FACTORS DETERMINING THE CONSTRUCTION OF THE NICARAGUAN CANAL

Autor: KALINKA BOYANOVA

Abstract: The Nicaraguan canal is technically feasible and logistically and economically justified. In view of the development of trade and transport, it is necessary. However, its construction also depends on political factors. The clash between the United States and China will determine the progress of the project.

Key words: Nicaraguan canal, logistics, technical parameters, political risks

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INTRODUCTION

In the system of international relations, the main driver of change is scientific and technological progress: it constantly offers new solutions for building infrastructure (including throughput and speed), changes the volume and composition of trade, creates and eliminates new threats to the security of this exchange. It is changing logistics schemes through the introduction of new vehicles - with greater capacity, speed and reliability. Recently, the importance of a relatively new requirement - that of environmental protection - is growing. It is precisely the sharp reduction in technically driven costs that is the main driver of globalization in the sense of merging the many local and regional commodity markets into one global market in which the local origin of a commodity no longer guarantees its previous short supply advantage. If only free trade is practiced, according to the theory of Smith, Ricardo, etc., then the logistics costs are determined only by the action of the above two groups of factors. However, political considerations always impose additional restrictions and are usually related to security. Control over transport and communication infrastructure is imperative, as enemy troops can also move on the roads. Therefore, any major infrastructure project is inevitably politicized.

1. THE ESSENCE OF THE PROJECT

The Nicaraguan Canal is a project to build a water way between the Caribbean Sea and the Pacific Ocean in the territory of Nicaragua, whence its name. The planned route must cross the San Juan River and Nicaragua Lake.

Fig.1: Map of the planned canal



Source: https://en.wikipedia.org/wiki/Nicaragua_Canal#/media/File:NicaraguaCanal.5

The idea is for the water transport facility to offer an alternative to the existing one in Panama. Greater width and depth should allow the reception of ships (mostly tankers) with a carrying capacity of up to 270 thousand tons. In 2013, the Nicaraguan government granted a concession for its building to a Hong Kong company, funded with \$ 50 billion from the Hong Kong-based investment fund HK Nicaragua Canal Development Investment Co., Limited. The concession is for 50 plus another 50 years of operation, ie. for a century since its construction - at trade risk and at the expense of the Hong Kong company HKND Group, owned by the Chinese billionaire Wang Jing, who owns the leading Chinese telecommunications giant Xinwei Telecom Enterprise Group, 12th richest in China in 2014 with personal wealth of 6, \$ 4 billion.

1.1. LOGISTICAL JUSTIFICATION

Until 2014, there was a steady increase in traffic through the Panama Canal then the canal reached the limit of its capacity with 14,000 ships. This number of ships is greater than optimal, which leads to delays of more than a day and to huge costs for shipping companies. The large volume of traffic is due not only to the large number of ships using the canal, but also to the restrictions on the size of ships capable of crossing the canal, the so-called Panamax standard. Panamax is actually a combination of the terms Panama and Maximum and describes a category of ships up to 294 meters long, 32.3 meters wide and 12 meters draft. The biggest problem with Panamax ships is that although two ships can cross the Gatun Lake, they cannot cross the other half of the canal, so one of the passing ships has to wait for the other. High traffic and low throughput lead to long delays. These delays cost a lot of time and money; sometimes shipping companies pay six-figure sums to gain an advantage and reduce waiting times. ¹

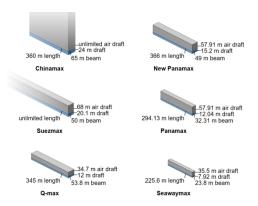
Given the exceeded optimal capacity of the Panama Canal and the constraints on Panamax ships, the Panama Canal administration prompted the Panama Canal to begin expanding in 2007. In 2016, the expansion, which cost about \$ 6 billion, was

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¹ Curry, Stephen: The Panama Canal, in History's Great Structures Series, San Diegeo 2015., pp. 70-72.

completed. Thanks to the expansion of the canal, the new ship standard, the New Panamax, allows for significantly greater capacity. (See Fig.2)

Fig. 2: Various shipping standards - Chinamax (for bulk cargo, ore from Brazil), Suezmax (Suez Canal), Q-max (liquefied natural gas from Qatar), Seawax (along the St. Lawrence River), Panamax, New Panamax



Source: https://en.wikipedia.org/wiki/Q-Max#/media/File:Ship_measurements_comparison.svg

