

CHAPTER 22
COMMUNITY RESILIENCE IN THE POST-CONFLICT PERIOD:
CONCEPTUAL FOUNDATIONS, SPATIAL
AND INFRASTRUCTURAL CONDITIONS
AND AN INNOVATIVE RECOVERY MODEL ¹

Olena Omelianenko

INTRODUCTION

The current stage of development of territorial systems is characterized by an increase in the number of multidimensional challenges, among which the consequences of armed conflicts occupy a special place. The post-conflict period forms fundamentally new conditions for the functioning of communities, combining physical destruction of infrastructure, disruption of economic ties, demographic losses, large-scale migration processes, a decrease in the level of trust and social cohesion, as well as an increase in the level of uncertainty in the strategic development of territories. In such conditions, traditional approaches to recovery, focused mainly on the reconstruction of material objects, are insufficient to ensure long-term stability and development of communities.

The relevance of the study is due to the need to transition from the concept of recovery as a return to the previous state to the concept of development as a qualitative transformation of territorial systems. In this context, the category of resilience acquires special importance, which reflects the ability of a community not only to withstand external shocks, but also to adapt to new conditions, restore the functioning of key systems and form new development trajectories. Resilience becomes an integrating principle that combines the security, social, economic, spatial and institutional dimensions of recovery.

The problem of organizing living space as the basic environment for the functioning of a community requires special attention. In post-conflict conditions, living space undergoes not only physical destruction, but also functional and social transformations. The usual spatial connections are lost,

¹ Research was carried out with the funds of grant of President of Ukraine provided by National Research Foundation of Ukraine for implementation of project 2025.05/0021 "Innovative strategies for developing community resilience: combining the organization of living space, human capital development and social partnership for the restoration of post-conflict territories".

the structure of land use is changing, new risks related to security, ecology and access to resources arise. In this regard, there is a need to form innovative approaches to the organization of living space, which combine the principles of security, inclusiveness, adaptability and sustainable development.

Thus, there is an objective need to form a holistic scientific approach to increasing community resilience, which would integrate spatial, social and institutional components of development and take into account the specifics of the post-conflict environment. Solving this problem requires the development of a comprehensive model that combines innovative approaches to organizing living space, developing human capital and mechanisms of social partnership.

The purpose of the study is to develop a scientifically sound model for increasing community resilience in the post-conflict period through the integration of innovative approaches to organizing living space, developing human capital and forming effective social partnership.

Achieving this goal involves solving a set of interrelated tasks, including: analyzing modern concepts of sustainability, adaptability and transformative development of communities; research into global and national experience in the restoration of post-conflict territories; assessment of spatial-infrastructure, environmental and social factors influencing community development; identification of mechanisms for human capital development and social integration; generalization of practices of intersectoral interaction; and formation of an integrated resilience model as a tool for strategic management of territorial development.

22.1. Conceptual Foundations of Resilience, Adaptability and Transformative Development of Communities in Post-Conflict Conditions

Community resilience is a key component for sustainable development and survival in the modern world. This concept goes beyond simple survival and encompasses the ability of communities to recover and adapt after crises. Community resilience is critical to their sustainability. Communities with a high level of resilience are able to effectively resolve conflicts, respond to challenges and support their members in difficult situations. This results in an improved quality of life and strengthened social capital of the community. Community resilience also has a direct impact on its economic sustainability. Communities that can quickly adapt to changes in the economic environment and develop diverse economic sectors are less vulnerable to economic crises and have a better chance of thriving in the long term. As a result, community

resilience is a key factor for their sustainable development and survival in the modern world. Strengthening community resilience through community engagement, adaptation and resource conservation is a strategically important task for creating viable and sustainable communities.

From the perspective of resilience potential, considering the archetypes of the territory is important because it allows us to understand the deep psychological and cultural connections of people with their environment. This knowledge helps to reveal the complex relationships between people and their motivations, which is the key to successful planning and management of urban and rural spaces. Understanding the archetypes of the territory contributes to the development of deeper and empathetic management, which can contribute to the formation of more harmonious and sustainable communities. Researching the archetypes of the territory can open up new opportunities for increasing the resilience of communities by adapting the environment to the needs of people and ensuring balanced development based on the unique characteristics of local communities.

The main approaches to the security and resilience of community development include ensuring flexibility and adaptability in responding to various challenges, as well as integrating innovative technologies and approaches for effective risk management. It is important to involve citizens in decision-making and to promote collaboration between different stakeholders to create more resilient and safe communities.

In the study ², resilience is defined as the ability of a system, society or community facing risks to sustain, perceive and adapt to them and to recover from the consequences of risk in an effective and timely manner, including by preserving and restoring its fundamental structures and functions.

Community resilience can be viewed as the long-term ability of a community to use available resources (energy, communication, transportation, food, etc.) to respond to, withstand and recover from adverse events (such as economic downturns or global catastrophic risks) ³. This allows for community adaptation and growth after a disaster has occurred ⁴. Resilient communities can minimize any impact of a disaster, making it easier to return to normal life.

² Holling C. S. Resilience and stability of ecological systems. *Annual Rev. Ecol. System.* 1973. № 4 (1). pp. 1–23. DOI: <https://doi.org/10.1146/annurev.es.04.110173.000245>

³ Boshier L., Chmutina K. *Disaster Risk Reduction for the Built Environment.* 2017. № 111 River Street. Hoboken, NJ 07030: John Wiley & Sons. p. 32.

⁴ Fran H., Susan P. Community Resilience as a Metaphor, Theory, Set of Capacities and Strategy for Disaster Readiness. *American Journal of Community Psychology.* 2008. № 41 (1–2). pp. 127–150. DOI: <https://doi.org/10.1007/s10464-007-9156-6>

By implementing a community resilience plan, a community can come together and overcome any disaster, rebuilding physically and economically ⁵.

According to Ukrainian experts, resilience is the ability to recover from organizational crises in a constructive way, to adapt and develop in changing environmental conditions. Resilience manifests itself in times of crisis and in a constantly changing environment and only in this context can we see how resilient a particular team is and whether it has managed to develop and increase its influence can only be understood in retrospect ⁶. Researchers ⁷ consider the socio-economic resilience of territorial communities as “a dynamic process of increasing financial and economic potential, aimed at ensuring a high standard of living, increasing well-being, forming a competitive local labor market and guaranteeing equal access to social goods and services”.

Morozyuk N. V. considers resilience as “the ability to create and recreate the necessary socio-economic conditions through one’s own activities to meet the needs of the population by activating the internal reserves of rural areas” ⁸. Molodozhen Yu. B. ⁹ defines resilience as “the property of a social community to create and maintain the phenomenon of social life within a certain territory under the conditions of an internal structural and functional organization capable of interacting with the environment for the purpose of self-preservation. At the same time, the main feature of self-sufficiency is that out of the entire set of target functions of a territorial community, 2/3 are implemented exclusively independently”.

