

# Urban Damage and Civilian Casualties in Ukraine

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## Issue

This policy brief examines Russian damage to civilian infrastructure and civilian populations in Ukraine, considers the strategic implications that this issue presents and identifies relevant policy opportunities for Canada.

## Background Assessing the Damage

Since the invasion began on February 24, 2022, the Russian campaign has not limited itself to military targets but has also systematically threatened Ukraine's civilian population. These attacks on civilian targets connect to Russia's strategic goals, stemming from Russian intent to eradicate Ukrainian culture and subjugate the population of Ukraine. Russian forces pursue these goals through eight military actions against non-military targets:

- 1. Direct risk to the life and health of civilians**  
As of June 19, 2023, the Office of the High Commissioner for Human Rights (OHCHR) recorded 24,862 civilian casualties, including at least 9,083 fatalities. They believe that the actual figures are considerably higher (OHCHR 2023).
- 2. Destruction of housing stock**  
As of February 24, 2023, the total number of destroyed or damaged housing objects is about 153.86 thousand buildings. The total area of damaged or destroyed objects is 83.1 million square metres (Kyiv School of Economics 2023).
- 3. Destruction of the healthcare system**  
As of July 26, 2023 a total of 995 attacks on Ukraine's healthcare system have been documented (Attacks on Health Care in Ukraine n.d.).
- 4. Destruction of educational institutions**  
As of July 26, 2023, 3536 educational institutions have suffered Russian bombing and artillery attacks (Save Schools 2022). Education for more than five million children has been disrupted (UN News 2023).
- 5. Destruction of culture**  
As of February 2023, at least 2,148 cultural and religious institutions have suffered direct damage (Kulish 2023).
- 6. Destruction of critical infrastructure**  
As of February 2023, Russian armed forces have damaged 19 airports and civil airfields, at least 57 railway stations, 23.8 thousand km of roads and 305 bridges (ibid.).
- 7. Nuclear terror**  
During the full-scale invasion, Russia resorted to unprecedented steps such as the occupation of nuclear stations aiming to commit nuclear terror, occupying the Chernobyl and Zaporizhzhia nuclear power plants, shelling stations and kidnapping the nuclear power plant workers (UN Press 2022).

## 8. Ecocide

The destruction of the dam at the Novo-Kakhovska Hipro Power Plant became a new unprecedented act of ecocide and caused large-scale losses for thousands of Ukrainians in 80 settlements (US Mission to OSCE 2023). The full estimation of loss and destruction will be fully appreciated after the water recedes.

## Weapons Analysis

Following the OHCHR 2023 report, it has been determined that a substantial percentage of civilian casualties during warfare are attributed to explosive weapons that possess wide-area effects (UN News 2022). This includes weaponry such as aerial bombs, cruise and ballistic missiles, and artillery shells. Such weapons account for more than nine in 10 civilian casualties throughout the time of full-scale war in Ukraine (ibid.).

As recorded by the monitoring efforts of Action on Armed Violence (AOAV), which utilizes English language media reporting to track the number of civilian casualties caused by explosive weaponry, 94 percent of civilian casualties in Ukraine since the onset of the conflict have occurred in populated areas. This figure corresponds with similar patterns of harm inflicted upon civilians in other conflicts in the past decade (AOAV 2023). Overall, according to the General Staff of the Armed Forces of Ukraine, within a year of the full-scale war waged by the Russian military forces, about 5,000 missile strikes and almost 3,500 air strikes have been carried out on objectives on the territory of Ukraine. In addition, the invaders employed almost 1,100 strikes using drones (Mazurenko 2023).

Russia has employed a range of missile weapons in its conflict with Ukraine, escalating in the past year to full-scale war. The Russian arsenal comprises three types of ballistic missiles and five types of cruise missiles that are commonly used against Ukraine (Mankov 2022). Precision-engineered weapons include the Kh-47M2 *Kinzhal* (the Dagger) hypersonic ballistic missile and the group of Kalibr cruise missiles. Frequently used against Ukraine, the long-range, highly precise Kalibr cruise missiles and Iskander-M ballistic missiles target military installations and civilian residential buildings. One such example is the Kalibr missile attack on Vinnytsia on July 14, 2022, resulting in at least 23 civilian deaths (CityNews Staff 2022).

In contrast, Russia also deploys non-precise missiles and unguided bombs to cause extensive destruction. Unguided-air-dropped explosives caused approximately 600 fatalities in the Mariupol Drama Theatre attack on March 16, 2022 (Hinnant, Chernov and Vasilisa 2022). The low-precision S-300 ground-to-air missile has been repurposed to attack land targets. Similarly, the Kh-22 air-based anti-ship Soviet-era cruise missiles, known as “aircraft carrier killers,” have been used to damage residential buildings and infrastructure, with a notable example being the January 14, 2023, strike on a Dnipro apartment complex that killed 46 people and injured 46 others (Wasiura 2023). Furthermore, the Russian military has deployed Grad and Uragan multiple-launch rocket systems, along with Smerch and Tornado-S rocket launchers. Despite their substantial destructive capacities, these weapons lack precision and are generally used against large urban areas.

The Russian military’s approach against Ukraine involves a deliberate strategy of targeting civilian populations and infrastructure, using both highly accurate and less precise missile systems, in direct violation of international humanitarian law. This pattern of weapon usage reveals a strategic intention to cause extensive civilian damage — demonstrating a callous disregard for the norms of warfare.