After the reconstruction, the waterway is now available for ships with a capacity of up to 14,000 containers on board; the previous maximum capacity was 4,400 containers. The new 427 meters long, 55 meters wide and 35 meters deep locks provide access for 96% of all ships. In good weather conditions and moderate traffic, these ships can cross the canal within eight to ten hours. In 2018, the historical record of 442.1 million tons of cargo transported across the isthmus of Central America for the year was set. ²

However, these remaining 4% of ships have a disproportionately large share of transport. The list of the ten most traded goods in the world for 2018 looks like this:

- 1. Brent crude oil
- 2. Steel
- 3. Crude oil (WTI, Texas light)
- 4. Soy
- 5. Iron ore
- 6. Corn
- 7. Gold
- 8. Copper
- 9. Aluminium
- 10. Silver³

The review of the list gives an idea of the predominance in international trade of bulk goods with a low unit price, where transport costs have a serious impact on the final price. From there, the interest is focused on larger vehicles, with lower prices per ton/kilometer. Technical progress meets these requirements by combining ever-increasing dimensions with increased survivability/buoyancy, reduced relative fuel consumption and increased safety through virtually complete surface coverage with satellite surveillance - the Global Positioning System (GPS). As a result, the largest

² https://en.wikipedia.org/wiki/Panama_Canal#Capacity

³ https://www.ig.com/uk/trading-strategies/top-10-most-traded-commodities-180905

class of oil tankers, the ULCC (Ultra Large Crude Carrier), has a carrying capacity of 320 to 550,000 tonnes (DWT), carrying more than 2 million barrels of oil, more than the total daily consumption in the UK. ⁴

While this class of ships has stagnated (the largest of them were produced in the 70s of the 20th century), the number and size of large container vessels is growing. The largest of these, the Maersk Triple E Class (currently 31 in number), carries up to 18,700 containers (TEUs). ⁵

Vessels with twice the tonnage will be able to pass through the Panama Canal, even after its expansion. Such vessels cannot pass through either the Suez Canal or the renewed Panama Canal and have to use routes near Cape of Good Hope, Cape Horn or the Northern Sea Route (in summer). It should be noted that the problem mentioned above in the case of the A 380 aircraft also exists in the case of super-heavy ships - there are not many ports that can serve ships of this class.

The Nicaraguan canal is expected to take up to 4.5% of international cargo traffic, especially South American oil and ore from the Atlantic Latin American countries of Venezuela, Brazil and Uruguay, reducing the travel and transportation costs of transporting the raw material to its largest consumers. in the Asia-Pacific region, and in particular to China. Now China is a global hub for manufacturing, and is the largest manufacturing economy in the world as well as the largest exporter of goods in the world, exporting almost every single category of industrial products. Due to the raising living standard the country becomes the world's fastest growing consumer market and second largest importer of goods. Following the export oriented economic model, China is heavily dependent on open foreign sales markets, but also (due to its geography) on abundant and secure raw materials and energy supplies.⁶

A review of the structure of Chinese trade shows that 9.4% of all the imports fall on crude oil (2nd place in the list of imported goods), 3.8% fall on iron ore (3rd place), 2,4% of soybeans (5th place) and copper ore - 1.6% (8th place). The economic interest of China and other Southeast Asian countries is obvious. China currently ranks third in the volume of cargo passing through the Panama Canal - much of this traffic is expected to be diverted to the future canal in Nicaragua. ⁷

The Strait of Malacca is currently the busiest in the world after the Strait of Hormuz in terms of oil supplies, with all the associated logistical risks and corresponding price increases. (Figure 3)

⁴ https://en.wikipedia.org/wiki/Oil tanker#Size categories

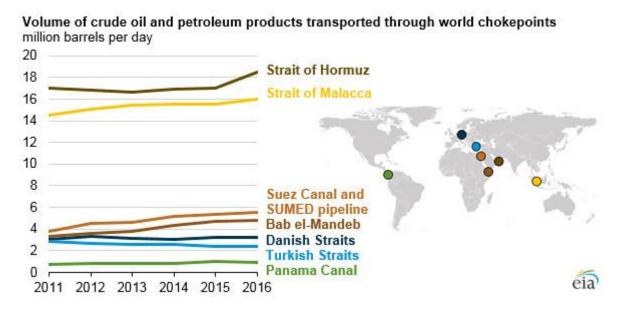
⁵ https://en.wikipedia.org/wiki/Maersk_Triple_E-class_container_ship

