



RSF REPORTAR
UTAN GRÄNSER



What do we mean by **ENVIRONMENTAL** and **CLIMATE** impacts of the war?

WEBINAR #1

Presenters



Oleksii Vasyliuk

UWEC expert, ecologist, zoologist,
Ukrainian Nature Conservation
Group, Ukraine



Eugene Simonov

UWEC expert, ecologist, PhD
conservationist, Russian Ministry of
Justice-designated foreign agent



Today we will discuss...

- 1 Direct impacts of military combat on the natural environment
- 2 Indirect but material consequences of military combat on the natural environment
- 3 Indirect impacts of legislative and other socioeconomic mechanisms
- 4 Consequences for international environmental conservation and climate collaboration
- 5 Environmental opportunities in the post-war phase – can there be positive outcomes?
- 6 Why should we evaluate the damage caused by war?



**DATABASE OF
INFORMATION SOURCES
ABOUT WAR IMPACTS**



1

Direct impacts of military combat on the natural environment

Examples of direct destruction:

- Physical effects of munitions
- Passage of military vehicles
- Construction of military fortifications
- Fires in natural and agricultural areas
- Destruction of dams at water reservoirs
- Logging (forests, parks, forest belts)



Direct destruction: munitions and technology

Explosions of munitions and effects of military vehicle movements

- Death of living organisms in combat zones are caused by blast waves, fire damage, and fragment distribution.
- Short-term effects lead to land degradation, soil erosion, and soil pollution.
- Damage stimulates distribution of non-native plant species.

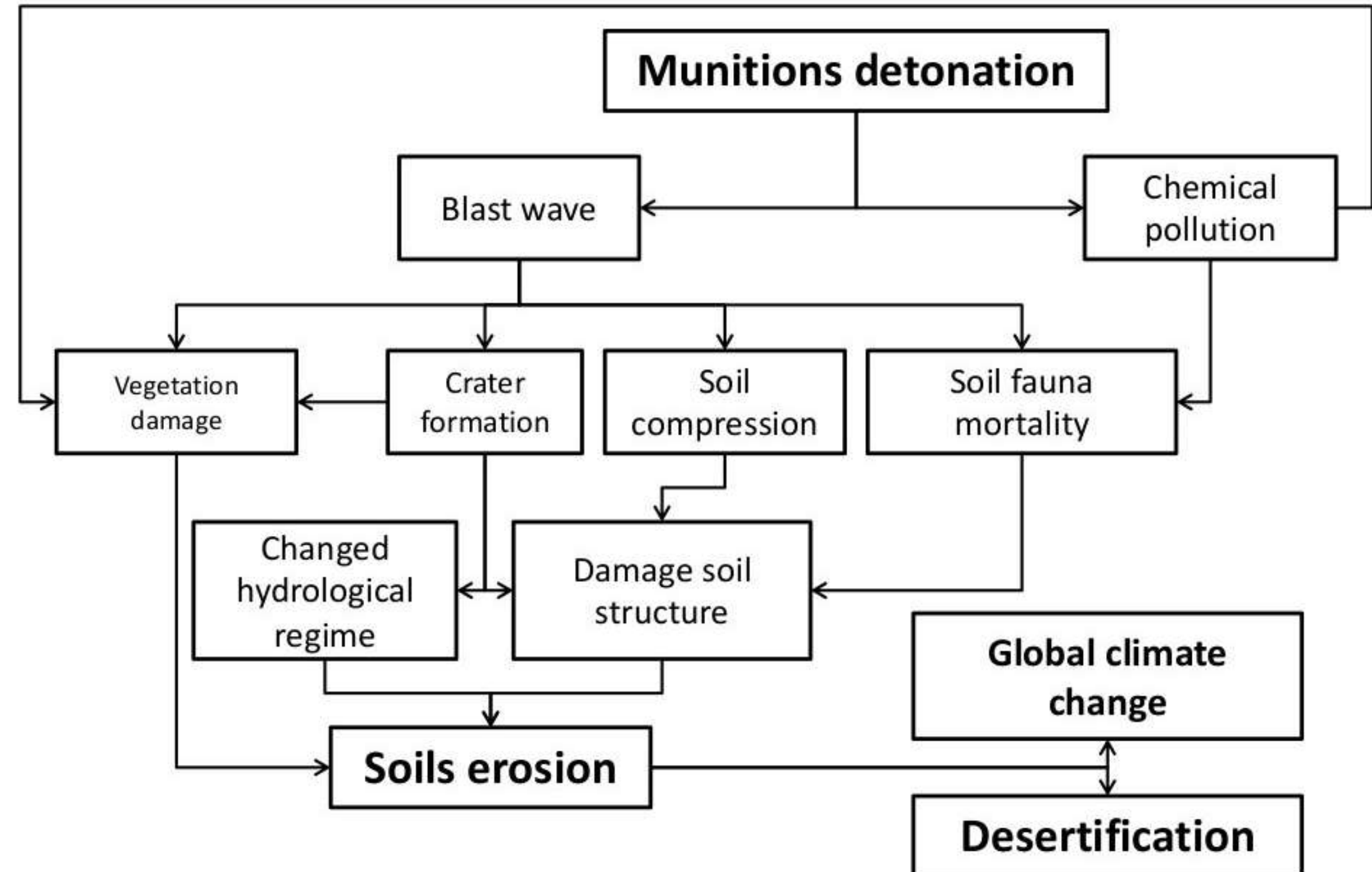


Diagram: UWEC





Photo: Maxar Technologies



Photo: UWEC archive

*Craters from munitions explosions and the
impacts of military vehicle movements*



Direct damage: **fires**

Fires result in ecosystem destruction over wide areas. In steppe biome climate, forest fires can result in their **complete destruction**.

