the western end of the Yangtze River Economic Belt lies Sichuan and Chongqing. Although Chongqing is a municipality under the direct administration of the central government, Sichuan is a populous province. The distance between the two places is very close and it was originally considered as "one family". These two cities appear to be greatly developed but have a very weak foundation, with the total GDP in 2018 being only RMB 6.4 trillion.

The conversion data shows that at the Yangtze River Economic Belt, the total GDP at the east end is equivalent to 300% of the total GDP at the west end. Between the east end and west end of the Yangtze River Economic Belt, there is a two-fold difference in total GDP, that is, a 200% gap. This means that if the market space at the west end, that is, the Sichuan-Chongqing Economic Circle, achieves an economic take-off and successfully makes up for economic growth, the market space at the west end will only be able to provide RMB 12.3 million in GDP growth annually. Based on this economic growth scenario, it will only require the western market three years to reach maturity. The growth prospects of Yangtze River Economic Belt's west end alone can almost write off the current national local debt. Calculated according to the total national GDP of RMB 100 trillion, and at an average annual economic growth level of 5%, the annual economic value added is RMB 5 trillion. Therefore, the market space at the west end of the Yangtze River Economic Belt can increase its contribution to RMB 635 billion, which is equivalent to 12.7% of the national economic value added, almost equivalent to replacing the current GDP added value of 3 to 5 provincial regions in China's marginal area.

It would not be an exaggeration to call the Yangtze River Economic Belt the future fuel to China's economic growth engine. For the Yangtze River Economic Belt to play an important value and role, the key is the realization of industrial gradient transfer of the Yangtze River Economic Belt from the east end to the west end, focusing on enhancing the economic growth potential of

the market space at the west end, so as to achieve a balance between economic growth at both ends and achieve common economic prosperity.

Once China achieves such an economic growth situation, it will also provide the world with an opportunity to re-understand China and the Chinese market space. The new geographic space, market and growth prospects will create favorable conditions for easing the global geopolitical tension. At least from the perspective of development conditions, it is conducive to the transition from serious confrontation to seeking common development. Capital always pursues profits, and people always involve themselves in things that allow them to make money. The discovery of new economic space in the Yangtze River Economic Belt, especially the west end of China, has created opportunities and possibilities for realizing and achieving this goal.

Chapter 6: The Construction of China's Golden Waterway

The construction of the Yangtze River Economic Belt is based on the previous achievements of economic and urban constructions, especially in the eastern coastal areas of China. Therefore, the construction of the Yangtze River Economic Belt must be effectively reflected. For example, one has to consider which aspects that cities of the southeastern costal cities are doing well, and which are not. In the future construction of the Yangtze River Economic Belt, it is necessary to strengthen the comparative study of such defects and shortcomings, so as to avoid blindly copying all the policy measures of the cities in the southeastern coastal area. Obviously, if there is a problem with the urban economy, then what is the point to bundle metropolitan area and the urban agglomeration together? Therefore, it is necessary to carry on objective summary and analysis.

Although the cities along the southeast coast are now built with high-rise buildings, and there is high quality urban infrastructure and real estate construction, these are not the foundation of the development of these cities, but rather the fruits of their development. At the beginning, cities along the southeast coast almost without exception started their development by relying on the industry. These cities attracted foreign capital and accumulated capital through their prosperous industries, which led to the prosperity of the southeastern coastal cities today. The "Made in China"

of that era, such as the first industrial park in Jiangsu province， manufacturing industry in Kunshan, Shandong's Haier, Hisense, and Tsingtao Brewery, Zhejiang's Wanxiang, Geely, Hangzhou Iron & Steel, Hangzhou Wahaha and Nongfu Spring, Shanghai's Volkswagen, Baosteel, and Jinshan Petrochemical, etc. were ambitious and achieved fruitful results. The development experience of cities at the eastern end of the Yangtze River Economic Belt shows that such prosperity comes from industries and enterprises.