⁶ Chankov, G., "The Chinese "One Belt, One Road" Initiative – new opportunities for the European Union and its neighbours", "KSI Transactions on Knowledge Society", Vol 8, No 2 (2015), ISSN 2367-5403, 2015-2-06.PDF, p.34

⁷ Cekov, Borislav, "Za nikaraguanskija kanal, geopolitikata i "Jushen potok", "Geopolitika", January 06, 2015,

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Fig.3: Comparison between the most important transport corridors for oil supplies



Source: https://www.flickr.com/photos/eiagov/36176590831

Despite its expansion, the Panama Canal will not be able to seriously unload the Strait of Malacca, which has reached its safety limits. (Figure 4)

Fig. 4: Load of the Strait of Malacca



Source: https://www.maritime-executive.com/article/strait-of-malacca-key-chokepoint-for-oil-trade

Since 2004, Thailand has been developing plans to divert much of the Strait's traffic on a shorter route: a canal through the Kra Strait, saving about 960 kilometers of travel between the two oceans. Ideas for running an oil pipeline through the isthmus, etc. are also being considered. It is necessary to look for an alternative.

On the other hand, it is impossible to calculate accurately the return on investment of \$ 50 billion. There is an opportunity for China to build a railway line between the two shores of Honduras and thus make the use of the Nicaragua Canal meaningless. Similar North American land bridges in Mexico and the United States can take away traffic between Asia and the east coast of the United States, but at the cost of complicating the logistics scheme. However, the economic viability of the Nicaragua canal cannot be separated from other factors.

1.2. TECHNICAL PARAMETERS AND RISKS

The Nicaraguan canal is planned to be 278 km long, including 105 km along the waters of Nicaragua Lake. (For comparison, the Panama Canal is 82 km long and the Suez Canal - 172 km.) The parameters of the new canal are expected to be: depth 26-30 meters; width - 230-530 meters.

The approximate time for crossing the canal by ship should be about 30 hours. The canal, divided into three parts – Eastern part, Nicaragua Lake and Western part, will have to ensure the passage of container ships with a capacity of up to 25,000 TEU and tankers with a carrying capacity of 320-400 thousand tons (DWT). 5,100 ships must be able to pass through the canal for a year.

Both the Western Channel and the Eastern Channel will have one gateway with 3 consecutive chambers needed to raise ships to the level of Nicaragua Lake, with an average water height of 31.3 m and a width of 30.2-33.0 m. The Brito Locke West Gateway will be 14.5 km inland from the Pacific Ocean, and the Camilo East Gateway will be 13.7 km (8.8 miles) inland from the Caribbean Sea. The dimensions of each of the sluice chambers are 520 m long (1706 ft), 75 m (246 ft) wide and a threshold depth of 27.6 m (91 ft). Since locks usually define the size of ships that can pass, the Nicaragua Canal would allow passage for larger ships than those that cross the Panama Canal. In comparison, the new third group of locks in the extended Panama Canal is 427 m long, 55 m wide and 18.3 m deep. ⁸

The estimated time for digging the canal is just over 11 years, during which time the megaproject is expected to create at least 40,000 jobs. It envisages the construction of two deep-water ports, a railway and two free trade zones on the Caribbean and Pacific coasts, housing for about 140,000 people, a dam, several tourist complexes, an international airport, a power plant and cement and steel processing plants.

It should be noted that although this is a megaproject, it is not unique, which allows the application of the methods of analogy, based on the analysis of other similar projects and the conditions for their application in calculating the probability of loss. The application of modern techniques and technologies (machine dredging, etc.) for the construction of canals was checked during the mentioned expansion of the Panama Canal, as well as during the expansion of the Suez Canal completed in 2015. Nature conservation measures have also been tested in these projects. They also use knowledge gained about 100 years ago - high mortality from malaria and yellow fever among workers in the first attempt to build the Panama Canal virtually ceased work in 1888, but caused a sharp leap in medicine in the fight against these diseases and currently no danger of such difficulties.

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⁸ https://en.wikipedia.org/wiki/Nicaragua_Canal#Description

1.3. POLITICAL FACTORS AND RISKS

The idea of building the Nicaraguan Canal preceded the beginning of the great structural crisis, which necessitated a change in the paradigm of the nature of public relations and in the existing system of international economic relations. Until 2007, the principle of free trade and free competition was leading, as international economic relations were governed by the principle of maximum short-term profit. Deviations from this principle were in favor of. As a guarantor of this system the United States possessed the privilege, exceptionally, to impose restrictions on free trade, as long as it is in their national interest.