Russian military action in Ukraine during the first four months of war resulted in **37,867 fires** in natural and anthropogenic landscapes.

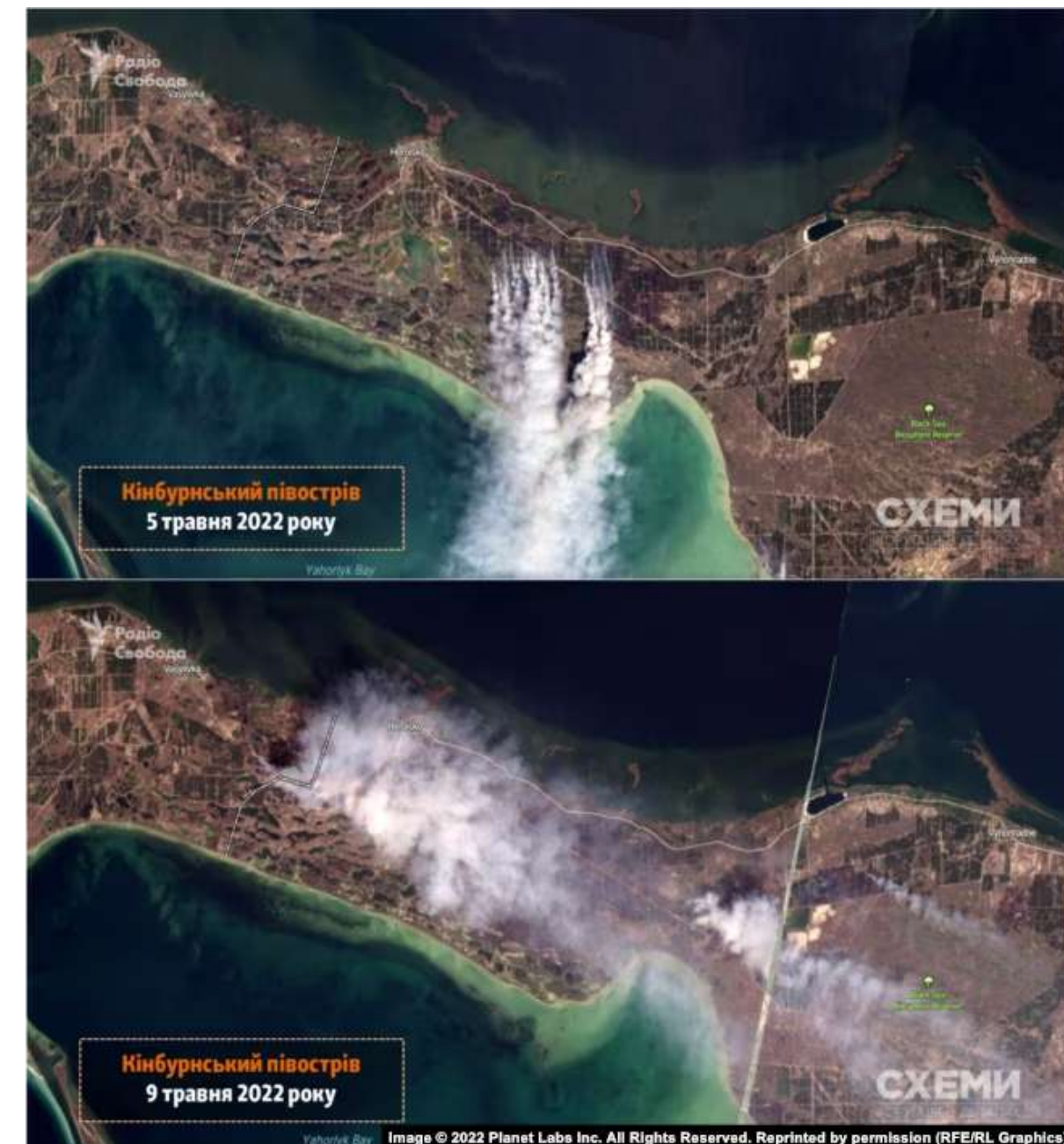
Total area burned 1006.62 km² ≈ 30% Reserves and national parks

Fire has destroyed:



36,154 ha forest

10,250 ha of steppe



Direct destruction: **building defensive fortifications**

Construction of fortification zones, trenches, blinds, and equipment shelter is accompanied by significant damage to natural landscapes. In most cases, this usually occurs in forests or on slopes in steppe biomes, where damage leads to future erosion of disturbed soils into undisturbed areas and erosion more generally.



