Analysis of the Problems and Causes of American Infrastructure Act

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Abstract. The development of infrastructure is a major concern for people's livelihoods. Faced with a variety of problems in the post-epidemic era, the Biden administration entered office with the slogan "Build Back Better" and has shifted its focus to domestic affairs. At the end of 2021, acts for the infrastructure development has finally been passed. The author aims to analyze the problems revealed in the process of formulating the goals and objectives of the Acts, and explore the difficulties and causes behind its implementation, to explain why the bill has had so little effect after being implemented. Document research and case research were used together. Comparative studies are used where appropriate. The policies have little effect, and the future is uncertain. The most severe problem with infrastructure is the lack of funds, which is caused by a number of factors. The result demonstrates that structural contradictions exist in the formulation and implementation of government policies.

Keywords: Infrastructure Investment and Jobs Act · Bipartisan Infrastructure Law · Domestic politics of U.S.A · Biden Administration · American economics

1 Introduction

From the perspective of Chinese academic research, a total of 61 valid documents were found by searching for keywords such as "American infrastructure" and "Biden infrastructure" through correlation screening. According to the timeline of the process to form the bill, social attention was at its highest when the Bill was passed by the Congress and the president signed it into effect in November 2021. At that time, the publication of targeted comments and papers reached its peak. However, relatively little follow-up research has been done since the act was signed. From the documents available in the United States, the official documents published by the White House [1] are the core and the most significant ones in the field. The Investment and Jobs Act(IIJA) includes offering funds for water facilities to provide clean water; high-speed Internet access; improving the condition of roads and bridges, especially paying attention to the damage caused by extreme weather; promoting the upgrading of public transport facilities; more budgets and plans for airports, ports, and railways, etc.

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This study adopts the traditional historical research method and takes the US infrastructure Act as the research object. By analyzing the drafting, passage and implementation of the US infrastructure Act, its development and influencing factors can be further understood. In addition, comparative study is carried out in specific cases to compare and analyze the infrastructure models and achievements of the United States, and enlightenment could be drawn. Besides, basic quantitative and qualitative analysis have been used. Based on the ranking data of infrastructure released by some authorities, a quantitative analysis is conducted on the retrieved literature. Also, the commonness and special individuality of infrastructure in the two different countries are explored. Qualitative research is used to focus on the content of the bill itself as well as its impact on social development.

This study systematically combs through the problems existing in the process of passing the bill and the content and analyzes the difficulties in implementation based on the actual situation. It is of academic significance to explore the crux of implementation. The research results have laid a certain foundation for the subsequent related research of the act and enriched the relevant academic content.

2 Literature Review

Chinese domestic literature mainly consists of newspaper comments and generally cautious attitudes. Review articles written by Gao Pan, Xiang Mengxi, and other commentators are cited more frequently. Xiang (2021) thinks that there is great uncertainty in the implementation of the bill [2]. Gao (2021) says that the effect of the bill on boosting the economy and controlling inflation remains vague [3]. Reporter Shi and Liang (2021) point out that Biden's infrastructure plan will put a huge strain on the U.S. fiscal system, which could further widen the deficit [4]. They remain relatively cautious, not only because the implementation effect of the newly passed bill is still not obvious, but also because of the long-term structural contradictions of the US economy and the problems exposed in the process of enactment. A small number of scholars tend to compare the infrastructure of the United States with that of China, mainly criticizing that it is unnecessary for the Biden administration to use the infrastructure bill to counter China.

There are also loads of fact sheets published by the White House. Other literature consists mainly of editorials. Both the media comments and the opinions of scholars are biased, more or less, reflecting the obvious political polarization and partisanship in the United States. Much of the media has been pro-Democratic. The New York Times, as the mouthpiece of the Democratic Party, has voiced support for the bill's development and criticized it in a mild tone. Robert Leonard (2022) writes in his article that what Biden has already done for rural America, especially to improve the facilities, is more than Trump ever did [5]. However, there is more dissent voiced in the Fox News commentary. Tyler Olson (2021) points out that Biden's bill spends less than half of its original amount on infrastructure, which views "infrastructure" from another angle [6]. Actually, the definition of "infrastructure" has been becoming a point of contention between the two parties. Besides, Houston Keene from the FOX News pays more attention to the immigration issue. He remarks: "the president's spending plan does not address border infrastructure, even as the nation faces what is predicted to be the largest surge of migrants at the southern border in 20 years." [7].