In fact, military-political considerations, which are inseparable from logistics, have played a role in the construction of the Panama Canal from the very beginning. The choice of the plan in 1901 was influenced by US President Theodore Roosevelt, who wanted to guarantee the supremacy of the US Navy by providing it with a guick connection between the two oceans. At the time, the Isthmus of Panama was part of Colombia, but the United States militarily supported the local independence movement. In this way, the United States helped separate Panama from Colombia in 1903 and, as a reward, gained access to the canal's construction site forever. At present, the Panama Canal, although formally handed over to Panama in 1999, remains under de facto American control and is a key element of US global geopolitical and economic interests. Two-thirds of the cargo passing through the Panama Canal is destined for American ports, and US warships have the exclusive right to pass without waiting in line. In the conditions of politicized economic relations - increasing protectionism, trade "wars" and restrictions, this control increases its importance, respectively strengthens the desire of US rivals (especially China) to look for ways out of this control.

For Nicaragua itself, the canal is expected to attract about 4.5% of the global freight traffic with a net income of about 1.2 billion a year, turn the country into a global transportation hub and help boost economic growth. According to the country's Human Development Strategy 2007-2016, the Nicaraguan economy needs to grow by 8-10% per year to meet the basic needs of the population, and to overcome poverty requires growth of over 10%. Proponents of the project hope for growth of about 14% and about 100,000 new jobs. ⁹

The political risks, which are currently very difficult to calculate, come mainly from the confrontation between the United States and China. Nicaragua has long been held hostage to American interests around the Panama Canal. To prevent possible competition, the United States entered into a bilateral treaty with the government in 1914, under which Washington acquired all rights to build a canal in Nicaragua for a period of 99 years and thus effectively block any construction there. Resistance to US control over Nicaraguan policy has resisted with varying degrees of success since the 1930s. The treaty was repealed in 1970, and nationalists, led by Augusto Sandino, began plans to build an overseas canal that was not under external control. The combined military, political and economic pressure from the United States against the independence movement (incl. support for the dictator Anastasio Somosa until 1979, the war against the Sandinistas in the 1980s, support for the peacefully elected president of Nicaragua, Violeta Chamoro, in 1992, renewed pressure against Daniel Ortega, who has been in power since 2007) among other things has this specific goal

⁹ Cekov, Borislav, "Za nikaraguanskija kanal, geopolitikata i "Jushen potok", "Geopolitika", January 06, 2015.

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- to make the political cost of building the canal without US involvement unbearably high.

In their attempt to gain independence, the Sandinistas relied on the USSR before 1990, then on Russia, but now primarily on China, which has the strongest interest (see above) and already serious opportunities to defend it.

China's development has forced the United States to formulate a strategy for Asia during President Clinton's first term. At the heart of this strategy is "integration," in which the United States becomes the largest buyer of Chinese goods, while many American productions are transferred to China through "outsourcing." Exporting production capital outside the United States on a large scale helped China's rapid industrialization. The global financial crisis that began in the United States exhausted this model of partnership. It shifted the structure of world production, the directions of trade and capital flows and outlines a new economic (and political) order. US-China cooperation is no longer at the heart of this order. China is becoming an undesirable competitor in the domestic market. Rivalry prevails. 10

In fact, tensions over the current project have been mounting since the Nicaraguan government's decision to seek Chinese help. When announcing the plans to build a canal on the territory of Nicaragua, the US Deputy Secretary of Commerce during his visit to Managua in 2013 expressed the readiness of the US public and private sector to get involved in the construction. However, the Nicaraguan authorities, together with the already selected Chinese investor, prefer participation from Brazil and Russia (historically easy to explain). This could significantly change the geostrategic situation in the world in favor of the BRICS countries and provoke the corresponding reaction.

2. PROJECT PROGRESS AND PERSPECTIVES

Since 2014, the economic and political risks have manifested themselves in the following way on the course of the project:

1. From 2014 to 2017, there is a relative slowdown in the growth of the Chinese economy, along with an attempt to shift the sources of growth to domestic consumption. At the same time, there is a restraint in the volumes of Chinese imports, which reduces the optimism for return on investment.

