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ECONOMIC EFFICIENCY OF URBAN RESILIENCE PROGRAMS: IMPACT ON BUSINESS ACTIVITY AND THE LABOUR MARKET

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Abstract

The article examines the economic efficiency of urban resilience programmes and their impact on business activity and the labour market under conditions of intensifying global crises and structural transformations of urban economies. The relevance of the study is driven by the need to reconsider the role of urban resilience programmes not only as instruments of crisis response, but also as tools for long-term economic development, particularly in the context of post-war recovery of Ukrainian cities. The purpose of the article is to provide a comprehensive economic assessment of the impact of urban resilience programmes on the stability of the business environment and the labour market, taking into account international and Ukrainian experience in the period 2015-2025.

The methodological framework of the study combines comparative economic analysis, a structural–functional approach, and Cost-Benefit Analysis. The information base is formed using official data from Eurostat, the OECD, the World Bank, the International Labour Organization, national statistical services, as well as urban development strategies and resilience programmes of cities in the European Union, Ukraine, the United States, Canada, and South Korea.

The results of the study demonstrate that the most economically efficient are integrated urban resilience programmes that combine infrastructural, institutional, socio-labour, digital, and “green” components. Such programmes contribute to increased resilience of small and medium-sized enterprises, growth in innovation activity, stabilisation of employment, and the formation of positive multiplier effects for the urban economy. At the same time, it is established that the effectiveness of resilience programmes largely depends on the institutional capacity of urban governance and the degree to which resilience is integrated into local economic development strategies. The practical significance of the findings lies in the development of analytical guidelines for optimising urban policies aimed at supporting business and employment in the context of the post-war recovery of Ukrainian cities.

Keywords: urban resilience; economic efficiency; business activity; small and medium-sized enterprises; labour market; employment; urban economy; development programmes; post-war recovery; Ukraine.

Introduction

Today, more than 80% of global GDP is generated in urban agglomerations [1], making cities key hubs of economic activity. At the same time, rapid urbanization is accompanied by a growing incidence of extreme events (climate-related disasters, pandemics, and armed conflicts) that have large-scale impacts on urban economies. In contemporary conditions, municipal resilience is transforming into a fundamental pillar of national security, determining the overall viability of the state system. Urban resilience refers to the capacity of an urban system – its residents, institutions, economy, and infrastructure – to effectively withstand external and internal shocks, adapt to change, and not merely return to its previous state, but to transform into a better and more resilient version of itself. The economic dimension of resilience is linked to the extent to which local economies are able to mitigate losses from shocks and ensure the preservation of investments, businesses, and jobs.

The crises of recent years vividly illustrate these challenges. In particular, in Ukraine, the full-scale invasion of 2022 resulted in the destruction of critical infrastructure and massive economic losses (over USD 290 billion in total damage, including USD 135 billion in property damage). Approximately 4.8 million jobs were lost in the Ukrainian economy, and the unemployment rate increased from 10% in 2021 to nearly 25% in 2022. Small and medium-sized enterprises (SMEs) were forced to suspend operations on a large scale: 64% of SMEs temporarily or permanently halted their activities, and 90% of businesses suffered financial losses [2]. Similar negative effects were observed in other cities worldwide during the COVID-19 pandemic and economic crises, including declines in output, workforce reductions, and decreased consumer demand. This underscores the relevance of the topic: resilience programs at the city level should become key instruments for mitigating such shocks, yet their economic effectiveness remains insufficiently explored.

At present, there is a significant knowledge gap regarding which specific components of urban resilience programs generate the highest economic returns and how they affect entrepreneurial activity and labour market outcomes. While a system of regulatory and programmatic approaches to building resilient cities is taking shape, methodologies for assessing their effectiveness, particularly in terms of cost-effectiveness, cost-benefit analysis, and impacts on productivity and employment, remain underdeveloped.

The purpose of the article is to provide an economic assessment of the effectiveness of urban resilience programs and to determine their impact on business activity and labour market functioning under crisis and post-crisis transformations, in order to substantiate managerial decision-making in the field of sustainable urban development.

The study will be conducted with the aim of testing (confirming or refuting) the following hypotheses:

Hypothesis 1 (H1). Comprehensive urban resilience programs ensure higher economic efficiency compared to narrowly targeted infrastructural measures.

Hypothesis 2 (H2). Urban resilience programs have a positive impact on the resilience and innovative activity of small and medium-sized enterprises.

Hypothesis 3 (H3). Social, labour-related, digital, and “green” resilience programs contribute to employment growth and improvements in job quality.

Hypothesis 4 (H4). Higher institutional capacity of urban governance enhances the multiplicative economic effects of resilience programs.

The scientific novelty of the article lies in a comprehensive economic assessment of urban resilience programs from the perspective of their impact on enterprises and the labour market. An analytical framework for evaluating the economic effectiveness of resilience programs is proposed, and international and Ukrainian experience in their implementation over 2015-2025 is synthesized, taking into account the objectives of post-urban recovery in Ukraine.

Information base and research methods

The information base of the study consists of official statistical data from Eurostat, the OECD, the World Bank, the International Labour Organization, and national statistical offices, as well as urban development strategies and resilience programs of cities in Ukraine, EU countries, the United States, Canada, and South Korea for the period 2015-2025. The study uses indicators of enterprise economic activity, SME development, employment, labour productivity, investment activity, and budgetary expenditures. The methodological foundation of the research is based on a combination of comparative economic analysis, a structural-functional approach, and cost-benefit analysis (CBA). Methods of statistical grouping and analytical synthesis are applied to generalize the results. The analytical framework is used to systematize the channels through which urban resilience programs affect business activity and labour market outcomes.

