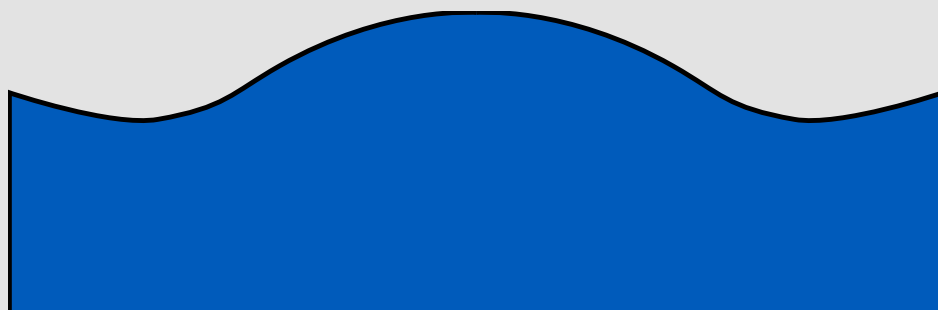




A BLUEPRINT FOR THE RECONSTRUCTION OF UKRAINE

RAPID RESPONSE
ECONOMICS
1

CEPR PRESS

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Foreword

This is the first title in CEPR's *Rapid Response Economics* series, which is designed to publish research on major policy issues with the utmost speed.

A Blueprint for the Reconstruction of Ukraine, by Torbjörn Becker, Barry Eichengreen, Yuriy Gorodnichenko, Sergei Guriev, Simon Johnson, Tymofiy Mylovanov, Kenneth Rogoff and Beatrice Weder di Mauro, is designed to give an overview of a possible reconstruction project for Ukraine. The project was started about two weeks ago, and that it has resulted in so comprehensive a plan is testament to the incredible hard work of the authors, led by Yuriy Gorodnichenko.

We hope that this short publication will lead to a broader project which will encompass further and more detailed analysis on how best to reconstruct Ukraine.

CEPR, which takes no institutional positions on economic policy matters, is delighted to provide a platform for an exchange of views on this crucially important topic.

Tessa Ogden

April 5th 2022

Executive Summary

On February 24, 2022, Russia invaded Ukraine. Thousands of civilians have been killed. The scale of destruction in Ukraine is already staggering. Millions of people are displaced, including two million children displaced outside of Ukraine. The General Assembly of the United Nations condemned Russia's war of aggression in Ukraine. Multiple countries and international institutions have called on Russia to stop the aggression.

Although the outcome of the war is uncertain, one can start thinking about the future reconstruction of Ukraine. This paper outlines ideas for the design and requirements of this effort. We build on prior experiences with post-war reconstruction (e.g., the Marshall Plan after WWII, reunification of Germany, reconstruction of Iraq and Afghanistan) and reconstruction following natural disasters.

As a first step, we review the current situation in Ukraine. In short, the economy has experienced a large negative shock, with GDP contracting by at least 30 percent. Despite the massive economic disruption and mounting fiscal challenges, the government functions are largely operational. Ukrainians have a strong sense of common purpose and unity. Given the level of economic development and proximity to the EU, Ukraine will likely resemble Europe after WWII, rather than Iraq or Afghanistan in 2002/2003.

Next, we outline the key principles of international aid for reconstruction efforts: *i*) put Ukraine on the path to EU accession; *ii*) establish a stand-alone EU-authorized agency with significant autonomy to coordinate and manage aid and reconstruction programmes; *iii*) recognise that Ukraine must own its reconstruction programme; *iv*) encourage and facilitate inflows of foreign capital and technology transfers; *v*) focus aid on grants rather than loans; *vi*) organise rebuilding around the principle of a zero-carbon future with minimal reliance on fossil fuels. These principles aim to fully utilise a unique opportunity to modernise the country with a secure future. Building on these principles, we propose an institutional design for funnelling aid into Ukraine.

Then, we argue that the reconstruction should include three distinct phases: *i*) emergency response (akin to the response to a natural disaster hitting a country); *ii*) rapid restoration of critical infrastructure and services to revive the basic functions of the economy and the government; *iii*) laying foundations for a rapid, sustained growth trajectory. As we discuss in this paper, each of these stages has different objectives, constraints, and tools.

Finally, we provide tentative estimates for the reconstruction cost and benchmark these estimates against previous reconstruction efforts. After just over a month of war, the required assistance from Europe and others already likely ranges from €200 billion to €500 billion, which is comparable to the scale of aid offered in the past. However, the cost of reconstruction increases with every additional day of the war and at an increasing rate, as people spend more time away from their homes, children become more traumatised, and private sector companies disintegrate.

1. Introduction

- 1.1 On 24 February 2022, Russia invaded Ukraine. Thousands of civilians were killed. More than a quarter of the population (41 million on the territory of Ukraine excluding Crimea) has been displaced, including more than four million to EU countries. Mariupol and many other Ukrainian cities are effectively destroyed. This intensity of destruction and refugee crisis has not been seen in Europe since WWII.
- 1.2 Of the four million displaced outside of Ukraine, about two million are children. Many families have been split by the conflict, with fathers frequently staying behind to fight. While most Ukrainian refugees have been taken into peoples' homes in European countries, there are growing concerns about access to education, health care, and income earning opportunities for this population. In addition, more than six million people have been displaced within Ukraine, and they also face difficult conditions in most cases. The worst situation is faced by hundreds of thousands of people trapped in besieged areas, including 100,000 in Mariupol.
- 1.3 The General Assembly of the United Nations condemned Russia's war of aggression in Ukraine. Multiple countries and international institutions called on Russia to stop the aggression. Ukraine receives aid, including arms, from multiple countries.
- 1.4 Due to the resistance of Ukraine's armed forces, the Russian army has not achieved its strategic goals and has sustained large losses. The outcome and duration of the war are uncertain. However, it is increasingly clear that there is a good chance that Ukraine will drive out most of the invading Russian forces.
- 1.5 Various governments and international organisations have indicated their willingness to help Ukraine recover from the war. This policy brief outlines ideas for the design and requirements of this effort. We build on prior experiences with post-war reconstruction (e.g. the Marshall Plan after WWII, the reunification of Germany, and the reconstruction of Iraq and Afghanistan) and reconstruction following

natural disasters. As more information about the outcome of the war becomes available, specifics of the reconstruction can be developed.

