BIULDING NATIONAL RESILIENCE AFTER THE WAR: ECONOMIC AND CRITICAL INFRASTRUCTURE APPROACH

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SUMMARY

On February 24, 2022, Ukraine found itself at the war with Russia. The Ukrainian state faced new challenges of existence, which made the development of a strategy of national resilience relevant. Georgia also had experience in the economic and social sphere during and after the war. Therefore, the comparison of approaches to building a resilient state is based on resilient economic and social sphere (ESS) and critical infrastructure (CI) is extremely useful as in scientific as well as in a practical sense.

A shift in the main threats of national resilience (NR) appeared due to global challenges. That reasons moved from war threats and terrorism to climate change threats, the digitalization of social life, inequality and the decline of democracy in the world. Analysing possible scenarios for the development of the global landscape, researchers argue that all the positive human capabilities can only be approached through the creation of resilient state, based on resilient economic and social sphere (ESS) and critical infrastructure (CI). However, no previous study was devoted to: 1) the changes of conceptual understanding "national resilience", 2) the indicators of resilient administration of ESS and CI, as well as 3) policy making approaches in ESS and CI to build NR. This study will present major information sources for NR investigation; it will research the NR term understanding in Ukraine and Georgia, and other countries; as well as discover basic indicators of resilient ESS and CI.

Key words: national resilience, economic and social sphere, critical infrastructure, basic indicators, Ukraine, Georgia, the war with Russian federation

INTRODUCTION

Published **Global trends and Key implications thorough 2035** (www.dni.gov/files/documents/nic/GT-Full-Report.pdf) claim that governing is getting harder. While formulating strategies in public management, we must consider that "Publics will demand governments deliver security and prosperity, but flat revenues, distrust, polarization and a growing list of emerging issues will hamper government performance". Researchers state that "at national level, the gap between popular expectations and government performance will grow; indeed, democracy itself can no longer be taken for granted". Analysing possible scenarios for the global landscape development, researchers argue that all the positive human capabilities can only be realized through the creation of resilient administration. "Increasing resilience at the institution level could also occur through the employment of dedicated strategic planning cells, exercises, technologies and processes that would accelerate responses during crisis". At present, Ukraine is undergoing a public administration reform, in conditions of political and economic crisis, military aggression of the Russian Federation in the East of Ukraine, annexation of Crimea (Bilynska 2.). This requires new paradigm of resilient ESS as the part of NR. Georgia also has begun to discuss the possible ways to build a resilient state and form resilient national strategies in economic and energetic spheres (Z. Garakanidze 16.) . That is why the Ukrainian experience in the functioning of the sphere during the war can provide new mechanisms for creating national resilience.

Protecting critical infrastructure is a key part of government activities, the main goal of which is to provide its own population with safe investments and to protect them . Critical infrastructure involves the security of interconnected systems, networks, and assets that serve the functioning of the community. Examples of generally critical material infrastructure include: **roads, bridges, airports, communications, and power plants.** All other infrastructure of the country is impossible without information support, ie without computers and networks, which are mainly represented by dispatch control and data collection systems (SCADA [1]), the interdependence of which allows them to exchange information and analyze all critical functions. These other types of infrastructure include: **financial activities, electricity generation and supply, medical services, government emergency ser-**

1 SCADA - is Of time Real Mode Away From the point Information Interrogation Process Processing , analysis And Object / process Management In order

vices, and air and land transport . As it is directly related to the process of attracting investments, one of its most dangerous and considerable factors is investment security and state security interests, different countries have different tools in this direction. Which many of them use successfully.

In order to develop a critical infrastructure as a document and to form an effective model, it is necessary to compile it taking into account internationally distinguished practices, issues and expert recommendations, as well as to ensure maximum compliance with national legal framework, European legislation and to exclude their contradictions.

Ensuring the continuous delivery of services provided by critical infrastructure is vital for the full functioning of the state and its institutions. It should also be noted that the safe and continuous operation of critical infrastructure is one of the priority issues not only for us, but also for the EU and NATO countries.

According to recent studies, the problems of terrorism and war are the most significant global challenges the world will face in the near future. Along with that, the public administration will complify. Civil society will require governments to ensure individual and collective security, well-being. In the same time declining incomes, mistrust, polarizing society, and an increasing list of urgent environmental issues will face public servants on the daily basis.

