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IN A WHIRLWIND OF SINO-US CLASH OF INTERESTS: THE 5G ROLLOUT IN CENTRAL AND EASTERN EUROPE

Analytical review

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Summary

- The intersection of Sino-US interests in the field of technology and the potential threats arising from the activities of unreliable Chinese telecommunications companies in the development of 5G communications in Europe have led to the formation of a common position among the countries of the Western world.
- Research and development of 5G communications, which have been prioritised and supported by Beijing since 2013, have allowed Chinese telecommunications companies to become undisputed market leaders with real opportunities to dominate Europe's 5G communications infrastructure.

- In highlighting potential security threats, the Clean Network initiated by Donald Trump's administration and the active promotion of this idea prompted a change in the position of the large majority of EU member states that began restricting the activities of Chinese companies in the sphere of telecommunications.
- The necessity to address security challenges and the support of the US initiative has caused a significant slowdown in the development of 5G communications in Europe, and a particularly pronounced impact of this move is observed in Central and Eastern European countries.
- Although Lithuania has carried out initial tests of 5G technology, along with Portugal, it is one of the only two countries in the EU where commercial 5G services are not yet offered.
- The case of Lithuania stands out in the general context of the EU: The 3.5 GHz frequencies "usurped" in the Kaliningrad region for Russian military purposes overlap with Lithuania's needs in 5G communications. Stalled negotiations with Russia have caused a situation where the auction for the frequency bands has to be postponed.
- Lithuania's decision to support the US position by banning Chinese telecommunications companies from contributing to 5G infrastructure development was important and necessary in terms of security. However, it also has its own costs – potentially higher expenses and delays in the development of 5G communications network.

Introduction

After Xi Jinping came to power in 2013, China's foreign policy has become much more active and ambitious. Beijing's global ambitions and the increasingly keen struggle of interests with the US are evident not only in the economic but also in the technology sphere. It is the latter field where the development of 5G communications technology in Europe has become a key "battlefield".

The impact of 5G on the economy is significant: 5G technology is projected to create new jobs and encourage GDP growth. However, in the overall European context, there is a growing gap between Western and Eastern Europe in terms of the progress in 5G rollout. It has been caused not only by the COVID-19 pandemic, but also by the US pressure that has influenced countries to distance themselves from Chinese technology companies. In some countries, the US Clean Network initiative has delayed 5G communications development plans for several years. The anxiety growing in the region is justified: the slow development of the 5G network could not only reflect negatively on the national economy, but also on future competitiveness.

This publication will review the specifics and historical context of the US-China "technological war" and introduce the Clean Network idea initiated by the US. The second part discusses the impact of 5G communications on the economy and future competitiveness and provides

an assessment of the progress of 5G rollout across the Central and Eastern Europe (CEE). The third part provides an overview of 5G development in Lithuania and the main factors hindering its progress. This analytical review is based on the highlights of the EESC discussion that took place on May 27 as well as additional analysis of materials from public sources.

US response to China's 5G ambitions: Clean Network Initiative

The initial research stage of China's 5G communications technology dates back to 2013, when the Ministry of Industry and Information Technology initiated the establishment of a special IMT-2020 (5G) group. Its aim was to ensure the rapid and uninterrupted progress of 5G research and development, allocation of sufficient resources, and the initiation of active discussions on the development of 5G international standards[1]. The prioritisation of China's 5G global ambitions at the political level became clear in the "Made in China 2025" Action Plan announced by the country's Prime Minister Li Keqiang in 2015[2]. It emphasises the importance of developing 5G technology and Beijing's vision of seeing China as the "global leader in future technologies". In the same year, the Digital Silk Road was included in the One Belt One Road mega-project initiated by Xi Jinping, which is aimed at helping Chinese technology companies to establish themselves abroad, while strengthening the countries' telecommunications infrastructure and developing various projects (such as creation of "smart cities").