Theoretical background

Key scholarly concepts of urban resilience emphasize its comprehensive nature. Shulha O. V. notes that

the concept of “resilience” has been gradually expanded from its initial ecological interpretation (the ability of natural systems to recover) to a modern interdisciplinary approach that takes into account economic and socio-cultural factors of urbanization [3]. Urban resilience thus refers to the ability of urban systems (infrastructure, businesses, communities, and populations) to survive, adapt, and develop despite chronic stresses and sudden shocks. For example, the UN-Habitat Resilient Cities network defines it as “the ability of a city’s systems, enterprises, institutions, communities, and individuals to survive, adapt, and thrive regardless of the stresses and shocks they face” [4]. Edward L. Glaeser, in his essay, focused on the destruction of human capital during crises and its impact on the resilience of cities and ecosystems. He warned of potential large-scale economic and political changes that may be caused by the outflow of entrepreneurs and the middle class from urban areas [5]. E. Moro and co-authors substantiated the need for urban policies aimed at job creation to enhance economic resilience [6]. B. Gulati and S. Weiler, in their study, analysed the impact of local labour market dynamics on the survival of newly established firms and put forward the hypothesis that the characteristics of local labour markets influence firm survival rates, levels of entrepreneurial activity, and the overall economic resilience of a region [7]. In turn, a research team led by B. M. Omowole examined the key role of small and medium-sized enterprises (SMEs) in stimulating urban economic development, with particular attention to their development strategies in developing countries. SMEs are recognized as drivers of growth due to their flexibility, innovativeness, and job-creation potential, often addressing urban challenges by filling market niches that remain overlooked by large enterprises [8]. Thus, it is evident that assessing the economic dimension of resilience requires analysing how cities ensure the continuity of business activity and employment during crises. The OECD emphasizes that policies aimed at strengthening the economic resilience of local economies substantially overlap with those that promote productivity growth. For example, measures that support a dynamic business environment, production diversification, and the development of local skills simultaneously enhance regions’ capacity to withstand shocks. During the COVID-19 pandemic and other crises, government programs supporting businesses and workers (such as subsidies and short-time work schemes) proved effective, as they preserved “worker-employer” links, safeguarded skills, and reduced rehiring costs after the crisis. Such measures function as a form of “risk insurance pool,” as they help avoid prolonged recovery periods and maintain the economy’s readiness for growth. At the same time, trade-offs are also discussed: excess productive capacity (buffers) on the one hand increases resilience, but on the other hand may reduce short-term efficiency, as demonstrated by disruptions in supply chains during crises [9].

The market dimension of resilience is most visible through the role of small and medium-sized enterprises (SMEs). They provide rapid adaptation: during economic downturns, SMEs often demonstrate flexibility, retain jobs in their regions, and support social cohesion.

However, as Resilient Cities experts note, SMEs are also vulnerable (limited resources, restricted access to capital) and require targeted support within resilience programs [4]. Therefore, it can be argued that robust SMEs are essential for achieving urban resilience. This layer of entrepreneurs serves as a key driver of urban development. They not only shape the labour market but also function as a strategic resilience reserve, capable of absorbing the effects of crises and maintaining social balance. From the labour market perspective, the OECD defines resilience as the ability to “absorb” an economic shock at the moment it occurs and to restore a stronger skills system and labour market. The core elements are the phases of absorption, adaptation, and anticipation: for example, rapid reskilling and employment support help workers remain in their professions, while investments in remote work infrastructure enable adaptation after a shock [10].

Urban resilience programs typically combine a variety of measures, including infrastructure modernization, economic diversification, workforce upskilling, and social support for entrepreneurs. The typology of such programs is diverse. For example, under the Rockefeller Foundation’s “100 Resilient Cities” initiative, cities established dedicated resilience offices and developed risk assessment plans and project prioritization frameworks. In Europe, many cities, such as Rotterdam, Rome, Milan, and Barcelona, have adopted resilience strategies that integrate climate adaptation with economic and social programs. In Rotterdam, for instance, resilience was understood not only in terms of infrastructure but also through strengthening the socio-economic conditions of residents: the city plan envisages creating jobs within local communities, improving housing, and implementing new governance approaches that enhance neighbourhood viability [11]. In Ukraine, these ideas are also taking hold through projects focused on integrated urban planning and recovery. For example, with support from GIZ, Ukrainian cities have launched programs for housing and infrastructure restoration, while simultaneously developing digital systems for tracking war-related damage and cross-sectoral risk management [12]. These initiatives aim to restore basic services and enhance local capacities for responding to emergencies.

Overall, methods for assessing the effectiveness of resilience programs are gradually becoming more sophisticated. Traditional cost-benefit analyses (CBA) are being complemented by concepts such as “resilience dividends” (benefits during normal times) and social indicators. For instance, in the infrastructure sector, CBA is often applied to resilience projects to compare the costs of enhancing safety with the expected avoided losses [13]. At the same time, there is increasing use of productivity- and employment-impact analysis, such as metrics for post-shock productivity recovery or changes in unemployment dynamics. However, the literature still lacks standardized methodologies that would allow for a consistent assessment of the effectiveness of different resilience investments specifically in terms of business development and job creation.

In recent years, several international approaches to monitoring urban resilience have been developed. The

OECD, in its recommendations, suggests indicators related to economic diversification, employment, entrepreneurial activity, as well as the quality of infrastructure and risk management. Within its City Resilience Program, the World Bank estimated that without appropriate measures, natural disasters could cost cities USD 314 billion annually by 2030 [13], highlighting the economic necessity of investing in resilience. Other frameworks, such as the UN-Habitat *World Cities Report* and the OECD Urban Resilience Framework, also incorporate economic indicators of resilience.

Thus, there is a clear link between urban resilience, entrepreneurship development, and the state of the labour market. Crisis measures supporting the private sector, tested during the pandemic, are critically important for preserving human capital and assets, serving as a catalyst for subsequent demand. Moreover, a well-developed business ecosystem and a strong labour market function as autonomous mechanisms for protection against future challenges. When evaluating resilience programs, this feedback loop must be taken into account: positive effects may manifest not only in reduced direct losses during a crisis but also in long-term benefits, such as higher employment levels, business innovation, and increased production.

Studying the economic effectiveness of resilience measures becomes particularly relevant in the context of rebuilding Ukrainian cities. The total costs of Ukraine’s recovery are estimated in the hundreds of billions of dollars, making it essential to allocate these resources as productively as possible. Integrating aspects of economic resilience into municipal planning – through programs for enterprise modernization, workforce retraining, support for small businesses, and infrastructure development – can contribute to economic recovery and the creation of new jobs. Given that, since 2022, a large number of workers have been placed on furlough or experienced salary reductions, resilience programs must actively support employment and workforce adaptation.

In the context of this study, it is proposed to evaluate the effectiveness of resilience programs not only through direct measures of losses and expenditures but also through long-term economic outcomes: trends in productivity, employment, and entrepreneurial activity. International examples, including deferred GIZ programs, European strategies of leading cities, and global initiatives, highlight the importance of comprehensive approaches that combine infrastructure investments, financial support for businesses, and human capital development. The research aims to provide a solid theoretical foundation for subsequent empirical assessments of which urban resilience programs are truly economically effective and how they impact business activity and the labour market under contemporary crisis conditions.