Security and resilience of communities in the postmodern era should be considered in a broader context, particularly with archetypes in mind, as they offer a deep understanding of the cultural, social and historical contexts that

⁵ Zarghami S., Kaleji L.K., Abhari M. Resilience analysis of the local communities from a political economy perspective in Zanjan, Iran. *Sci Rep.* 2023. № 13. pp. 19433. DOI <https://doi.org/10.1038/s41598-023-46838-x>

⁶ Бордун Н. Уроки резильєнтності від українських громадських організацій. 2023. URL: <https://ua.hive-mind.community/blog/386,uroki-reziljentnosti-vid-ukrayinskix-gromadskix-organizacii>

⁷ Мульська О., Бараняк І. Послаблення соціальної вразливості територіальних громад Карпатського регіону України в умовах економічнополітичної нестабільності. *Modeling the development of the economic systems.* 2023. № 2. С. 131–137. DOI <https://doi.org/10.31891/mdes/2023-8-17>

⁸ Морозюк Н. В. Теоретичні аспекти самодостатності сільських територіальних громад. URL: <http://www.pdaa.edu.ua/sites/default/files/nppdaa/5.1/173.pdf>

⁹ Молодожен Ю. Б. Теоретико-методологічні засади визначення самодостатності територіальних громад. URL: <http://mydisser.com/en/catalog/view/386/394/7335.html>

influence community behavior and values^{10, 11}. Engaging archetypes helps create more holistic and inclusive approaches that take into account the diversity of human experience and contribute to the long-term sustainability of communities^{12, 13}.

Community resilience is a key concept in the context of its ability to withstand and adapt to challenges and crises. Community resilience describes its ability to respond to and recover from stressful situations, crises, natural disasters or conflicts. This includes the ability of community residents to help each other, quickly restore normal life and use resources for recovery. Community sustainability describes its ability to continue and remain resilient in difficult conditions over a long period of time and includes not only recovery from crises, but also the ability to prevent and resolve conflicts, build sustainable structures and governance systems that ensure the resilience of the community even in stressful situations. Therefore, community resilience is more focused on its ability to recover quickly from a crisis, while community sustainability describes its ability to remain resilient and function effectively in the long term, regardless of external pressures or challenges.

For the purposes of the study, local territorial resilience is defined as the ability of specific geographical areas (cities, rural communities, regions) to adapt to stress, crises and changes in their environment. This means that such territories have the ability to respond effectively to threats and challenges that may arise from natural disasters or human activities. To achieve local territorial resilience, it is necessary to take into account various aspects, such as economic sustainability, social integration, environmental sustainability and effective crisis management. This should be summarized in the form of emergency plans, improving education and public participation in decision-making, as well as creating sustainable infrastructure and ensuring access to resources for recovery after a crisis.

¹⁰ Амосов О., Гавкалова Н. Архетипи в діяльності об'єднаних територіальних громад. *Публічне урядування*. 2019. № 3 (18). С. 15-28. DOI: <https://doi.org/10.32689/2617-2224-2019-18-3-15-28>

¹¹ Марченко В.Ю. Архетипні засади історичного розвитку місцевого самоврядування на теренах України. *Публічне урядування*. 2021. № 1 (26). С. 123-133. DOI: [https://doi.org/10.32689/2617-2224-2021-1\(26\)-123-133](https://doi.org/10.32689/2617-2224-2021-1(26)-123-133)

¹² Serohin V., Serohina S., Bodrova I., Hrytsenko H., Omelianenko O. The Potential of Territorial Communities as a Factor of Socio-Environmental Development of Territories. *WSEAS Transactions on Environment and Development*. 2023. Vol. 19. pp. 197-206. DOI: <https://doi.org/10.37394/232015.2023.19.17>

¹³ Омеляненко В.А., Омеляненко О.М. Архетипні основи інституційно-інноваційних проєктів сталого розвитку територій в умовах постмодерну. *Український соціум*. 2022. № 2 (81). С. 59–75.

Pakhnenko O.¹⁴ notes that most often among the components of ensuring community resilience, researchers note social capital, economic development, human capital and physical resources. Experts of the “Resilient Ukraine” program¹⁵ note that resilience is not only the ability not to be nervous, but the ability to use contacts as a resource. The resilience of a society is measured by involvement in joint actions and not by the simple existence of a set of individual resilient people. Social support, collective effectiveness, a sense of the meaning of the existence of a community and community play a significant role. The awareness that there are connections, that is, community members can support each other, are able to cope with the consequences, is also part of resilience.

It should be noted that postmodernity as a socio-cultural phenomenon has a significant impact on territories and local communities, introducing various changes in their structure, functioning and interaction.

Postmodern conditions are characterized by increased complexity and unpredictability of crisis situations, as a result of which territories must be prepared for various types of threats, including non-standard and new forms of challenges¹⁶. Postmodern conditions are characterized by rapid changes in society, technology, economy and environment. For example, in the postmodern world, digital and technological innovations become both a cause and a means of resolving crisis situations. The development of digital technologies can facilitate monitoring, forecasting and responding to risks and dangers. At the same time, this is often accompanied by a large amount of information that spreads rapidly through social media and other channels, which creates challenges for crisis management and contributes to the spread of disinformation. The response to crisis situations must be fast and flexible enough to respond to these changes.

Postmodernity leads to a blurring of boundaries and identities in territories. Traditional geographical boundaries lose their importance as globalization promotes the growth of transnational and interregional connections. This can lead to the formation of global urban regions, where interaction and exchange between different local communities become more intense.

¹⁴ Пахненко О. Сутність та складові резильєнтності громад в контексті covid-19. *Економіка та суспільство*. 2022. № 39. DOI: <https://doi.org/10.32782/2524-0072/2022-39-51>

¹⁵ Інтерв'ю з Іриною Бруновою-Калісецькою, кандидатом психологічних наук і конфліктологом. Стіяка Україна. 08.20.2020. URL: <https://resilient-ukraine.org/activities/19>

¹⁶ Яковлев М.В., Купка О.В. Метамоdern, пост-постмоdern і світоглядні орієнтири постінформаційного суспільства. DOI: <https://doi.org/10.30525/978-9934-26-357-6-16>

Postmodernity also changes the mentality and way of life of local communities. The growth of individualism and pluralism of values can lead to the emergence of different approaches to social, economic and political issues at the local level and therefore to potential conflicts.

From the perspective of territories, it is important that postmodernity involves the active participation of citizens in governance processes and crisis response. Different communities and stakeholders can play an important role in the joint creation and implementation of resilience strategies. Thus, understanding and implementing the resilience of territories in postmodern conditions requires taking into account these features and developing adaptive and flexible strategies to ensure stability and resilience in conditions of increasing complexity and unpredictability.