Since 2015, China has been investing heavily in 5G technology, which has allowed the country to become one of the leading players in the field. The study on 5G development in China[3], prepared by the China Academy of Information and Communication Technology (a research centre under the Ministry of Industry and Information Technology), predicts that investment in the country's telecommunications infrastructure will reach about USD 411 billion by 2020–2030. This study perfectly reflects the great attention paid by the Chinese authorities to the development of 5G communications, its long-term planning and ensuring stable allocation of resources. Therefore, it is not surprising that China has succeeded in becoming a world leader in this communication technology. The race for technological leadership is only gaining momentum: On 1 November 2019, China announced the launch of the commercial 5G communications services in the country's major cities and two days later, the Ministry of Industry and Information Technology announced[4] the establishment of an expert group to begin research on the 6G communications technology.

The confrontation with China in the field of technology, which especially escalated during Trump's tenure as the president of the United States, fundamentally redrew the plans for 5G development in Europe. In analysing this intersection of Sino-US interests, it is important to pay attention to the general context of relations between the two countries in recent years. The technological confrontation is one of several areas in the general context of the US-China trade war that started in 2018. For the US, a long-time world leader in research and innovation, the formation of a response to China's growing advantage in the field of new technologies and Beijing's growing global ambitions became a priority. According to a study by Deloitte[5], over the past decade, the US was no match for China in the field of investment in telecommunications infrastructure. The study claims that since 2015, the US investments in telecommunications infrastructure were by USD 8–10 billion a year less than those of China.

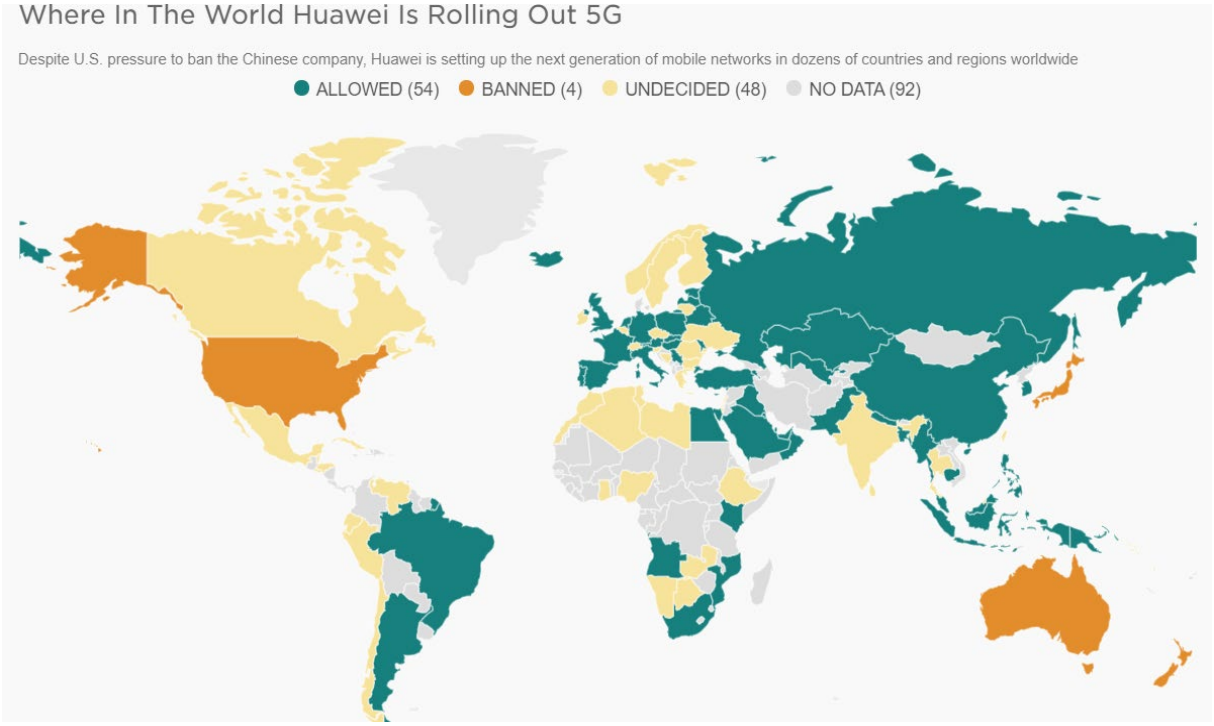

Fig. 1 Huawei 5G development plans in 2019 (green – activities are allowed; orange – activities are prohibited; yellow – undecided). *Source*: Emily Feng, NPR