Photo: Social media

Fortification zone in eastern Ukraine



Photo: UWEC archive

Damage in Chornobyl Biosphere Reserve on the site of a Russian military outpost in March 2022



Direct destruction: **destruction & weapons fire at hazardous sites**

The first sites to suffer were fuel depots.

Weapons fire completely destroyed Ukraine's entire network of large metallurgical and chemical industry facilities, the locations of which were concentrated in the eastern part of the country.



Bryansk, Russia



Vasylkov, Kiev Oblast, Ukraine

The purpose of individual attacks was targeted environmental degradation of population centers.

In total, over 60 fuel depots, large fueling stations, and airport fuel storage areas were destroyed.



Direct impacts: **destruction of agricultural infrastructure**

Deliberate environmental degradation could explain why the Russian army purposefully fired at chemical fertilizer warehouses.

Rocket attack on ammonia fertilizer storage in Mykolaiv Oblast.



Destroyed or abandoned military equipment

Together with fuel and ammunition, munitions explode and military equipment is destroyed or burned during combat.

Equipment damage presents significant risks both for area residents where remnants of surface-to-air missile systems and other rockets containing highly toxic fuel threaten public health, while other tactical transport often contain a wide array of toxic substances (including asbestos, PCBs, and battery acids (including phosphorus)).



Photo: Ukrainian Armed Forces



Photo: Ukrainian Armed Forces



Sunken military equipment

Given that the entire northern front of the invasion took place in Polesye — Ukraine's largest wetland area — and that most rivers experienced at least partial flooding and early ice breakup in 2022, Russian military equipment often sank in swamps or ended up in rivers and lakes.

The "Moscow" cruiser was hit and ultimately sank in the Black Sea on 13-14.04.22 .

Planes and helicopters were shot down, falling repeatedly into water bodies. In addition, several ships were destroyed, including the "Saratov" large landing craft, which carried up to 1,000 metric tons of fuel and ammunition.



Risks for water supply and purification

Bombardment of cities and towns likely resulted in dozens of broken pipelines and out-of-service pumping stations, leaving hundreds of thousands without access to safe water.

Aside from additional cases of water pollution, inability to conduct water treatment became a widespread problem when a large number of infrastructure facilities were damaged, including treatment plants.

This leads to the pollution of rivers, which are sources of water supply for industrial and municipal enterprises.



**Pollution of the Bug estuary
following damage to Mykolaiv's
main wastewater treatment
facility >>>**



Abandoned water treatment infrastructure in Vasyl'evka, Zaporizhzhka Oblast. Photo: t.me/vodokanal



Significant landscape changes: Irpin River

Example 1

In March 2022, **a dam was destroyed in Demdyiv, Kyiv Oblast that separated the Irpin River from the Kyiv Reservoir,** which has a significantly higher water level.

🔍 Hydroelectric dams as weapons: virtual and actual >>>

The Irpin River valley became connected to the reservoir, resulting in the flooding of over 3,000 hectares. Demydiv experienced particularly extensive flooding.



Photo: Ukrainska Pravda



Photo: David Guttenfender for the New York Times



Significant landscape changes: **Oskil Reservoir**

Example 2

On 02.04.2022 the Oskil Dam was destroyed, resulting in a water release from Oskil Reservoir into the Oskil River in Kharkiv Oblast.

9000 ha of land were flooded by 355,500,000 cubic meters of water

 [read more >>>](#)



Photo: Sentinel

The reservoir's bare bottom was exposed, destroying an important shallow-water ecosystem, and, at the same time, incomplete destruction of the dam prevented the resumption of free river flow.





Photo: Russian Ministry of Defense

Transboundary risks

Direct impact factors may extend across borders to other countries.

- **Transboundary air transmission of pollutants**, e.g., explosions at fuel storage facilities located along Ukraine's borders with Russia and Belarus.
- **Radioactive pollution** from both military action and accidents at energy production sites. For example: [Chornobyl-2 >>](#)
- **Pollution and changes to flow regime of transboundary rivers**. For example: [Siversky Donets-Don river basins>>](#).
- **Pollution of marine water bodies** and coastlines resulting from military action. For example: [sinking of cruiser carrying fuel reserves >>](#)
- Negative impacts for **transboundary animal populations and ecosystems**, resulting in [construction of border barriers & disturbance factors >>](#).
- Threat of [Biological invasives >>](#) caused by Russia's fullscale invasion of Ukraine.



Construction of transboundary defensive structures

A significant portion of fortifications are being built along national borders, and not only in Ukraine. In a short time, Poland has built more than 240 km of concrete wall along the border with Belarus. This wall specifically divides the transboundary Belovezhskaya Pushcha UNESCO Biosphere Reserve.

Construction of these types of barriers destroys migratory routes for land animals, fragments wildlife populations,, and isolates ecosystems.



Fragment of the border Poland-Belarus border wall. Finland plans to build a similar barrier along its borders with Russia.