Fig. 1. The world infrastructure quality ranks

There are few follow-up studies on the implementation of the bill. The documents related to the act published by the Chinese academic circle are mainly comments, with a conservative wait-and-see attitude. The perspective of American scholars mostly focuses on the game between the two parties, and it is difficult to discard the influence brought by their party background. Some of the American literature also focuses on infrastructure comparisons between China and the USA. They have noted global infrastructure investment such as the "Blue Dot Network Project", aimed at investing more in foreign infrastructure as a tool for the United States to surpass China.

3 The Reasons for Implementing the Act

3.1 An Overview of the Infrastructure in USA

3.1.1 Current Condition

In April 2021, the White House published a report to illustrate the need to develop its infrastructure. The report ranks countries for the quality of infrastructure, scoring them on multiple factors, including the competitiveness of their economies, government institutions, labour markets, health care and infrastructure, etc. The report is instructive, with China ranked third and the United States 13th [8] (Fig. 1).

In fact, the United States, as one of the world's most developed countries with a large economy, started early in infrastructure, yet today many facilities are over-worn due to their long service life, which has been delayed to improve. In addition, tornadoes, snowstorms, and other extreme weather do harm to transport facilities such as roads, rails, bridges, and so on. Improper maintenance has also caused secondary losses. Additionally, there are obvious gaps in the usage and spread of broadband and high-speed Internet for people from different areas. Rural or low-income areas still lack high-speed and stable Internet facilities. As many as 10 million American households and 400,000 schools and child care centres lack safe drinking water [1].

Table 1. The representative infrastructure policies of US President

President	Date and schedule	Concerns
Franklin Roosevelt	1933, for 8 years	Provide employment as a form of relief; Reorganize banking and finance; Revitalize industry; Restructure agriculture, build public works, and establish a social security system;
Dwight Eisenhower	1956, for 10 years	Develop transportation systems, construct interstate highways, railroads, water conservancy project and networks;
Bill Clinton	1993, for 20 years	Build national information infrastructure;
Barack Obama	2009, for 10 years	Build expressways and high-speed rail to improve broadband network;

Every four years, the American Society of Civil Engineers (ASCE) [9] releases a report that surveys and rates America's infrastructure. According to the ASCE report 2021, the U.S. infrastructure averages only a "C-" [10].

3.1.2 A Brief Review of Government Policies

Dating back to American history, with consideration of the respective presidency, there are four periods that the government attaches great significance to infrastructure (Table 1).

Roosevelt proposed the Work-relief project, which relieved people in disaster areas by giving them employment instead of an outright grant. As for the concerning aspects of the respective presidents, Roosevelt and Eisenhower both added significance to the traditional infrastructure, such as transportation and agriculture. Clinton emphasized new technology areas such as the development of the Internet. Barack Obama had also embarked on infrastructure projects, but progress had been slowed by the difficulty of reaching bipartisan agreement. In June 2020, the Trump administration also submitted a $1 trillion infrastructure plan. Plans aimed at infrastructure were announced several times under the Trump administration, and the Dow Jones Index would rise in response. Yet it had limited effect, as a matter of fact. Biden's infrastructure bill also made its rugged way through the House and Senate last year.

3.2 Advantages of Improving the Infrastructure

Generally speaking, infrastructure construction can promote employment and increase income in the short term, thus expanding market demand and stimulating economic growth. Infrastructure requires a large number of construction materials, which can alleviate overcapacity in upstream industries and adjust industrial structures. Large-scale logistics mobilization will promote the development of the transport industry. In the long run, it will improve people's well-being and provide convenient facilities for surrounding residents and improve their lives, who are faced with the stress caused by the recession and epidemic.