2. Basic inputs for the analysis

- 2.1 *Economy*: The economy has lost 30% to 50% of its productive capacity, with losses concentrated in Eastern Ukraine. Human losses (dead and injured) are mounting. Factories and plants are destroyed. Ports, roads, railways, grain elevators, storage facilities, logistical centres, warehouses, power lines, and telecommunication networks are severely damaged or destroyed. The housing stock and commercial real estate are effectively destroyed in many major cities (e.g. Kharkiv, Mariupol, Chernihiv), while other urban areas have sustained significant (irreparable) damage. Social infrastructure (schools, kindergartens, hospitals, etc.) have been comparably affected. Perhaps 30% of crops were not planted. As many as 30% of workers (including professionals such as doctors, engineers, technicians, etc.) have been displaced. Economic activity is estimated to have declined by 30% to 50% in the first month of the war. Surveys of firm managers suggest that logistical problems and shortages of inputs (including workforce) are the main challenges for doing business. Only 1% of companies report no losses. Given the ongoing war, estimates of damages are imprecise, but the order of magnitude is likely in the hundreds of billions of dollars.
- 2.2 *Governance*: Ukraine has functioning institutions (government, tax collection, social transfers, payment and banking system, etc.). Some forms of economic/political activity are restricted during the war. For example, a few political parties are suspended and economic registries are closed.
- 2.3 *Trade*: Maritime shipping, the main means of transportation for Ukrainian exports, is shut down through a combination of the Russian navy's blockade and the Russian army's shelling or controlling the ports (e.g. Russia has blocked 94 vessels with agricultural products in the Black Sea). Ukraine continues to trade with EU countries (although there is effectively no trade with Russia or Belarus) and

receives critical materials and supplies via its border with the EU. There is a critical need to expand the capacity to export to Poland and to other EU countries via railroads and highways. Current account deficits are starting to accumulate (imports are 80-90% of the pre-war level while exports have declined sharply).

- 2.4 *Energy*: Ukraine's electric grid was connected to the EU grid in the early stages of the crisis. Pipelines for natural gas are largely operational, and Ukraine is connected to the EU pipeline network. Imports of natural gas, diesel, and gasoline flow from Poland and other countries. Ukraine currently has no critical shortages of energy. As of March 2022, Ukraine has around 11 billion cubic metres of gas (roughly 2.5 months of gas consumption in winter time) in storage owned by Ukrainian companies.
- 2.5 *Public finances*: Shortly after the war started, the government simplified taxation (e.g. replaced all corporate income tax (CIT), value-added tax (VAT), and social security tax with a 2% sales tax; import taxes were cancelled) and social transfers (e.g. the relocated can receive basic income with minimal paperwork). Fiscal deficits have increased because tax revenues have fallen by 80% (mostly because economic activity has declined) and wartime government spending has increased sharply. The fiscal deficit is largely financed by international aid (around \$3bn from the IMF and bilateral government loans) and by the National Bank of Ukraine (roughly \$0.6bn).
- 2.6 *Monetary policy*: The central bank has fixed the exchange rate at the pre-war level, and imposed capital controls to support it. The banking system has adequate liquidity. There is no sign of bank runs. The payment system is stable. The central bank has large reserves of foreign currency. Inflation appears to be under control but inflationary pressures have been mounting.
- 2.7 *Regulations*: Prices for basic goods (e.g. bread) are capped by regulation. The government has imposed holidays and freezes on various payments (utilities, mortgages, loans, taxes, etc.).

- 2.8 *Education*: Ukraine has one of the highest levels of government spending on education and Ukrainian people are highly educated. Schools and universities rely on distant learning models developed during the pandemic.
- 2.9 *Sociopolitical situation*: There are no materially important problems with social/ethnic divisions on the territories controlled by Ukraine as of January 2022. According to polls, around 90% of Ukrainians believe that Ukraine will win in the war. The activities of pro-Russian political parties have been suspended for the duration of the war.
- 2.10 *Assumptions*: The following assumptions are made about the state of post-war Ukraine:
- A. The Ukrainian state is functioning.
 - B. Ukraine is not partitioned or at least retains a large part of its territories.
 - C. Western Ukraine avoids significant physical damage from the war.
 - D. The public debt is large, fiscal deficits are largely financed via foreign aid and the central bank.
 - E. Households have little to no wealth, low incomes, and most loans are non-performing.
 - F. The exchange rate is fixed at the pre-war level and the hryvnia is likely overvalued.
 - G. Ukraine has to commit significant resources to its security forces indefinitely.
 - H. While not a member of the EU in the near future, Ukraine will be on a trajectory to become a member of the EU (e.g. either a candidate country or at a minimum fulfilling the institutional and macroeconomic requirements of a country with candidate status).
 - I. Ukraine has security guarantees such that another Russian invasion cannot happen.
- 2.11 *Summary*: Post-war Ukraine is more similar to post-WWII Europe than to Iraq/Afghanistan (e.g. labour force is highly educated, functioning institutions, relatively unlikely resource curse, etc.). Most refugees (80% or more) will return to Ukraine after hostilities end.

However, it must be emphasised that the costs of this war continue to increase every day, and at any increasing rate. Also, if the war lasts longer, fewer people are likely to return to Ukraine. We do not in this report consider the substantial and rising fiscal costs to European governments from providing education, health care, and other services to Ukrainian refugees. As long as the war continues and the security situation in Ukraine remains unstable, more people are likely to leave the country and find sanctuary elsewhere.

3. Potential sources of aid

- 3.1 *Bilateral aid:* Various governments have expressed interest and/or commitment to provide aid. This support can take a variety of forms (grants, loan guarantees, loans, in-kind contributions, etc.). Some of this aid may be administered via established agencies such as USAID (USA) and SIDA (Sweden).
- 3.2 *Multilateral institutions:* The World Bank (WB), European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), and other institutions that specialise in development aid are natural sources of funding (mostly loans). United Nations (UN) and humanitarian organisations (e.g. Doctors without Borders) can provide emergency relief. The International Monetary Fund can provide short-term financing to ensure access to foreign currency and cover temporary fiscal imbalances. The EU can create (or contribute to) a trust fund for Ukraine's reconstruction or use special provisions to give Ukraine access to structural funds available to EU countries.
- 3.3 There is a strong case that Europe should have the lead in coordinating aid and making high-level decisions, given that its economic and social incentives are closely aligned with Ukraine's. The IMF and World Bank have excellent technical assistance capabilities, but as long as Russian forces remain in Ukraine (or if there is a second Cold War more broadly), some significant voting members may have interests that are not

aligned with having Ukraine succeed economically, making conditional loan programmes problematic. In addition, as Ukraine should be placed on a trajectory where it eventually becomes an EU member, it is important that aid should be administered in a manner fully consistent with EU policies and procedures. An EU-led reconstruction would provide more than financial assistance and rebuilding of physical capital; it could provide a credible anchor for institutional reform and confidence for private investment.

