



# The architecture of infrastructure recovery in Ukraine

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## Key messages

- The assessment of damage and the creation of a project-level vision of where Ukraine would like to be tomorrow are already under way.
- The vision, though, is not yet a masterplan. It needs to be balanced against evidence and aligned with clear objectives that are consistent with Ukraine's future accession to the European Union.
- A masterplan goes beyond reconstruction projects. Alongside affordability scenarios, it addresses the institutional and decision-support system needed to enable efficient and effective reconstruction and the strategic ambitions of the state, *e.g.*, decarbonisation, digitalisation.
- The fiscal capacity of the state and the ability of the population to pay user charges will be limited for the foreseeable future. This will represent a serious constraint on any public or private finance options, meaning that international aid should focus on grants.
- Ensuring efficiency in procurement will represent a significant challenge, not least because the transition to a competitive market in supply chains servicing infrastructure has yet to be completed. Devising strategies that minimise the risk of procurement failures will be the first of many essential policy interventions.

## Key considerations for the development of an infrastructure reconstruction plan in Ukraine

**In the wake of Russia’s large-scale and ongoing aggression against Ukraine, initiatives are under way to document the level of destruction.** For example, the Kyiv School of Economics is creating a database of damage reports,<sup>1</sup> with estimates exceeding EUR100 billion as of mid-June 2022, based on historic accounting values. Replacing this infrastructure today, even if no new damage were suffered, would likely be significantly more expensive.<sup>2</sup> The cost to the economy due to infrastructure non-performance is a multiple of that number, given the critical role of infrastructure for basic services and links to global value chains.

**A high-level proposal to institutionalise reconstruction is on the table.** At the suggestion of the Centre for Economic and Policy Research (CEPR) (Becker, 2022<sup>[1]</sup>), the European Commission (EC) has proposed a new joint institution – the Ukraine Reconstruction Platform – managed jointly by the EC and Ukrainian authorities (EC, 2022<sup>[2]</sup>). But due to different donor interests, this may not be the only platform.

**The Ukraine Reconstruction Platform is expected to coordinate the Strategic Reconstruction Plan “Rebuild Ukraine”, including financial aid from abroad.** The plan is supposed to be developed and owned by the recently-formed National Reform Council in Ukraine. It is understood that the European Union (EU) and other partners would provide assistance that would increase the effectiveness of the plan. The Platform plans to promote partnerships between places in the European Union and regions or cities in Ukraine to accelerate reconstruction (EC, 2022<sup>[3]</sup>).

**A number of reforms had already begun before the war started.** Ukraine received systematic diagnosis and reform proposals from numerous organisations. The OECD reviewed Ukraine’s public administration management (2018<sup>[3]</sup>), its post-2014 regional development and decentralisation reforms, multi-level governance and public investment arrangements (2014<sup>[5]</sup>; 2018<sup>[6]</sup>), and the corporate governance of state-owned enterprises (SOEs) (2021<sup>[7]</sup>). In addition, the OECD is currently reviewing Ukraine’s post-2018 advancements in regional development policy, as well as the impact of the municipal amalgamation process implemented since 2014 (OECD, n.d.<sup>[8]</sup>). The IMF reviewed public investment management (2019<sup>[4]</sup>), and the World Bank reviewed almost all key infrastructure sectors, including roads (2018<sup>[6]</sup>), railways (2019<sup>[7]</sup>), energy (2021<sup>[8]</sup>), water (2021<sup>[9]</sup>) and health (World Bank Group, 2020<sup>[10]</sup>).