Therefore, when formulating development strategies for Ukraine and Georgia, researchers analyze possible scenarios for the development of the global landscape. That leads to argue that all the positive opportunities of mankind can only be realized through the creation of a resilient state through resilient ESS (RESS). "Increasing institutional level resilience can be ensured through the introduction of strategic planning, technologies and processes that will provide resilience in times of crisis. But another extremely important factor is public servants who implement these technologies and processes. And the level of their participation in the formation of the RESS has not been studied yet.

The issue of NR on state level is complex in many ways. Unfortunately, a collection of resilient individuals does not guarantee a resilient community; similarly, a set of resilient communities does not necessarily form a resilient nation and a resilient state. Studies prove that effective public administration (when government bodies are trusted) is a part of resilience formation on both personal and community levels.

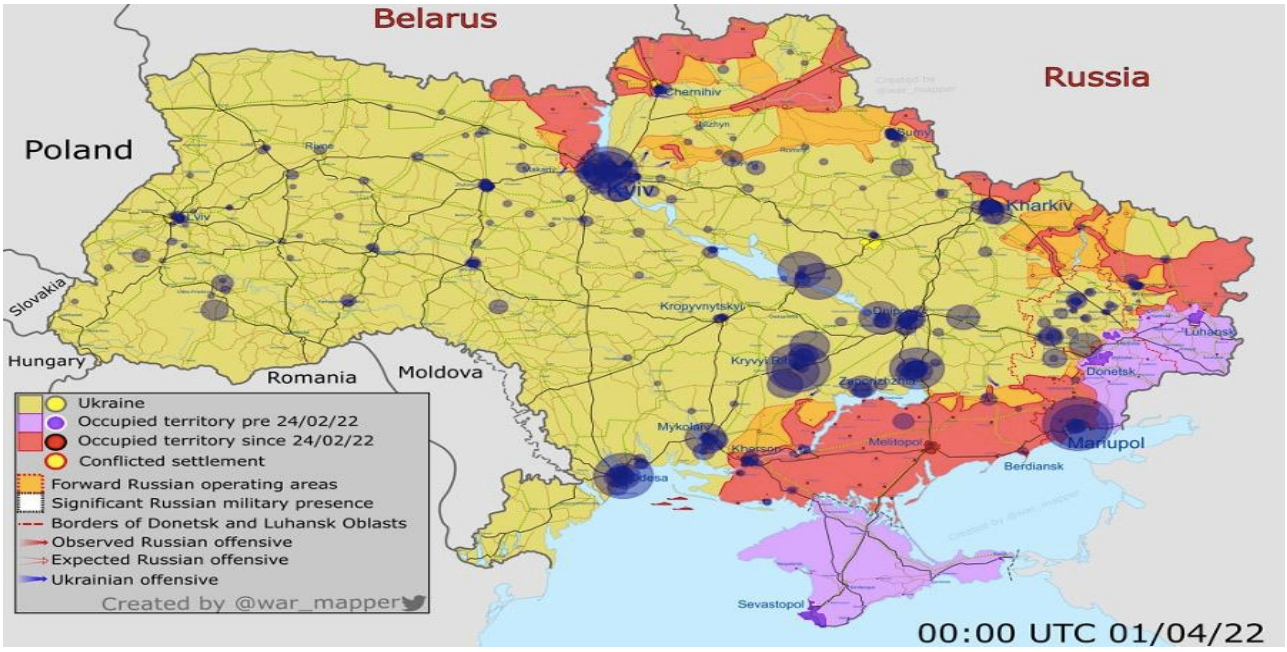
Scientific issues that have not been researched yet:

1. What changes happened in the Ukrainian NR paradigm since 2014? What is the current NR structure in Ukraine and Georgia?

2. What are the RESS and CI indicators especially those at NR level?

3. What factor unites resilient public policy and resilient authorities, and forms the resilient state?

This study will provide several contributions. First, it introduces the major sources of NR investigation, used by researchers and professionals in EU. Second, it examines contemporary structure of NR based on possible scenarios for the development of the global landscape. Third, it investigates the indicators of RESS and their influence on NR formation. Fours, the study analyses the effect of acceptance of NR paradigm in public administration system of EU countries and its' possible implementation in Ukraine and Georgia. Practical recommendation of this



Picture 1 Territory of Ukraine as a battlefield, 2022
Sourse: Centre of Economic Strategy

study will be discussed.