In our opinion, in postmodern conditions, the security and resilience of community development acquire new aspects and challenges that require the use of innovative approaches. One of such approaches, in our opinion, should be based on the archetypal methodology. Archetypes are especially important in postmodern conditions, as they provide a cultural and symbolic context that helps to explain complex social, economic and political phenomena. They also contribute to understanding the deep structures of collective consciousness and behavior, which allows us to better navigate the ambiguous and dynamic conditions of postmodernity, as well as effectively adapt to them.

In general, in the postmodern world, the security and resilience of community development require flexibility, innovation and cooperation at different levels and scales. These aspects, in our opinion, can be combined into the concept of a self-sufficient community. Researchers¹⁷ define a self-sufficient territorial community as a community that “has a defined territory, developed social infrastructure, necessary human resources, material and financial resources sufficient to resolve issues of local importance in the interests of community residents and to exercise its own and delegated powers by local authorities. A self-sufficient territorial community should be able to effectively use its resources in the process of its functioning, not only to meet current needs, but also to create conditions for further successful development”.

In the postmodern and resilient context, a self-sufficient territorial community can be defined as a community that is able to effectively adapt to modern challenges and changes, using its own resources (including social capital and archetypes), knowledge and innovation. Such a community

¹⁷ Люта О. В., Пігуль Н. Г. Самодостатність територіальної громади: її сутність, склад та напрями забезпечення. *Ефективна економіка*. 2015. № 11. URL: <http://www.economy.nayka.com.ua/?op=1&z=4571>

develops its own economy, education, infrastructure and social systems, promoting cooperation between members and interaction with other communities. In resilient conditions, a self-sufficient community is able to quickly recover from a crisis, maintaining its social, economic and environmental sustainability through citizen engagement, active participation in planning and decision-making, as well as through the creation of various opportunities for development and prosperity.

A self-sufficient community is an important element of sustainable development and modern “responsible citizenship”, as it allows people to be active participants in their own lives and solve problems at the local level. For example, in the study ¹⁸ it was empirically proven that communities that during the military conflict showed structural changes in local budget expenditures, in particular by increasing expenditures on social protection of local residents and veterans, were able to ensure an acceptable level of financial and material well-being of the population and the development of human potential. It is obvious that the growth of financial resources of communities contributed to the economic progress of the territory, due to an increase in the number of enterprises and, consequently, the creation of new jobs, meeting the needs of community representatives and developing social infrastructure. This, in turn, contributed to an increase in the general standard of living of the population, ensuring social stability and reducing the social vulnerability of all population groups, including veterans.

To generalize theoretical approaches to understanding the processes of community recovery in post-conflict conditions, it is advisable to carry out their comparative analysis through the prism of key concepts (resilience, adaptability and transformational development). Each of these approaches reflects a separate logic of community response to crisis challenges: from ensuring basic viability and restoring functions to flexible adaptation and further systemic renewal.

In the scientific literature, these categories are often considered in isolation, but in real conditions of post-conflict recovery they form an interconnected dynamic system within which the community gradually moves from the stabilization stage to the development stage. That is why their comparison according to a number of criteria allows us to more deeply reveal the content of

¹⁸ Мульська О., Бараняк І. Послаблення соціальної вразливості територіальних громад Карпатського регіону України в умовах економічнополітичної нестабільності. *Modeling the development of the economic systems*. 2023. № 2. С. 131–137. DOI: <https://doi.org/10.31891/mdes/2023-8-17>

each approach, determine their functional role in recovery processes and outline the possibilities of integration into a single model of increasing resilience.

To this end, Table 1 presents a systematic description of these concepts by key parameters reflecting their essence, implementation mechanisms, time horizons and significance for community development in the post-conflict period. This approach creates an analytical basis for the further formation of a scientifically sound model of community resilience.

Table 1

**Comparative analysis of community recovery approaches
with practical solutions**

Criterion	Resilience	Adaptability	Transformational development
Core concept	Ability of a community to withstand shocks and restore basic functions	Capacity to adjust to changing conditions and uncertainties	Ability to fundamentally transform systems toward a new development trajectory
Primary goal	Stabilization and rapid recovery of critical systems	Flexible response and adjustment to new socio-economic realities	Long-term sustainable and innovative development
Focus of actions	Infrastructure repair, restoration of services, emergency support	Institutional flexibility, labor market adjustment, education and retraining	Structural reforms, innovation ecosystems, new economic models
Key mechanisms	Risk management, redundancy systems, crisis response planning	Learning systems, policy adaptation, diversification strategies	Strategic planning, co-creation, mission-oriented innovation
Role of human capital	Maintaining basic skills and workforce availability	Upskilling, reskilling and mobility of labor	Creation of new competencies, knowledge generation, innovation leadership
Governance approach	Centralized coordination and rapid decision-making	Multi-level governance with feedback mechanisms	Collaborative governance, partnerships and stakeholder engagement

Spatial dimension	Restoration of damaged territories and infrastructure	Reconfiguration of spatial-economic linkages	Development of smart, inclusive and sustainable spatial systems
Practical recovery solutions	Rapid infrastructure rebuilding; restoration of critical services (energy, healthcare, transport); emergency employment programs	Development of dual education systems; support for SMEs; digital transformation of services; flexible urban planning	Creation of innovation hubs and clusters; green and smart infrastructure projects; public-private-community partnerships; implementation of lifelong learning systems
Expected outcomes	Functional recovery and basic stability	Increased flexibility and capacity to respond to future shocks	Sustainable growth, competitiveness and improved quality of life

Analysis of approaches to community recovery in the post-conflict period shows that different concepts – resilience, adaptability and transformational development – reflect the stages and levels of management of recovery processes. Therefore, the approach to increasing community resilience should be comprehensive and multi-level: from restoring basic functionality, through the development of adaptive capabilities, to creating conditions for systemic transformation. The interaction of these approaches ensures not only the elimination of the consequences of the conflict, but also the formation of long-term strategies for sustainable, innovative and inclusive community development.

22.2. Spatial and Infrastructural Determinants of Human Capital Restoration and Development

In order to analyze community infrastructure and human capital (HC) it is advisable to apply a comprehensive approach that includes various aspects of the interaction of these elements. Community infrastructure promotes population mobility and allows for more efficient use of human capital and also affects the quality of life and work of the population.

People, economy and space are the three main dimensions of social development. Fig. 1 depicts the interactions and connections between them. HC

reflects the connections between people and the economy and its accumulation depends on favorable relationships and spatial conditions, such as natural resources, infrastructure and facilities. Space develops due to human, natural, physical and social capital and other factors.