4 Problems Encountering

4.1 The Fundamental Flaw of Infrastructure Construction

Infrastructure projects generally have a long construction period with demand for huge investment, including materials and funds. It will also take a long time to see its benefits. That's why the previous policies were usually planned to last more than eight years, most of which were 10–20 years. In general, population density and land prices also have a great influence on the infrastructure effect. The United States has a large territory with low population density in many areas, and the efficiency of large-scale infrastructure projects is questionable. However, due to the high cost of land in cities with high population density, where there is definitely a demand for public amenities, it is difficult to carry out those constructions.

Infrastructure projects will promote a certain amount of employment rate, but it is temporary. In the long term, maintaining, operating, or repairing these facilities will cost a high amount. Meanwhile, the economic boost caused by the infrastructure bill is indirect, such as the improvement of road and bridge conditions benefiting transport capacity, which is difficult to see through visual data.

4.2 The Act Itself

4.2.1 Large Demand Gap

Although the IIJA signed by Joe Biden has a total budget of $1.2 trillion, which includes $550 billion in new spending over 2022 through 2026, the demand gap is still large (Fig. 2).

According to the statistics from the American Society of Civil Engineers (ASCE, 2021) [10], except for the fund that will be due provided, the funding gap will be $2.588 trillion from 2020 to 2029. However, IIJA's $1.2 trillion, including only $550 billion in the new project, is an utterly inadequate method of dealing with a severe situation. The rest is what the federal government has already arranged in the budget.

4.2.2 The Unbalanced Distribution

The graph above directly illustrates the distribution of the BIL fund category. The fund is unevenly distributed. More precisely, 19% of it will be invested in public transportation, accounting for the most part. Nevertheless, the investment in electric vehicles, buses, and ferries only accounts for 9% of the total. As technology advances, the need to transform energy types will emerge. What is worth mentioning is the resilience, only taking up 5%, which manifests the imbalance between construction and maintenance (Fig. 3).

There are also differences in actual expenditures within the same area, which some experts consider to be uneven. Take the water project as an example. Neil S. Grigg (2021) from the Department of Civil Engineering, Colorado State University, criticized its imbalance. "Drinking water and wastewater systems would see a modest increase, but $45 billion to replace lead service lines is new. No new investments in dams and waterways were proposed." [11].

1 Data taken from ASCE Failure to Act 2021 study + rail funding gap from ASLRRA

2 Data taken from ASCE Failure to Act 2021 study. www.asce.org/failuretoact

3 Includes estimates from ASDSO, USACE, U.S. Bureau of Reclamation, and FEMA

4 Data based on conversations with ASTSWAMO: RCRA Part C; Brownfield analysis; the Superfund funding information does not include DOE's Environmental Management program

5 Total needs numbers is based on discussions with the National Committee on Levee Safety

6 Estimates from National Parks Service; National Association of State Park Directors; City Parks, and National Association of State Park Directors

7 Data from State of our Schools: America's K-12 Facilities (2016). 21st Century School Fund, Inc., U.S. Green Building Council, Inc.

CUMULATIVE INVESTMENT NEEDS BY SYSTEM BASED ON CURRENT TRENDS, 2020 TO 2029

ALL VALUES IN BILLIONS

Infrastructure System	Total Needs	Funded	Funding Gap
Surface Transportation[1]	$2,834	$1,619	$1,215
Drinking Water / Wastewater / Stormwater[2]	$1,045	$611	$434
Electricity[2]	$637	$440	$197
Airports[2]	$237	$126	$111
Inland Waterways & Marine Ports[2]	$42	$17	$25
Dams[3]	$93.6	$12.5	$81
Hazardous & Solid Waste[4]	$21	$14.4	$7
Levees[5]	$80	$10.1	$70
Public Parks & Recreation[6]	$77.5	$9.5	$68
Schools[7]	$870	$490	$380
Totals	**$5,937**	**$3,350**	**$2,588**