**However, deep issues persist that will have an impact on Ukraine’s ability to make the most of reconstruction investments.** Ukraine is facing serious issues across infrastructure domains that could undermine its capacity to prioritise, target, and coordinate infrastructure investments, as well as the effectiveness and efficiency of the reconstruction programme. For example, Ukraine lacks a multi-annual capital expenditure budgeting process – which could lead to stop-and-go project funding – and donor coordination mechanisms. Strategic infrastructure planning was not in place before the war, and masterplans for different infrastructure sectors still do not exist. A project appraisal and selection methodology<sup>3</sup> was rolled out but not broadly used, and its effectiveness is unclear; modern project management principles are not adhered to and project performance monitoring focuses mainly on

<sup>1</sup> <https://kse.ua/about-the-school/news/over-the-week-the-damage-caused-to-ukraine-s-infrastructure-during-the-war-has-increased-by-over-5-billion/>

<sup>2</sup> Not all infrastructure elements are about steel and concrete. Technologically more sophisticated elements related, e.g. to signalling and safety or traffic control, evolve continuously and modern equivalents of equipment bought 20 years ago are likely to be more costly. Moreover reconstruction will at least at first suffer from disrupted supply chains.

<sup>3</sup> A masterplan identifies strategic issues to be resolved, whereas concrete solutions or projects need to be selected among several alternatives. The alternatives are compared using Cost-Benefit Analysis and other methodologies to determine, which yields the highest economic benefits.

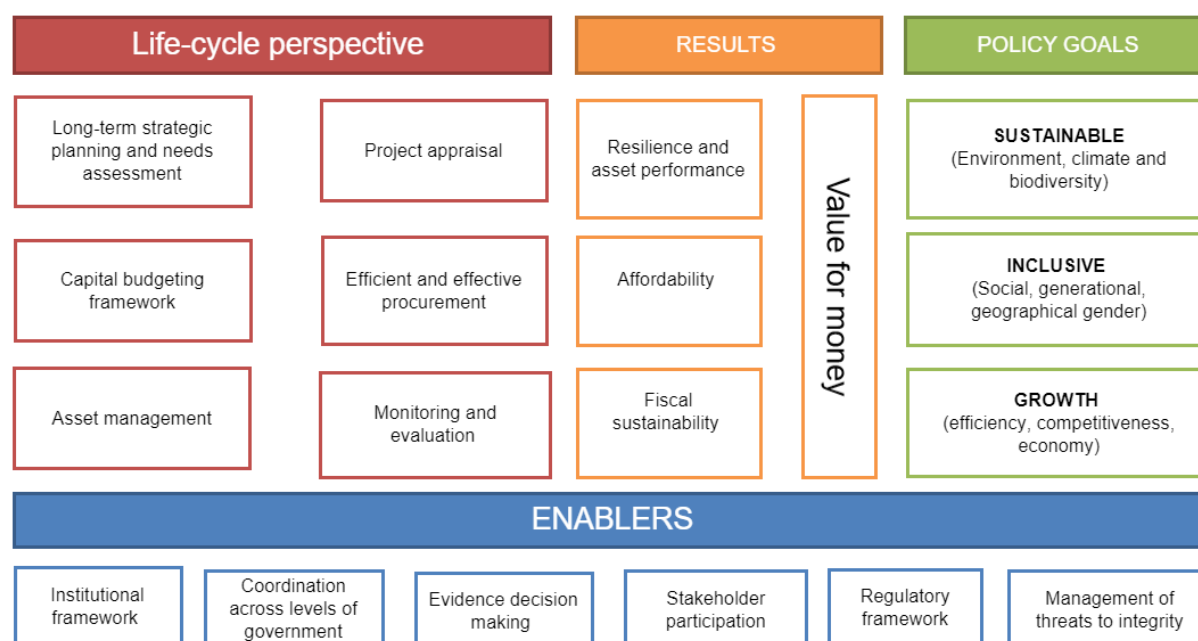
confirming financial expenditures, rather than meeting project objectives; state ownership practices, disclosure, integrity and corporate governance need to be raised significantly to conform to international best practices (OECD, 2015<sup>[11]</sup>) (OECD, 2019<sup>[12]</sup>); capacity building will also be required for regional and local governments, who are responsible for 68% of public investment in Ukraine (IMF, 2022<sup>[15]</sup>; OECD/UCLG, Forthcoming<sup>[16]</sup>).

**Any approach to reconstruction will have to recognise that Ukraine's economic transition to a competitive market economy is not yet complete.** For example, competitive procurement legislation and procedures are in place, but “competition” takes place between state-owned enterprises, and many private suppliers own local resources or other capabilities that limit market entry.