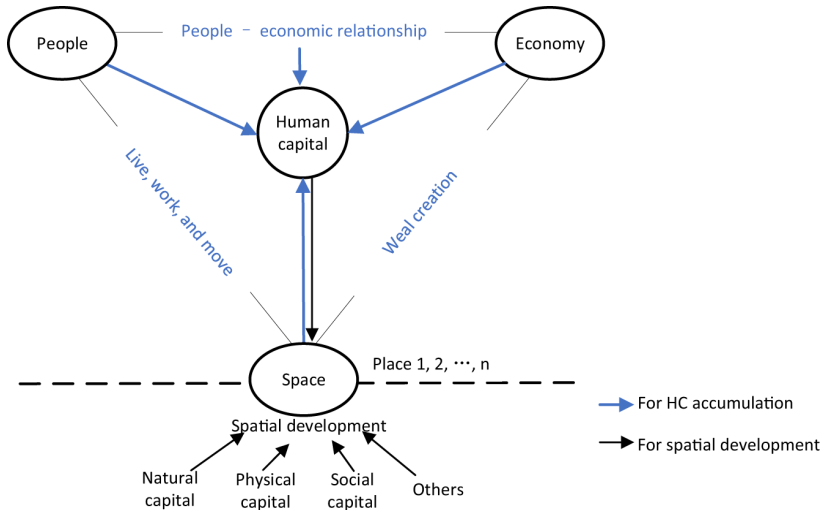


Figure 1. Spatial environment of human capital ¹⁹

The study ²⁰ examined three types of human capital spaces (HCS). Their synergies are explained by the reciprocity of investments and rewards during human development. Through the projection of HCS into physical spaces and the complex relationships between physical objects, HCSs explain human-centered spatial development (Fig. 2).

There are three types of human capital spaces (HCS), based on the concepts of human capital mobility and socio-economic development: the Human Capital Employment Space (HCES), the Human Capital Development Space (HCDS) and the Human Capital Recovery Space (HCRS).

The HCES is the space where individuals acquire skills and apply their human capital to create value for society. The concept of HCES is closely

¹⁹ Yang Z. Human capital space: a spatial perspective of the dynamics of people and economic relationships. *Humanit. Soc. Sci. Commun.* 2023. № 10. 145. DOI: <https://doi.org/10.1057/s41599-023-01639-5>

²⁰ The same.

related to the evolution of industrial spaces and talent clustering, which provide better conditions for the application of skills, acquisition of professional experience and innovative development.

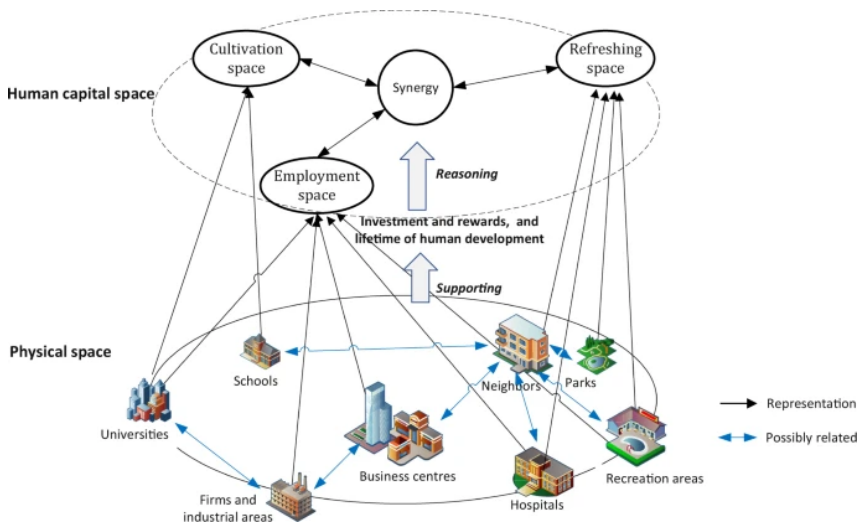


Figure 2. Human Capital Development Space (HCDS)²¹

The concept of HCES is similar to the notion of intellectual capital “packaged as useful knowledge”²², which is important for value creation processes within firms²³, as well as to studies on talent in geographical literature²⁴.

The HCES corresponds to places that attract companies and people and are unevenly distributed across space.

²¹ Yang Z. Human capital space: a spatial perspective of the dynamics of people and economic relationships. *Humanit. Soc. Sci. Commun.* 2023. № 10. 145. DOI: <https://doi.org/10.1057/s41599-023-01639-5>

²² Sveiby K.E. The new organizational wealth: managing & measuring knowledge-based assets / Karl Erik Sveiby. Berrett-Koehler, San Francisco, CA, 1997.

²³ Tandon K., Purohit H., Tandon D. Measuring intellectual capital and its impact on financial performance: empirical evidence from CNX Nifty companies. *Glob Bus Rev.* 2016. № 17(4). pp. 980–997.

²⁴ Florida R., Mellander C., Qian H. China’s development disconnect. *Environ Plann A.* 2012. № 44 (3). pp. 628–648.

In their study of computer services in South East England, Coe and Townsend (1998)²⁵ explored the “myth of localized agglomeration,” demonstrating that despite connections between firms across relatively large geographical distances, localized concentrations of firms remain important. This suggests that HCES may be concentrated in specific areas, yet generates urban or regional effects that attract related firms and services. Therefore, HCES is critical for sustaining the viability and competitiveness of cities and regions in the era of globalization.

Moreover, the HCES facilitates the accumulation of skills in the workplace²⁶, where employees can learn through practice. This is essential for continuous learning and for acquiring the knowledge and skills required for work. In modern economies, dual education is becoming increasingly widespread. In some sectors (e.g., banking), this model of education is quite popular. Vocational training is organized by firms, associations of firms and local authorities to disseminate and enhance the knowledge necessary for supporting local industrial development and for developing lifelong learning strategies aimed at human capital accumulation²⁷.

Many contextual factors explain the formation and transformation of HCES. Although industrial structure is often considered the main factor influencing the education system, there is evidence highlighting the importance of local context. For example, the apprenticeship system in the British construction industry has declined, while in Australia it has been maintained. These outcomes are driven by institutional differences, as well as by different ways of organizing employers and labor²⁸.

Globalization accelerates the development of HCES, which represents a synthesized space of internal labor and managerial relations within firms, as well as inter-organizational relations²⁹ and is also the result of exchanges between local and external knowledge.

²⁵ Coe N.M., Townsend A.R. Debunking the myth of localized agglomerations: the development of a regionalized service economy in South-East England. *Trans-Inst Brr Geogr.* 1998. № 23 (3). pp. 385–404.

²⁶ Hansen G.D., Imrohorglu S. Business cycle fluctuations and the life cycle: How important is on-the-job skill accumulation? *J Econ Theor.* 2009. № 144 (6). pp. 2293–2309.

²⁷ Cort P. The EC discourse on vocational training: how a ‘common vocational training policy’ turned into a lifelong learning strategy. *Vocat Learn.* 2009. № 2 (2). pp. 87–107.

²⁸ Toner P. Survival and decline of the apprenticeship system in the Australian and UK construction industries. *Br Jf Ind Relat.* 2008. № 46 (3). pp. 413–438.