Photo: @WasikMaciej, Twitter



2

Indirect but "material" consequences of combat on the environment

This can include:

- Increased mining, logging, and other natural resource exploitation in countries involved in the war;
- Impacts from the redistribution of traffic flows;
- Increasing extraction of natural resources (including energy resources) and land development in countries where imports were limited as a result of the war;
- Spontaneous use of natural resources due to declining living standards for residents in occupied or affected regions and for migrants and countries affected by export restrictions;
- Environmental impacts due to rapid mass human migration.



Examples

Impacts to global food security



Photo: UWEC

Risks of developing valuable territories to compensate for grain and fertilizer shortages have arisen from Europe to the Amazon.

[!\[\]\(e3f8612927870f2e0f9f5989e6dd3064_img.jpg\) read more >>>](#)

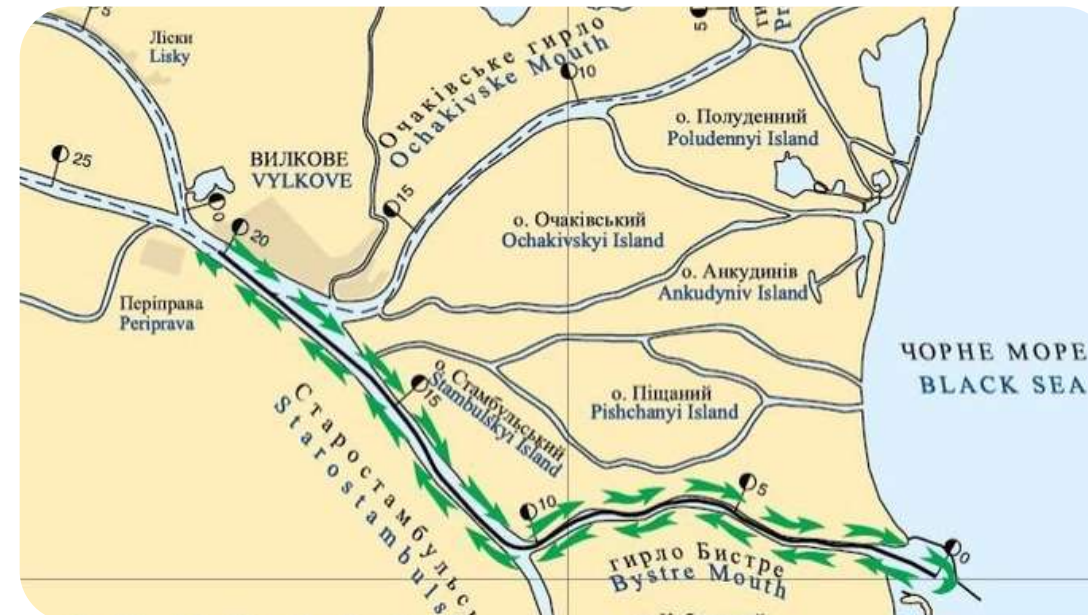


Photo: [Militarynyi](#)

Under the pretext of transporting food to Europe, a new transport corridor was built through Danube Nature Reserve and could cause irreparable environmental damage.

[!\[\]\(cf531ed27e91483460120fcc057b3901_img.jpg\) read more >>>](#)



Photo: Vincent Mundy/Bloomberg

Difficulties in Ukrainian and Russian exports increase the risks of famine and bargaining overexploitation of natural resources.

[!\[\]\(b4eeff342f60cc7bcd67d869b4fedca2_img.jpg\) read more >>>](#)



Return of prehistoric fossils: firewood and coal...



Photo: Ecodefense



Photo: Erakogu

Coal stations were “temporarily” reborn in 2022 in Europe, while coal production and consumption in Russia have not yet decreased, and exports have fallen slightly. Activists are attacking coal and even cooperating in both areas.

In 2022 high European gas prices triggered a wood burning boom for both private home heating and 'renewable' energy. This demand accelerated logging in forests. (Estonia is pictured here).

 [read more >>>](#)



3

Indirect impacts of legislative and other socioeconomic mechanisms

The war also triggers reduced environmental requirements for businesses and municipalities and provides new incentives for activities that destructive to nature.

- Examples:**
- Weakening procedures for environmental impact assessments and public input
 - Postponement or cancellation of previously adopted environmental programs
 - Lowering environmental and technological standards
 - Exploitation of previously protected areas and rare species habitats
 - Allocation of subsidies for environmentally hazardous activities
 - Termination/reduction of funding for environmental and climate programs
 - Termination/reduction of control over implementation of laws
 - Suppression of civil society and dissent



Weakening environmental oversight



Photo: Reuters

In Russia, scheduled inspections of enterprises were suspended, deadlines for implementation of environmental programs were postponed, and many previously prohibited environmentally hazardous activities became permissible. Relaxation of environmental requirements is ongoing.

 [read more >>>](#)



Photo: Yegor Hrynyk

Inspections of logging activity by the Ukraine State Ecological Inspectorate are now strictly limited and logging volumes have increased. Access to forested areas by citizens, including for community monitoring, is also limited.