Fig. 2. Report Card for America's Infrastructure

5 The Tortuous Process of Passing

5.1 Large Shrinkage of Scheduled Funds

Biden formally announced the infrastructure investment plan in a speech in April 2021. He proposed more than $2 trillion in infrastructure over the next eight years. On May 21, 2021, the White House took the initiative to reduce the $2.3 trillion "American Jobs Initiative" to $1.7 trillion. Due to the continuous debate between the two parties, Congress stripped out the traditional infrastructure investment from the "American Jobs Plan" into a separate legislation. They reached the "bipartisan infrastructure framework" on June 24, 2021, with an additional spending of about $579.2 billion. The total size was $1.2096 trillion, including the baseline spending in the eight-year federal budget arrangement. In November 2021, the House of Representatives passed the Bipartisan

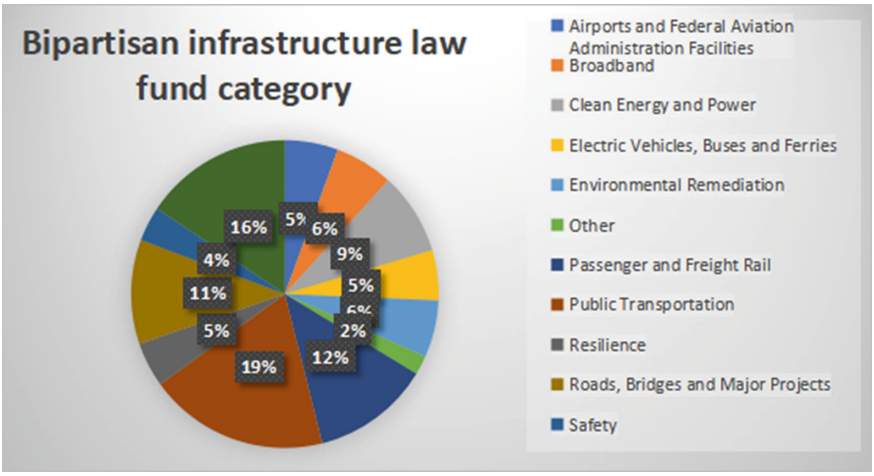

Fig. 3. Bipartisan infrastructure law fund category

Infrastructure Law that had passed the Senate on August 10. About $550 billion of new spending is planned, adding up to $178.4 billion over the eight-year baseline.

5.2 The Contradictions Between the Two Parties

Actually, the Democrats are not alone in terms of infrastructure. The former president, Donald Trump and his administration also laid out development plans on tax and regulatory reform, infrastructure, and other areas to enhance job opportunities and economic growth. Considering the potential benefits, both parties hope to acquire support from the people by boosting infrastructure.

However, against the backdrop of increasing partisan divergence and polarized politics in the United States in recent years, wrangling over the bills has sometimes turned into "opposing for opposing's sake" and a tool of political struggle. The length of the passage process and the narrow margin between approval and disapproval reflected the inefficiency of the government and the political battle between the two major parties. The good news is that both parties agree on that infrastructure investment can drive the U.S. economy. Both parties have the awareness of the current situation, which is not positive, of their domestic infrastructure. The compromise on spending areas and amounts is also an attempt to reach balance between economic recovery and the debt crisis.

6 Implementation Problems

6.1 The Debt Crisis

According to the federal government's fiscal statistics, the US deficit in 2021 will reach $2.77 trillion, and the federal debt will reach $28.43 trillion [12]. In an effort to keep up with the soaring debt, Biden signed legislation on December 16, 2021 that planned to raise the debt ceiling by $2.5 trillion, extending the Treasury's borrowing authority