²⁹ Zhu H.S., Feng J.W., Wang M.J. et al. Sustaining regional advantages in manufacturing: skill accumulation of rural-urban migrant workers in the coastal area of China. *Sustainability.* 2017. № 9:1.

The HCDS is the space where individuals receive education, primarily in primary and secondary schools, universities and research institutions. The first subtype, education for children, is usually a matter of family choice³⁰ and has dual outcomes. First, the development of human capital influences both current and future levels of knowledge and technology. Second, the location of primary and secondary schools, especially high-quality ones, affects residential choices of families and leads to the so-called “educationization,” which becomes a driving force in transforming middle-class locations in cities³¹. Within spatially bounded school districts, “educationization” narrows opportunities for social mobility and intensifies social polarization, making this type of HCDS a social space with the potential to gradually replace traditional social hierarchies.

The second subtype focuses on higher and vocational education, which equips students with the necessary knowledge, skills and technologies for the labor market. Its role was initially examined in the context of promoting economic growth and later within initiatives aimed at fostering synergy between universities and industry³². The educational component is also considered a factor of urban socio-spatial transformation driven by the growth and concentration of student communities.

A number of studies support cooperation between universities and industry to facilitate the diffusion of knowledge from academic research into regional innovation systems³³. At the same time, recent studies in the United States indicate that universities primarily generate human capital rather than disseminate knowledge to firms³⁴. The reasons for this may include weak technical collaboration between universities and firms, the lack of curriculum updates in line with industry needs and the tendency of graduates to seek employment near their place of residence rather than in the field for which they were trained.

Human capital and knowledge diffusion affect firms in different ways, as the former represents a type of capital, while the latter constitutes a form of

30 Kromydas T. Rethinking higher education and its relationship with social inequalities: past knowledge, present state and future potential. *Palgrave Commun.* 2017. № 3 (1):1.

31 Yang Z., Dunford M. City shrinkage in China: an analysis of scalar processes of urban and Hukou population losses. *Reg Stud.* 2018. № 52 (8). pp. 1111–1121.

32 Nakazawa T. Studentification. In: Kobayashi A (ed) International encyclopedia of human geography (second edition). Elsevier, Oxford. 2020. pp. 105–109.

33 Eerola S., Tura T., Harmaakorpi V. et al. Advisory professorship model as a tool for practice-based regional university-industry cooperation. *Eur Plann Stud.* 2015. № 23 (3). pp. 475–493.

34 Fallah B., Partridge M.D., Rickman D.S. Geography and High-Tech Employment Growth in US Counties. *J Econ Geogr.* 2014. № 14 (4). pp. 683–720.

knowledge or skills for innovation. Due to the limitations of academic education in providing vocational training, firms may actively participate in the development of college curricula; for instance, public and private vocational colleges have been established within industrial firms in Beijing ³⁵.

The HCRS is oriented toward meeting the social needs of individuals and encompasses a range of amenities and services, including climatic amenities, friendly neighborhoods, consumer and recreational spaces, as well as healthcare services.

The first subtype of HCRS relates to climatic amenities. Examples include the attractiveness and growth of Sun Belt cities in the United States ³⁶, as well as the persistent population decline in the colder northeastern regions of China ³⁷.

The second subtype of HCRS concerns neighborhood studies. Research on communities is increasingly focused on testing the impact of the environment on life satisfaction and well-being, encompassing various characteristics of local communities such as walkability, transport, parks³⁸ and educational amenities³⁹.

The third subtype of HCRS relates to consumer and recreational spaces. Studies show that leisure activities attract people, especially highly skilled workers, by offering diverse entertainment opportunities, cultural and sports facilities, as well as high-quality restaurants ⁴⁰. This type of people-centered urban growth influences contemporary cities and regional spatial structures⁴¹.

The fourth subtype of HCRS concerns healthcare spaces. Although there is a substantial body of research in economic geography addressing the impact of healthcare provision on human capital, as well as the relationship between

³⁵ Zhu H.S., Li P.F. Dancing in shackles: interactive learning of industrial design firms in Beijing. *Ind Innov.* 2019. № 26 (5). pp. 568–591.

³⁶ Glaeser E.L., Tobio K. The rise of the sunbelt. NBER Working Paper 13071, Cambridge, MA. 2007.

³⁷ Yang Z. Sustainability of urban development with population decline in different policy scenarios: a case study of Northeast China. *Sustainability.* 2019. № 11:22.

³⁸ Pfeiffer D., Ehlenz M.M., andrade R. et al. Do neighborhood walkability, transit and parks relate to residents' life satisfaction? Insights from Phoenix. *J Am Plann Assoc.* 2020. № 86 (2). pp. 171–187.

³⁹ Midouhas E., Kuang Y., Flouri E. Neighbourhood human capital and the development of children's emotional and behavioural problems: The mediating role of parenting and schools. *Health Place.* 2014. № 27. pp. 155–161.

⁴⁰ Carlino G.A., Saiz A. Beautiful city: leisure amenities and urban growth. *J Reg Sci.* 2019. № 59 (3). pp. 369–408.

⁴¹ Lanzara G., Minerva G.A. Tourism, amenities and welfare in an urban setting. *J Reg Sci.* 2019. № 59 (3). pp. 452–479.

healthcare and the quality of residential locations, this issue gained significantly more attention during the COVID-19 pandemic. Darlington-Pollock and Peters (2021)⁴² examined migration with consideration of health factors to better understand the emerging mobility paradigm. The socio-economic crisis manifestations during the pandemic may have significantly undermined human capital accumulation in both quantitative and qualitative dimensions.

These three types of HCS are organically interconnected through the accumulation of human capital and the scale of returns to its use. HCDS supports the development of human capital, HCES facilitates the acquisition of further skills and reflects the value of human capital, while HCRS provides opportunities for individuals to enjoy the benefits of enhanced human capital. In spatial terms, such as cities, HCDS contributes to educating people in schools and universities, HCES enables the utilization of human capital to generate value from both internal and external sources and HCRS rewards the use of human capital and supports its sustainable utilization. The multidimensional nature of HCS links human development with spatial development, placing people at the center of the concept, as society advances toward human-centered development and space is reorganized accordingly.

Applied aspects of HCS development in the infrastructure context include the design of strategies and policies that promote the optimal use of resources for infrastructure development, the identification of priority areas for investment and the stimulation of partnerships between government, the private sector and civil society organizations for the implementation of joint projects. This approach enables a deeper understanding of the interconnections between community infrastructure, human capital and national interests, as well as the development of effective strategies for their mutual reinforcement.

In the context of territorial recovery and sustainable development, it is advisable to implement an integrated spatial model of human capital management that synchronizes the spaces of development (HCDS), employment (HCES) and recovery (HCRS) into a unified infrastructure system. The scientific novelty of this approach lies in shifting from a fragmented consideration of education, the labor market and quality of life toward their spatially interconnected governance through mechanisms of “human capital circulation.” This implies the formation of polycentric educational and innovation hubs, the integration of dual education with regional clusters and the spatial alignment of educational programs with the needs of local economies.