- 3.4 *Private sources:* Private foundations and individuals as well as the Ukrainian diaspora already collected significant sums to support Ukraine in the first month of the war. Although less structured than other sources, private aid will likely continue to play a significant role.
- 3.5 *Seized Russian assets:* Although it is unclear precisely how Russian assets frozen by other governments (e.g. Russian National Welfare Fund, reserves of the Russian central bank) will be reallocated to compensate Ukrainians, there could be a path (perhaps, after rulings of international courts or executive orders) to utilise these monies to help cover the cost of reconstruction in Ukraine. Because the legal nature of these funds may be different from loans and grants available from sources in 3.1 and 3.2, there may be a different process to utilise the seized assets.
- 3.6 *Ongoing revenue from Russian oil and gas:* Funding from seized assets can be complemented by the payments similar to those made by Iraq to Kuwait for 30 years after Iraq invaded Kuwait. In that case, a percentage of the proceeds generated by the export sales of Iraqi petroleum and petroleum products was directed to the Compensation Fund; the total reparation was approximately \$51 billion. One possibility would be for the EU to tax Russian energy exports over time, in return for which Ukraine would receive up-front grants from the EU.

4. Principles of reconstruction

- 4.1 One should distinguish three stages of reconstruction:
- A. Emergency response (akin to the response to a natural disaster hitting a country)
 - B. Rapid restoration of critical infrastructure and services
 - C. Laying foundations for future growth and modernisation

Each of these stages has different objectives and requirements. The emergency response is a set of measures usually taken after major natural disasters. The second stage aims to revive the basic functions of the economy and the government. The third stage is meant to put the country on a rapid, sustained growth trajectory.

- 4.2 International aid should include the following key elements
- A. *Aid should be rapid but conditional*: Speed is critical for arresting a humanitarian catastrophe in Ukraine. Aid should be front-loaded to ensure that Ukraine receives support in the critical early post-war period when Ukraine does not have its own resources. Reasonable conditionality (accountability, milestones, etc.) will ensure that international aid is well-spent and Ukraine makes progress in fighting corruption. Administrators of aid will monitor the use of funds, and Ukraine provides the transparency necessary to sustain international support for its reconstruction. Conditionality should be based on measurable, verifiable outcomes.
 - B. *Grants rather than loans*. The country destroyed by the war will unlikely be able to service and repay additional debts in the short run. A focus on loans (which is the main type of funding for WB, EBRD, EIB, etc.) will increase the risk of a debt crisis in the future. Grants accounted for 90% of Marshall Plan disbursements.
 - C. *Coordination*: Given the multitude of aid sources, close coordination across funding sources and with the recipient will minimise waste and delays.

- D. *Administration.* Aid should be administered by a self-standing EU-affiliated or authorised agency independent of but accountable to multilateral, bilateral, and nongovernmental donors. However, this agency should sunset when Ukraine joins the EU, to avoid the creation of a permanent bureaucracy with perverse incentives.
- E. *Ukraine must ‘own’ the reconstruction:* Ukraine will utilise the aid most effectively when the aid is consistent with Ukraine’s interests. Aid programmes should be aligned with the ultimate objectives of Ukraine (e.g. close the per capita GDP gap vis-a-vis successful EU accession economies, become a member of the EU, and build a carbon-free economy). Aid should reinforce national success via national institutions. Ukrainians should be able to scrutinise reconstruction efforts consistently, in line with best practice of EU transparency. Ukraine should be able to sustain projects funded by reconstruction aid after the aid is withdrawn.

4.3 *EU integration:* Aid should create incentives for Ukraine to align its regulatory/legal environment to the EU standards (including anti-corruption frameworks), to promote free trade, and to attract foreign direct investment (FDI). The success of aid will critically depend on Ukraine’s ability to export to the EU and other markets. The aid should direct Ukraine to become a member of the EU. Just like the Marshall Plan and the impetus it provided for regional integration (through the Organisation for European Economic Cooperation) were instrumental in building confidence about the future of post-WWII Europe, EU integration would send a vital signal about a long-term commitment to market-based democracy in Ukraine.

4.4 *Modernisation:* Reconstruction offers a unique opportunity to radically upgrade Ukraine’s productive capacity to bring it close to the technological frontier, lay foundations for long-term growth, and integrate Ukraine even more tightly into the global economy. Aid should be focused on increasing the productivity

capacity of the economy and stimulating a high investment rate (e.g. on new machinery/equipment, infrastructure, training/human capital, technical assistance, etc.), as well as through strengthening human capital. The Russian invasion has damaged education for many young people, and this needs to be addressed as a top priority.

- 4.5 *Government intervention:* Markets are unlikely to function smoothly in a war-torn economy. With scarce resources and dysfunctional markets, government will need to intervene in the allocation of resources producing ‘coordinated capitalism’ at least in the early stages of reconstruction. Ukraine will reduce government intervention in the medium-to-longer run, in line with EU accession.
- 4.6 *Reduction of corruption:* Putting in place mechanisms for the efficient utilisation of aid (strengthening public procurement practices), together with mechanisms for monitoring the results, offers an opportunity to address complaints about clientelism and corruption, and, in doing so, to set the stage for attracting additional foreign direct investment. Again, following best practice for the EU seems to provide the best path.

5. Institutional design for funnelling aid into Ukraine

- 5.1 The vast diversity of potential aid sources and the complexity of reconstruction calls for establishing a dedicated agency similar to the Economic Cooperation Administration (ECA) that administered the Marshall Plan. The agency should coordinate across aid sources, use the comparative advantage of various funding sources to address specific needs (e.g. UN may have a comparative advantage in delivering humanitarian aid), and provide a single interlocutor for Ukrainian authorities.
- 5.2 Establishing a *new* EU-affiliated agency will help to avoid mission drift, minimise bureaucracy and inertia of existing institutions, to minimize political influence (e.g. Russia is a shareholder in the IMF, WB, and EBRD), avoid donor-driven

reconstruction, and attract fresh, motivated, high-morale cadre. The Economic Cooperation Administration was established as a self-standing agency of the US government rather than embedded within the State or Treasury Departments precisely in order to streamline hiring and operations.