As to the Sino-US technological "war", the greatest attention was undoubtedly focused on China's technology giant Huawei. In the context of the recent development of 5G in Europe, the countries' decisions to prohibit the activities of unreliable companies in the 5G development are undoubtedly primarily directed to Huawei's ambitions in Europe. Washington's conflict with the company started back in 2005 (Huawei began its activities in the US in 2001), when US politicians expressed concern over Huawei's possible close ties with the Chinese military and financial support from the Chinese government. Huawei's impressive expansion and becoming of the undisputed world leader in 5G communications forced the US to take stringent action to curb the global ambitions of Chinese companies.

The epicentre of the US-China 5G ambitions' battlefield is undoubtedly in Europe. Just a few years ago, Western countries had a quite positive (neutral) attitude towards Huawei activities and the use of Chinese technology in Europe (see Figure 1), which was based on the fact that the advantage and capacity of Chinese companies in the 5G technological sphere was greater compared to Western alternatives. However, the increasing pressure put by the US on the allies (according to US Secretary of Defence Mark Esper, "US alliances including the future of NATO were in jeopardy if European countries went ahead with using Chinese Huawei technology in their 5G networks"[6]) and emphasis on potential security threats emerging from the adaptation of China's 5G technology have forced the Western

world to support the US idea of the Clean Network and to distance itself from cooperation with Chinese telecommunications companies.

In April 2020, US Secretary of State Mike Pompeo announced for the first time the US Clean Network Initiative, which is "the Trump Administration's comprehensive approach to safeguarding the nation's assets including citizens' privacy and companies' most sensitive information from aggressive intrusions by malign actors, such as the Chinese Communist Party. The Clean Network addresses the long-term threat to data privacy, security, human rights and principled collaboration posed to the free world from authoritarian malign actors."[7] The countries of Central and Eastern Europe have almost unanimously supported the US initiative, but the noticeably stagnant actual 5G development raises growing concerns about economic prospects and the countries' future competitiveness.

The CEE region's race against time: the stagnant development of 5G communications and economic prospects

The ongoing Sino-US technological "war" has had a major impact on European countries' 5G development plans. In this context, the countries of Eastern and Central Europe, whose economic gap with the Western Europe remains wide, raise justified concerns about the slow development of 5G communications in the region. The benefits of the 5G communications technology for the global economy are undeniable, and extensive research has been carried out on this topic (reports were published by competent companies: Accenture Analysis, Omdia Consulting, Incites, and IHS Markit). These studies not only discuss the benefits of the technology, but also warn of the potential negative effects on countries' economic prospects and competitiveness in the event of especially slow development. According to Oxford Economics, "A delay in the rollout of 5G would also result in slower technological innovation and reduced economic growth".[8]

The ongoing fierce race for 5G leadership in the world is based on the significant economic benefits of this technology in the future. Accenture's analytical report on the impact of the 5G communications on the EU and UK economies[9] states that the opportunities offered by 5G technologies will have a significant impact on the European economy over the period 2021–2025:

- up to €2.0 trillion in incremental gross output (sales) growth
- creation or transformation of up to 20 million jobs across all sectors of the economy
- adding up to €1.0 trillion to European GDP

The new-generation technology will allow to: (a) create new industries, products and business models (5G will unlock new high bandwidth, the Internet of things and ultra-low latency products and businesses; (b) improve productivity and optimise costs, leading to increased economic output from the same inputs; (c) improve service quality significantly and, therefore, increase consumer willingness to pay for goods and services. According to the calculations provided in the study, the impact of 5G over the period from 2021 to 2025 will increase significantly, and it will be felt by every industry.