## What it will take to secure an effective and efficient reconstruction

**The continuity and scale of donations flowing into Ukraine to rebuild its infrastructure will depend on how effectively and efficiently these donations will be spent. Supporting Ukraine in this regard is a key role for the Ukraine Reconstruction Platform.** The OECD's various recommendations take into account key infrastructure and public investment governance elements that can help Ukraine develop, support deployment at scale, and monitor outcomes. These elements are critical to achieving value for money, long-term strategic objectives, and integrity and legitimacy of investment decisions. Figure 1 outlines key elements based on OECD infrastructure governance principles.

**Figure 1. A governance framework for infrastructure policy and implementation**



Source: OECD (2021<sup>[11]</sup>).

**In terms of immediate measures, a first disaster response is already underway.** With ongoing hostilities, there will be a need to establish or maintain key services and to prioritise essential re-building activity. Re-establishing basic transport, power, and water connections, and creating temporary housing solutions will be required first, in order to set up the basic conditions for the reconstruction. Ukraine could benefit from the experiences from other advanced economies, which have suffered nationwide disasters

and updated their contingency plans for the future. New Zealand's earthquake in 2010/11 is one such example with other cases available from Japan, Italy, Mexico, the United States, etc.

**At the same time, Ukraine will have to start developing sectoral, regional, and local masterplans for infrastructure reconstruction, with a pragmatic focus.** Established approaches to strategic infrastructure planning rely on evidence (e.g., a national transport model to predict the movement of people and goods on transport networks) and a vision of economic development for the country, regions, and cities, complementing the overview of needs. Masterplans also include a high-level overview of measures (i.e., projects and policies to be enacted, such as pricing and other aspects of infrastructure governance). In Ukraine, urgency dictates that masterplans – which usually take several years to design – are developed within a year. The governance vision should involve a stocktaking of the pre-war reform process, aligned with OECD standards,<sup>4</sup> G20 Principles for Quality Infrastructure Investment and related recommendations/guidance. The OECD has supported the development of such plans within the European Commission's DG Reform framework for Estonia, for example (ITF, 2021<sub>[12]</sub>), and has ongoing work with Ukraine to strengthen multi-level governance and public investment (OECD, n.d.<sub>[8]</sub>). Given the recent invitation to Ukraine to begin the EU accession process, plans will also have to consider the multiple dimensions in which sectoral policies across the EU are aligned<sup>5</sup> (e.g., decarbonisation/environmental aspects, safety, efficiency etc.).

**Sectoral masterplans provide the guidelines for reconstruction.** By mapping existing and planned concentrations of economic activity for all infrastructure, Ukraine will create a basis to inform strategic decisions on which activities to be encouraged and which to be abandoned or replaced by imports. The masterplans should include decarbonisation objectives, e.g., net-zero emissions, as well as other strategic objectives such as digitalisation or inclusion. These will, in turn, be reflected in the vision of each infrastructure subsystem (e.g., transport, energy etc.). In the case of transport, this determines decisions on the main origins and destinations of passenger and goods transport, on which transport links to be reconstructed and to what standard, or which to be abandoned (e.g., Ukraine has an extensive capillary network of low-density railway connections, which were not economically viable already before the war). Analogous decisions are required for each infrastructure subsystem. Some of the needs assessment are already taking place via the Working Group on Infrastructure Rehabilitation and Development led by the Government of Ukraine as part of the National Recovery Council.