Presentation of research results

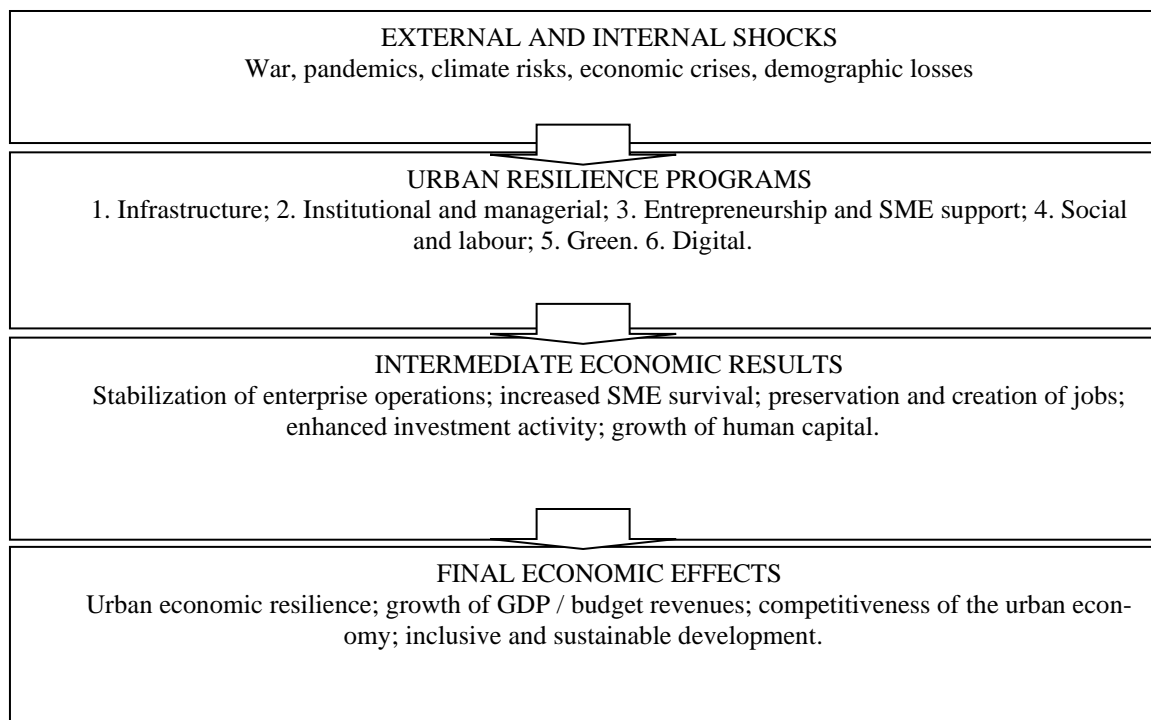
Urban resilience programs are a multidimensional instrument of economic policy aimed at enhancing the capacity of urban systems to withstand external and internal shocks, adapt to structural changes, and ensure sustainable economic dynamics. Contemporary research views resilience not merely as a crisis response

but as a long-term investment in a city's economic stability, competitiveness, and social cohesion. A synthesis of international experience allows for the identification of several key types of urban resilience programs, each with specific channels of economic impact on business activity and the labour market.

In today's globalized world, the issue of fast and reliable connections between economic actors is highly relevant and directly affects competitiveness. For this reason, infrastructure-focused resilience programs aim to create and restore urban infrastructure, including transport, energy, water supply, housing, and social facilities. This ensures the continuity of services during crises and reduces material losses. For example, the German GIZ project is restoring basic infrastructure in Ukrainian cities and developing sustainable urban planning programs. In particular, with GIZ support, Mykolaiv is repairing its heating and energy networks and implementing digital monitoring of damages for integrated recovery planning [12]. Economic effect: increased labour productivity, preservation of jobs, reduced insurance costs, and enhanced investment attractiveness of the city. At the same time, it is clear that the implementation of large infrastructure projects in particular, and the regulation of market processes in general, is currently impossible without the involvement of state institutions and local authorities. Accordingly, institutional and governance programs are designed to strengthen the capacity of city authorities for proactive risk management through strategic planning, the creation of crisis management teams, and information sharing. These programs include the development of emergency response plans, staff training, disaster management systems, and the implementation of "smart" technologies. Such governance resilience optimizes budget expenditures, accelerates recovery, and reduces the costs of disaster response. At the same time, the private sector also requires special attention through programs supporting entrepreneurship and SMEs. Small and medium-sized enterprises form the backbone of the urban economy, accounting for approximately 63% of employment in Ukraine [14] and about 63.5% in the EU [15]. Urban resilience programs also include financial and advisory support for businesses –grants, concessional loans, microfinancing, and accelerator programs. These measures ensure business continuity after shocks and promote employment growth. In 2024, the **SME Resilience Alliance** was established, covering 77 countries. Through the *Ukraine Economic Resilience Program*, Mercy Corps provides SMEs with grants of

around USD 20,000 for recovery, and the agricultural sector with USD 75,000-150,000 [16]. The GIZ project supported 150 SMEs in L'viv and Volyn regions with grants of €500 per month [14]. Such programs create jobs, expand the tax base, and improve the city's business climate. However, merely creating jobs is not sufficient for ecosystem resilience. The rapid pace of technological development requires quick and flexible adaptation in terms of equipping the workforce with modern skills and qualifications. The implementation of social and labour programs, covering employment, retraining, and inclusion, supports the population during structural and crisis-induced changes, including the unemployed, internally displaced persons, and vulnerable groups. These programs encompass professional training, internships, employment support, and social protection. This supports household incomes and enables flexible workforce retraining. For example, the *Future of Work* project in Cluj-Napoca, Romania, established the **Creative Industries Centre (CREIC)**, three sustainable technology laboratories, and the *Culturpreneurs* program for local entrepreneurs. The project promoted inclusion by providing free Wi-Fi in marginalized communities and creating new transport routes to improve access to education and employment [17]. Such initiatives develop a skilled workforce, reduce social tension, and enhance the city's competitiveness. Of course, "green" and digital resilience programs must also be highlighted. **Green programs** help cities adapt to climate change through energy efficiency, public transport, urban greening, and renewable energy. They reduce disaster risks and create jobs in green sectors. For instance, in Lappeenranta, Finland, the *Urban Infra Revolution* project developed a 3D-printed composite using local waste to replace reinforced concrete and brought together around 50 companies to transition to green production [17]. **Digital programs**, including smart city initiatives, service digitalization, and IT clusters, also strengthen resilience. A study of 274 Chinese cities (2011-2020) showed that the digital economy (e-commerce, big data, IT start-ups) fosters innovation, industrial diversification, and human capital accumulation, thereby increasing urban resilience to shocks [18]. High-speed internet, digital services, and e-consulting enable businesses to recover quickly and integrate into global value chains.