 [read more >>](#)



Removal of bans on exploitation of previously protected natural areas & rare species habitats

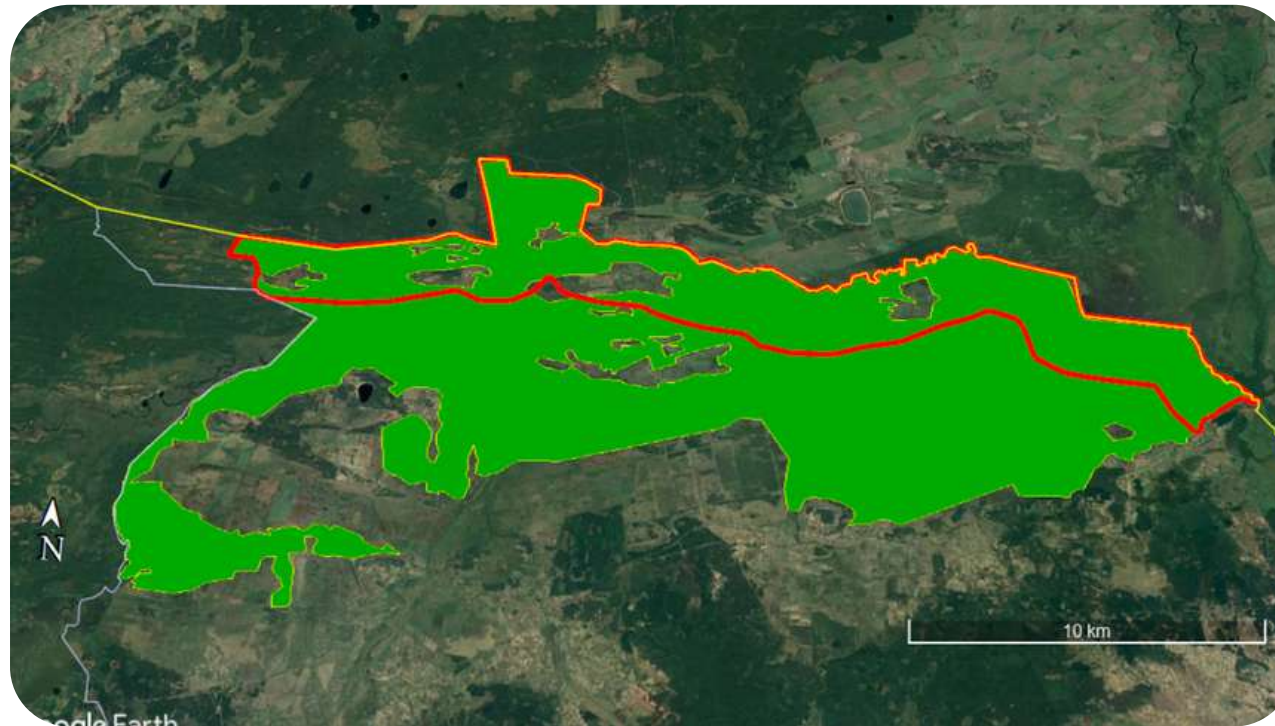


Photo: UWEC

A wide strip of natural areas (incl. dozens of nature reserve funds) along Ukraine's borders with Belarus and Russia was allocated for construction of a defense belt, possibly resulting in environmental damage.

 [read more >>>](#)



Photo: Eugene Simonov

Speculation on the “hardships of war” lead to the elimination of restrictions on the economic use of Russian protected areas and natural monuments.

 [read more >>>](#)



Pressure on civil society



Photo <https://inf.news/>

Cases of criminal prosecution of activists have become more frequent in Russia, and it is now possible to punish both environmental and anti-war activities. Dialogue with government authorities and business has become even more difficult.

 [read more >>>](#)



Photo Clemens Bilan/EPA-EFE

Not just local, but also international environmental NGOs have begun to be declared “Foreign Agents” in Russia.

 [read more >>>](#)

Experts commenting on the war’s environmental consequences may be indicted under new laws.

[read more >>>](#)



Wartime changes to climate policy

In Russia, government and corporate enthusiasm for development of climate policy and corporate responsibility programs has sharply decreased.

 [read more >>>](#)



Photo: pxhere.com, CC0



4

Influence on international environmental and climate collaboration

The military confrontation is also changing international environmental cooperation priorities.

Examples

- Suspension/delay in fulfilling obligations under international conventions
- Exclusion/freezing of country participation in international mechanisms
- Difficulty in conducting international negotiations (or refusal to participate)
- Reduced international attention and funding for key issues
- Termination of joint research and international activities
- Expansion of international activities bearing obvious environmental threats (e.g. arms race)



Pause/delay in meeting responsibilities in agreements and conventions



Photo: Daily Mail

In order to crush all dissent, Belarus unilaterally withdraws from important international conventions.

 [read more >>](#)

Russia's participation in international conventions and treaties is hampered by rejection of the country as an aggressor by other nations. In particular, the 2022 Session of the World Heritage Committee in Kazan was canceled.