- 5.3 To ensure long-term commitment to the reconstruction, the agency should be authorised to with clear sunset provisions, preferably linked to when Ukraine becomes an EU member. A pre-determined, multiyear lifespan will allow for multiyear capital programmes, efficient budgeting, clustering of complementary programmes (e.g. coal-chemicals-metallurgy), and funding of infrastructure capital programmes, while making the programme more politically palatable to donor countries and institutions. A stable structure is needed to avoid reconstruction fatigue. Aid programmes with uncertain horizons (e.g. the UN Relief and Rehabilitation Administration after WWII, Afghanistan Reconstruction Trust Fund) have proved less effective.
- 5.4 The governance structure of the agency (e.g. the executive committee) should reflect key stakeholders (which includes Ukraine) and should be technocratic in nature. Consensus decision making is preferred but not required. This agency should have significant autonomy in decision-making to minimise political influence and maintain flexibility in an uncertain, fluid, and complex environment. For example, if necessary, the agency should be able to give budget support to the government and to coordinate with other multilateral organisations, such as the IMF, also providing budgetary support. To ensure credibility of aid conditionality, the agency should have authority to delay or withdraw aid. In this spirit, the ECA was given a special status and exempted from government regulations which could impede flexibility or speed. The ECA was able to suspend aid to Greece after aid was channelled to purposes inconsistent with agreed goals. In contrast, while US officials tried to impose

conditionality on aid in Afghanistan, the Afghan authorities could ignore conditions.

- 5.5 The agency is responsible for assembling funds from aid sources, releasing funds to Ukraine conditional on meeting deadlines and qualification criteria, monitoring the use of aid, and reporting results to aid sources. The agency can subcontract tasks in a manner consistent with the comparative advantages of providers (e.g. the World Bank can assess damages, although it is currently only prepared to do so after the fighting has stopped entirely). Although the agency should have resources and authority to scale up its staff and capacity to administer and coordinate aid, there should be a cap on administrative costs.
- 5.6 To ensure that Ukraine owns reconstruction, the agency should use the following principles:
- A. *Matching funds*: The Ukrainian government or businesses should cover a fraction of the cost of reconstruction to ensure that they have skin in the game. This was done under the Marshall Plan by allowing recipient governments to sell merchandise and commodities delivered as aid to the private sector; receipts were then deposited into ‘counterparty fund’ accounts, whose release was controlled by the US government.
 - B. *Joint decisions*: The Ukrainian authorities formulate requests; to minimise corruption and help with compliance, the agency reviews and approves (or recommends changes to) the requests; once a funding request is approved (and the aid agency provides a ‘commitment letter’), the recipient has some freedom/flexibility in determining suppliers (local or international). The agency disburses funding to designated Ukrainian financial intermediaries to ensure compliance and accountability.

- C. *Plan*: With inputs from the agency, Ukraine develops a five-year umbrella plan for reconstruction. The plan covers financial and engineering requirements, coordinates cluster programmes, and prioritises and facilitates the allocation of scarce resources. Ukraine sets up a commission to develop a plan. Despite uncertainty, this commission should be set up as early as possible so that plans could be ready immediately at the end of the war. (Under the Marshall Plan, the ECA and each recipient government first inventoried the state of the economy and post-war problems. That inventory was then used to jointly elaborate a series of annual programmes, each divided into four quarters. These programmes enumerated the main economic and geographical areas that needed funding. Each quarter, the ECA approved each individual project to be financed with Marshall Plan funds without further input from the recipient government. The ECA was obliged to transfer the grant money to the government within 20 days, and the government was required to commence the project within four months.)
- D. *Decentralisation*: Because local communities have a better sense of what they need (a kindergarten, a school, a local road, etc.), the agency can fund requests from local governments to accelerate the recovery and direct funds to uses with the highest impact. The central government should assemble local government requests and make priority recommendations before passing them on to the aid agency. Some form of competition and milestones across localities should help to both unleash initiative and create accountability. Although this policy contrasts with the ECA in the Marshall Plan (local governments and local projects were mainly funded with local tax revenues which delayed local projects), this policy will empower local communities, direct aid to most effective uses, enhance quality control, and create more political competition. There also needs to be a degree of coordination across local governments when it comes to road building, electrification, etc. The umbrella plan can be used to improve

coordination across local projects and needs. Guidelines can be put in place to ensure that all new infrastructure and investments will move Ukraine to the technological frontier.

- 5.7 The agency implements strong anti-corruption protocols to ensure effectiveness of reconstruction efforts and continued support of donors. These protocols can rely on on-site visits and third-party verification (during construction and after project completion), enforceable timelines, measurable results, insulation from political influences, and periodic studies. The agency provides technical assistance to strengthen public procurement. The agency can partner with the European Public Prosecutor's Office to bolster its credibility on corruption and get technical assistance (including auditing of Ukrainian anti-corruption efforts). Again, best EU practices should set the standards.
- 5.8 The experience of the Marshall Plan suggests that aid was effectively spent even in Italy where corruption risks were high. Society there and in other European countries was strongly invested in the reconstruction effort. There is strong reason to think that the same will be true of post-war Ukraine.
- 5.9 The Marshall Plan came too late (three years following the conclusion of hostilities) to help European countries with their immediate post-war reconstruction problems. Work on setting up the agency should commence immediately to make sure it is (close to) operational by the time the war ends. Furthermore, it is important to start the process now while the political will to achieve tangible results is the highest. Finally, some preliminary work must be done now to protect the productivity capacity during the war.

6. Stage 0 (while hostilities last): 'Minimising the damage'

- 6.1 The scale and success of the reconstruction plan depends on how the Ukrainian people, economy, and institutions are saved from the war. To minimise damage, Ukraine and its allies should structure the war-time economy according to security risk.

6.2 Frontline regions:

- Humanitarian aid (food, fuel, medicine)
- Technical assistance with evacuating industrial capacity (wherever feasible/expedient)
- Technical assistance with government planning efforts (in these regions the economy is likely to be quasi-nationalised across most sectors)
- Logistical support for maintaining these regions connected

6.3 Relatively safe regions:

- Technical support for industrial capacity being relocated
- Employment/business activity programmes for relocated population
- Technical support for logistics organisation
- ‘Digital mobility’ support for relocated businesses/people (i.e. being able to work/live productively outside of major agglomerations, supporting ‘spread out’ economy).
- Support in additional transport corridors for humanitarian aid inwards and Ukrainian exports outwards.
- Residential and infrastructural construction with a special modular twist.
- Building out local capacity for Stage I rapid response efforts.

6.4 ‘Deep behind the lines’:

- Special economic zones for Ukrainian enterprises in neighbouring countries, e.g. refugees are given employment opportunities and a connection to Ukraine (produce humanitarian aid, launch back offices for service companies, safe havens for engineering/R&D, etc.). Virtual economic zones for IT firms in Ukraine (Diia City) could provide a template.
- Support in additional transport corridors for humanitarian aid inwards and Ukrainian exports outwards.
- Residential and infrastructural construction with a special modular twist.