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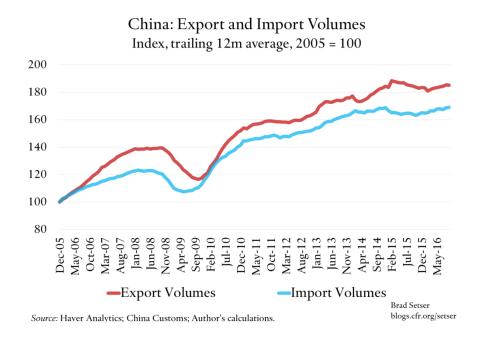
¹⁰ Chankov, G., "Changes in the world economic order and the strategies of the main players", "The Silk Road", Confucius Institute, Sofia, 2017, ISSN 1314-9865, p. 163-164

13608:15 14000 12143.49 12000 11015.54 11137.95 10438,53 9570.41 10000 8532.23 7551.5 8000 6087.16 6000 5101.7 4000 2010 2014 2016

Fig. 5: Chinese GDP growth

Source: https://tradingeconomics.com/china/gdp





Source: https://www.cfr.org/blog/chinese-exports-and-imports-are-growing-2016-real-terms

At the same time, the Chinese stock market collapsed in 2015-2016, and as a result, Wang Jing's personal wealth declined significantly, after which he no longer appeared in Nicaragua. This raises doubts about the channel's funding, especially since the project's financial feasibility studies conducted by HKND by market research firm McKinsey have not been published. There are conflicting signals related to the progress of construction activities that began in 2016: excavation, dredging, construction of roads and ports, according to external observers are "paralyzed", and according to the management of the Nicaraguan canal, the project "is progressing slowly but normally".¹¹

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¹¹ https://www.mediapool.bg/kolosalniyat-proekt-za-nigaraguanski-kanal-se-izpari-vav-vazduhanews275900.html

There are suspicions that the Chinese state is not actually behind the project, and it is only a private initiative of the entrepreneur and the group led by him. This is not usual for Chinese politics, where in principle the country's political leadership controls economic activities with less scope and significance, and Wang Jing's absence probably allows the abandonment of the venture to be attributed to private initiative and the deteriorating situation without engaging foreign policy of the state. The resumption of diplomatic relations between China and Panama in 2017, at the expense of the severance of ties between the Central American state and Taiwan, is cited as evidence in favor of suspicions that the Chinese state is in fact withdrawing from Nicaragua and the risky venture. Panama's advantage is that it has a functioning, expanded channel, but this argument does not answer two questions:

- 1. Is there no interest in transport with the largest capacity and why?
- 2. How does China plan to compete with the United States for control of the Panama Canal?

In the current political risk assessment, in view of the above, the following should be taken into account:

There is strong opposition to the project, in the face of the US government and major US corporations, for economic and geopolitical reasons. The current US government is "not afraid to use the" Monroe Doctrine" with Central and South America to prevent foreign interference and even recolonization," according to President Trump's National Security Adviser John Bolton. In compliance with this doctrine in the region are provoked events that are more or less directly related to the project:

- 1. Organizing a "soft" coup in Brazil: overthrowing President Dilma Rusev through a contested court case (2106), removing former President Luis Ignacio Lula da Silva through a contested court verdict and politically beheading the Workers' Party and externally assisted imposition of US-oriented Jair Bolsonaro for president. This change is attributed to the actions of former Trump adviser Steve Bannon. The consequences are an apparent abandonment of the country's more independent policy from the West and the abandonment of ambitions for a leading role in the BRICS group as a regional leader of Latin America, the so-called "Southern Colossus". Such a possible development could also affect the country's trade relations with China. For now, China is Brazil's main trading partner, with 20.5% of its total foreign trade (almost twice as much as its second partner, the US, with 13%), and the leading position in Brazilian exports is precisely the mass cargo transported through the Panama Canal soybeans (12%), iron ore (9.2%) and oil (7.9%). The possible division of the world into (rival) spheres of influence could place Brazil in the sphere of influence of the United States and dramatically change the direction of Brazilian foreign trade.
- 2. Attempt to organize a "soft" coup in Venezuela (since 2018), so far unsuccessful: unlike Brazil, the main partner in the foreign country is the United States with a total of 40% of the volume, followed by China with 20.5%. 80% of Venezuela's exports are crude oil and another 10% refined oil, with almost a fifth of it going to India, the third largest importer. Venezuela has long sought to pursue a policy independent of the United States and is increasingly relying on financial and political assistance from China and Russia. Opposition there is particularly strong, and possible facilitation of

¹² The policy of 1823, announced by the President James Monroe, was perceived in Latin America as a justification for the intervention, incl. armed, the United States in the region.