For Ukraine, joint management of transboundary basins with Russia and Belarus has been undermined for some time.

 [read more >>](#)

Ukraine's unilateral actions during the war also caused misunderstanding and protest by its neighbors in the Dniester basin and Danube delta.



Photo: Wikipedia

Blows to science & termination of scientific ties

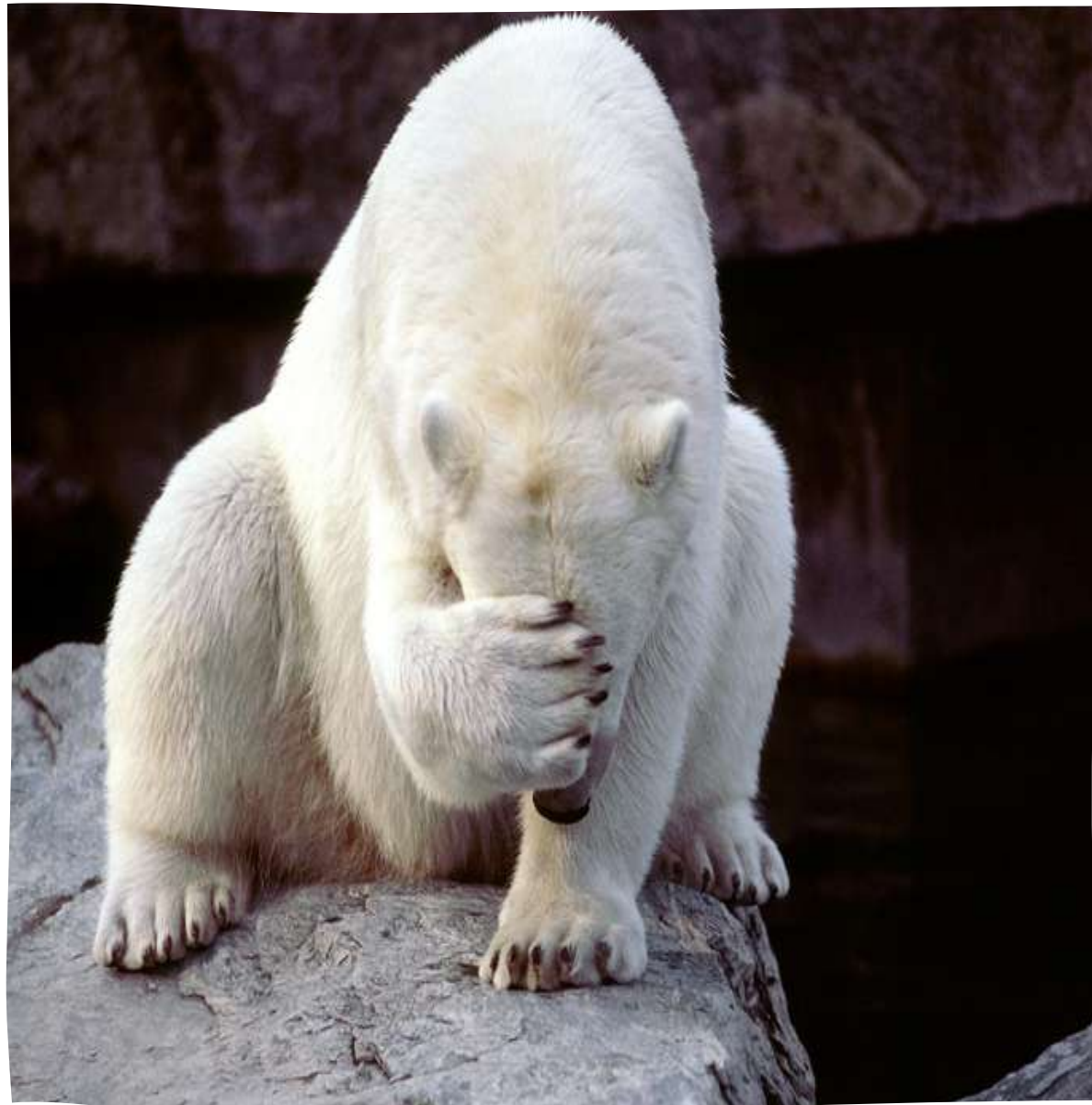


Photo: Wallfon

Half of Ukraine's scientific institutions are occupied or in ruins. The material base of universities and nature reserves has been severely undermined. Many young scientists have left for the West and some of them will not return. But science is alive!

Biology in bomb shelters >>

International projects, such as environmental monitoring in the Arctic, have been halted due to the impossibility of cooperation with the aggressor. The aggressor is pleased, but scientists are not at all pleased.



Militarization & the arms race



Photo: Russian Ministry of Defense

Important natural areas in the warring countries have become host to military trainings and testing.

[🔍 read more >>](#)



Photo: "Забытые моряки" blog

Russia deploys military complexes in protected natural and cultural sites from **Moscow>>** to the **Arctic>>**.