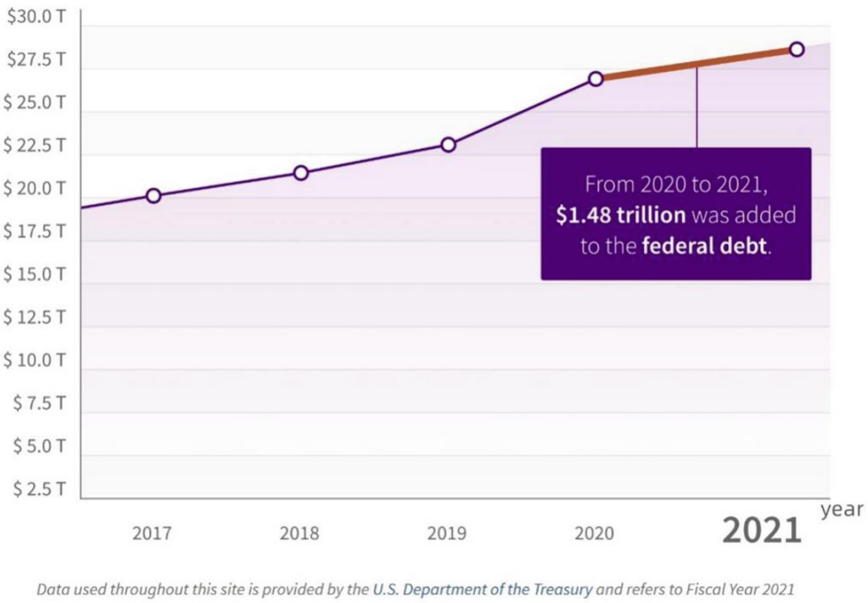

Fig. 4. Growth of U.S. debt from 2017 to 2021

to 2023, thus enabling it to temporarily avoid a default on the government's debt. However, inflation is indeed rising, and so is financial risk. Under the circumstance, while infrastructure projects may bring down the unemployment rate and stimulate economic growth, the huge spending and the long waiting time for repayment will make the U.S. government's debt crisis get worse and worse (Figs. 4 and 5).

6.2 Uncertainties Brought by the Epidemic

6.2.1 Inflation and Shortage

Due to the impact of the epidemic, the global supply chain fluctuates greatly. The reducing supply is coupled with the overlapping pressure of Sino-US trade friction and Russia-Ukraine conflicts, and the gap between the supply and demand of raw materials is getting larger, with the price rising and serious inflation. To suppress their inflationary effects, On Wednesday, June 15, EST, the Federal Reserve announced after the meeting that it would raise the target range for the federal funds rate from 0.75 to 1.00 to 1.50 to 1.75%, the largest increase since 1994. The FEB is seeking to restrict inflation by 2%, but the risk of runaway inflation remains. Under such circumstances, shortages of raw materials and rising costs for infrastructure could slow progress.

6.2.2 High Rate of Unemployment

The United States is experiencing a high unemployment rate. The tide of unemployment is more serious this time, owing to the fact that, compared with previous layoffs,