Thus, we can note that resilience programs affect the economy through multiple channels (Fig. 1).



*Fig. 1. Channels of influence of resilience programs on the urban economy **

* Compiled by the authors

As a result of this impact, several outcomes can be achieved. **First**, direct loss prevention: strengthening infrastructure and early warning systems reduces disaster recovery costs and limits the loss of productive capacity. **Second**, the investment multiplier effect: each dollar invested in adaptation measures can generate multiple economic returns in the form of jobs created, increased productivity, and GDP growth. In the United States, it is estimated that every \$1 spent on resilience projects saves up to \$33 in lost economic output [19]. **Third**, stimulation of the labour market and entrepreneurship: for example, grants and training for SMEs increase their productivity and the number of employees. **Fourth**, positive co-benefits for health and social well-being: cities with better adaptation (clean air, comfortable environments) reduce healthcare costs and attract skilled professionals. Overall, studies emphasize that modernizing urban systems enhances competitiveness: *“cities shift from reactive crisis management to proactive capital engagement, not only to prevent losses but also to stimulate sustainable economic growth”* [20]. Thus, resilience programs strengthen supply chain stability, reduce costs for businesses and insurers, and, in the long term, support sustainable growth of the local economy.

In the context of further research, it is important to note that assessing resilience presents several challenges. First, indicators provide a fragmented picture: employment can be measured, but not the quality of jobs or social well-being. Second, it is difficult to isolate the impact of a program from other factors – economic cycles, war, or international trends. The OECD warns that external circumstances can distort effectiveness assessments [21].

Resilience programs unfold over time, and their long-term benefits (climatic, demographic changes) are difficult to quantify. Indirect measures, such as income inequality or quality of life analyses, are often necessary. Conclusions require a comprehensive approach: data should be supplemented with expert assessments, risk analysis, and scenario modelling. Nevertheless, even with limited data, economic evaluation of urban resilience allows for understanding resource-use efficiency and comparing strategies in terms of preserving businesses and jobs.

The analysis confirms that urban resilience programs are aimed at mitigating the impacts of crises and supporting businesses. Following their implementation, a slowdown in business activity is softened, and entrepreneurship begins to recover. According to Eurostat data, in 2022, the nominal value added of SMEs in the non-primary sector of the EU increased by 6.7% (although accounting for inflation, the real change was -2.3%). Paradoxically, small businesses proved to be more adaptive: in 2022, employment in SMEs grew by 2.4%, compensating for losses in 2020-2021 [22]. Despite shocks, European cities that implemented SME support programs and infrastructure modernization successfully restored – and even surpassed – pre-crisis employment levels.

In Ukraine, a similar trend was reinforced by crisis response measures. After the outbreak of the war, only 57% of enterprises were active (March-April 2022), but by 2023 this figure had risen to 84%, and in 2024-2025 it stabilized around 85% [23]. Thus, thanks to rapid responses – financial support, relocation of production, and regulatory simplification – the majority of enter-

prises were able to resume operations, although reductions in production volumes and profitability were still generally observed.

Overall, it can be noted that while the implementation of SME support programs varied across different regions of the world due to the nature of specific crises, they consistently led to improvements in business activity dynamics. In the EU, post-crisis employment in cities returned to pre-crisis levels: in 2023, the employment rate of the working-age population (20-64 years) reached 75.6%, exceeding the EU-wide figure of 75.3% [24]. Financial programs and business incentives restored investment volumes and production growth despite global disruptions. In Ukraine, business activity sharply declined during the first months of the full-

scale invasion, but by 2023-2025 it had significantly recovered. Municipal and state programs, including grants, preferential loans, and support for relocated enterprises, helped businesses adapt. The government's "5-7-9%" program provided over UAH 52.8 billion in concessional loans, supporting companies' financial activity [23]. In global cities such as Vancouver, Seoul, and San Francisco, comprehensive resilience plans combined infrastructure upgrades, digitalization, and the development of "smart" industrial parks.

The importance of SMEs for urban resilience cannot be overstated. It is the activity of this sector that provides the majority of jobs and makes a significant contribution to GDP (Table 1).

Table 1. The Role of SMEs in the Economy (2022-2025)*

Region / Category	SMEs (% of all firms)	Share of total employment	Share of GDP
World	90%	70%	n/a
Developing countries	n/a	47%	52%
EU	99,8%	64,4%	51,8%
Ukraine	99,98%	74%	64%

*Compiled by the authors based on [22,23,25,26]

However, SMEs are simultaneously the most flexible and the most vulnerable link in the economy. World Bank data show that during the COVID-19 pandemic, the average decline in SME sales was 34.8%, whereas in large companies it was -22.6% [26], further highlighting the critical need for targeted stabilization programs specifically for small businesses. Accordingly, we can distinguish three main components of the impact of resilience programs on SMEs:

- survival. Support for small businesses through grants, subsidies, and loans enhances their resilience. In the EU, "urban recovery funds" provided rapid assistance to SMEs. In Ukraine, additional subsidies and microloans helped thousands of enterprises avoid bankruptcy during the first years of the war;

- profitability. Financial literacy and modernization programs improve profitability. Numerous projects promoting the transition to "green" technologies have increased both profits and energy independence of enterprises worldwide;

- innovation. Resilience strategies stimulate innovative activity through hubs, incubators, competitions, and grants for start-ups, contributing to higher innovation indices and an increase in patent activity.

The aforementioned components of impact require targeted investment actions. Investments in infrastructure, technology, and workforce training within resilience programs enhance labour productivity and production stability. For instance, digitalization of processes enables enterprises to quickly resume operations after local disruptions. The transition of Ukrainian SMEs to e-commerce and remote work has significantly improved production efficiency during the war. Similarly, equipment modernization ("Industry 4.0") in European factories systematically increases manufacturing productivity. Stress tests and business continuity plans, which have become integral parts of resilience strategies, reduce downtime for enterprises during crisis events.