⁴² Darlington-Pollock F., Peters K. Progress in the study of health inequalities and selective migration: Mobilising the new mobilities paradigm. *Prog Hum Geogr.* 2021. № 45 (5). pp. 1061–1082.

At the same time, it is important to take into account the effect of “educationization” and to prevent social polarization through the balanced development of school and university infrastructure, especially in the context of post-conflict transformations.

Additionally, it is proposed to expand the public governance toolkit by incorporating HCRS as a full-fledged element of economic policy rather than limiting it to the social sphere. The novelty lies in interpreting environmental quality (climatic, recreational, healthcare and community conditions) as an active factor in the accumulation and retention of human capital, directly influencing the innovative capacity of territories. In practical terms, this requires prioritizing infrastructure investments based on their impact across all three types of HCS, fostering partnerships between government, business and communities for the co-design of living environments and implementing lifelong learning strategies oriented toward adaptation to crises and global challenges. Such an approach enables the formation of resilient socio-economic systems capable not only of recovery but also of generating long-term competitiveness.

22.3. A model for Increasing Community Resilience Through Innovative Organization of Living Space, Human Capital Development and Social Partnership

Infrastructure plays a key role in the model of increasing community resilience, since it forms the material basis of the living space in which innovative, social and economic processes are implemented. In the context of innovative organization of living space, infrastructure ceases to be just a set of objects and turns into an integrated system that ensures interaction between people, technologies and institutions.

First of all, infrastructure determines the ability of a community to respond to crises and adapt to changes. Developed transport, energy, digital and social networks ensure the continuity of life even in difficult conditions, reduce vulnerability to external shocks and allow for rapid recovery after disruptions. It is through infrastructure solutions that the principle of flexibility and adaptability, which is basic for resilience, is implemented. An important aspect is also the impact of infrastructure on the development of human capital. Educational, scientific, medical and digital infrastructure create conditions for the accumulation of knowledge, advanced training, access to information and innovation. This not only increases the competitiveness of the community, but

also forms its ability to self-develop and generate new ideas, which is especially important in times of transformation and recovery.

Within the proposed model of increasing community resilience, it is advisable to consider infrastructure not in a narrow, engineering and technical sense, but as a multidimensional, integrated system for ensuring the life, development and security of the community. This approach reflects the modern evolution of scientific ideas, according to which infrastructure is not only the material basis of the functioning of the territory, but also a key element of social cohesion, economic activity, institutional capacity and adaptability to crisis challenges.

In post-conflict conditions, infrastructure acquires strategic importance, since it is through it that the processes of recovery, stabilization and transformation of the community are implemented. It forms the basis for the return of the population, the restoration of economic processes, ensuring access to basic services and the creation of a safe environment. At the same time, infrastructure becomes a tool for rethinking the living space – the transition from vulnerable and outdated systems to more flexible, inclusive and sustainable solutions.

In general, infrastructure within the model acts as an integrated platform for life support and development, where all components interact with each other and form a single system. Its key characteristic is not so much the presence of individual objects, but the level of their interconnectedness, adaptability and ability to ensure the functioning of the community in conditions of uncertainty.

Thus, an expanded understanding of infrastructure allows us to move from fragmented restoration to a systemic approach, in which infrastructure becomes not only an object of reconstruction, but also an active tool for increasing the resilience of the community. This interpretation provides the basis for integrating spatial, social, economic and governance solutions within a single model of post-conflict development focused on security, well-being, inclusiveness and sustainability.

Infrastructure investments undoubtedly have a significant impact on economic growth and development. However, when these investments are combined with long-term considerations of resilience, inclusiveness and sustainability, they can also achieve transformative outcomes. Taking these outcomes into account in the development and implementation of infrastructure means moving from solving single problems to solving multiple tasks that have the greatest impact on our most pressing challenges, such as the climate crisis, social inequality, adaptation and resilience.

In addition to economic growth and development, inclusion was the most targeted transformational outcome by G20 governments in 2022, with around half (51%) of infrastructure investments targeting at least one inclusive outcome, such as inclusive mobility or access to services. 56% of inclusive infrastructure investments were in the transport sector (as investments in areas such as roads and public transport improve access and connectivity) and 20% in the social sector (schools and hospitals). Climate goals also played a prominent role, with 39% of G20 central government investments in infrastructure going towards environmental sustainability. The transport and social sectors accounted for around half of these investments (24% and 21% respectively). This pattern of public investment contrasts with the trends in private infrastructure investment; among private investors, minimal investment is made outside the renewable energy sector⁴³. Governments have focused less on digital/InfraTech outcomes. These outcomes attracted only 9% and 5% of total G20 government investment in infrastructure in 2022, respectively. As expected, about half of the digital/InfraTech investments were in the communications sector (49%), but other sectors also received investments aimed at digitalizing infrastructure. For example, the German budget included measures to digitalize municipal transport and healthcare facilities and the Spanish budget included investments in the digital transition in the water sector, including the digitalization of water control systems and investments in certain technological solutions. Central government investments in G20 countries reflect planned direct investments by central governments in infrastructure, as well as transfers from other levels of government for infrastructure investments (Fig. 3).

⁴³ What transformative outcomes are G20 governments targeting with infrastructure investment? GIHUB. 2023. URL: <https://www.gihub.org/infratracker-insights/what-transformative-outcomes-are-g20-governments-targeting-with-infrastructure-investment/>

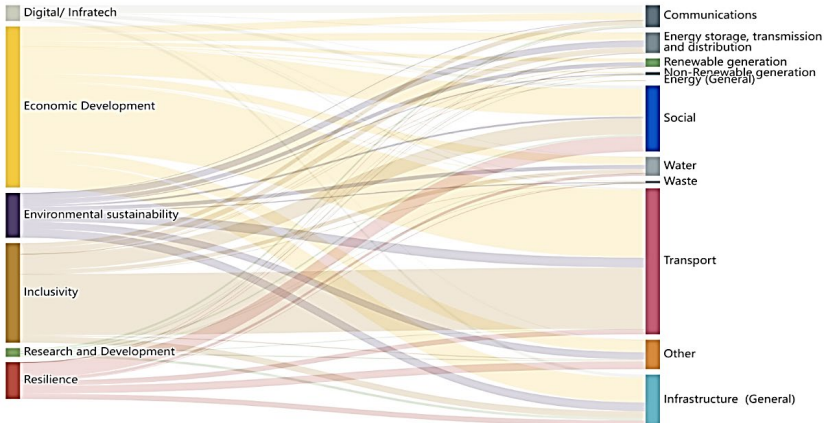


Figure 3. Infrastructure investment trends in the G20 countries ⁴⁴

The selection of priority infrastructure projects is a key task for governments and private investors, as it determines the future economic and social development of the country. In order to correctly select priority infrastructure facilities, several key factors must be taken into account.