Despite the positive outlooks, the slow progress in 5G development across the Central and Eastern Europe is a cause for concern. This was influenced not only by the impact of the COVID-19 pandemic on the national economies but also by the reorientation of the region

Fig. 2. US Clean Network. *Source*: ZDNet, US State Department

for support of the US initiative. The countries in the region (except for Hungary) have signed up to the US Clean Network idea (see Fig. 2) and committed themselves to exclude Chinese technology companies from developing local 5G communications networks. However, the countries have faced the lack of alternatives and stagnation in development.[10]

In the area of 5G rollout, the gap between Eastern and Western Europe is quite obvious and worrying. This problem is reflected in a study conducted by Incites[11], which compiled 5G Readiness Index in which European countries were assessed in various categories. Looking at the situation in Europe's sub-regions, the current progress partly reflects the persistence of economic inequality.

According to the Incites study, in the top 20, seventeen places are occupied by Western European countries, which are on average ahead of Eastern Europe in all categories (Fig. 3). Among Eastern European countries, Estonia is placed highest (12th), and the average East European country would rank 32nd. The Baltic countries are the clear frontrunners in this region, earning a top 10 spot in at least one of the categories. By current progress, Slovenia stands out (21st place), followed by Romania (27th place). In summary, based on this study, Europe can be divided into three groups by readiness for the development of the 5G communications technology (Fig. 4). It demonstrates a clear division in which Eastern Europe lags behind the rest of the continent (except for Estonia). It is important to mention that the Eastern European region itself is divided into several groups: the Western Balkans, where the development of 5G is still in an early stage, is separated from the rest of the CEE.

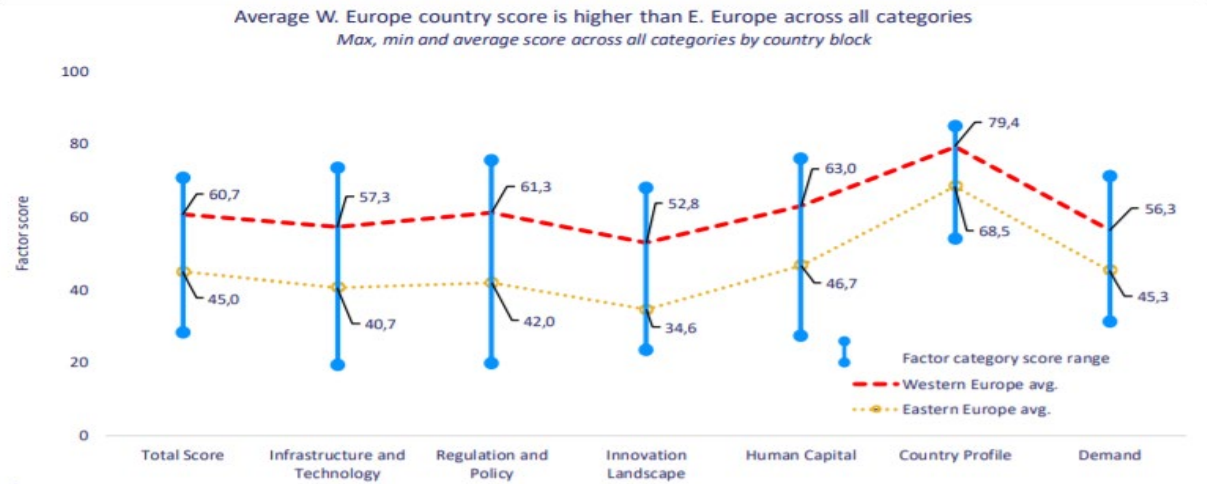

Fig. 3. The gap between Western and Eastern Europe by separate assessment categories. *Source*: Incites

Fig. 4. Groups of countries by the 5G Readiness Index. *Source*: Incites

The Western Balkan region, where most countries are not members of the EU, is often considered as an arena for international powers to fight for spheres of influence. The development of 5G infrastructure in the region has also become one of the areas for the major countries, US and China, to compete. The case of Serbia is an excellent example showing the complexity of the region: the country's 5G development is still in an early stage, which is greatly influenced by pressure from both sides and an attempt to successfully "navigate" between maintaining warm relations with China and the West[12]. Bosnia and Herzegovina also stands out for its close cooperation with China within the framework of the Digital Silk Road. Montenegro has not joined the US Clean Network. Furthermore, Chinese telecommunications companies are also active in the country. N. Macedonia, Albania and Kosovo have reached an agreement with the US on the Clean Network, so the expansion of Chinese companies' activities in these countries is unlikely. Although the situation in the region is shifting in favour of the US (most countries express support for the US initiative), slow progress and a gloomy economic outlook may force the countries to reconsider their position in the future.