Analytical issues. Russia's initial 'blitzkrieg' campaign is gradually turning into a standstill. How much does Ukraine has on its hands now to survive economically through the war and what instruments does it have to safeguard business activity and maintain crucial government functions in order to protect rapidly expanding vulnerable groups and win the war with the Russian federation? (Picture 1).

With a significant part of Ukraine's territory being either temporarily occupied or turned into a battlefield (Picture 1), and the rest experiencing a less severe, but nevertheless traumatic shocks of war disruptions, the country has been losing a lot in economic terms. The humanitarian catastrophe and the war unfolding in several big cities lead to massive internal and outward migration. People, who previously had a secure job and accommodation, are rapidly joining a vulnerable group that needs support. The deaths toll keeps rising.

In this paper, we describe the available data on Ukraine's economy and social sphere and draw the outlines for the major possible policies in the economic area, including the crisis response and building economic resilience for the nearest future:

• GDP forecasts from -10% (IMF) to -45% (WB), electricity consumption drop by ~35% in March.

• Over half of the business activity frozen (57% according to European Business Association, 59% according to Kyiv School of Economy)

• Exports at 50% of pre-war volumes, imports at 30% of pre-war volumes with a heavy ban on imports and collapse of the exports logistics

• Maritime logistics (62% of exports in 2021) effectively blockaded by Russians

• Consumer prices rose 4.5% in March compared to February, the annual figure very likely to exceed 15%

• Banking sector reportedly lost 50-70% of cash flow from loan portfolio, NPL and capital adequacy problems mounting, but the system is up and running

• Currency depreciation was negligible, but it took the severe capital controls to hold the currency crisis at bay

• Investments are frozen and unlikely to widely rebound without special war risk insurance policies

Speaking about infrastructural loses we can say about huge amount of damaged enterprises, plants, buildings, roads, bridges and privet houses. According to the National Bank of Ukraine, during the war, Ukraine's economy lost 50% of "unproduced" GDP. That is, every week the national economy costs more than 50 billion UAH. And this without loss of destruction. The IMF estimates Ukraine's losses due to the military invasion of the Russian occupiers at 35 percent of GDP:

• The logistics market has suffered significant losses as many areas have been cut off from communication. Logistical enteprises reported that deliveries fell by 95% during the first week of the war.

• Many highways have been destroyed, so new routes have to be built.

• In addition, there is a curfew in Ukraine. At night, cars can not move, which excludes around the clock.

• "We try to minimize the risks of drivers: we carefully plan the route, taking into account all possible dangers and hot spots, we monitor the real situation on the roads online."

Now we can observe the most difficult economic policy making in Ukraine's modern history due to:

• Restoration of business activities and employment in safer regions of Ukraine.

• Closing the fiscal gap with as little effect on inflation and debt burden as possible

• Massive extraordinary deregulation to be assessed and mainly retailed for the post-war period.

• Logistical issues will demand a lot of hands-on job to build new routes for the exports

• The NBU restrictions on imports and payments abroad might be gradually relaxed

• Grants instead of loans to ease the debt burden for the post- war future

• Existing debt management should not damage the ability to attract funds immediately and be as less damaging for the country's credibility as possible

• After the war frontloaded Ukraine reconstruction support program should be activated, partly using Russia's frozen assets

• Granting Ukraine the EU Candidate Status will have a profound impact on institutions rebuilding and economic policies. (Picture 2).

Government policy on the formation and development of human capital should be based on identifying and assessing the threats posed by current demographic issues (Picture 2). Although it is important to increase the quality of human resources, it is also necessary to ensure that their quantity is sufficient. Only then will the effectiveness of public investment in human capital be maximised. According to the UN, about 5.5 million citizens left Ukraine by May 1. Slightly less than half of them are people of working age. Almost all women. A large number of working-age men were mobilized, and some workers moved to relatively safe regions. Therefore, businesses that cannot relocate suffer from labor shortages.

Internally displaced - more than 7 million people. If a woman and a child have gone abroad and a man has stayed here, they have two options: either the woman and the child return or the man leaves Ukraine. Every effort should be made to ensure that as few families as possible choose the second path. This requires international investment in reconstruction. This is the task of both Ukraine and its partners. The latter must feel part of the blame for starting the war, because they tried to pacify terrorist Russia, to do business with it as usual (business as usual), despite what the aggressor has been doing for the last two decades.