- Mobilising potential participants for Phase I among international contractors.

7. Reconstruction stage I (months 0-6): ‘Rapid response’

- 7.1 Humanitarian aid must be rushed in to cover basic needs, avoid starvation, and prevent further exodus of people from Ukraine. Food, fuel, medical supplies, etc. must be quickly provided to the affected areas. Although 60% of the Marshall Plan in its first year was spent on food, the fraction of aid dedicated to food could be smaller for Ukraine given that half of the country can produce crops. Because much of the housing stock in Ukraine is destroyed or severely damaged, the first tranches of aid should prioritise provision of temporary housing (tents, pre-fabricated housing blocks, heating systems, etc.).
- 7.2 With the technical assistance of the agency, the government assembles an inventory of damages, capabilities and needs.¹ Failure of reconstruction in Iraq was attributed to the lack of such an effort when local competences (including linguistic) and local involvement were disregarded, as was strategic planning and coordination in initiatives.
- 7.3 The agency coordinates with the IMF and other institutions providing emergency financing to the Ukrainian government to cover temporary fiscal deficits and support price stability and a competitive currency.
- 7.4 Emergency services in Ukraine and in allied countries are used to restore critical infrastructure such as power lines, communication towers, internet, water/sewer systems, ports, railroads, highways, grain terminals, etc. The agency helps to coordinate and compensates for emergency services provided by the allied countries. The agency uses the Ukrainian experience of providing

¹ Some preliminary data have been collected by <https://damaged.in.ua/> and <https://kse.ua/ua/about-the-school/news/za-ostanniy-tizhden-vtrati-naneseni-vnaslidok-ruynuvannya-ta-poshkodzhennya-infrastrukturi-ukrayini-v-hodi-viyni-zrosli-na-ponad-5-mlrd/>.

emergency housing and services during the war (e.g. temporary housing for displaced people in Western Ukraine, temporary logistics centres in Western Ukraine, infrastructure repair).

7.5 Given the seasonal nature of production in agriculture as well as the critical role of Ukraine as a source of foodstuffs, agribusinesses should receive materials, machinery, and other aid to ensure they have resources to harvest/store/transport/export crops.

7.6 Rules of providing emergency aid may deviate from conventional practices. For example, contracts to provide recovery aid in Puerto Rico after Hurricane Maria went to firms with little capacity to fulfil the requirements of aid delivery. Hence, focus on lowest bidders may lead to failed contracts. Tilting contracts toward larger firms (with possible subcontracting) with stronger organizational capital, established logistical networks, and more diversified supply chains should yield better results. So-called ‘tiered’ subcontracting should be limited. Simplified public procurement (e.g. bilateral negotiations rather than open auctions) should be allowed to ensure speed and actual deliveries. The agency provides technical assistance and monitors public procurement funded by the international aid. The following safeguards should be implemented to enhance oversight and minimise abuse.

A. *Open contracting* limits corruption while maintaining efficiency in the procurement process. Open Contracting Data Standards (OCDS) are a set of guidelines describing how to publish data and documents at the different stages of public procurement contracting to increase transparency. Ukraine had already made significant advancements in this area prior to the war. For example, during the pandemic, while Covid-related emergency procurement contracts could be signed outside of ProZorro (Ukraine’s E-procurement system in accordance with OCDS, which was a success story), within 24 hours of conclusion, the contracting entity was required to

upload the contract and all related documents together with a structured report. An additional report had to be submitted after the contract was fulfilled.

- B. *Protecting whistle-blowers* is an important mechanism to discover corruption. Best-practices can be adapted from the EU Directive (2019/1937) on the protection of whistle-blowers. Monetary incentives can also be offered to whistle-blowers reporting severe corruption and fraud; these ‘reward programmes’ have proven highly effective in the US. Best-practices can be adapted from the (US) False Claims Act (1986) and the (US) Dodd-Frank Act (2010).
- C. *Framework agreements (FAs)* allows direct ‘off the shelf’ purchasing with no time-consuming procedures from pre-selected suppliers that already have passed a competitive screening/vetting stage – typically arranged by a central purchasing body – and have committed to sell the relevant goods or services at pre-established conditions for a given period of time. FAs allow for a rapid second-stage procurement, offer more transparency, were used successfully during Covid-19 by numerous countries, and have been suggested as useful for emergencies in general.
- D. *Contract design* should emphasise (wherever possible) fixed-price contracts with clear deadlines and specifications, measurable outcomes, and verification protocols. Uniform contracting, management, and report systems should be established. Disputes can be resolved via arbitration to ensure speed and efficiency.

7.7 Foreign firms with functioning supply chains and organisational capital (especially from neighbouring countries such as Poland and Turkey that had projects in Ukraine) can be involved to address shortages of expertise and workforce. Foreign firms are encouraged to use Ukrainians (especially refugees) for some of the work to raise local incomes, improve the quality of deliveries

by utilising local knowledge, and to encourage people to return to their pre-war locations. The agency helps with recruiting foreign firms.

- 7.8 The agency coordinates with domestic and international efforts to restore basic security (remove land mines, weapons, etc.).
- 7.9 The agency helps to facilitate Ukrainian exports to the EU and other countries so that Ukraine has a source of hard currency. For example, given that Ukraine is connected to the EU electric grid and Ukraine has surplus capacity (consumption of electricity is down by 30%), Ukraine can export electricity to the EU.

8. Reconstruction stage II (months 3-24): Rapid revival of the infrastructure and economy

- 8.1 The agency uses conditionality of aid to ensure that sound policies are implemented. Public procurement should be able to continue as in Stage I.
- 8.2 *Encourage market mechanisms to allocate resources.* Prices should be gradually liberalised to avoid shortages/barter and to stimulate more production. More flexible wage contracts should be allowed to quickly reallocate labour, which would be a continuation of war-time practices. The influence of allocative bureaucracies should be minimised. Export controls are to be lifted or minimised. The agency facilitates lifting trade restrictions between the EU and Ukraine.
- 8.3 Macroeconomic stabilisation is achieved with a mixture of fiscal, monetary, and regulatory policies.
 - A. *Fiscal policy.* Fiscal policy allows moderate fiscal deficits. The government does not default on public debt to ensure that the banking system is not destabilised and access to external funding is preserved. According to the IMF, Ukraine already faced debt sustainability issues as of March 2022 because

economic activity has shrunk and the burden of the war on public finances has increased. With the help of the agency, the government organises a conference of creditors to get debt relief, which could be similar to what was done for Iraq after 2003 (more on this in section 8.3.C). The agency can help the government to set up a programme to give short-term loans to businesses so that they have liquidity. Government/agency loan guarantees can be used to encourage longer-term investment.