For the economic success of the southeastern coastal cities, the following experiences and lessons are worthy of attention. The successful experience is mainly as follows: First of all, facing the international market, taking advantage of the geographical position and policy, most of the reform and opening-up policies favor the southeastern coastal areas. Secondly, the introduction of capital is more convenient. The first consideration of foreign capital is the import and export convenience of the manufacturing industry, so the southeastern coastal areas have become the first choice. Third, as foreign capital brings domestic capital, the supply chain is more abundant, which includes a large number of industrial gradient transfer, especially the cultivation of industrial talents.

Of course, in addition to the successful experience, there are also defects and the lessons of failure. This is mainly reflected in the following aspects: First, due to the relatively small area of the region and the lack of land supply, the cost rises far faster than the technological upgrading capacity of the manufacturing industry, which inhibits the manufacturing industry of the areas. Second, the uneven development of China’s western and eastern regions, and the high market concentration in the southeastern coastal areas is likely to cause excessive competition. Third, the rapid urban and real estate development has caused the manufacturing industry to be gradually crowded out of the market.

Judging from the aforementioned experiences and lessons, China's manufacturing industry would continue to achieve greater success and the capital outflows could be improved as long as following measures could be achieved sooner: the implementation of China’s "Western Development" plan, the implementation of policy that focuses on the regional economy, and the implementation of policy that address the imbalanced development between China’s western and

eastern regions. Experience and lessons are equally valuable, and the development of the Yangtze River Economic Belt in the future should be given full attention.

From the perspective of the systematic solution of the Yangtze River Economic Belt, the key point of the urban agglomeration in the western region is to exchange resources with market space. Attractive market space usually means lower costs, relatively abundant labor, consumption power, and scale. Among them, the cost is the most attractive condition. This is because the living space of the manufacturing industry along the southeast coast with abundant resources such as technology, capital, and commodities has been compressed, and the main reason is that the rapid rise of costs has greatly eroded the competitiveness and profit space of enterprises. Therefore, the control of cost increase in the western end of the Yangtze River Economic Belt is not only related to the vision of the Yangtze River Economic Belt, but also to the success or failure of the "Western Development".

How to control the rapid rise of cost, while at the same time promoting the gradient transfer of industry? The key is to attach great importance to the development of the Golden Waterway.

Yangtze River is the longest river in China, and it is theoretically capable of navigating 10,000-ton-class inland vessels. The Yangtze River Economic Belt traverses the central region of China, covering a vast area. The Yangtze River not only connects Ganjiang, Hanjiang, Xiangjiang and other tributaries, but also intersects with Beijing-Shanghai, Beijing-Kowloon, Beijing-Guangzhou, Anhui-Jiangxi, Jiaozuo-Liuzhou, and other north-south railway trunk lines. The Yangtze River Economic Belt is China's core economic zone. Unlike the Guangdong-Hong Kong-Macao Greater Bay Area, this economic zone has both internal and external features, and has a more reliable economic future in the long run. Moreover, unlike the Greater Bay Area, the Yangtze River Economic Belt is not disrupted by Hong Kong's issues and external markets, making it a veritable “golden waterway”.

At the western end of the Yangtze River Economic Belt, the Sichuan trunk line is currently supposed to run roughly 258 kilometers from Yibin to the Sichuan-Chongqing region. Obviously,

this is only a part of it. If we count from Yibin's Shuifu to Haikou, there are 2,838 kilometers of waterway that can be used. Of course, there is the “bottleneck problem” of the Three Gorges Dam and Gezhouba Dam. In the past, more attention was paid to the issue of electricity for the Yangtze River development. However, now and in the future, especially from the perspective of the Yangtze River Economic Belt, more attention should be paid to the issue of comprehensive economic efficiency. An objective reality that cannot be ignored is that the cost-efficiency ratio of water transport is too prominent, which is an important factor to reduce logistics costs and thus industrial costs and promote the realization of industrial gradient transfer.