## Understanding Russian Strategy

The nature of the Russian attacks on Ukraine’s civilian population and civilian infrastructure, as summarized above, reveals three objectives: terror, ethnic cleansing and preparation for future conflict.

Several cases of Russian crimes against civilians, particularly during the early phases of the invasion, show remarkable brutality but little to no coordination. For example, the UN Inquiry Commission reports “numerous” cases of sexual and gender-based violence against civilian victims aged four to 82 (UNHRC 2023). Such attacks do not advance conventional military objectives or reveal any pre-determined targets other than the Ukrainian population at large. Actions like these can be explained in two ways: either they result from command-and-control failure or the perpetrators have authorization from their superiors to disregard the international law of war. Since Russian authorities have opted to deny rather than investigate or prosecute these crimes, the latter explanation appears more plausible (UN Web TV 2022). Thus, the uncoordinated crimes against Ukrainians point to an overarching intent to terrorize the civilian population and

break Ukrainian morale. This approach has not succeeded; Ukrainian morale remains high (Reinart 2022).

Other Russian crimes against civilians and civilian infrastructure are relatively systematic. Examples include, but are not limited to, mass killings of civilians, forced deportations, forced transfers of Ukrainian children to Russian homes, the destruction of residential buildings and the seizure and/or destruction of cultural artifacts (Venneri 2023). These actions seem designed to stimulate Ukrainian migration while erasing Ukrainian cultural ties to the land. Meanwhile, reports have noted an influx of Russian settlers to the occupied territories (*ibid.*). While no internationally recognized definition for ethnic cleansing currently exists, this pattern of activity matches the definition offered by the United Nations Commission of Experts in their 1994 report on the former Yugoslavia: "... a purposeful policy designed by one ethnic or religious group to remove by violent and terror-inspiring means the civilian population of another ethnic or religious group from certain geographic areas" (UN n.d.).

Lastly, Russian air and artillery forces have targeted critical infrastructure and civil institutions that deliver crucial functions of the state: educational facilities, hospitals and energy stations. These attacks suggest that Russian strategists anticipate a prolonged or recurring war in Ukraine. Inflicting maximal damage to Ukrainian civil society puts Russia in an advantageous position for future territorial gains — especially if Ukraine's allies do not renew their support.

### Securing Ukraine's Future

In an increasingly unstable international order, Canada must strengthen its ties with traditional allies. This means contributing its fair share to protect democracies in crisis from authoritarian aggression. Key allied players agree that the long-term survival of a free Ukraine will require extended international aid both during and after the war (G7 Germany 2022).

As a NATO member, a close partner of the United States and a vocal champion of human rights, Canada should pursue a leadership role in the reconstruction of Ukraine. The Canadian mining industry produces world-class expertise in geological engineering, civil engineering and seismology — all of which may prove useful for designing conflict-resilient infrastructure systems. Canada has also cultivated a long-standing development relationship with

Ukraine, having committed over \$890 million towards "securing Ukraine's future as a democratic, rules-based state" since 2014 (Global Affairs Canada [GAC] 2023a).

The forefront of the reconstruction effort is not only a natural place for Canada, but one that advances Canadian interests. Renewing its investment in Ukraine remains the best way to secure returns on previous development investments. In addition, it presents a vital opportunity to foster rapport and cooperation with its allies. Finally, this task invites Canadians to step towards the vision espoused by GAC: "a more peaceful, prosperous and inclusive world" (GAC 2023b). By rebuilding Ukraine, Canada rebuilds confidence in its alliances, governance systems and the values that hold them together.

## Recommendations

**Reconstruction and Development Aid.** To help Ukraine stand resilient against future Russian aggression, Canada must invest in post-conflict reconstruction and development with an intense focus on rebuilding critical infrastructure and civil institutions. Canada should coordinate with fellow signatories to the Lugano Declaration, the outcome document of the 2022 Ukraine Recovery Conference (Ukraine Recovery Conference delegates 2022), to develop a concrete implementation plan as soon as possible. In tandem with these measures, Canada should lend technical expertise to Ukraine to guide the reconstruction process.

**Multilateral Disarmament.** To promote a safer world for future generations, Canada should advocate tighter restrictions against the use of explosives in civilian areas. In November 2022, Canada and 22 other NATO members endorsed the "Political Declaration on the Protection of Civilians from the Use of Explosive Weapons in Populated Areas" (INEW 2022). Codifying these principles into law may help to refine the currently ambiguous definition of "indiscriminate weapons" in the Geneva Convention, Additional Protocol I (International Committee of the Red Cross 2005). In light of the recent and devastating attack on the Nova-Kakhovka hydroelectric power plant, we further recommend that Canada support the recognition of ecocide as an international crime.

**International Justice.** To secure justice for the victims of Russian aggression, Canada should support the creation of a Special Tribunal to prosecute the crimes committed in Ukraine. While this measure has been taken only four

times prior — in Yugoslavia (1993), in Rwanda (1994), in Cambodia (2003) and in Lebanon (2005) — our findings affirm that the Russian invasion of Ukraine deserves this level of inquiry. Russian actions against Ukrainian civilians have already warranted war crimes charges and may even invoke the question of genocide.

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## Acknowledgements

The authors would like to thank Stephen Evans, Andrew Thompson, and officials at Global Affairs Canada for their guidance and mentorship throughout the course of the fellowship program.

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