Picture 2. Flows of external Ukrainian migrates during the war

LITERATURE REVIEW

There is a fast-growing amount of academic literature referring in one way or another to the phenomenon called NR. The concept has appeared to be attached to different fields, and is used within those fields at different levels. A search for relevant Subject Terms in a scientific database (EBSCO) reveals 1465 hits about " national resilience" from 1991 to 2019. The concept of NR is a comprehensive one, addressing the issue of society's sustainability and strength in several diverse realms (Chemtob, 2005; Eshel & Kimhi, 2016; Obrist et al., 2010). In addition to the conceptual ambiguity, this topic is also politically driven and can appear to be sensitive as it refers to responsibilities of political leader and state authorities in conflict hotspots around the world. According to last research (Kimhi, Eshel, Leykin & Lahad, 2017; Kimhi et al., 2019) measuring resilience becomes increasingly difficult with regard to amorphous systems without clear structures or definable borders. The nation, especially in the globalized world, is one of these ever-changing phenomena; accordingly, national resilience is certainly a challenge to define and measure. However, it seems that beyond the various definitions there is tendency to agree that national resilience means society's sustainability and strength in several diverse realms including components like patriotism, optimism, social integration, and trust in political and public institutions.

The scope of potentially intervening factors expands from personality attributes to cultural aspects as well as other potential component of national resilience is waiting to be studied. At the level of the nation, the situation of society becomes very complex since we have to face two ill-defined variables in one equation: we do not know either what constitutes national resilience or how to define the nation in the context of globalization. (Joseph, 2013) having been introduced into the contingency policies of many institutions (CabinetOffice, 2008a,b;Coaffee, Murakami,Wood,&Rogers, 2008; Goldstein, 2012; Martin, 2012; Newman, Beatley, & Boyer, 2009). This, of course, has not been without criticism (see, for example, MacKinnon & Derickson, 2012). Nonetheless, the scope of resilience has grown exponentially. The term isnowused across disciplines in work concernedwith the interactions between people and nature (see, for examples, Berkes & Folke, 1998; Gunderson, 2001; Holling, Gunderson, & Light, 1995; Redman, 1999) and as such is seen as a "bridging concept" between the natural and social sciences (Davoudi et al., 2012). With amove toward a concept that holds multiple levels of meaning,from the metaphorical to the specific (Carpenter, Walker, Anderies, & Abel, 2001), the critique of its use is not only understandable but also well justified.

After the 9/11 the amount of expenditure dedicated to the protection of nations from extremism and terrorism increased exponentially (Guinnessy & Dawson, 2002; Issues in Science & Technology, 2002; Lum et al., 2006; Silke, 2004). Part of this expenditure has been allocated to the development of policy and interventions aimed at preventing violent extremism. In the United States, the introduction of a Strategic Implementation Plan for Empowering Local Partners to Prevent Violent Extremism in the United States placed emphasis on the building of community resilience in countering violent extremism (The White House Officer of Press Secretary, 2011). However, resilience as a concept and even more so as a political

buzzword has not been properly conceptualized in this context.

Parmak (2015) further highlights the need to develop a greater conceptual understanding of national resilience and possible measuring system. Several studies showed that exposure to terror has led to higher levels of patriotism among Americans (Moskalenko,McCauley, & Rozin, 2006). This data seem to suggest that different aspects of the NR construct will be assessed differently by different groups of people.

Creating critical infrastructure in Georgia is directly related to NATO and European integration. The goal of the state is to normalize the existing legislation where the security of critical infrastructure is in harmony with it.] With the implementation of standards and recommendations established over the years.

It is noteworthy that the Georgian legislation does not define the essence of critical infrastructure, its definition and the necessary conditions for its safety, there is no investment policy related to national security, as well as the list of critical infrastructure and, most importantly, unidentified responsible persons responsible for its safe operation. It is therefore necessary to set up a group to work on this issue and identify the people responsible for its functioning, their responsibilities and other important issues.