Taking the western end of the Yangtze River Economic Belt as an example, the transportation cost of the Sichuan expressway is RMB 0.075 per ton-kilometer, while the cost of water transportation is only RMB 0.015. The price difference between the two is almost 6 times, and the price of water transportation is only one-seventh of that of the expressway, showing an obvious advantage. The logistics advantages of Sichuan expressways are relatively weak. They are all winding mountain roads with twists and turns. However, there are shortcuts for water transportation. For instance, from Shuifu (Sichuan) to Jiangjin (Chongqing), the mileage of the expressway will be 261 kilometers the closest, and a further detour would extend to 304 kilometers. However, the waterway is only 258 kilometers long, which has a shorter distance and a low freight rate. Therefore, connecting the regions in the Yangtze River Economic Belt by the waterway is a very important link. The cost advantage of water transportation is directly related to the economic competitiveness of the Sichuan-Chongqing urban agglomeration at the western end of the Yangtze River Economic Belt.

The development of the western part of China requires a starting point, a breakthrough, and a realistic policy option that affects the whole system. The Yangtze River Economic Belt is such a breakthrough, and the opening of the golden waterway is the key to guide industry, capital, and technology westward. According to the Asian city classification as edited by the University of Tokyo, Beijing, Shanghai, Guangzhou and Shenzhen appear as "developed first-tier Asian cities". Next to them is the "standard first-tier Asian cities" category, with Chengdu topping the list, while Chongqing also holds a place among the 18 "standard first-tier Asian cities". Let's imagine the future after the golden waterway is opened. By taking advantage of the water transportation, the

industries along the southeast coast began to enter the western China market from the middle-end of the Yangtze River to pursue the advantage of cost and the scale of market space. Through the golden waterway, the industries expand their businesses all the way to the south of Sichuan and then through Qinzhou port in Guangxi to the ASEAN countries. At the same time, these industries also expand their businesses domestically in the vast western China market.

The key to the realization of this scenario lies in the opening and construction of the golden waterway. This is the key to realize the "western development" and explore new market space of the Yangtze River Economic Belt.

Chapter 7: The Solution to the Three Gorges Dam

The construction of dams on the golden waterway (Yangtze River) has always been controversial. The main dams on the Yangtze River are the Three Gorges Dam and the Gezhouba Dam, among which the Three Gorges Dam is the most important bottleneck problem in the golden waterway. It has been 11 years since the Three Gorges Dam was completed in 2009. During this period, the debates about its merits and demerits have been constant and sometimes such debates can be rather emotional. In this regard, the author, from an objective and neutral perspective, believes that the four benefits of the Three Gorges Project are as follow: 1. Flood control, with uncertain benefits; 2. Power generation, with determining benefits; 3. Water transportation, with both advantages and disadvantages; 4. Drought resistance, with uncertain benefits. Overall, the Three Gorges project is neither as bad as its critics say, nor as wonderful as its advocates proclaim.

According to analysis, since its completion, the Three Gorges Dam has generated a total of 500 billion kWh of electricity, reaching and surpassing the design level of 84.7 billion kWh per year[8]. This is a huge benefit, and it's good for reducing carbon emissions. Among the four “officially determined benefits”, the benefit of power generation is the most obvious and there is consensus about this. As for the benefits of flood control and drought resistance, they should not

[8]China Energy Net (www.China5e.com): http://www.iwhr.com/zgskyww/ztbd/sanxia/mtbd/webinfo/2011/07/1311234313058829.htm

only be determined in the field of water conservancy, but also need to be assessed scientifically and rigorously by a third-party system. The impact of the Three Gorges project on shipping has both advantages and disadvantages, and it is the focus of this research.