¹³ https://news.bg/int-politics/sasht-ne-se-strahuva-da-izpolzva-doktrinata-monro-za-venetsuela.html ¹⁴ https://atlas.media.mit.edu/en/profile/country/bra/

Venezuelan exports to China (and India) through a new channel complicates the US task of building its sphere of influence.

Thus, the issue of the Nicaraguan Canal project is highly politicized, and since the United States largely controls the world media and non-governmental organizations, the recently reported facts should be considered with great caution:

"China will invest \$ 25 billion (annually) in various Latin American countries, but Nicaragua is not on its radar screen," said former diplomat Mauricio Diaz. 15

- "There has always been speculation about the possible interest of the Chinese state in granting the concession (for the canal), but the 19 trade agreements that were signed last year between China and Panama show that its interest is focused on that country, richer and with an already built canal, which was recently widened, "said Monica Lopez. 16
- NGOs refer to the "Inter-American Commission on Human Rights" violations of the rights of local communities, a petition is collected to the parliament with a request for immediate cancellation of the project. ¹⁷
- Eco-activists, incl. some foreign (Danish and American) environmental organizations are concerned about an impending ecological catastrophe, the destruction of Nicaragua Lake, the largest source of fresh water in the region, biodiversity and sea turtle populations, the population of tapirs and mangroves along the future canal. ¹⁸ Given the growing influence (even reaching extremes) of environmental movements, organizations, etc. in the policy of leading countries, as well as the growing environmental awareness among citizens, these risks must be seriously taken into account in the analysis of the project.
- Construction is associated with corruption, inefficiency, even a threat to democracy.

The media coverage of the Nicaraguan Canal project also constantly questions the credibility of the Chinese investor, Wang Jing, as well as his alleged (and completely natural for China) connection with the Chinese government. The expertise and hence the support of China's second largest state-owned construction company CRCC, Australia's MEC Mining (a leading mining consulting firm), Belgium's SBE, which specializes in the construction of canals and locks, and Mackinzie & Co. (one of the top five consulting companies in the world), are being questioned. The same relates to the British consulting company Environmental Resources Management (ERM), with expertise in environmental and social risks. ²⁰

SUMMARY

1. In view of what has been written, the following conclusion is necessary - like other projects - Suez Canal (with enlargement) and Panama Canal (with enlargement),

¹⁷ Lakhani, Nina (3 August 2017). "Amnesty condemns 'campaign of harassment' against Nicaragua canal critics". The Guardian. Retrieved 22 August 2017

¹⁵ https://www.mediapool.bg/kolosalniyat-proekt-za-nigaraguanski-kanal-se-izpari-vav-vazduhanews275900.html

¹⁶ Ibid

¹⁸ Lakhani, Nina (3 August 2017). "Amnesty condemns 'campaign of harassment' against Nicaragua canal critics". The Guardian. Retrieved 22 August 2017

¹⁹ Miller, Greg (26 February 2014). "Why the Plan to Dig a Canal Across Nicaragua Could Be a Very Bad Idea". Wired Science,

²⁰ Cekov, Borislav, "Za nikaraguanskija kanal, geopolitikata i "Jushen potok", "Geopolitika", January 06, 2015

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the Nicaraguan Canal is technically feasible, and its parameters allow the operation of virtually all modern maritime vehicles.

- 2. From an economic point of view, the project seems justified given the expected return on investment. One circumstance is omitted in the economic analysis: estimates of expected traffic are a share of the current one and are influenced by the current relative stagnation in world trade and economic development, especially in China. The opening of a new road inevitably sooner or later loads it to full capacity, especially given that the existing roads (Strait of Malacca, Panama Canal) are loaded (almost) to the limit. Delays are an inevitable part of almost any transport project (eg the English Channel Tunnel) and pay off in the medium or long term.
- 3. In this case, the greatest uncertainty comes from the political situation: the restructuring of the system of international economic relations and future relations between the United States and China, as well as between them and the countries of the region separately. Moreover, some of the considerations related to the Nicaraguan Canal are military-strategic and do not have an immediate economic dimension. In the conditions of economization of international economic relations, these considerations should gain weight in the analysis. The complete abandonment or, on the contrary, the accelerated construction of the project is currently most strongly dependent on the political situation. In the event of a favorable or neutral one, economic considerations are likely to weigh in its favor.