First of all, it is important to analyze the economic impact of projects. Infrastructure facilities that contribute to economic growth, job creation and productivity should have a high priority. For example, the construction of new transport networks can significantly reduce logistics costs and provide faster access to markets, which stimulates entrepreneurial activity.

Equally important is the environmental impact of infrastructure projects. In today's climate-change context, projects that reduce greenhouse gas emissions and promote sustainable technologies should be prioritized. For example, investments in renewable energy or clean transportation systems can have significant environmental benefits.

Infrastructure projects should also be sensitive to regional needs and circumstances. Each region has its own unique challenges and opportunities, so it is important to tailor priorities to specific conditions. For example, in rural areas, projects that improve access to water and electricity may be prioritized,

⁴⁴ What transformative outcomes are G20 governments targeting with infrastructure investment? GIHUB. 2023. URL: <https://www.gihub.org/infratracker-insights/what-transformative-outcomes-are-g20-governments-targeting-with-infrastructure-investment/>

while in urban areas, the focus may be on modernizing transportation systems and developing information and communication technologies.

It is also important to consider public opinion and involve it in the decision-making process. Public support can make a significant difference to the success of infrastructure projects. Open public discussions and consultations allow taking into account the interests and needs of the local population, which increases the effectiveness and sustainability of projects.

Thus, the selection of priority infrastructure facilities is a complex process that requires a careful analysis of economic, social, environmental and regional factors. Investments in these projects are of strategic importance for the future development of the country and the community, ensuring sustainable economic growth, improving the quality of life of the population and protecting the environment.

The proposed model is based on the understanding of a community as an open socio-territorial system, capable not only of counteracting crisis challenges, but also of transforming under the influence of new conditions, while maintaining its integrity, viability and development prospects. In the post-conflict period, community resilience cannot be ensured only by restoring destroyed infrastructure or returning to the pre-war state. It requires a comprehensive rethinking of the spatial organization of the living environment, restoring and building human potential, as well as the formation of sustainable mechanisms of interaction between all key development actors. In this context, resilience is considered as an integrated ability of a community to adapt to the consequences of the conflict, restore basic functions, reduce vulnerability, mobilize internal resources and create a new quality of life. That is why the model is built on three interrelated functional blocks: innovative organization of living space, development of human capital and social partnership. Their interaction forms a systemic basis for the transition from short-term crisis response to long-term sustainable development.

1. Conceptual logic of the model. The model is multi-level in nature and combines strategic, institutional, spatial and social dimensions. It is based on the principle that increasing community resilience is possible only if three interrelated areas are simultaneously updated: material-spatial, socio-human and organizational-partner. If at least one of them remains weak, the overall resilience of the community is significantly reduced.

Innovative organization of living space ensures safety, functionality, accessibility and comfort of the territory. Development of human capital creates a personnel, educational, psychological and professional basis for recovery. Social partnership forms institutional coordination, trust and resource

interaction between authorities, business, public sector and educational institutions. Together, these elements create not just a mechanism for reconstruction, but a new architecture of local development.

2. The first block of the model: innovative organization of living space. This block reflects the spatial basis of community resilience. It is not only about the physical restoration of buildings, roads, communications or social infrastructure, but about the formation of a holistic, safe, inclusive and adaptive living environment. In post-conflict conditions, living space should be considered as a space for survival, restoration, interaction and development.

Innovative organization of living space involves several interrelated areas. Firstly, this is spatial planning taking into account risks, where the key is not only the restoration of what has been destroyed, but also the prevention of new vulnerabilities. Secondly, it is the integration of the principles of safety, accessibility and universal design, so that the environment is convenient for all population groups, including children, the elderly, people with disabilities, internally displaced persons and other vulnerable categories. Thirdly, it is an orientation towards sustainable development, resource conservation, ecological balance and the use of modern technologies for spatial management.

Within this block, an important place is occupied by the concept of “community living space” as a multidimensional system that includes not only buildings and engineering infrastructure, but also public spaces, social services, transport accessibility, digital solutions, environmental safety and everyday life conditions. It is the innovative spatial and functional organization of such a system that allows a community to recover faster after shocks and move to a qualitatively new level of development.

A special role here is played by the approaches of smart planning, participatory planning and place-based development, which allow combining technologicality, participation of residents and consideration of local specifics. In post-conflict communities, this means that space should not be imposed from the outside, but should be restored and rethought together with the local community. Such an approach strengthens the identity of the community, a sense of involvement and trust in the restoration processes.

3. The second block of the model: human capital development. The second block of the model concerns the person as a central resource for recovery. In the post-conflict period, it is human capital that determines whether a community will be able to use existing opportunities, implement new projects, ensure institutional sustainability and form internal sources of growth. Therefore, the development of human capital is not an auxiliary, but a system-forming element of resilience.

Within the framework of this model, human capital is understood broadly: as a set of knowledge, skills, professional competencies, health, social ties, motivation, psychological resilience and the ability to learn throughout life. Post-conflict communities often face such problems as the loss of qualified personnel, population migration, disruption of educational trajectories, emotional exhaustion and decreased confidence in the future. That is why the development of human capital should encompass not only professional training, but also socio-psychological recovery.

The model provides for several key mechanisms. The first is educational programs focused on the needs of reconstruction and the new economy of the community. These can be short-term courses, modular programs, dual education, digital literacy, training for entrepreneurs, municipal employees, teachers, social workers, spatial planning and project management specialists. The second is support for professional mobility and retraining, which allows residents to adapt to new market conditions. The third is socio-psychological support, which helps restore internal stability, reduce the consequences of traumatic experiences and return people to active community life.

It is important that in this model, the development of human capital has not only an individual, but also a collective effect. When residents gain new knowledge, skills and opportunities, the overall competence of the community increases, its ability to self-organize, participate in decision-making and implement innovative projects is strengthened. Thus, human capital becomes not just a resource, but a driving force for local transformation.

4. The third block of the model: social partnership. The third block of the model ensures the organizational and institutional coherence of all recovery processes. Without social partnership, even the best spatial solutions and educational programs remain fragmented. It is partnership that creates the conditions for harmonizing interests, coordinating resources, distributing responsibilities and achieving common goals. Social partnership within the model is interpreted as a system of horizontal and vertical connections between local governments, businesses, public organizations, educational and scientific institutions, international donors and residents themselves. Its essence lies in jointly forming decisions, developing and implementing projects, monitoring results and adjusting actions in accordance with changes in the environment. This block performs several functions. The coordination function ensures the coherence of actions of various actors. The resource function makes it possible to attract financial, expert, human and material resources from various sources. The communicative function forms channels of trust, feedback and public legitimacy of decisions. The innovative function contributes to the emergence

of new formats of interaction, joint laboratories, hubs, partnership platforms and network initiatives.