In terms of shipping, the Three Gorges waterway used to be very complicated, with many rapids and shoals, and dense reefs. Before the dam was built, the natural waterway of the Three Gorges was difficult for full-loaded cargo ships to go to the upstream due to its fast currents, so that the cargo shipping was mainly down-going, and the up-going cargo ships could only carry no or light load. Moreover, the waterway of the Yangtze River was narrow and tortuous, with the narrowest point only about 100 meters, and some vessels in the section had to take turns to travel in one direction. The maximum navigable riverboat displacement was about 3,000 tons, its annual freight capacity was only about 13 million tons. After the dam was built, the water flow in the reservoir slowed down, and the flow of upstream cargo was close to that of downstream cargo in some years, and even exceeded that of downstream cargo, making the logistics smoother. As the waterway widens, it can travel in both directions and reduces the accident rate. The reservoir area and the lock can allow vessels with a maximum displacement of 12,000 tons. The annual cargo volume exceeds 100 million tons, and some authorities even claim to reach 140 million tons.

According to general information, the "ten thousand-ton ships" that can pass through the Three Gorges waterway and locks refer to inland vessels that can match the design, with shallow drafts and short superstructures. It does not simply refer to the vessel with a displacement of 10,000 tons. Due to the insufficient water depth in the middle and lower reaches of the Yangtze River, the possibility of vessels with a displacement of 10,000 tons had been excluded in the design of the Wuhan Yangtze River Bridge and Nanjing Yangtze River Bridge. At that time, the upper limit of the design standard was 6.5 meters of waterway depth and 24 meters height under the bridge. Because of this ambiguity, it has been changed to "5000-ton vessel" in recent years. The "10,000-ton fleet" can go directly from Shanghai to Chongqing[9]. The 12,000-ton President Cruises of Wuhan Yangtze River Cruise Co., Ltd, can travel from Yichang to Chongqing with the locks of the Three Gorges Dam. Although exaggerated, the annual navigation rate of the Three

[9] Wikipedia: https://zh.wikipedia.org/wiki/%E9%95%BF%E6%B1%9F%E4%B8%89%E5%B3%A1%E6%B0%B4%E5%88%A9%E6%9E%A2%E7%BA%BD%E5%B7%A5%E7%A8%8B

Gorges reservoir area and the lock has reached 95.9% in recent years, and it is no longer affected by the dry season like natural waterway.

The permanent lock of the dam is a double track five level lock built on the side of Tanziling facing the Yangtze River and owned by the Yangtze Three Gorges Dam Administrative Bureau. The annual throughput capacity is 50 million tons. The average daily operation times of double track lock increased from the initial 23.5 times to 31 times but still did not meet the design target. The average tonnage of vessels passing by has increased from the initial 1,040 tons to 4,036 tons; the average transport volume per pass has increased from 3940 tons to more than 10,000 tons; the draught control standard of the ships has been increased from the initial 3.3 meters to 4.3 meters; the navigation days also increased from the original design of 335 days to 350 days; since 2010, the throughput of the Three Gorges lock has exceeded 100 million tons for five consecutive years[10].

It is worth noting that after the completion of the Three Gorges Dam, the development of shipping on the Sichuan River has been in a state of saturation. The Three Gorges locks, which were not expected to reach saturation until 2030, reached saturation in 2011, 19 years ahead of schedule, and reached its design passability. Since the Three Gorges Locks went into service in 2003, its throughput has maintained an average annual growth rate of 15%. After exceeding 100 million tons in 2011, it exceeded 100 million tons for the second time in 2013. As of 8:00pm on December 7, 2013, the Three Gorges Locks have operated 10,211 times, passing 40,848 cargo ships, 2,461 passenger ships (totaling 43,309), with 91.65 million tons of cargo and 8.41 million tons of passenger ships. In the whole year, the average daily operation of the Three Gorges Locks reached 31 times and 300,000 tons. In 2011, the volume of cargo passing through the Three Gorges locks reached 100.3 million tons, reaching the target 19 years ahead of schedule[11]. These data show that the rapid development of shipping on the Yangtze River has far exceeded people's expectations, the Three Gorges locks have been in a state of saturation in an absolute sense.