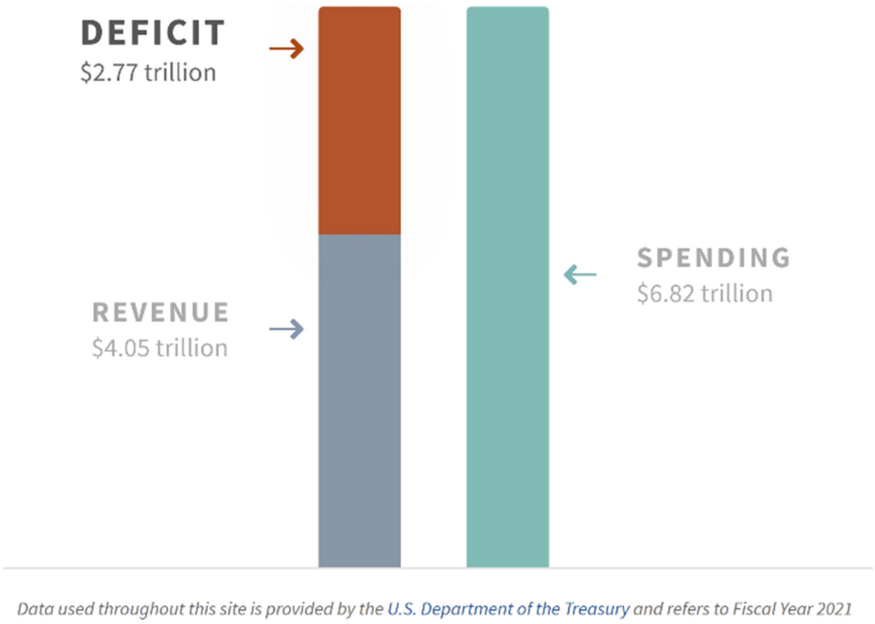

Fig. 5. The U.S. fiscal deficit of 2021

a younger or middle-aged working population has declined to work. Handsome salaries are not attractive enough for them to find a stable job. Young people's changing attitudes toward work are associated with considerable social welfare. Even if the IIJA is aiming to promote employment, the enthusiasm of the public has not always lived up to expectations.

6.3 Structural Contradictions in the State System

6.3.1 Politics

Due to the federal characteristics of the United States, states have a great deal of autonomy in the implementation. The infrastructure bills passed by the federal government may not be fully accepted by states in practice. It also involves interstate infrastructure, which needs to be built and dismantled by vote. It takes time to coordinate benefits, and the respective states should cooperate on the construction. The continuity of the governance and policies cannot be assured. There are a lot of historical precedents for the US improving its economy through infrastructure construction, which has been used by successive governments. The focus has been shifted to different fields, and it indeed has brought people's well-being to some extent. However, due to poor maintenance and aging facilities, it has fallen behind in recent years.

2022 will usher in the midterm elections. Rising prices and inflation may affect the election results. Given the declining approval rating of the incumbent government and the ratio of votes for and against the bill, it is doubtful whether the Democratic Party will retain the seats in Congress. Although it is a "bipartisan bill," the change of the ruling

party will affect the continuity of the subsequent administration, so the effectiveness of the implementation is threatened by fluctuation.

6.3.2 Economy

As a highly privatized capitalist country, the United States has a large amount of input from private enterprises and limited government power in the construction of various facilities. The "small government" philosophy of governance makes it difficult for the government to play a large role in infrastructure. Especially when it comes to land use, it requires complicated voting and interest-pulling. Also, the demolition prices are high, and land use rights are difficult to obtain. In the United States, capitalists hold a lot of wealth, and profit-driven capital leads them far away from investing in roads, high-speed rail, and other projects, which may cost a great deal and will be slow to return. As a result, the US has a low level of social engagement and enthusiasm for infrastructure.

7 Discussion

Biden has praised the infrastructure in China several times, such as the modern airport, to illustrate the urgent demand to improve the condition in America [13]. Because the United States and China are different in respective national conditions, infrastructure is also taking on completely different faces. China, as an infrastructure powerhouse as well, has more success factors than the United States.

China's infrastructure has been utilized fully with a high rate of benefiting people. Take China's high-speed railway as an example. At the end of 1990, China issued the "Beijing-Shanghai High-speed Railway Line Proposal Report" to speed up the construction of high-speed railway lines. Later, the "Medium-term and long-term Railway Network Planning" was proposed, which currently spans from "four vertical and four horizontal" to "eight vertical and eight horizontal" railway network pattern [14]. In addition to the practical construction, China also pays attention to the development of infrastructure technology. In the early 21st century, China proposed the localization of high-speed rail technology and production.

However, regardless of the economic development potential brought by the migration of high-speed railway population, the overall operation of high-speed railway is still in deficit under the premise of China's dense population and large flow demand. It is more difficult to make profits on infrastructure projects in the US.