Resilience programs are also aimed at reducing business and financial risks. They include supply chain diversification, disaster insurance, simplification of regulatory procedures, and the development of financial instruments. In particular, the Ukrainian "5-7-9%" preferential lending program in 2022-2025 provided enterprises with UAH 52.8 billion on favourable terms, reducing the risk of liquidation due to temporary difficulties [23]. In the EU, leading cities (e.g., Copenhagen, Amsterdam) support insurance for small businesses against climate-related risks. Additionally, urban infrastructure investments (road repairs, network modernization) enhance logistical stability, which further lowers the risk of operational disruptions for enterprises.

Overall, the outcomes of resilience programs depend on the local context and labour market characteristics. In 2023, urban employment levels in EU cities ranged from 83.9% in Lithuania to 66-67% in Belgium and Italy, while unemployment in Spanish and Greek cities exceeded 10% compared to less than 2% in Romania [24]. These differences reflect both the economic climate and the effectiveness of local policies. Sectoral variations are also significant. Innovative industries (IT, "green" energy, high-tech) demonstrate higher resilience and faster employment recovery (for example, Canadian tech hubs created thousands of high-paying jobs). Traditional sectors (crafts, small-scale retail) experience greater shocks and stabilize through preferential loans and subsidies. The most successful resilience programs focus on economic diversification, technological modernization, and tailoring support to the specific characteristics of the city or sector.

In combination with business support, it is also necessary to implement labour market resilience programs. Urban resilience programs shape the labour market by protecting existing jobs and creating new ones. In the EU, employment recovered rapidly after COVID-19: in cities in 2023, employment stood at

75.6% (for the 20-64 age group), compared to the overall European average of 75.3%. Unemployment returned to pre-crisis levels (6.1% in the EU, 6.7% in cities) [24]. In Ukraine, around 74% of jobs are provided by SMEs, so support for small businesses directly impacts employment. After the sharp rise in unemployment in 2022-2023 (initial peak 15-18%), labour market stimulus programs and financial support managed to stabilize it at around 10% [27]. Thus, anti-crisis programs helped prevent sudden large-scale job losses and reversed the unemployment trend.

At the same time, resilience strategies actively stimulate labour market reorientation. Within international initiatives, emphasis is placed on the development of key sectors such as infrastructure, IT, construction, and the “green” economy. In Ukraine, the shift of enterprises toward digital services and online sales helped mitigate the shortage of jobs during the war. As a result, new demand for specialists is emerging. For instance, in Ukraine alone, the Skills4Recovery project retrained over 2,500 people since January 2024, with a target of 5,800 by 2026 [18]. On a global scale, the share of IT specialists and renewable energy professionals is clearly increasing, while the demand for personnel in some traditional sectors is gradually declining.

It should be noted that resilience programs focus not only on the quantity but also on the quality of jobs, including strengthening social protection and gender equality. In EU cities in 2023, the gender pay and employment gap narrowed to 8.5 percentage points – the lowest level among regions – indicating improvements in working conditions for women [19]. It is also necessary to enhance municipal initiatives aimed at creating quality employment: highly skilled and socially valuable jobs, the development of cooperatives, and social enterprises. In urban communities in Canada and the USA, programs supporting low-income groups (housing subsidies, community employment centres) helped maintain incomes during crises. In Ukraine, state subsidies and municipal initiatives (such as bonuses to entrepreneurs for hiring internally displaced persons and veterans) also reduced the risk of income loss for vulnerable population groups [28]. In the context of improving workforce quality and reducing structural unemployment, urban resilience strategies emphasize training and retraining personnel. In Ukraine, plans aim to train 1.7 million entrepreneurs, managers, and employees in courses on digitalization, marketing, and management by 2027 [21]. Similar programs operate in leading countries: for example, South Korea and Singapore regularly offer free retraining courses for IT specialists and “green” technology professionals, enabling flexible workforce redistribution after economic shocks.

Thus, it can be noted that comprehensive resilience programs provide significant socio-economic ben-

efits: reducing poverty, decreasing inequality, and improving quality of life. On one hand, increased employment and the preservation of jobs improve family well-being and reduce social expenditures. On the other hand, projects implemented within these programs are aimed at developing civil society, for example, increasing the number of cooperatives and community enterprises.

Many cities include inclusion as a priority within their resilience programs, for example, the creation of social housing near new business centres and grants for entrepreneurs from disadvantaged neighbourhoods [29]. This helps level opportunities and reduce urban polarization. Overall, the success of resilience policies in a city is measured not only by economic indicators but also by improvements in living conditions: reducing the risk of homelessness and increasing access to education and public services for citizens.

At this stage of the study, the impact of urban resilience programs on business activity and the labour market has been analysed, allowing the identification of the main directions of their economic and social effects at the micro- and meso-levels. At the same time, the results obtained require further synthesis and comparison in terms of the overall economic efficiency of different types of programs and models of their implementation in cities. Therefore, the logical next step in the research is a comparative analysis of resilience programs, taking into account their scale, cost structure, and achieved economic outcomes. This approach enables a transition from a fragmented assessment of individual effects to a comprehensive understanding of which urban resilience tools provide the highest returns for the city’s economy. Moreover, comparing cities with different resilience models allows the identification of stable patterns and factors that determine short- and long-term economic benefits. This creates an analytical basis for forming evidence-based managerial conclusions and practical recommendations, particularly for Ukrainian cities in the context of post-war reconstruction.

Different classes of resilience programs have varying impacts on the economy. Infrastructure projects (dams, protective structures, network modernization) provide high short-term effects: for example, an AECOM analysis shows that an investment of \$10 billion in resilient infrastructure in the state of New York would create approximately 131,000 direct and 180,000 indirect jobs, while the value of avoided flood damages would exceed \$55 billion [30]. Infrastructure measures also generate multiplier effects: a study in the U.S. shows that \$10 million invested in a park in Dallas produced an economic impact of \$2 billion for the city [31]. SME support programs preserve local jobs and business development; for instance, in South Korea, the number of small enterprises rapidly recovered after the 1997-98 Asian financial crisis [25] (Table 2).

Table 2. Economic effect of resilience programs in world regions *

Program type	Example of economic effect
Infrastructure (New York)	\$10 billion investment in infrastructure: 131,000 direct + 180,000 indirect jobs; \$55 billion in avoided flood losses.
SME Support (South Korea)	Stabilization of the local economy: after the 1997 crisis, Korean SMEs quickly recovered their workforce and contributed to growth.
Digital / Green (Dallas)	Increased efficiency and multiplier effects: green infrastructure projects (e.g., constructed wetlands, green roofs) enhance resilience and generate economic benefits.