[10] These data are not standard design data. They are retrieved from the internet, and only serve as a general reference.

[11] Ministry of Transport of the People's Republic of China: https://www.guancha.cn/Project/2014_05_23_232110.shtml

According to the initial data from the Changjiang River Administration of Navigational Affairs, by the end of 2013, although the Three Gorges locks were in full-load and high-efficiency operation throughout the year, a large number of ships were still queuing in the waters of the dam area every day and waiting for the lock to pass. Such queues have long been the norm. Faced with the serious shortage of the Three Gorges locks' passing capacity, it is said that there are two solutions - "build a second lock" and "ship lift". It is reported that in 2016, the National Development and Reform Commission, the Three Gorges Office of the State Council and the Ministry of Transport are organizing the preliminary work of the construction of the new water transport waterway of the Three Gorges project, preparing for the construction of the second lock on the left bank of the Three Gorges Dam, with a length of more than 10 kilometers, an estimated cost of more than RMB 40 billion, and the construction period is about 10 years.

At present, the Three Gorges Dam's "bottleneck" problem is becoming increasingly serious. In addition to the "guerrilla-style" solution of the local government, the main solution is still under "study", which is unfavorable for "western development", "the Yangtze River Economic Belt construction" and the golden waterway construction, leaving China in a passive situation in the geopolitical competition. To solve this "bottleneck" problem, there are mainly three inclined solutions: the first is to give up; the second is expansion; the third is reconstruction.

Giving up the Three Gorges Dam means blowing it up. However, it is not a viable option from an economic development point of view as it is conducive to shipping and power generation. The option of expansion is actually to build a new lock to increase the passing capacity. Yet, there are two problems. The first problem is that the Dam is in a state of monopolistic operation, and the new lock will not solve this problem. It is still possible that costs continue to rise due to various reasons and the efficiency is not high. The second problem is the technical features of the lock itself, which determines its low efficiency and longtime consumption. A lock operation time may take three hours each time, and the queue time can be long. In 2018, there were more than 200 hours of waiting time for the lock. Thus, there is still a "bottleneck" problem on the Yangtze River transportation capacity. Considering the important geopolitical significance of the golden waterway, the focus in the future should be placed on opening up the waterway, reducing costs,

and promoting the convenience of shipping. Therefore, the third solution, namely reconstruction, should be preferred.

There are many options for the reconstruction plan.

As a part of the Three Gorges project, the ship lift project proposed by the Changjiang River Administration of Navigation Affairs is an option, but this option obviously depends on the state-owned enterprises of the Three Gorges Dam, and the benefits are mainly reflected in the state-owned enterprises, which are not directly related to the economic significance of inclusive of the golden waterway. The other option is to build a “multi-dam system”, which has the highest investment efficiency and the most obvious economic significance of inclusivity.

To be specific, two ports can be selected as logistics transshipment centers above and below the dam, respectively, with a special short-distance high-grade transportation channel connected in the middle, forming a "one-stop" standard operation mode. At the same time, the cargo of the whole shipping system of the Yangtze River is transported by standard containers and ships[12]. According to the water transport conditions of the Yangtze River, the shipping could be divided into sections to improve efficiency[13]. The choice of this plan is actually equivalent to solving the "bottleneck" problem of the whole Three Gorges Dam by constructing a “multi-layered dam system”. One is the river lock, which does not rule out expansion; the second is the inland transshipment system, which may be more than one passage and, if necessary, may be extended to multiple passages. As far as project developers are concerned, it should not be limited to state-owned enterprises of the Three Gorges project, but should be open to local governments and private enterprises to participate, which is equivalent to using the Three Gorges project to attract

[12] The Rhine river transport system in Germany determines several types of standard ships according to shipping conditions, which can greatly improve transport efficiency.

