

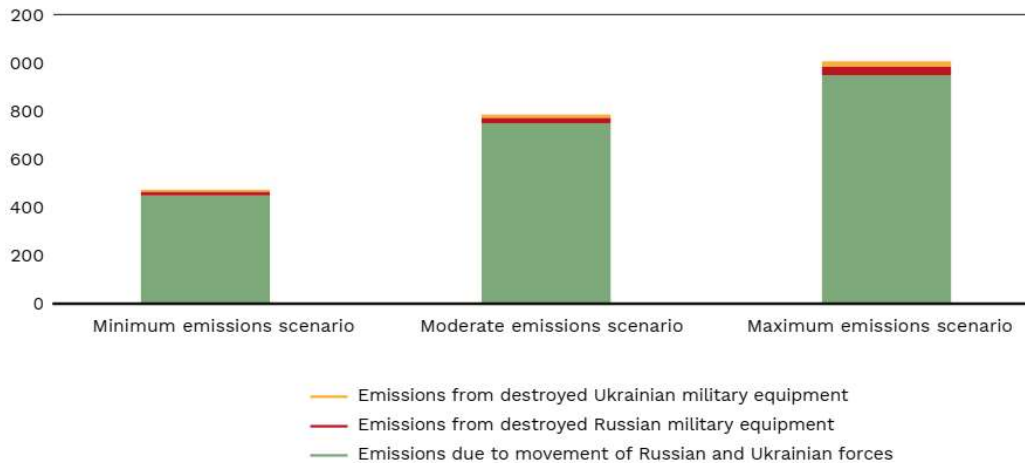
Warsaw, 30 November 2022

## **The climate costs of the war represent up to as much as 20 per cent of Ukraine's GDP**

As calculated by the Polish Economic Institute, the climate cost of Russia's invasion of Ukraine in the moderate emissions scenario will be 212.7 million tonnes of CO<sub>2</sub> equivalent. This is as much as 6 per cent of the equivalent of all the EU's greenhouse gas emissions in 2022 and 80 per cent of Poland's annual direct CO<sub>2</sub>-eq emissions. In the same scenario, the potential climate cost of the invasion could be EUR 16.6 billion. Ukraine's green recovery could enable as much as 115 million tonnes of CO<sub>2</sub> emissions to be avoided and reduce the war's climate costs by EUR 8.9 billion. A green recovery will also be necessary due to the fact that as much as 4000 MW of renewable energy sources, or 24 per cent of Ukraine's installed RES capacity, may have been destroyed and damaged – according to the PEI report entitled 'The climate costs of the Russian invasion'.

*'Depending on the scenario adopted, we estimate that total greenhouse gas emissions in February–September 2022 caused by Russia's invasion of Ukraine may have amounted to 98.1 million tonnes of CO<sub>2</sub> equivalent in the minimum emissions scenario, 212.7 million tonnes in the moderate one and as much as 326.9 million tonnes in the maximum emissions scenario. Therefore, we estimate the war's climate costs at EUR 6.5–25.5 billion, accounting for 10–19 per cent of Ukraine's GDP. The Russian invasion of Ukraine has caused significant environmental and climate damage, which will require many years of work by the international community to make up for. In the minimum emissions scenario, total emissions from military operations were estimated at around 474,000 tonnes of CO<sub>2</sub>-eq; the respective figures were 786,000 tonnes in the moderate scenario and as much as 1,007,000 tonnes in the maximum scenario',* says Kamil Lipiński, an analyst at the climate and energy team of the Polish Economic Institute.

**Chart 4. Total CO<sub>2</sub> emissions from military operations (thousands of tonnes)**



Source: prepared by PEI based on data from ORYX, the Ministry of Environmental Protection and Natural Resources of Ukraine, the *Ukrainska Pravda* newspaper, Ukraine's Ministry of Defence, and GMF.

### The cost of destroyed infrastructure is as much as EUR 235 billion

The Russian invasion has destroyed EUR 95.4 billion worth of infrastructure. The losses caused by impediments in its functioning amount to an additional EUR 126.7 billion. The minimum cost of rebuilding infrastructure is EUR 235 billion. The calculations cover the main areas of socio-economic life, heavily dependent on infrastructure: housing, transport, industry, the energy sector, agriculture or public services. But the highest cost, at as much as EUR 69.9 billion, is that of demining.

**Chart 10. Minimal costs of rebuilding destroyed and damaged infrastructure in Ukraine according to IKSE (billion EUR)**



Source: prepared by PEI based on analysis by the Institute of the Kyiv School of Economics.

### **A green recovery as an opportunity to reduce the climate costs of the invasion**

A green recovery with the participation of the European Union, the United Kingdom and the United States could enable as much as 115 million tonnes of CO<sub>2</sub> emissions to be avoided and reduce the war's climate costs by EUR 8.9 billion. Lower emissivity of European economies and the transfer of green technologies enabling a rapid recovery of destroyed and damaged RES power will be key to limiting the climate impact of Russian invasion.

The EU Member States' active involvement in Ukraine's green recovery and development would require supporting it in the construction of 14.4 GW worth of solar power plants and 3.1 GW of wind farms. The climate cost of this kind of investment would be EUR 21.2 billion, but it would reduce Ukraine's emissions by at least 39.5 million tonnes of CO<sub>2</sub>. The dynamic support of the development of Ukrainian RES would be over 12 times more effective in terms of climate protection than the EU Member States' less defined, general involvement in Ukraine's recovery process.

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**The Polish Economic Institute is a public economic think-tank dating back to 1928. Its research primarily spans macroeconomics, energy and climate, foreign trade, economic foresight, the digital economy and behavioural economics. The Institute provides reports, analyses and recommendations for key areas of the economy and social life in Poland, taking into account the international situation.**

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