8 Conclusion

To sum up, the American infrastructure bill is formed on the basis of multiple troubles at home and abroad. The global situation has brought uncertainties. In foreign relations, the Sino-US competition is fierce, and even the various sanctions against China show no signs of abating. The shortage of global supply chains and the adjustment of the division of labor will not decrease in the near future. Many domestic problems in the United States challenge the effectiveness of infrastructure legislation. Inflation, shortage of supply chain, the polarization, and unemployment are of great concern, which are

existing problems that may hamper the speed of resilience being driven by infrastructure construction. In return, they are targets that will be solved by the acts. After comprehensive deliberation, if the United States wants to pragmatically promote infrastructure construction, it is necessary to thoroughly grasp the above-mentioned social problems, so as to change the situation of vanity project, and it will bring actual benefits into play.

There are some limitations. Due to the restrictions of the epidemic, the author has had limited opportunity to visit the United States, thus lacking field investigation experience. In addition, the media's agenda setting makes literature and opinion screening challenging. Many newspapers and media outlets today have a clear political stance, coupled with a lack of access to some of the coverage in colourful standpoints. There is no doubt that it is beneficial to the people. But given the characteristics of infrastructure construction, it is difficult, for example, to analyze the economic boost from the improvement of road and bridge conditions through visual data. These beneficial effects are very important, but sometimes indirect.

References

1. The White House. President Biden's Bipartisan Infrastructure Law, 2022-05. https://www.whitehouse.gov/bipartisan-infrastructure-law/
2. Xiang Mengxi. Biden's massive infrastructure plan increases fiscal risk for the U.S. government. The financial times, 008, 2021-08-20. https://www.financialnews.com.cn/hq/cj/202108/t20210820_226480.html
3. Gao pan. It remains to be seen how much the U.S. infrastructure bill will boost the economy. Economy Information Daily, 002. 2021-11-19. http://www.jjckb.cn/2021-11/19/c_1310319604.htm
4. Shi shi & Liang Xuqi. Who will pay for Biden's $550 billion infrastructure plan?. financial report of the 21st century, 005. 2021-08-10. http://www.21jingji.com/article/20210810/21bc785ee4dbd2aac7d635413d1da6ca.html
5. Robert Leonard Biden. Has Already Done More for Rural America Than Trump Ever Did, 2022-04-26. https://www.nytimes.com/2022/04/26/opinion/biden-trump-democrats-rural-america.html?searchResultPosition=5
6. Democrats should let voters know about their successes—and run on Democratic values. FOXNEWS, 2021, https://www.foxnews.com/politics/biden-spending-plan-billed-as-infrastructure-bill-spends-non-infrastructure
7. Houston Keene, Democrats' 'infrastructure' push neglects border amid crisis, FOXNEWS, 2021, https://www.foxnews.com/politics/biden-infrastructure-border-crisis-democrats
8. World Economic Forum. The Global Competitiveness Report 2019. October 4, 2019. https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf
9. ASCE, a comprehensive assessment of American's infrastructure, 2021. https://infrastructurereportcard.org/
10. Official Statements. ASCE Statement on House Passage of Infrastructure Investment and Jobs Act, 2021-11-05. https://www.asce.org/publications-and-news/civil-engineering-source/society-news/article/2021/11/05/asce-statement-on-house-passage-of-infrastructure-investment-and-jobs-act
11. Neil S. Grigg: President Biden's Infrastructure Plan: Does it address needs of water systems in the United States?, International Journal of Water Resources Development, Volume 38, 2022-Issue 2, pp. 346-350. DOI: https://doi.org/10.1080/07900627.2021.1951180

12. Beta Data lab. The Federal deficit and debt in 2021, 2021. https://datalab.usaspending.gov/americas-finance-guide/#deficit-debt-heading
13. Remarks by President Biden on the Infrastructure Investments Made at Portland International Airport, APRIL 21, 2022, https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/04/21/remarks-by-president-biden-on-the-infrastructure-investments-made-at-portland-international-airport/
14. National Development and Reform Commission. The Mid-Term and Long-term Railway Network Development Program, 2016, http://www.gov.cn/xinwen/2016-07/20/5093165/files/1ebe946db2aa47248b799a1deed88144.pdf