[13] What the relevant departments are pushing forward is the work of "closing the back door, opening the front door and adjusting the stock". "Closing the back door" strictly prohibits new non-standard ships from entering the Three Gorges reservoir area, and promotes standard ships in a mandatory way, but the mandatory scope is limited to ship's main dimensions and safety and environmental protection indicators. "Opening the front door" means to continue to accelerate the research and development of standard ship types in a way led by the government and participated by enterprises. "Adjusting the stock" means to speed up the renovation of existing non-standard ships, prohibit small tonnage ships from passing through the Three Georges locks, and encourage them to withdraw from the shipping market in advance, so as to improve the passage capacity of the Three Georges locks.

investment for local governments. Once the systems are integrated and operational, both the state-owned enterprises and local governments will benefit.

In fact, similar solutions have been successful in practice. For example, there are abundant phosphate rock resources in Leibo and Mabian in Sichuan, while Yichang and Jingzhou in Hubei are important phosphate fertilizer manufacturing bases in China. Every year, more than 2 million tons of phosphate rock are transported from Leibo and Mabian to Yibin and then to Hubei via Jinsha River. On this channel, Xiangjiaba Dam on the Jinsha River located in Yibin is a difficult point for transportation. Therefore, the Sichuan Provincial Department of Transport coordinated the Xiangjiaba Dam and organized the transshipment system. A 10 kilometers land passage has been built between the upstream and downstream ports of Xiangjiaba Dam. It is reported that at least 80 vehicles are involved in transshipment every day. It is reported that since the outbreak of COVID-19 pandemic in 2020, the Xiangjiaba Dam trans-ship 18,000 tons of ore and building materials every day, among which 6,000 to 8,000 tons of phosphate rock can be trans-shipped every day. So far, about 420,000 tons of phosphate rock have been trans-shipped.

Facing great demand and increasing navigation passing pressure, Yichang city has built Jiangnan Expressway, Jiangbei Expressway, Zigui Port, Baiyang Port, the railway of Zigui, and Baiyang, and the Jiangnan Refined Oil Pipeline. That is, the Three Gorges Dam transportation system with "two routes, two ports, two railways, and one pipe". Through the construction of convenient port transportation, high-efficiency intermodal transportation is realized; the railroad is guided to carry out large-scale transshipment of cargoes after landing, and the small transshipment is carried out through the expressway, forming the pattern of multimodal transportation, so as to reduce the transportation pressure of the Three Gorges locks.

It is worth noting that, from the perspective of case analysis, the development of the logistics economy is of great significance to the economic development and prosperity of towns along the Yangtze River. Zigui County in the upstream of the Three Gorges Dam is a representative of the logistics industry. Zigui is the first county of the Three Gorges reservoir area; on a sunny day, one will be able to see the Three Gorges Dam from the county seat. Vehicles loaded with goods from all over the country line-up on the highway outside the Zigui Port's wharf. Once the vehicles are on board from Zigui Port, they will be shipped to Chongqing, Wanzhou, and Zhongxian.

Rolling transport refers to the water transportation of vehicles and goods with "ro-ro ships". One of its features is easy to load and unload, and the car can be driven directly into the ship. Another feature is to be able to realize the combined transportation of highway and waterway. In 2013, the throughput of Zigui's ro-ro ships was 280,000 vehicles, which it exceeded 300,000 vehicles in 2014. The carrying capacity of a vehicle is about 40 tons, and the throughput of 300,000 vehicles a year means the annual cargo throughput of Zigui Port reaches 12 million tons[14].