*Compiled by the authors based on [25,30,31]

Institutional programs (improving governance and planning) are predominantly long-term in nature and enhance the coordination of actions; however, their immediate economic effect is difficult to measure in the short term. Social and labour programs (support for the unemployed, retraining, social protection) reduce social vulnerability and stabilize the labour market, although their immediate impact on GDP is smaller. Digital and “green” initiatives (smart technologies, green infrastructure) increase efficiency and adaptability: for example, the introduction of green spaces, restoration of wetlands, and smart grids provides simultaneous environmental, social, and economic benefits. Overall, it can be said that heavy infrastructure-oriented measures generate large short-term multipliers (jobs, capacity release), while socio-economic and institutional programs are more invested in long-term resilience and growth.

Cities around the world adopt different models of sustainable development. For example, in the U.S. and Canada (New York, Toronto, Vancouver), there is a strong emphasis on protective infrastructure and innovations in climate adaptation, whereas some European cities (Amsterdam, Copenhagen) actively implement nature-based solutions and digital technologies (smart grids). Analytical indices indicate that cities that gradually strengthen urban systems across all areas (infrastructure, environment, social) demonstrate increasing resilience. According to a comparative index study, from 2000 to 2020, cities such as Malmö (Sweden), Baltimore (U.S.), and Beijing significantly improved their scores across multiple dimensions of sustainability, while Shanghai, Vienna, and São Paulo recorded a decline in overall resilience [32]. These examples suggest that comprehensive strategies – encompassing both physical projects (coastal restoration, transport) and institutional planning – yield better results than single-focus approaches. Resilience models also vary depending on local conditions: for instance, Asian megacities (Seoul, Singapore) prioritize high technology and strict planning, whereas EU cities place greater emphasis on social cohesion and ecological solutions (park-gates, eco-projects).

In the short term, resilience programs typically stimulate increases in GDP and employment through capital investments. For instance, infrastructure projects create thousands of jobs during the construction phase and boost local incomes (through direct and indirect multipliers). Research shows that investments in urban development and amenities have a multiplicative effect: for example, \$10 million invested in Klyde Warren Park in Dallas was projected to generate an eco-

nomical impact of \$875 million, but since 2012 it has actually delivered over \$2 billion in economic growth for the city [31]. In the long term, the positive effects of sustainable programs manifest in reduced losses and economic stabilization. Specifically, avoiding natural disaster damages directly increases future GDP. National examples confirm that targeted investments have a lasting impact: in Germany, the Regional Recovery and Resilience Program (RRF) is expected to generate GDP growth of approximately €66.1 billion by 2030, nearly twice the initial stimulus amount [33]. At the same time, support for SMEs and business development contributes to long-term employment growth and productivity: resilient small enterprises ensure the stability of local supply chains and help maintain the competitiveness of the region.

Analysis shows that resilience investments have the tendency to expand well beyond the initial project due to multiplier effects and shared benefits. These effects extend to the strengthening of related industries and local value chains. A dataset from a project in the Lebanese city of Byblos demonstrated that every \$1 invested in the restoration of a cultural heritage site generated an additional \$7 in private investments (primarily in the construction of surrounding plazas and façades) [31]. Accordingly, resilience programs stimulate the attraction of private capital and innovation. In the aforementioned New York example, in addition to direct job creation, such financing also benefits related construction and service sectors [30]. Moreover, infrastructure upgrades (improved accessibility to parks and transportation) increase the attractiveness of an area: property values rise, and commercial and tourism activity grows. Thus, resilience programs can trigger a “bottom-up effect” – boosting GDP through job creation not only in directly invested projects but also in related industries and among local suppliers.

At the same time, the implementation of resilience programs raises the issue of optimizing urban expenditures. To use budget funds effectively, cities need to systematically assess the expected benefits of different projects. In particular, applying cost–benefit analysis and hedonic valuation methods allows the identification of the most promising initiatives and helps attract private investment. Taking into account all economic and social effects increases the return on each contribution. Therefore, policymakers are advised to focus on projects with the highest socio-economic multipliers (e.g., green and transport infrastructure) and to seek partnerships with businesses or donors (offset schemes, public-private partnerships). In this context, Germany demonstrates that coordinated planning, such as the RRF (Recovery and Resilience Facility) program, with

almost 50% green and 47% digital components, creates synergy between reforms and investments, justifying the resources allocated [33]. Cities should also consider implementation time constraints to avoid losing financial opportunities.

Thus, resilience should become an integral component of urban development strategies. This means incorporating adaptation measures and risk management into master plans, economic growth strategies, and social development programs. Experience shows that integrating climate adaptation, transport modernization, energy efficiency, and digitalization creates a synergistic effect: numerous cities that have implemented such programs (Scandinavian megacities, EU climate adaptation mission pioneer cities) have recorded significant improvements in social welfare alongside strengthened urban resilience. Ukrainian cities, when developing recovery strategies, should follow the “build back better” approach—that is, to reconstruct not only based on current needs but also to invest in long-term sustainability and innovation according to EU standards [34]. Integrating resilience into economic planning will promote economic diversification (e.g., development of green and digital sectors) and align with national reforms and cooperation programs (coordination with the RRF and investment funds).

Thus, certain general recommendations can be formulated for urban policies supporting business and employment. To ensure the resilience of enterprises and jobs, cities should implement comprehensive measures. Priority actions include facilitating financial access for SMEs through fintech tools (crowdfunding platforms, P2P lending) and establishing mechanisms for concessional loans and government guarantees [35]. It is also necessary to provide effective information to small businesses about existing support programs and grant opportunities to ensure their broad utilization. Urban strategies should include retraining programs and skills development for workers in green transition and digitalization sectors, as well as support measures for startups and innovation (incubators, accelerators). European economic recovery initiatives focus on stimulating small and medium-sized enterprises: in particular, the National Recovery and Resilience Plans (RRF) aim to create favourable conditions for doing business, strengthen competitive positions, promote innovative activity, and provide comprehensive support for the SME sector. Moreover, urban policy should include inclusive initiatives: programs for creating stable jobs and providing training for vulnerable groups, which strengthen social cohesion. Such a comprehensive set of measures will contribute to preserving and growing SMEs, increasing employment, and mitigating the social impacts of economic shocks.