- B. *Monetary policy*: The central bank returns to inflation targeting regime once the conditions allow. In particular, it introduces greater exchange rate flexibility (the slow convergence of Eastern Germany after the reunification underscores the damaging role of an overvalued exchange rate) coupled with some temporary capital controls (primarily capital account measures such as a maximum on withdrawals, repatriate dividends, etc.) and return to price-based monetary policy. Given accumulated imbalances and huge productivity losses, exchange rate adjustment is inevitable but should be smoothed by exchange rate interventions. Interest rate policy will have to be balanced between the need to control inflation and spur economic recovery. Once martial law is lifted, the central bank should not finance fiscal deficits directly.
- C. *Financial system*. The central bank should issue unified guidelines to the banks on credit risk recognition and loan restructuring principles, followed by asset quality review (AQR). Based on AQR results, the recapitalisation plan for each bank needs to be developed and agreed with the regulator. Similar to the 2014-16 crisis after the annexation of the Crimea and partial occupation of the Donbas, the banks should be given an extended time period (three years at minimum) to bring capital ratios back to the statutory levels. There should be a mechanism created for channelling foreign aid into recapitalisation of the banking system. Given that more than 50% of the banking system is in state hands and

state-owned banks will play a vital role in financing post-war reconstruction efforts, the proper corporate governance in the state-owned companies must be preserved and further enhanced. The central bank may need to reintroduce long-term (secured) refinancing facility (up to five years) for the commercial banks, which was used during the Covid-19 pandemic. 100% deposit guarantees should be allowed to expire once martial law is lifted and to be replaced by the increased deposit guarantee ceiling (UAH 600000 ceiling discussed before the war probably should be revised upwards). The post-war debt burden on the economy should be minimised and hence debt contracts should not be indexed to inflation. Debts to foreign creditors may be reduced following the experience of Iraq in 2003 when a UN resolution (reinforced by executive orders of US Presidents) created immunity for Iraqi government. Another option is to invoke Article 25 of the International Law Commission's (ILC) Articles on Responsibility of States for Internationally Wrongful Acts (i.e. excuse Ukraine's non-performance of an 'international obligation' because non-performance is the only way to address 'a grave and imminent peril').

- D. *Credit*: Because credit will likely be rationed, there may be a need to assign priorities for the allocation of credit (e.g. give resources to capital intensive industries and cluster projects first). Credit may be prioritised to firms that can deliver rapid growth and export revenue with minimal investments such as agribusiness, IT, metallurgy/mining that was not destroyed by the war. The agency provides technical expertise and monitors the allocation of credit.
- E. *Safety net and employment*. Social assistance should be simplified and be largely based on providing cash to households rather than specific goods (e.g. a basket of specific goods). The tax system should emphasise easy administration (e.g. flat income tax with minimal if any exemptions). Strong redistribution should be avoided to ensure social cohesion.

The government can use public works to employ people in areas declared to have significant destruction (remove rubble, fix infrastructure, etc.). The agency encourages employment of locals, which will be much cheaper than ‘importing’ crews from other countries.

- 8.4 *Continue expanding access to infrastructure services.* Intensive work to restore/expand ports, railroad tracks, highways, etc. The stock of railroad cars, trucks, buses, etc. is replenished. It is important at this stage to utilise complementarities between restoring infrastructure and revival of particular sectors.
- 8.5 *Energy:* Effort is to be put in re-establishing a stable energy supply, and appropriate energy mix at reasonable prices. The EU is to play a crucial role in facilitating and mediating this task. Ukraine is already connected to the EU gas market and has recently joined the European electricity network. EU would need to assist Ukraine (both practically and financially) in utilising this access. For example, the capacity of gas pipelines connecting Ukraine and the EU countries should be increased so that Ukraine can cover its critical needs in natural gas without Russia. A secure route is established to deliver oil and gasoline from the EU or other sources other than Russia and Belarus. Help with establishing (shorter term) supply contracts for oil products should be provided.
- 8.6 *Investment in housing stock and social infrastructure.* Post-WWII lack of housing took more than ten years to address. Lack of housing was a limiting factor for bringing people back to work. Lack of housing can also make the return of refugees less likely which can be costly for the long-term development of Ukraine (the outflow of high-human capital workers from East Germany slowed its convergence to West Germany). This problem may be easier to address with the modern technology of prefabricated houses, which may be privatised later. In a similar spirit, access to kindergartens and schools is key for bringing people back to the labour force.

9. Reconstruction stage III: Foundation for long-run growth

9.1 *Technology, capital, and institutional reform:* The cornerstone of Ukraine's success in the long run lies in attracting foreign capital and modern technology to radically modernise the country. Poland (ranking 5th in the world in terms of greenfield FDI) offers a playbook for Ukraine. Access to the EU market and institutional alignment with the EU made Poland a desirable destination for FDI. Although Ukraine and Poland started with similar initial levels of development in 1990, Poland's GDP (PPP) per capita was three times larger than Ukraine's in 2021.

9.2 *Institutional reforms.* Ukrainians consolidated around the government and many of them believe that after the war Ukraine will be a different country. This is a unique opportunity to transform Ukraine's institutions.

A. *EU accession:* A tangible prospect of joining the EU is a powerful incentive for Ukraine to align its regulatory and legal framework to deliver rule of law, low corruption, and a strong democracy. Along with the EU, the agency should provide technical assistance and create incentives to stimulate the Ukrainian government to stay on track. For example, public procurement protocols used by the agency to maximise the effectiveness of aid (and to minimise corruption) may become a permanent element of public procurement in Ukraine. Accepting EU certification (e.g. drugs, safety, etc.) in lieu of Ukrainian certification is a low hanging fruit. After multiple false starts, Ukraine can use accession to the EU to finally reform its civil service and judiciary system. More generally, this is an opportunity to solve Ukraine's chronic problems (corruption, weak governance, concentration of economic power, etc.).

B. *Break with the Soviet past:* Remnants of the Soviet legacy should be scrapped to clear space for a liberal economic framework. Many regulations and institutions are governed

by standards and laws adopted in Soviet Ukraine. For example, the labour laws go back to the 1970s. In a similar spirit, the tax code needs to be simplified (administration of taxes is the largest complaint in Ukraine). Regulations should be brought in line with the EU standards.