As of 2018, Zigui County has unique advantages in water transportation. There are 16 port enterprises and 13 waterway transportation enterprises in the county. The Three Gorges Over-dam

[14] Sina Finance, "Three Gorges Dam Locks Capacity Saturated: State Council to Open a New Channel", http://finance.sina.com.cn/china/20141030/012920678532.shtml

Logistics Industrial Zone was launched, and the advantages of the Zigui transportation hub are prominent. There are 55 logistics enterprises in the county, 99 village-level service stations, and the coverage rate of logistics distribution in administrative villages reaches 90%. In 2018, road and water transport completed cargo turnover of 1.493 billion ton-km and passenger turnover of 590 million passenger-km[15].

The prosperity of logistics and port, which reduces the cost, is bound to attract enterprises, thus driving industrial progress and economic prosperity. Zigui was originally a remote rural and urban area. In 2018, there were 15 foreign trade enterprises, with a total export volume of USD 105 million, up 10.59% from a year earlier. Zigui's export markets cover more than 20 countries and regions in Europe, America, South America, the Middle East, Southeast Asia, etc. Their export products include more than 90 varieties in 5 categories, namely clothing, food, non-metallic minerals, manufacturing equipment, and electronic components. In 2018, the per capita disposable income of all residents in Zigui County was RMB 16,213, up 8.37% year-on-year; the per capita disposable income of permanent urban residents was RMB 27,895, up 8.0%; the per capita disposable income of permanent rural residents was RMB 10,532, up 8.86%. The per capita consumption expenditure for all residents was RMB 12,056, up 6.72% year-on-year; the per capita consumption expenditure for rural residents was RMB 9,897, up 10.88%.

The Three Gorges of the Yangtze River was originally an example of national crowdfunding construction. At that time, in 1992, the State Council imposed a surcharge of RMB 0.003 for every kilowatt-hour of electricity the country uses on the Three Gorges project, and since then this figure has been raised several times, to as much as RMB 0.0124 in some provinces. Therefore, it is an inevitable choice to make the Yangtze River realize more inclusive economic benefits today. The key to the future is to join forces and cooperate between the central and local governments, this is to avoid conflicting policies from different departments, excessive competition, and departmentalism. On the basic principle of increasing efficiency and reducing cost, the Yangtze River, China's golden waterway, should be given full play to its economic value, so as to realize the grand goal of "Yangtze River Economic Belt" and the "Western Development".

[15] Baidu Baike: https://baike.baidu.com/item/%E7%A7%AD%E5%BD%92%E5%8E%BF/1802242?fromtitle=%E7%A7%AD%E5%BD%92&fromid=891961

Chapter 8: Comparative analysis of the Yangtze River and international inland water transport.

The value of the Yangtze River Golden Waterway is now increasingly obvious. The latest data shows that in 2018, the annual cargo throughput of the Yangtze River trunk line reached 2.69 billion tons, ranking first among inland rivers in the world[16]. Although the results are impressive, comparative analysis is still useful. From this, we find out that there can be great potential for improvement related to space and policy.

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Among the developed countries in the world, the United States has one of the most developed transportation industries in the world. Water transportation in the United States consists of inland waterway shipping and maritime transportation (including offshore transportation and ocean transportation). In 1998, the United States national water transport completed 992 million tons of freight, of which inland rivers completed 765 million tons and coastal shipping actually completed only 227 million tons[17].

The United States inland shipping is dominated by the Mississippi River system and the Great Lakes system. Among them, the Mississippi River system has the largest freight volume, accounting for more than 60% of the total inland freight traffic in the country. According to statistics, the freight of the Mississippi River Basin includes a large number of industrial raw

[16] People's Daily, http://paper.people.com.cn/rmrb/html/2019-01/25/nw.D110000renmrb_20190125_6-01.htm.
[17] *Comparison of River Shipping Development of the Yangtze River, the Mississippi River and the Rhine River*, Pei Yao, Wuhan Institute of Technology.

materials and also commodities coming from the the coast, especially bulk cargoes. More than 90% of them are transported through the internal waterways of the Mississippi River Channel.