The 5G technology rollout in Lithuania: stagnation and protracted negotiations with Russia

The challenges related to the development of 5G infrastructure that dominate Central and Eastern Europe are also reflected in the Lithuanian context. After the country supported the idea of the US Clean Network, development plans had to be suspended in order to properly complement the existing legal framework. However, the case of Lithuania is also unique: the Russian factor plays an important role in hindering developmental progress. Due to these multifaceted problems, the development of 5G communications in Lithuania is starting to stand out in the general EU context. At present, Lithuania, together with Portugal, are the only European Union countries that do not offer commercial 5G services[13] (see Figure. 5). However, in this situation, Portugal is ahead of Lithuania: an auction for several frequencies was started since 14 January 2021. However, due to disagreements between mobile operators and the Portuguese Regulatory Authority for Postal Communications and Electronic Communications (ANACOM) it is still active up to this day[14]. According to the European 5G Readiness Index, it can be stated that Lithuania had favourable starting positions but the obstacle course it is facing now has led to the fact that the frequency auctions, which have been planned since 2019, still do not have a specific date. The authorities' plans and requirements related to the 5G auction have caused various disagreements between the Communications Regulatory Authority (RRT) and market players, who are dissatisfied with the difficult-to-fulfil conditions of the auction[15].

In response to the potential threats to national security and in support for a common Western position, Lithuania and the United States

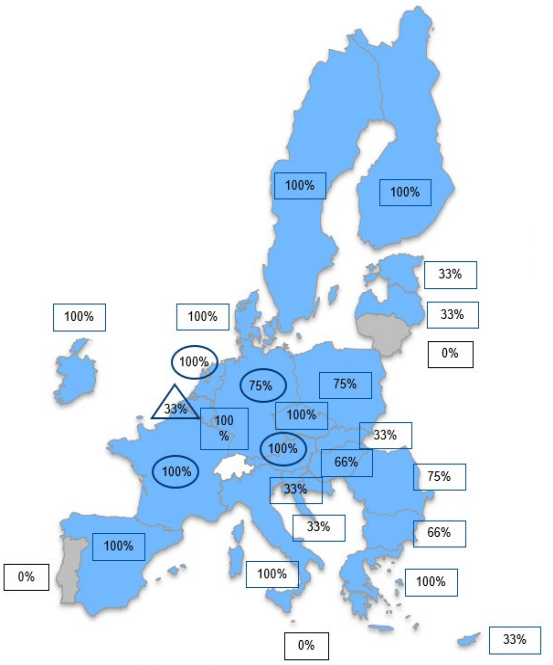

Fig. 5. 5G commercial communication in Europe (percentage indicates the share of 5G operators in the country). *Source*: European 5G Observatory

signed a memorandum of understanding on the principles of secure 5G infrastructure on 17 September 2020. Both countries emphasised the importance of the use of reliable and secure hardware and software in 5G infrastructure and their determination to distance themselves from unreliable manufacturers and their technologies. Although no specific companies or states are named, there is no doubt that it is directed to the Chinese telecommunications companies Huawei and ZTE. On May 25 of this year, the Seimas adopted amendments to the Law on the Protection of Facilities Important to Ensuring National Security[16] and the Law on Electronic Communications[17]. They barred unreliable manufacturers and providers from participating in 5G development. From now on, the frequencies required for 5G communications will be allocated only after assessing

whether the equipment used for this communication network will meet national security standards. Although no names are mentioned directly, there is no doubt that these changes have definitively closed the door to Huawei's plans in Lithuania. The amendments to the Law also oblige operators to replace by 2025 equipment which fails to meet the interests of national security. This update of the legal framework has eliminated one of the main challenges that have caused stagnation in development and, judging from the current situation, it is likely that there will be a progress in the development of 5G infrastructure in the near future.