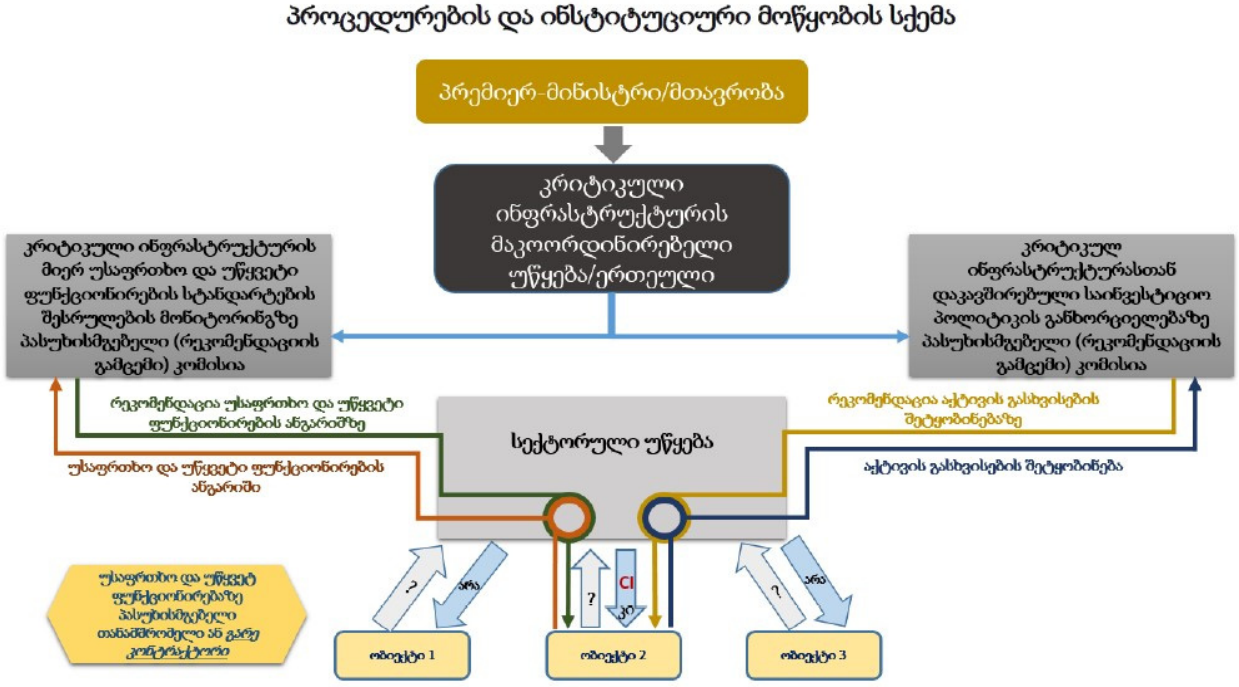
In today's reality, countries are facing a growing number of crises, with development emerging new threats, the emergence of which can be both subjective and objective causes. Such threats may relate to the violation of national borders and have a significant negative impact on current socio-economic processes and the environment of state institutions. The rulers of the world's leading states are well aware that the subsequent systemic shock can significantly hamper: economic development, social integration, and political stability .

In the history of mankind, the conquest of territories, conquest, destruction or Conversely, the protection of objects of strategic importance was the basis of martial arts. The concept that applies to the collection of such objects is "**critical infrastructure** ". In a more general sense, it is a set of interconnected elements of state security that maintain the integrity of the structure.

There is no specific definition of critical infrastructure in practice, but based on general experience and the international use of the term, the Office of the *State* Security and Crisis Management Council explains: *Puts the national interests of the country, state security, human life and health, as well as economic and social well-being at stake. "*

As we mentioned above, there is no investment policy related to national security and most importantly the unidentified responsible persons who are responsible for its safe operation. It is therefore necessary to set up a group to work on this issue and identify the people responsible for its functioning, their responsibilities and other important issues. However, work on this issue has begun and a working version of the document has been created by the staff of the State Security and Crisis Management Council; "Critical Infrastructure Regulatory Framework," it states A critical infrastructure procedures and institutional arrangement scheme that looks like this (Picture 3):

Thus, the Critical Infrastructure is essentially considered as a part of national security and civil protection, which is one of the main indicators of investment and acts



Picture 3. Critical infrastructure procedures and institutional arrangement scheme (desighed by author)

on the international investment image. With eliminate negative consequences, the critical infrastructure list protection system is complex and covers the whole chain of issues, although it has three main links:

✓ Critical Infrastructure Identification Defining criteria and compiling a list.

✓ Develop the conditions and standards required for the operation of critical infrastructure.

✓ Defining critical infrastructure investment policies.

Speaking about Critical Infrastructure Development we can emphasize that given the existing challenges, the development of information technology has led to the emergence of new gaps that cover all areas of vital importance and, above all, the activities of the economically active population. Therefore, the responsibility of the state government includes ensuring the security of important social structures and institutions on the required level. In order to achieve safety and sustainability, it is important to prioritize those on the critical infrastructure list and to determine how they will be coordinated, setting clear goals, identifying risks, avoiding them, or developing mitigating conditions:

1. Energy Power generation facilities: Transmission lines and substations; Central oil pipelines and oil depots; Oil refineries; Real and medium pressure high and medium pressure gas pipelines, gas storage.