C. *Decentralisation*: Although Ukraine has made strong progress since 2014 in giving more economic and political power to local governments, the central government continues to play a strong role which makes the political process more polarising ('winner takes all'). Further decentralisation of political and economic power should improve the allocation of resources, introduce more political competition, and build resilient local communities.

D. *Land*: After almost 20 years of moratorium on trading land, Ukraine introduced a land market in 2020 but there are still many restrictions on who can own land in Ukraine. Further liberalisation of this market is vital for attracting FDI.

9.3 *Infrastructure*: the overarching goal is to weave Ukraine into the EU common market in order to utilise economies of scale and comparative advantage.

A. *Transportation network*: The blockade of Ukrainian ports by Russia exposes the vulnerability of Ukraine's trade routes. To minimise risks of another blockade, Ukraine needs to have more robust transportation connections (railroad, highways, pipelines, bridges) to the EU so that Ukrainian exports can be directed to Europe or to European transportation hubs (e.g. Baltic ports) for exports elsewhere. Using concessions and joint ventures with EU transportation firms should accelerate progress in this area.

B. *Energy*: The energy policy should be guided by three objectives. First, Ukraine should not try to rebuild its energy framework to the pre-war state. Instead, Ukraine should focus

on reducing its dependence on fossil fuel and set a goal to decarbonise its energy. Apart from reducing pollution, this objective will minimise strategic reliance on Russia as a source of energy. Second, energy policy should aim to integrate Ukraine into the EU energy framework. For example, Ukraine's electric grid was connected to the EU grid on 16 March 2022. This step will diversify sources of energy, create more competition, and contribute to energy independence of Ukraine from Russia. Further steps in this direction (e.g. building liquefied natural gas (LNG) terminals, not buying nuclear fuel from Russia, reinstalling/modernising oil terminal capacities at the Black Sea) will create a solid basis for economic growth and energy security. Third, because Ukraine is highly energy inefficient (e.g. the energy intensity of Ukraine's GDP exceeds the European average by 2.5 times), energy efficiency programmes are vital.

C. *Social infrastructure*: A key element of reconstruction is to attract Ukrainian refugees and displaced persons back to their pre-war residences. To this end, it will be critical to rebuild the housing stock, schools, hospitals, etc. The agency can establish dedicated programmes for housing (including public housing) and provide technical assistance to ensure that the best building practices (e.g. energy efficiency) are used. The Singapore city planning model (high-quality housing in attractive, green neighbourhoods with local services like shops, restaurants, kindergarten, and public transports) may offer a template for modernisation and for bringing back displaced people. The agency can also support rebuilding the stock of housing by offering FEMA-like support to let people rebuild themselves.²

9.4 *Encourage inflow of foreign capital and technology*: By using international aid to create favourable conditions (including the prospect of joining the EU), Ukraine can become an attractive

² FEMA is the US Federal Emergency Management Agency.

destination for FDI. This process can be accelerated by policies that encourage FDI inflows.

- A. *Banking*: The two largest banks in Ukraine are state owned. Privatising these banks to foreign bank groups can offer an opportunity to deepen Ukraine's access to the international capital markets and facilitate FDI inflows, providing all safety and soundness standards are maintained. The National Bank of Ukraine can align its regulatory framework with the European Central Bank to facilitate the entry of European banks into Ukraine.
- B. *Subsidy*: Because investors may be initially uncertain about Ukraine's security, investors may need stronger incentives. For example, governments and multilateral institutions (EIB, EBRD, WB, etc.) participating in the reconstruction of Ukraine can provide a subsidy (a tax break, a subsidised loan, access to import-export loans) to firms investing in Ukraine. To further de-risk private investment, a subsidised insurance programme can be established to mitigate security concerns. Such policies can have a multiplier effect in the sense that a dollar of public spending generates more than a dollar of investment. Ukraine can facilitate the inflow by providing access to sites and infrastructure (land, easy access to electricity, utilities, communication lines, etc.).
- C. *Legal framework*: To minimise risks of expropriation, corruption, etc., the government and investors can use the legal framework of EU countries to resolve disputes.

9.5 *Build back better*. Although Ukraine has been gradually upgrading its productive capacity to modern technologies, a large share of its capital stock and production technologies were outdated. The reconstruction offers Ukraine an opportunity to leapfrog technologically. The most obvious possibility is to create a carbon-free economy, both as a way to coordinate on investments for the future, but also to show how to reduce reliance

on fossil fuels as much as possible. Further examples are provided below.

- A. *Urban reconstruction.* Whole cities (Kharkiv, Mariupol, Chernihiv, etc.) will need to be rebuilt. Although there is a natural tendency to repair cities to their original form, one should not try to restore Soviet-style housing and other infrastructure. Reconstruction should focus on using modern technologies (especially energy efficiency), designs, and urban planning (e.g. public transportation should adopt electric buses, redesigned tram lines, etc.). A balance between ‘old’ and ‘new’/‘smart’/‘green’ cities will have to be struck. The agency should help develop guidelines to ensure that all new infrastructure and investments will move Ukraine to the frontier. This should apply to schools, apartment buildings, airports, etc.
- B. *Transportation:* Because many airports are destroyed, reconstruction can develop an optimal airport network (e.g. there is no need to make aerial connections between cities if it takes three-four hours by high-speed train). While railroad tracks are being repaired, the new tracks should be built in a way that can be used for high-speed trains. Adopting the EU rail gauge can greatly expand the capacity to use railroads to exporting Ukrainian goods to the EU.
- C. *Bygones:* Some industries in Ukraine operated because the sunk costs were made in the Soviet times. If these industries (e.g. coal mines in the Donbas are flooded/outdated) are destroyed, one should not use the aid to restore these industries.
- D. *Alliances:* There will be many companies from advanced economies right now who would be willing to sign up to provide pro-bono assistance in rebuilding future Ukraine. This support should be formalised now. The agency should immediately be encouraging companies to sign up for this

kind of help while Ukraine is in the news. The agency should try to lock-in this promise of help. Not just engineering/construction but also IT firms that can provide software/hardware to rebuild administrative services of the government.

- E. *R&D/reversing brain drain*: The massive refugee flow of students, researchers, and other high human capital workers from Ukraine to the EU and the reconstruction offer a chance to forge long-lasting relationships in research and development. European educational programmes (e.g. Erasmus programme, European Research Council) can be expanded to cover Ukraine and offer (funding) opportunities for Ukrainians to study abroad and return home thereafter. Relations with foreign universities developed during the war will likely remain in place. These should be used for (1) improvement of the quality of Ukrainian academic faculty and administrators, (2) global education for Ukrainian students, and (3) inflow of knowledge (people may not be physically present in Ukraine but may work on Ukrainian projects). The Ukrainian higher education can be further consolidated to concentrate resources on leading institutions that can deliver higher research productivity and better services to students.