For Ukrainian cities, post-war recovery represents a unique opportunity to integrate resilience into new urban infrastructure. Analysts emphasize that the priority should be the rapid restoration of critical systems (energy supply, transport, housing) while incorporating green and innovative solutions [36]. This requires actively attracting private investment and international aid. Already, businesses in Ukraine are increasing investments in energy efficiency and renewable energy

(solar and biogas installations), and the IFC estimates that the private sector could cover about one-third of reconstruction needs [37]. Cities need to learn how to leverage these opportunities: creating incentives for RE investments in municipal projects (e.g., power purchase agreements with municipalities), attracting international support programs (green grants, EBRD/EIB funds), and implementing local initiatives (e.g., energy-efficient retrofitting programs or infrastructure upgrades that account for climate risks). Additionally, emphasis must be placed on the social dimension: preparing for the return of displaced persons, creating jobs in the regions, and supporting individuals affected by the war. It is also necessary to consider the broader development of the country’s economic model to enhance competitiveness and secure better positioning on the path to full EU membership [38]. Thus, the strategic priority for Ukrainian cities is not merely to restore what was lost but to achieve a qualitative transformation of the urban environment with a focus on resilience—through the implementation of EU integration standards and leading global practices in urban planning, energy efficiency, and social development.

Conclusions

This article provides a comprehensive analysis of the economic effectiveness of urban resilience programs and their impact on enterprise activity and the labour market in the context of increasing global and local crisis challenges. The results of the study allow for an assessment of the extent to which the proposed hypotheses regarding the economic effectiveness of urban resilience programs and their influence on enterprise activity and the labour market are confirmed.

The first hypothesis (H1) regarding the higher economic effectiveness of comprehensive urban resilience programs compared to narrowly focused infrastructure measures is generally confirmed. Comparative analysis of cities in EU countries, Ukraine, and other parts of the world showed that the combination of infrastructure, institutional, social-labour, digital, and green programs provide more sustainable short- and long-term economic effects, including higher multipliers for the urban economy.

The second hypothesis (H2), which concerned the positive impact of resilience programs on the sustainability and innovative activity of small and medium-sized enterprises, is also confirmed. Empirical examples indicate that cities with well-developed SME support programs demonstrate higher enterprise survival rates, stabilization of operational activities, and increased innovation, particularly during crisis and post-crisis periods.

The third hypothesis (H3) regarding the positive impact of social-labour, digital, and green resilience programs on employment and job quality is partially confirmed. Although such programs contribute to structural shifts in the labour market and the creation of new high value-added jobs, their short-term effect is less pronounced and largely depends on the scale of funding and the institutional capacity of the city.

The fourth hypothesis (H4), which anticipated the strengthening of the multiplicative economic effects of

resilience programs under conditions of high institutional capacity in urban governance, is fully confirmed. The experience of cities with integrated resilience models shows that effective management, strategic planning, and coordination across government levels are key factors in transforming resilience programs into long-term economic benefits.

Overall, the study results confirm the advisability of considering urban resilience programs as a tool of active urban economic policy, rather than solely as a mechanism for responding to crisis situations. This provides a basis for developing well-grounded recommendations on adapting international resilience practices to the conditions of post-war reconstruction in Ukrainian cities, taking into account resource constraints and the need to ensure sustainable economic growth.

References:

1. UNDRR. Urban resilience. Available at: <https://www.undrr.org/urban-resilience> (Accessed January 08, 2026)
2. UNDP. Support to the Economic Recovery of Ukraine. Available at: https://www.undp.org/sites/g/files/zskgke326/files/2024-02/undp-supporteconomiecoveryukraine2024en_v04.pdf (Accessed January 08, 2026)
3. Shulga, O. V. (2025). Legal and organizational foundations of resilience of Ukrainian cities. *Scientific Bulletin of Uzhhorod National University. Series: Law*, 2(90), 245-252. <https://doi.org/10.24144/2307-3322.2025.90.2.35>
4. A Point of View. Empowering SMEs for Urban Resilience. Available at: <https://resilientcitiesnetwork.org/wp-content/uploads/2023/08/A-Point-of-View-Empowering-SMEs-for-Urban-Resilience.pdf> (Accessed January 08, 2026)
5. Glaeser, E. L. (2022). Urban resilience. *Urban studies*, 59(1), 3-35. Available at: https://www.nber.org/system/files/working_papers/w29261/w29261.pdf (Accessed January 08, 2026)
6. Moro, E., Frank, M. R., Pentland, A., Rutherford, A., Cebrian, M., & Rahwan, I. (2021). Universal resilience patterns in labour markets. *Nature communications*, 12(1), 1972. <https://doi.org/10.1038/s41467-021-22086-3>
7. Gulati, B., & Weiler, S. (2021). Risk, Recessions, and Resilience: Towards Sustainable Local Labour Markets through Employment Portfolio Analysis. *Sustainability*, 13(14), 7926. <https://doi.org/10.3390/su13147926>
8. Omowole, B. M., Olufemi-Phillips, A. Q., Ofodile, O. C., Eyo-Udo, N. L., & Ewim, S. E. (2024). The role of SMEs in promoting urban economic development: A review of emerging economy strategies. *Journal Name Unspecified*. Available at: https://www.researchgate.net/profile/Bamidele-Omowole/publication/387029364_The_Role_of_SMEs_in_Promoting_Urban_Economic_Development_A_Review_of_Emerging_Economy_Strategies/links/675cfa5bebc8f979702e9437/The-Role-of-SMEs-in-Promoting-Urban-Economic-Development-A-Review-of-Emerging-Economy-Strategies.pdf (Accessed January 08, 2026)
9. Vermeulen, W. (2022). Policies for resilient local economies. *OECD Local Economic and Employment Development (LEED) Papers*, 2022(09). <https://dx.doi.org/10.1787/872d431b-en>
10. OECD. Cedefop. European Commission. ETF. ILO. UNESCO (2024). Skills policies for resilience, OECD, Paris. Available at: https://www.oecd.org/content/dam/oecd/en/topics/policy-issues/adult-skills-and-work/Skills_Policies_for_Resilience.pdf (Accessed January 10, 2026)
11. URBACT. Resilient Europe. Available at: https://urbact.eu/sites/default/files/2025-07/resilient_europe_rotterdam_action_plan_final.pdf (Accessed January 10, 2026)
12. GIZ. Supporting resilient cities and reconstruction in Ukraine. Available at: <https://www.giz.de/en/projects/strengthening-urban-resilience-areas-supply-infrastructure-and-housing-ukraine> (Accessed January 10, 2026)
13. The World Bank. City Resilience Program. Available at https://www.gfdr.org/sites/default/files/City%20Resilience%20Program_Annual%20Report.pdf (Accessed January 14, 2026)
14. ENPACT. Supporting Ukraine's green recovery and just transition through SMEs. Available at: <https://enpact.org/just-transition-through-entrepreneurship-overview/> (Accessed January 14, 2026)
15. Eurostat. Statistics Explained. Structural business statistics overview. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Structural_business_statistics_overview (Accessed January 18, 2026)
16. Ministry of Economy, Environment and Agriculture of Ukraine. SME Resilience Alliance: August opportunities for Ukrainian businesses. Available at: <https://me.gov.ua/News/Detail/80cbad7b-982b-48f3-9775-25a4d1d4c4b1?lang=en-GB&title=SmeResilienceAlliance-AugustOpportunitiesForUkrainianBusinesses> (Accessed January 18, 2026)
17. EUI. Three innovative examples of EU cities supporting the green skills transition. Available at: <https://www.urban-initiative.eu/news/three-innovative-examples-eu-cities-supporting-green-skills-transition> (Accessed January 18, 2026)
18. Xu, Q., Zhong, M., & Dong, Y. (2024). Digital economy and risk response: How the digital economy affects urban resilience. *Cities*, 155, 105397. <https://doi.org/10.1016/j.cities.2024.105397>
19. U.S. Chamber of Commerce. Beyond the Pay-off: How Investments in Resilience and Disaster Preparedness Protect Communities. Available at: <https://www.uschamber.com/security/beyond-the-pay-off-how-investments-in-resilience-and-disaster-preparedness-protect-communities> (Accessed January 18, 2026)
20. Nathaniel Echeverria. How investing in urban resilience can foster sustainable growth and long-term competitiveness. *World Economic Forum (WEF)*. Available at: <https://www.prevention->