Another no less significant challenge related to the stagnant development of 5G communications is the protracted negotiations between Lithuania and Russia on the use of certain frequency bands. The negotiations that started in 2019[18] have not yielded the desired result: although an agreement has been reached on the release of the 700 MHz band, Russia refuses to release the extremely important 3.5 GHz band (it is needed to effectively cover more densely populated areas and fully exploit the potential of 5G), which is used by Russia for military purposes. 3.5 GHz frequencies, "usurped" in the Kaliningrad Oblast, overlap with the needs of Lithuania. The 3.5 GHz band is used in European 5G networks; therefore, it is in Lithuania's interests to use the same frequencies in the rest of Europe. After the negotiations broke down, RRT decided to turn to the European Conference of Postal and Telecommunications Administrations for help in resolving this dispute but this process is time-consuming. According to Telia[19], which was the first to test 5G technology in Lithuania, if no compromise is reached with Russia, several solutions are possible: the use of a higher frequency (there would be problems with the incompatibility of the equipment with the rest of Europe) or installation of fixed 5G stations (5G services are offered by installing stations in stationary areas at the cost of mobility between them). Both of these alternatives would demand higher costs, which, against the background of the COVID-19 pandemic, may continue to affect the progress of development.

Summary: A race against time

Before the crisis in Sino-US relations and the outbreak of the COVID-19 pandemic, 2020 was referred to as a possible year for the breakthrough in the development of 5G communications in Europe. Beijing's long-term strategy for 5G technology and the allocation of significant resources for research and development have made Chinese telecommunications companies world leaders in 5G technology that had serious ambitions in Europe. However, as Europe became the epicentre of the escalation of the US-China technological "war", the countries of the region were forced to redraw their 5G development plans. The countries that have supported the US Clean Network initiative have committed not to allow Chinese companies to develop 5G communications infrastructure. Although geopolitical considerations have had a major impact on the adoption of such a position, security challenges are not unfounded either. The 5G communications revolution coincides with the emergence of the Internet of Things, growing digitalisation of the economy and increasingly advanced artificial intelligence technologies. All this, of course, particularly increases the importance of ensuring secure communications.

Central and Eastern Europe, which has almost unanimously supported the US idea of a secure communications, is facing a significant slowdown in 5G development. The main reasons include the adaptation of the legal framework that has taken much time, the stroke of the

pandemic on the economy and the lack of alternatives caused by separation from Chinese telecommunications companies. This situation causes legitimate concerns: the slow development of 5G communications could have a negative impact on the countries' economies and future competitiveness. In the Western Balkans, which have historically balanced between Western and Eastern influences, the outlook is even sadder. Although most countries of the region have supported the US initiative, extremely slow progress and China's charm offensive in the region may lead to changes in this position in the future.

Lithuania, which had a good starting position to initiate the rapid development of 5G communications, has recently been increasingly lagging behind in the general EU. Currently, Lithuania and Portugal are the only EU countries that do not have a commercial 5G service. The frequency auctions required for the development of 5G communications are being postponed and no specific date has been scheduled. Recently, the disagreements of the communication operators with RRT regarding the difficult-to-fulfil requirements have become another cause of delays. Lithuania's decision to support the US initiative and not allow Huawei to become involved in the development of 5G infrastructure in the country has led to significant delays in frequency auctions. In the case of Lithuania, it is important to emphasise that even though the decision to respond to US requests to distance from the Chinese telecommunications giant was important and necessary in terms of security, it also has its costs – potentially higher spending for 5G infrastructure development and significant delays. Also, Lithuania's case is unique in the general European context: successful development is hindered by the negotiations with Russia on the use of frequency bands that have been going on for several years. If Lithuania fails to solve this problem, it will have to look for alternatives as soon as possible, which may require additional costs.

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