Challenges of Innovative Development of Enterprises in the Kharkiv Region under Conditions of War

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Losses of the Kharkiv region from the war (according to preliminary estimates)

Losses	Estimates
Destroyed enterprises	Up to 13% of the total number of destroyed and damaged enterprises (Malorohansky Ironworks, Kupiansk Dairy Plant, Balakliya Ironworks, Agromol, Balakliya Repair Plant, Balakliya Cement Plant, Henkel Bautechnik, State Enterprise "Shebelinkagazvydobuvannya", etc.).
Relocated enterprises	About 1,000 units
Forced migration of the population (abroad; from Kharkiv region to other regions of Ukraine)	More than 0.5 million people
Destroyed or damaged key energy facilities	More than 600 facilities
Forests burned	23.3 thousand hectares
Forests affected	3 million hectares
Educational institutions damaged	More than 700 units
Destroyed or damaged housing facilities	28.01 thousand units
Direct losses of the region	30.2 billion USD
Indirect losses of the region	33 billion USD
Funds required for the recovery of the region	More than 30 billion USD

Challenges of Innovative Development of Enterprises in the Kharkiv Region across Time Periods

Pre-war period	Wartime period	Post-war period
Lack of effective state policy aimed at regional development. Deindustrialization of industry. Gradual loss of the region's scientific and technological potential. Ineffective regional personnel policy.	Constant shelling of the region's territories and loss of human life. Occupation of part of the region's territory. Destruction and damage of the region's energy system facilities. Destruction of infrastructure, enterprises, and residential housing. Relocation of businesses. Outmigration of the population beyond the region.	Uncertainty regarding future regional development priorities. Military threat to border areas. Low investment attractiveness of the region. Reconstruction of destroyed infrastructure, enterprises, and housing. Non-return of migrants. Territorial resettlement of the population. Loss of the region's transit potential.

Sectoral Impacts

* **IT and Digital Services:** The IT sector has shown resilience. Ukraine's software exports rose 23% to $3.7 billion in 2022. In Kharkiv (a major IT hub with ~510 companies and 45,000 specialists pre-warstartups, many firms preserved output via remote work and relocation. Some even expanded internationally to diversify risk.
* **Manufacturing and Industry:** Heavy industry collapsed in Kharkiv. Key export categories plummeted (e.g. machine/equipment exports fell ~58%, food/beverage exports ~51% in 2022. Local metallurgy and machinery output was particularly hard-hit, reflecting nationwide declines in industrial production.
* **Agriculture:** Farming activity has been severely disrupted by front-line fighting. Nationwide, about 30% of pre-war agricultural capital is reported destroyedoecd. In Kharkiv Oblast, shelling, landmines and looting have rendered large areas fallow. These constraints threaten future productivity.
* **Utilities and Transport:** Energy and infrastructure sectors are also suffering. For example, Kharkiv has lost dozens of power substations and suffered pipeline damage. Many roads/bridges are unusable, hampering logistics and recovery.

Adaptive Innovation Efforts in Kharkiv

* **Tech-sector resilience:** The Kharkiv IT community created "resilience hubs" during power outages. The Kharkiv IT Cluster coordinates shared office spaces so that any displaced developer can resume work within 30 minutes. This networking approach helped firms keep global contracts despite bombardment.
* **Diversification and relocation:** Major local tech firms (e.g. EPAM, SoftServe) rapidly opened offices abroad and relocated portions of their staff (≈30%) overseas. This allowed them to continue R&D and client work safely while still serving Ukraine.
* **Nurturing talent:** Universities in Kharkiv continue training engineers (sometimes in basements or remote classrooms). Scholarships and online programs help retain students. These efforts sustain the pipeline of innovators for post-war rebuilding.
* **Product adaptation:** Some Kharkiv enterprises have pivoted to war-relevant innovation: for instance, tech startups and factories have turned to producing drones, PPE, or energy-saving equipment, drawing on local engineering talent (though specific data are still emerging).

Policy and Business Recommendations for Innovation Recovery

* **Invest in R&D and skills:** Provide dedicated funding for scientific research (especially dual-use tech) and STEM training to offset brain drain . Support scientists at home and abroad with grants and fellowships, and foster collaboration with the Ukrainian diaspora.
* **Leverage international networks:** Actively integrate Kharkiv enterprises into EU and global programs. Co-fund Horizon and NATO-related research projects, and encourage joint ventures with foreign partners. International collaboration brings both capital and knowledge needed for innovative growth.
* **Build regional innovation clusters:** Strengthen Kharkiv's innovation ecosystem by enhancing university–industry links. Offer tax incentives and legal frameworks for joint R&D ventures between businesses and local universities/research institutes. Expand incubators and tech parks in the region to nurture startups.
* **Enable finance and investment:** Establish credit-guarantee funds and low-interest loans targeted at SMEs and startups in key sectors (e.g. agritech, software). Streamline business regulations and enhance transparency to boost investor confidence. Accelerate reconstruction of power and digital infrastructure to provide a stable operating environment.
* **Strengthen governance:** Continue reforms to reduce corruption and enforce contracts. The OECD notes that improving the rule of law and institutional integrity is essential to restore investment. Ensuring legal certainty and protecting property rights will encourage both domestic and foreign firms to innovate in Kharkiv despite wartime risk.

Thank You for Your Attention!