2. Transport infrastructure: main roads; airports; railway; seaports.

3. Information and Communication Technologies (ICT): Trunk communication lines; Masts and other transmitters. Protected government and private information center servers; TV, radio, telephone, various other means of communication.

4. Finances: The National Bank Reservoir; Central repositories of commercial banks; Key elements of the financial and monetary system.

5. Healthcare: Hospitals; NCDC; Biological laboratories.

6. Agriculture Food Storages & Warehouses: Food enterprises; Laboratories.

7. Water supply: Drinking water reservoirs and central distribution infrastructure.

8. Emergencies: Fire -rescue facilities; Rapid response services.

9. Government structures for the perfect functions of the administrative and other state apparatus.

10. Industry and hazardous waste utilizations: Chemical and other large-scale enterprises; Radioactive and arsenic waste burials.

11. Defense: Defensive buildings, structures; Ammunition and materials; Military bases and other objects of strategic defense infrastructure; etc.

The combination of sectors listed in the above list represents the critical infrastructure of the country, although it is somewhat necessary to concretize and discuss it as separate objects, their continuous functioning is important in times of peace, as well as in emergencies and war. The existence of critical infrastructure in itself implies that different, regulatory norms of security may apply to the facilities within it, depending on the interests of the state.

Ensuring information security is one of the main challenges for companies and countries in the world and its full provision requires incredible resources, so investing in this area is in the interests of both the state and the private sector. , Great damage to investors, companies and state administrative bodies.

The security of state bodies, active production or various services in the state is impossible without information support, ie without computers and networks represented by Dispatch Control and Data Collection Systems (SCADA), the interdependence of which allows them to exchange information and analyze all critical functions. These other types of infrastructure include: financial activities, electricity generation and supply, medical services, government emergency services, and air and land transport. As it is directly related to the process of attracting investments, one of its most dangerous and considerable factors is investment security and state security interests.

The involvement of the sectors included in the list of critical infrastructure depends on the quality . Investment potential, in turn, is closely related to specific, strategic resources that can be considered as listing priorities. Therefore, it is necessary to take measures to increase investment security at the facilities included in the field of critical infrastructure.

The establishment of critical infrastructure and its development can have a positive impact on the implementation of the strategic goals of socio-economic development of the country, and at a later stage in their planning.

Liberal investment principles are recognized by international organizations and all developed countries, but all of them have an investment security policy that is critical to infrastructure and imposes certain restrictions on the ownership and management of assets or services that are critical to infrastructure. Different countries have different approaches to this issue, however we can distinguish three main approaches:

I: Partial or total ban on foreign investment in certain sectors at the legislative level;

II: Preliminary review of all investment proposals that meet the criteria set by law;

III: Verification systems that identify individual, potentially problematic, and already completed transactions.

The prevention of national security risks is significantly possible in the first case of the measure, although it has one major drawback and it is the delay in economic development, which leads to a partial or complete blockade of investment. In this particular case, the legislature imposes general restrictions on the investor. But the relatively lenient approach involves assessing the risks through a preliminary or follow-up study, which may be considered best practice for Georgia, as the third approach is completely

liberal and individual review mechanisms allow only potentially substitutable transactions to be met that meet certain criteria. The pre-consideration approach assumes the need for the prior consent of a particular investment proposal, otherwise the investment will not be made.

EXPECTED RESULTS

1. Establishing the stages of evolution of the NR concept since 2008 and 2014 to nowadays in the scientific literature and national strategies of Ukraine and Georgia.

2. Supplementing the terminology of economic and public administration scientific areas by authorizing the definition of "resilient public administration" , "resilient critical infrastructure" expected to be useful for both Georgia and Ukraine.

3. Research of modern Ukrainian and Georgian scientists and politicians' perception of the NR concept in order to identify basic factors influencing the formation of institutional resilience.

4. Identification of RESS and CI indicators at the national level in order to determine the priority change strategies for governance.

5. The establishment of critical infrastructure and its development with a positive impact on the implementation of the strategic goals of socio-economic development of the country, and at a later stage in their planning.

6. Building the model of the globalization challenges impact on national resilience.

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