Photo: European Space Agency

Military action and a new arms race are not only draining resources needed to protect nature, but also leading to an increase in greenhouse gas emissions, and not only on the battlefield.

[🔍 read more >>](#)



5

Environmental opportunities (after) wartime – Will there be beneficial consequences?

While negative effects predominate, war can bring some **positive environmental outcomes**. These often depend on political choices made by government and civil society efforts. It is important to identify, demonstrate, and amplify such opportunities to facilitate environmentally responsible decisions in wartime. For example:

- Replacing fossil fuel imports with renewable energy (rather than a different fossil fuel);
- Assessing and maximizing the environmental impact of sanctions, as well as reducing their negative impacts on environment and humans;
- Support for nature restoration in places where the war has made economic development dangerous.



Examples

Influence on future energy



Photo: EnEco Solutions

The first year of the war showed that countries with a larger share of renewable energy coped better with the energy crisis. Despite heavy losses in renewable energy from the occupation and discrimination against solar power at the war's start, the advantages of renewable energy are visible in Ukraine.

[read more >>](#)

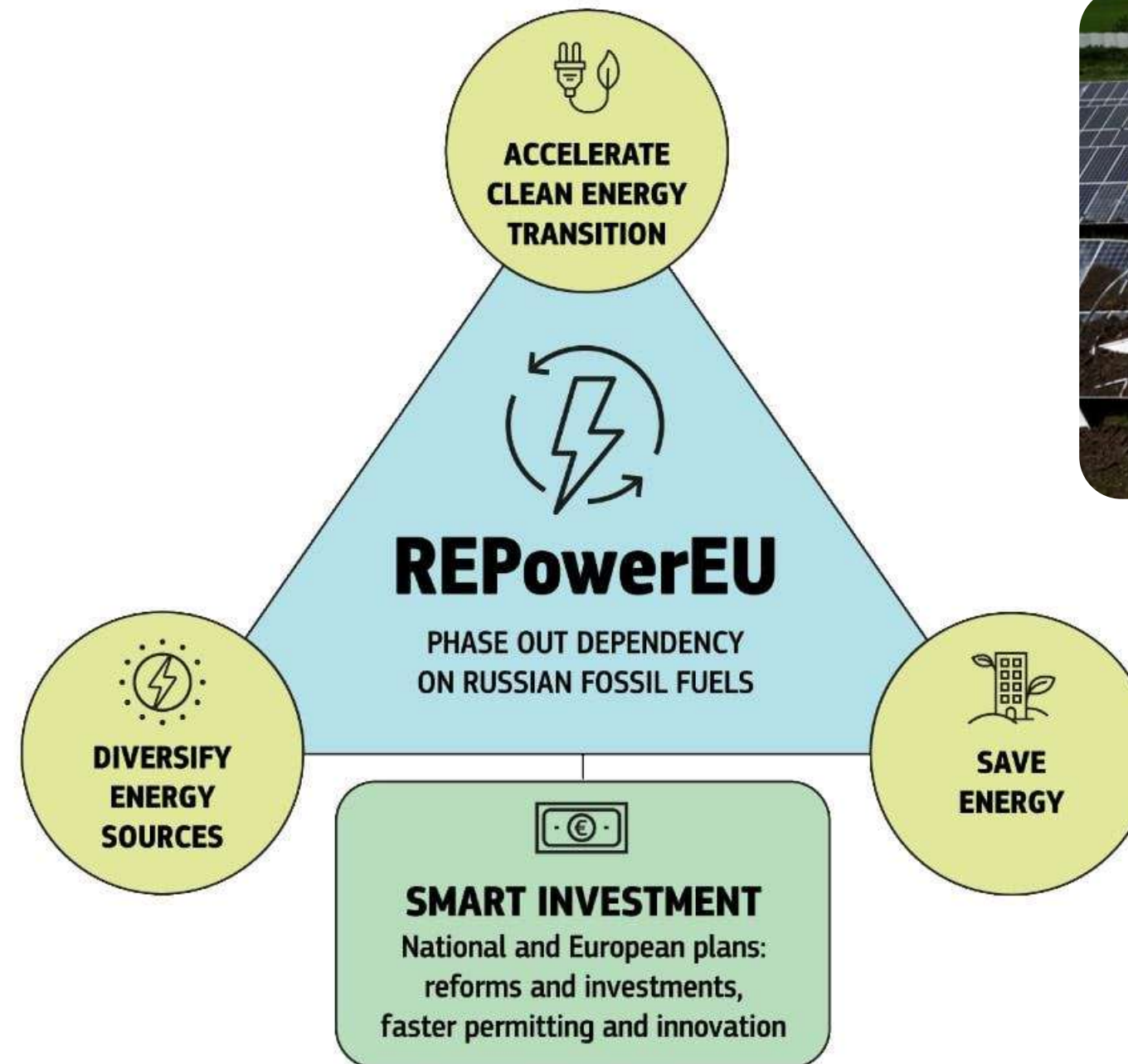


Photo: European Commission



Photo: Ecoaction

In general, the EU's accelerated energy transition program is developing successfully, but it has risks of placing capacities in valuable natural areas.