After the improvement of the river course, during the time period from 1940 to 1980, the transportation volume of the Mississippi River doubled every 10 years. This increase had greatly exceeded the economic growth rate of the United States.

It is worth noting that the Mississippi River transportation not only can sustain large volume and is lower in cost, it is in fact a transportation method with extremely low energy consumption.

According to research in the United States, a fleet of 15 1,500-ton barges has a deadweight equivalent to that of 2.25 trains or 870 large trucks consisting of 100 wagons. At the same time, the transportation costs of inland water as compare to railway and highway are in the ratio of 1:4:30. This shows that inland water transportation has a unique cost advantage.

There are two most important experiences for the inland water transport development in foreign countries. The first is the water transport system and the supporting development of industrial parks. The formation and development of the Rhine river basin economic belt, the Mississippi river and the industrial zones of the Great Lakes basin belong to this. On one hand, it provides ample source of containers for inland river container transportation and on the other hand, it reduces industrial cost with its cheaper water transportation. The second is that the development of the urban economy is based on logistics. The inland river routes are connected with the coastal container hub ports, giving way to the development of the container hub ports in the estuary area into a prosperous city. At the same time, the canalization of inland rivers will turn them into golden waterways.

In Europe, the development and prosperity of the Rhine river economic belt has also benefited to a certain extent from the inland water transport system, including the inland container transport system. The entire Rhine riverside economic, industrial and commercial development areas are prosperous because of this. With the completion of the Mississippi River development from 1952 to 1979, there were 11,200 new and expanded industrial enterprises along the Mississippi River in

the United States, with an average of more than 400 new industrial enterprises set up every year. Even along the Ohio River, which has a tributary of only 93 kilometers long, there are 37 new factories, with an average of 1 enterprise set up in every 2.5 kilometers[18].

The prosperity and development of the inland waterway is not only related to management, but also a major policy issue. In order to support the prosperity and development of inland waterway navigation, Western countries generally will have specific policies and capital.

In the United States, the policy goal of inland shipping is that it insists on diverting land transportation to water transportation. Therefore, the United States has formulated a number of policies that are conducive to the development of inland water container transportation, such as stabilizing the source of inland waterway infrastructure construction and inland waterway management funds, establishing a shipbreaking fund, and allowing subsidies for inland waterway container transportation. Other policies include increasing taxes on land transportation, and implementing policies that exempt inland waterway vessels from navigation tax, navigation mark fees and port or berthing fees.

In order to reduce the impact of land transportation on the ecological environment and the excessive occupation of resources, the United States has also formulated a variety of policies to support inland water transportation. Prior to the 1980s, shipping companies were exempted from fuel tax and channel usage fees. Ships passed through locks were not levied, and shipbuilding was subject to differential subsidies.

Similar to the United States, in order to reduce pollution originated from truck transportation and limit the use of land resources for land transportation, European countries' policy unilaterally encourage the use of water transportation. European countries have stipulated that road transportation should be adopted mainly within 200 kilometers; railway transportation should be adopted mainly from 200 to 400 kilometers. In areas where conditions permit, inland waterway shipping should be adopted mainly from 400 kilometers or more.

[18] The Status Quo and Trends of Foreign Inland River Container Transportation, Huang Lin, Jiang Huiyuan, Wuhan University of Technology.

On the whole, although the Yangtze River Golden Waterway has made great achievements, there is still a long way to go, especially in terms of comprehensive utilization. From the perspective of China's development prospects and its geostrategic situation, the Yangtze River Golden Waterway's the main routes on the dam can no longer be launched. The focus should be on the development of the western region and the opening-up of the shipping system to improve overall efficiency.

Such golden waterway of the Yangtze River can play a positive role not only in China's future economic growth, but also the growth of areas surrounding Yangtze River, thereby achieving the balanced development of the east and west ends of the Yangtze River Economic Belt and building the prosperity and stability of the entire central and western regions of China.