10. The cost of reconstruction

- 10.1 Given the ongoing war, any estimates of damages and required reconstruction aid are tentative. We use three approaches to provide a preliminary assessment for orders of magnitude.
- 10.2 *Bottom-up*: The Ukrainian government, the Kyiv School of Economics, and other credible sources in Ukraine estimate losses by quantifying the following: i) the cost of restoring infrastructure (ports, railroads, railroad cars, highways, powerlines, water supply, etc.), ii) costs associated with financing the war effort (ammunition, weapons, etc.), iii) civilian losses (housing stock, commercial real estate, compensation for death and injury,

resettlement costs, income support, etc.), iv) lost current and future income (firms' lost revenue, lost FDI, etc.). Estimates based on this approach range from \$500 billion to \$1,000 billion depending on the assumptions (e.g. the value of life can vary from \$200,000 as was paid by Ukraine for accidentally shooting down a Russian airplane in 2001 to \$8 million as was paid by Boeing after a series of crashes).

10.3 *Top-down:* The World Bank ('The Changing Wealth of Nations 2018') estimates that Ukraine's *produced* capital stock per capita in 2014 was approximately \$25,000, which amounts to approximately \$1.1 trillion at the aggregate level. Early reports by government officials and business leaders suggest that 30% to 50% of that capital stock has been destroyed or severely damaged. Assuming 40% destruction, the cost stands at \$440 billion. This estimate does not include i) less tangible values (likely to be large) such as higher uncertainty for investments for years to come, ii) immediate GDP losses, and iii) the very high costs of human suffering and loss of life.

10.4 Examples of reconstruction efforts.

A. *The Marshall Plan.* The US government cumulatively spent \$12.5 billion, or 2% of US GDP. If one scales this aid to the current level of the economy, it would amount to \$450 bn. The population of the US at the time was approximately 50% of the population of countries that received aid. The plan is generally regarded as a success story.

B. *Reunification of Germany.* The unification of East and West Germany cost €2 trillion, which includes the €300 billion cost of upgrading infrastructure of East Germany. The reunification initially achieved fast catch-up of incomes in the East to about 70% of income in the West. However, income convergence eventually stagnated and a significant gap remains even 30 years later. Overvalued exchange rate, disincentives to work, weak involvement of East Germans in decision-making, and lacking infrastructure contributed to the

delayed and incomplete convergence. The population of East Germany in 1989 was about 40% of Ukraine's current population.

- C. *Reconstruction of Afghanistan.* The US government alone spent \$145 billion on reconstruction. The reconstruction suffered from lack of a coherent mission, unrealistic timelines, corruption, poor oversight and planning, staffing issues, disengagement of the locals, and insecurity. The population of Afghanistan in 2003 was about 50% of Ukraine's current population.
- D. *Reconstruction of Iraq.* The international coalition spent approximately \$220 billion. The US Department of Defence directed programmes covering more than 75% of US funds, while USAID directed 15%. Three (!) successive organisations bore responsibility for providing the US reconstruction programme with strategic oversight and tactical direction. The reconstruction programme was plagued by poor planning, weak oversight, poor coordination (if not rivalries) across agencies, weak security, poor involvement of locals, low capacity to absorb aid, and understaffing. The population of Iraq in 2003 was about 50% of Ukraine's current population.
- E. *Reconstruction of Kuwait:* Although some reconstruction was done by the coalition forces, Kuwait (population of 2.2 million) relied on its own resources (e.g. the sovereign wealth fund) to finance the reconstruction after the Persian Gulf War. To ensure speed and flexibility, contracts were often reopened/modified which required stronger internal controls. Although some contracts were given to small firms, this policy reflected politics rather than advantages of small businesses (e.g. many small businesses could not travel to Kuwait). Bechtel, a large contractor, was chosen to put out fires at oil wells. The reconstruction programme was completed within one year because damages were not as large

as initially thought. The main post-war costs were compensation for Operation Desert Storm, continued high defence spending, and non-performing loans in the economy (the government purchased the entire loan portfolio of domestic banks, approx. \$20 billion). Iraq paid over \$50 billion in reparations.

- F. *EU accession and the associated funding for reconstruction and development.* Poland is an often-used example of the economic benefits and successes of joining the EU. It is also a country with the largest population size of the EU members that joined in 2004 and later and relatively close to the pre-war population of Ukraine (38 million versus 41 million). Importantly, it is not only the funds the EU provides directly that helped reconstruction, but perhaps more importantly in the longer-run, the prospect of significantly higher growth. This was certainly the case for Poland. In the 15 years from 2003 to 2017, its GDP per capita increased by more than 80%. During the first 15 years as an EU member, Poland also received over €160 billion in funding from the EU, which by some has been labelled a Marshall Plan of sorts for Poland. In the case of Poland, net contributions from the EU have increased significantly over the years. In 2004 it was €1.2 billion while in 2020 it amounted to €13 billion. This can be compared to the EU's entire budget for 'Global Europe', EU's main financial tool for international cooperation: in 2020 it was €11.4 billion of which the IPA (Instrument for Pre-accession Assistance) was €1.5 billion. In other words, becoming an EU member will be very important to secure long-term, large-scale funding from the EU for the reconstruction and development of Ukraine. This also implies that in the shorter-run, grants from the EU will need to be complimented by significant bilateral support that can be organised in larger donor conferences.

- 10.5 These preliminary estimates and examples suggest that the cost of reconstruction aid to Ukraine ranges from €200 billion to €500 billion.

This is the first of CEPR's Rapid Response Economics, a new series which is designed to publish research on major policy issues with the utmost speed.

On 24 February 2022, Russia invaded Ukraine. Thousands of civilians were killed. More than a quarter of the population (37 million on the territory controlled by Ukraine as of January 2022) has been displaced, including more than four million to EU countries. Mariupol and many other Ukrainian cities are effectively destroyed. This intensity of destruction and refugee crisis has not been seen in Europe since WWII.

Various governments and international organisations have indicated their willingness to help Ukraine recover from the war. This policy brief outlines ideas for the design and requirements of this effort. The authors build on prior experiences with post-war reconstruction (e.g. the Marshall Plan after WWII, the reunification of Germany, and the reconstruction of Iraq and Afghanistan) and reconstruction following natural disasters. As more information about the outcome of the war becomes available, specifics of the reconstruction can be developed.

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