[read more >>](#)

Hopes for restoring ecosystems

There are proposals to withdraw many of Ukraine's mined and war-modified ecosystems from economic activity in order to provide ecosystem services.



Photo: biznes-gazeta.ru

It is highly probably that sanctions restricting the export of resources from Russia can decrease destruction and exploitation of certain ecosystems, for example, reduce alluvial gold extraction from rivers.

 [read more >>](#)

Environmentalists are advocating for a stretch of the Irpin River between Moshchun and Rakivka to become a focus area for environmental restoration.

 [read more >>](#)



Photo: Vincent Mundy



6

Why calculate damage caused by war?

- Force the aggressor to pay reparations and/or justly_punish Russia for its actions >>.
- Calculate assistance needed from donors and engage in dialogue with them.
- Ensure restoration of the human environment (primarily urban >>) and replenish lost resources.
- Preserve biodiversity and restore natural balance.

Can all losses be calculated?
Which ones can be restored through reparations?



10 steps to overcome the war's environmental consequences (24.02.2023)



The environmental community has consolidated views on goals and methods for Ukraine's green restoration. Their views do not fully coincide with those of government.

In June 2022, **environmentalists criticized the Ukraine Recovery Plan >>.**

Call to Action to the International Community:

A Ten-Step Plan to Address the Environmental Impact of the War in Ukraine

 [read more >>>](#)



Information sources about the war's consequences

| Name | Organization | Partner | Priority | Key information sources on environmental impacts, war damages, humanitarian crises and other environment-related wartime information |
|--|--|---------------------------|----------|--|
| Ecodozor [Ecowatch] | Zoï Environment Network (Zoï) | OSCE UNEP | 1 | Environmental consequences and risks map |
| Warmap | Ecoaction | | 1 | Potential environmental impacts map from media reports, not independently verified |
| UNCG | Ukrainian Nature Conservation Group | | 2 | UNCG plays a leading role in analyzing and publicizing war impacts on protected areas, biodiversity, conservation science and sustainable use of natural resources. It also coordinates several direct support initiatives for protected areas and conservation research institutions. |
| SaveEcoBot | SaveDnipro | | 1 | Air quality, background radiation, and fire maps; environmental crimes map (only in Ukrainian https://www.saveecobot.com/features/environmental-crimes) |
| Ukraine Conflict Environmental Briefings | Conflict and Environment Observatory (CEOBS) | Zoï Environmental Network | 1 | Series of thematic environmental briefings on Ukraine (nuclear sites, water, industry, fossil fuel facilities and the coastal and marine environment). Also see methodology for OSINT |

 [***see the entire list >>>***](#)



Thank you for your attention!



<https://uwecworkgroup.info/>

We love to hear from you.



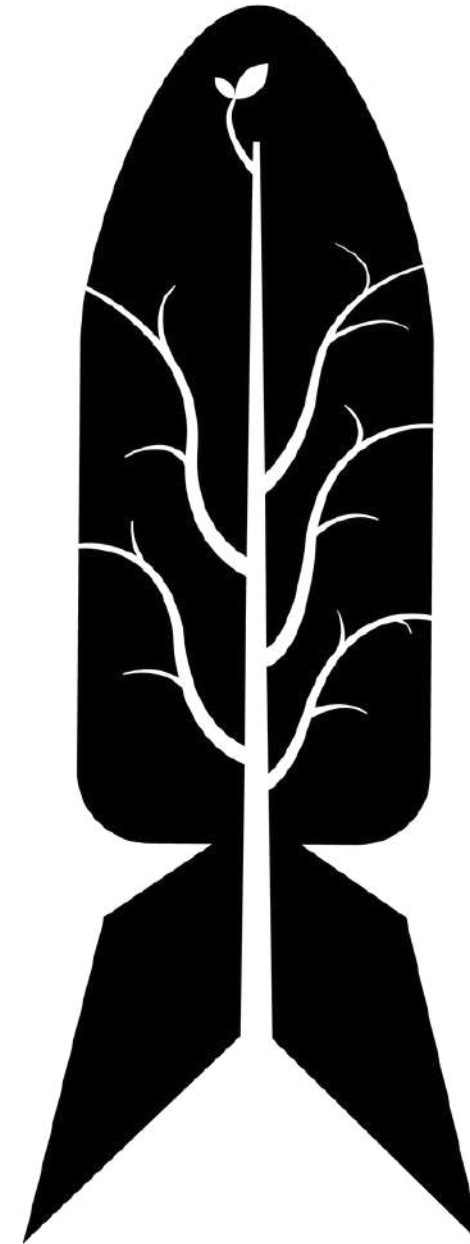
[*editor@uwecworkgroup.info*](mailto:editor@uwecworkgroup.info)



[*@UWECWorkGroup*](https://twitter.com/UWECWorkGroup)



[*https://www.facebook.com/UWECWorkGroup*](https://www.facebook.com/UWECWorkGroup)



**U W
E C**

Ukraine War
Environmental
Consequences
Work Group