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Room 002, Hallerstrasse 12, GIUB

Environmental Effects of the War in Ukraine: Spotlight on Soil Damage Assessment and Mapping

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ABSTRACT. Approximately one-third of Ukraine's territory is currently contaminated or mined, equivalent to the size of an average European country. The scale and intensity of the war in Ukraine have resulted in widespread and locally severe damage to some of its most ecologically and economically important areas, such as farmlands, a basis of the country's food security. Since the beginning of the war, Russia has launched more than 10000 drones, 7400 missiles and 30 million artillery shots, all of which have settled into the soil.

Ukraine is now facing one of the most severe environmental crises in terms of soil pollution per unit of time, largely due to the leaching of toxic elements such as lead, cadmium, arsenic, and mercury from ammunition and weaponry into the soil. Failure to promptly identify and document potential contamination sites could lead to harmful substances entering the food chain, posing carcinogenic risks and jeopardizing global food security and export opportunities. It is crucial to act now to prevent the deterioration of human health.

Here, I present a project aimed at enhancing the capacity for mapping, environmental monitoring, and managing the effects of war-induced damage on Ukraine's agricultural land, utilizing existing networks of scientists and field-based analysis to safeguard food security. The first component of the project involves gathering ground truth data on the damage inflicted on Ukrainian farmland, which is then utilized to analyze the extent of soil pollution and calibrate remote sensing data. The second component focuses on developing an application for mapping farmland to document hazards and contamination and prioritize land for production and remediation. The third aspect involves building up 'citizen science' by training non-combatant experts to inspect and analyze contaminated farmlands and contribute to land mapping efforts. The fourth component aims to facilitate the decontamination and remediation of Ukrainian lands to restore agricultural productivity while promoting post-war environmentally friendly agricultural practices to ensure sustainability and climate neutrality.

BIO. Olena Melnyk, Senior Researcher at ETH Zurich, Climate Policy Lab (Switzerland), Assoc. Prof. at Sumy National Agrarian University (Ukraine), Honorary Prof. at the Royal Agricultural University (England). She is a member of the UNEP Environment Working Group: Humanitarian Response for Ukraine; a core team member of the project CAS Rebuild Ukraine (BFH, Switzerland); a board member of the Swiss Network with Ukraine (ETH Zurich, Switzerland).