**Following the elaboration of strategic masterplans for each infrastructure subsystem, Ukraine will then have to operationalise the plans by identifying and prioritising concrete projects that address the needs identified.** As there was no broadly used and established system for investment appraisal before the outbreak of the war, much of the data required for standard cost-benefit analysis will be missing, so a light approach needs to be developed to help Ukraine prioritise its investments. Even so, basic data on cost and benefits will be necessary, where several challenges will have to be acknowledged, such as:

- cost data are available (at least historically), although at the beginning of the reconstruction programme costs will be elevated due to disrupted supply chains;
- benefit data are a greater challenge – in transport, for example, there will be no reliable references on post-war traffic flows; a heavy reliance on assumptions and estimates will be necessary, as well as well-developed regional and urban plans; and
- pricing those flows is another challenge – judging from the reform proposals before the war, pricing of infrastructure services is inadequate and transparent asset accounting is an issue, creating the

<sup>4</sup> OECD Recommendation on the Governance of Infrastructure (OECD, 2020<sub>[11]</sub>), OECD Recommendation on Effective Public Investment Across Levels of Government (OECD, 2014<sub>[20]</sub>), (OECD, 2018<sub>[17]</sub>)

<sup>5</sup> <https://euneighbourseast.eu/news-and-stories/latest-news/european-commission-recommends-to-grant-ukraine-and-moldova-eu-candidate-status-georgia-receives-perspective-to-become-eu-member/>

first obstacle to determining what tariff level would support a full cost recovery, enabling sustainable operation of infrastructure. A shadow price would have to be estimated.

Project ranking is not a fully technocratic process as it involves a decision that is ultimately political. In Ukraine, national lawmakers make up more than 50% of project selection committees of different regional and local development funds (CMU, 2012<sup>[22]</sup>). However, a clear and transparent decision-making process is required, with investment appraisal playing a key supporting role. Post-war Ukraine will need to strike a balance between the economic/commercial logic of infrastructure development and security considerations. For example, it may seem sensible from a defence perspective to build multiple railway connections to regions bordering Russia. However these connections may not be viable economically and will reduce the opportunities to use the same resources for supporting economic activities elsewhere. Data and energy sovereignty will also be strategic considerations in planning telecommunications, digital and energy infrastructure.

**The strategic masterplans and project appraisals ensure that the right projects will be pursued. Procurement must ensure that they are delivered efficiently.** Firstly, a strategic choice on the reconstruction pace must be made (and be updated as more experience/data become available). Initially, procurement of infrastructure projects in Ukraine will be affected by disrupted supply chains. Uncertainty will be high regarding time and cost of delivering supplies on building sites as well as the sourcing of skilled experts. The availability of local capabilities to deliver infrastructure will also have to be assessed through systematic industry consultations. As a critical point, an economic analysis is required of trade-offs between the speed and overall trajectory of reconstruction and impacts on growth, employment and income distribution, based on long-term scenarios. The reconstruction pace will be limited by the absorption capacity of Ukrainian construction. On the other hand, the expedience with which the priority lists of projects are delivered will have an economic opportunity cost. A faster pace may overheat the Ukrainian construction sector leading to high prices. Institutional factors will also be critical in assessing the speed of reconstruction (Sutherland, 2009<sup>[14]</sup>). Heavy reliance on international contractors, foreign suppliers and foreign workforce, will reduce the short-term multiplier effect Ukraine can expect from the reconstruction programme. That said, to some extent, some reliance on international contractors is inevitable, due to the need for imported technological capabilities which do not yet exist in Ukraine.

**The approach to procurement will have to address a range of challenges that existed before the war, including a lack of competition.** Pre-war reform sector reports by the World Bank found that many infrastructure subsystems face uncompetitive supplier markets. The first response is to approach the procurement strategy comprehensively and in an evidence-based manner to avoid three key procurement failures: low bidder interest, hold-up, and risk allocation failures. This means investigating, for example, when insourcing might sensibly resolve a single supplier issue, when contract number and scope (packaging) or risk allocation adjustments might improve the competitive response etc. The OECD Support Tool for Effective Procurement Strategies (STEPS) (OECD, 2021<sup>[14]</sup>) offers an evidence-based tool to reduce procurement failures. This tool should be used on major infrastructure projects where competition failures are expected. Second, Ukraine would benefit by deliberately making every  $n^{\text{th}}$  major project (for example every 5<sup>th</sup> project above EUR100 million) open to international competition only. A strong presence of international experts is advised also on the buyer's side. The objective would be to create reference benchmarks to which other projects in Ukraine could be compared. A systematic knowledge management function would help ensure the dissemination of experience and best practices to local industry. Across the board, comprehensive procurement performance data (cost/benefit estimates throughout project gestation and performance/outcomes) should be collected to inform policy and decision-making.