web.net/news/how-investing-urban-resilience-can-foster-sustainable-growth-and-long-term-competitiveness (Accessed January 19, 2026)

21. Figueiredo, L., Honiden, T., & Schumann, A. (2018). Indicators for resilient cities. OECD Regional Development Working Papers 2018/02. <https://dx.doi.org/10.1787/6f1f6065-en>

22. European Commission. Annual Report on European SMEs 2022/2023. Available at: https://single-market-economy.ec.europa.eu/system/files/2023-08/Annual%20Report%20on%20European%20SMEs%202023_FINAL.pdf (Accessed January 19, 2026)

23. Anastasiia Tsymbala. Resilience of Ukraine's Small and Medium Businesses Amid the War: Challenges, Policy, and the Future. Vox Ukraine. Available at: <https://voxukraine.org/en/resilience-of-ukraine-small-and-medium-businesses-amid-the-war-challenges-policy-and-the-future> (Accessed January 20, 2026)

24. Eurostat. Statistics Explained. Urban-rural Europe – labour market. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Urban-rural_Europe_-_labour_market

25. A Point of View. Empowering SMEs for Urban Resilience. URL: <https://resilientcitiesnetwork.org/wp-content/uploads/2023/08/A-Point-of-View-Empowering-SMEs-for-Urban-Resilience.pdf> (Accessed January 20, 2026)

26. Amin, M., Jolevski, F., & Islam, A. M. (2023). The Resilience of SMEs and Large Firms in the COVID-19 Pandemic: A Decomposition Analysis (No. 10562). The World Bank. Available at: <https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/research-1/The%20Resilience%20of%20SMEs%20and%20Large%20Firms%20in%20the%20COVID-19%20Pandemic.pdf> (Accessed January 22, 2026)

27. State Statistics Service of Ukraine. Available at: <https://stat.gov.ua/uk> (Accessed January 23, 2026)

28. Zadoia O.A. Analysis of scenarios for the use of anti-crisis policy instruments in Ukraine during a pandemic. Academic Review. 2020. No. 2(53). PP. 19-28. <https://doi.org/10.32342/2074-5354-2020-2-53-2>

29. Zadoia O.A. Tools and directions for the implementation of an inclusive development strategy in Ukraine. Academic review. 2019. No. 2(51). PP. 5-12. <https://doi.org/10.32342/2074-5354-2019-2-51-1>

30. AECOM. Resilient Infrastructure for New York State. Available at: <https://re-buildbydesign.org/wp-content/uploads/2021/12/1329.pdf> (Accessed January 23, 2026)

31. World Bank Blog. Unlocking financial opportunities: Evaluating urban infrastructure's economic impacts. Available at: <https://blogs.worldbank.org/en/sustainablecities/unlocking-financial-opportunities-evaluating-urban-infrastructures-economic> (Accessed January 23, 2026)

32. Oliveira, B., & Fath, B. D. (2023). Comparative Resilience Evaluation – Case Study for Six Cities in China, Europe, and the Americas. *Land*, 12(6), 1182. <https://doi.org/10.3390/land12061182>

33. European Commission. Germany's recovery and resilience plan. Available at: https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/germanys-recovery-and-resilience-plan_en (Accessed January 24, 2026)

34. World Bank Group. Updated Ukraine Recovery and Reconstruction Needs Assessment Released. Available at: <https://www.worldbank.org/en/news/press-release/2025/02/25/updated-ukraine-recovery-and-reconstruction-needs-assessment-released> (Accessed January 24, 2026)

35. Business at OECD. Policy recommendations for SME recovery and long-term resilience. Available at: <https://www.businessatoecd.org/hubfs/website/documents/pdf/SMEs/Policy%20recommendations%20for%20SME%20recovery%20and%20long%20term%20resilience.pdf> (Accessed January 25, 2026)

36. UNDP. Urban development and post war recovery for Ukrainian cities. Available at: <https://www.undp.org/ukraine/blog/urban-development-and-post-war-recovery-ukrainian-cities> (Accessed January 26, 2026)

37. IFC. Private Sector Opportunities for a Green and Resilient Reconstruction in Ukraine. Available at: <https://www.ifc.org/en/insights-reports/2023/private-sector-opportunities-for-a-green-and-resilient-reconstruction-in-ukraine> (Accessed January 28, 2026)

38. Mahdich A.S., Zadoia O.A., Novikov A.M. Ways of implementing a complex approach to increase the competitiveness of Ukraine. *European Vector of Economic Development*. 2024. No. 2(37). PP. 98-115. <https://doi.org/10.32342/3041-2153-2024-2-37-8>