Social partnership is especially important in post-conflict communities, where recovery requires not only administrative management, but also a high level of social cooperation. It helps to reduce the fragmentation of society, strengthen cohesion, create an atmosphere of shared responsibility for the future of the territory. In practical terms, this means that community recovery is not happening “for the people”, but “with the people”.

The peculiarity of the proposed model is that its elements do not exist autonomously. They form a single cycle of resilience, where each block reinforces the others. Innovative organization of living space creates conditions for the return of people, the development of education, business and social services. The development of human capital provides the competence and activity of residents necessary for the implementation of changes. Social partnership provides resource and managerial support for these changes, transforming individual initiatives into a systemic development policy.

The model functions as an interconnected system in which space, people and partnership do not simply complement each other, but form a new quality of the community. It is thanks to such interaction that the possibility of transition from recovery to development, from survival to sustainability, from sustainability to transformation appears.

The implementation of the model should be based on several basic principles. The first is the principle of human-centricity, under which the needs, rights, safety and dignity of residents are at the center of all decisions. The second is the principle of integration, which involves a combination of spatial, social, economic and institutional measures. The third is the principle of adaptability, i.e. the ability of the model to change in accordance with new conditions and challenges. The fourth is the principle of participation, which ensures the involvement of the community in planning, implementing and evaluating changes. The fifth is the principle of sustainability, according to which all decisions should be focused on a long-term effect and not just on a quick result.

The introduction of the model will contribute to the formation of a new quality of governance in the community, increasing the level of safety and comfort of the living environment, strengthening the professional capacity of the population, restoring trust and social cohesion and activating entrepreneurial and public initiative. In a broader sense, this will ensure the transition of the community to a trajectory of sustainable and innovative development.

Thus, the proposed model of increasing the resilience of communities in the post-conflict period is not only a theoretical construct, but also a practically oriented framework for the formation of recovery policies. Its value lies in the integration of spatial, human and partnership components, which allows moving from partial solutions to comprehensive management of territorial development. It is this model that can become a scientific basis for developing strategies for the restoration of communities in post-conflict conditions, taking into account the principles of security, comfort, inclusiveness and sustainable development.

CONCLUSION

Resilience, adaptability and transformational development form a holistic conceptual framework for the recovery of communities in post-conflict conditions. Resilience ensures the ability of communities to withstand shocks and restore basic functions, adaptability ensures the ability to flexibly respond to new challenges and change internal development mechanisms, while the transformational approach focuses on deep structural changes and the formation of a new quality of socio-economic systems. In real practice, these approaches do not exist in isolation, but interact, forming a dynamic trajectory of community development from stabilization to long-term sustainable growth. In conditions of uncertainty and increasing complexity of crises, innovative management tools, citizen engagement and social capital development become particularly important. It is the combination of these factors that creates the basis for the formation of self-sufficient territorial communities that are capable not only of recovering from shocks, but also of ensuring inclusive, balanced and innovative development. The integration of resilience, adaptability and transformability is a key prerequisite for increasing the viability of communities and forming effective models of their restoration in the long term.

Spatial and infrastructural determinants play a system-forming role in the restoration and development of human capital, forming the conditions for its accumulation, implementation and reproduction. The relationship between people, economy and space determines the logic of modern development of territories, in which infrastructure acts not only as a material basis, but also as an active environment for the formation of opportunities for education, employment and quality of life. The concept of human capital spaces (HCDS, HCES, HCRS) allows for a comprehensive disclosure of these processes through the prism of the interaction of educational, production and socio-comfortable environments. It is their balanced development that ensures a continuous cycle of reproduction of human capital - from its formation to

effective use and improvement of the quality of life, which is especially important in the conditions of post-conflict restoration.

The proposed approach demonstrates the need to move from fragmented management of individual components (education, labor market, social infrastructure) to an integrated spatial model of human capital management. Such a model is based on the synchronization of development, employment and recovery spaces, which provides the effect of “human capital circulation” and increases the efficiency of resource use. Of particular importance is the consideration of the local context, institutional features and risks of social polarization, in particular through the phenomenon of “educationization.” In this context, infrastructure policy should focus not only on economic results, but also on the formation of a favorable environment for life, self-realization and the maintenance of human potential.

The integration of a spatial approach to human capital development with mechanisms of public administration, infrastructure planning and intersectoral partnership creates the basis for the formation of sustainable socio-economic systems. This allows not only to ensure effective recovery of territories, but also to form long-term competitive advantages, increase the innovative potential and adaptability of communities to modern challenges and global transformations.

The proposed model for increasing community resilience forms a holistic methodological and practical basis for the transition from fragmented recovery to systemic development of territories in post-conflict conditions. Its key value lies in the integration of three interrelated components (innovative organization of living space, human capital development and social partnership), which together ensure not only the restoration of basic community functions, but also the creation of prerequisites for long-term, sustainable and inclusive development. Infrastructure in this model is considered as a multidimensional platform of interaction that combines material, digital and social elements, ensuring adaptability, security and continuity of life. This approach allows us to move from the traditional perception of infrastructure as an object of reconstruction to its understanding as an active tool for community transformation.

SUMMARY

The research proposes a comprehensive model for increasing community resilience in the post-conflict period through innovative organization of living space, development of human capital and social partnership. Infrastructure is considered as a multidimensional system that ensures interaction between people, technologies and institutions, forming a material and spatial basis for

life, economic development and social cohesion. Particular attention is paid to the role of infrastructure in the restoration, adaptation and transformation of communities, including transport, energy, digital and social networks.

Within the framework of the model, three interrelated blocks are proposed: innovative organization of living space, development of human capital and social partnership. Innovative organization of space ensures safety, functionality, accessibility and comfort of the territory, takes into account the principles of sustainable development, universal design and community participation in planning. Human capital development encompasses knowledge, professional competencies, socio-psychological stability and motivation of residents, contributing to the community's ability to self-develop and innovate. Social partnership coordinates the actions of government, business, public and educational institutions, creating conditions for integrated management of community recovery and development.

Additionally, spatial and infrastructural determinants of human capital development were investigated, including spaces of education (HCDS), employment (HCES) and recovery (HCRS), which are interconnected and ensure a continuous cycle of formation, use and reward of human capital. The need for integrated spatial management, the creation of polycentric educational and innovation hubs, the combination of dual education with regional clusters and the consideration of local features in infrastructure planning was identified.

The proposed model combines strategic, institutional, spatial and social dimensions, ensuring the transition from short-term crisis response to long-term sustainable development. Its practical value lies in the formation of a new quality of community management, increasing the level of safety and comfort of the living environment, developing the professional potential of the population, restoring social trust and activating public and entrepreneurial initiative.

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Information about the author:

Olena Omelianenko

PhD, Senior Researcher,

Institute of Industrial Economics

of the National Academy of Sciences of Ukraine

2 Maria Kapnist Str., Kyiv, 03057, Ukraine

ORCID: <https://orcid.org/0000-0001-8993-806X>