**The government should ensure transparent decision-making processes regarding the allocation and execution of recovery funding and the accountability of involved actors at all levels of government.** This is particularly important as audit reports published prior to 2022 mention, for example, political influence over the distribution of intergovernmental grants that have been used for political

campaigning in local constituencies (National Institute for Strategic Studies, 2020<sup>[24]</sup>). As such, Ukraine is advised to set up mechanisms to oversee the effective, efficient and transparent use of recovery funding.

**The scale of public procurement in reconstruction is an opportunity to investigate different engineering approaches and standardisation.** For example in social infrastructure (e.g., schools, hospitals), there may be possibilities to develop modular design solutions, which are scalable, rather than pursuing a bespoke design every time. The integration of new technologies into infrastructure building (Infratech), can improve its monitoring and performance. Here too, international organisations can help establish platforms to gather and exchange such experiences.

**Private investment in infrastructure should not be the immediate focus given the limited short-term economic capacity to ensure adequate returns. Over the medium- and long-term, private investment should be considered in terms of efficiency benefits.** The immediate challenge for Ukraine is infrastructure funding (who will repay what was borrowed), rather than meeting financing needs (who will borrow). Immediate reconstruction should be funded as much as possible through grants (e.g. donor assistance) as the borrowing capacity of Ukraine and the ability of people to pay through user charging/tariffs (i.e., to achieve full cost recovery) will be extremely limited at the beginning of reconstruction. These are primarily political challenges, already identified in the pre-war reform reports. In addition, the use of the public-private partnerships (PPP) model in infrastructure has only shown performance benefits in specific circumstances, leading to higher-quality infrastructure but at a disproportionately higher life-cycle cost (ITF, 2018<sup>[13]</sup>). PPPs are best suited to circumstances where continuous competitive pressure throughout the duration of the contract are present, such as in sea and airports, which compete each in their own catchment area for the market. Blended finance approaches may aid in mobilising private finance for these projects. In all other circumstances (e.g., roads, social infrastructure), a regulated monopoly (RAB – Regulatory Asset Base) model is preferable. The latter, however, requires a long evolution in economic regulation capability and State-owned Enterprise (SOE) governance, which Ukraine should pursue to manage these types of assets, regardless of whether or not private investment is ultimately considered.

**The first step being the prioritisation of needs and deployment of projects, a range of reforms that began pre-war should be continued and reinforced.** A stock-taking on the progress of reforms will help to identify the most pressing needs, e.g., institutional setup, economic regulation, and other aspects of governance that will not have changed because of the war. The initial approaches in strategic planning and project appraisal/selection will need to be revised and brought up to a more sophisticated level, based on international standards on planning, appraisal, and procurement, once the most pressing challenges are addressed. These can build on the robust multi-level framework for regional development planning, financing and decentralisation reforms developed since 2014. At the subnational level, reconstruction funding will need to be connected to the regional and local development strategies. Regional and local planning should be considered in the choice of the short, medium and long-term investments that allow for immediate needs of different regions to be met, but also facilitate the achievement of longer-term priorities, such as supporting the green and digital transitions. The national government and international partners should support subnational governments through capacity building and oversight to make the best use of the recovery infrastructure funding for a sustainable recovery in regions, cities and local communities. Subnational authorities know best what their needs are, and have demonstrated great resilience during the war, but their capabilities to effectively plan, prioritise, and deliver projects need to be reinforced. While reconstruction will be a relatively rapid process, building missing capabilities at the regional/local level will take a longer time, and options will need to be investigated on how to reduce disconnects between the central authorities and the situation on the ground, e.g., regional and local planning to meet the immediate needs of different regions. Policy makers will need to pay particular attention to the capacity of subnational governments to absorb and process recovery funding in ways that maximise their benefit and impact, both in terms of the national vision for the economy, society and environment, as well as local and regional realities and needs.

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