Reconstructing War-Ravaged Agricultural Lands and Waters to Enable Co-production of Food and Nutrition Security and Natural Resource Reclamation and Resilience

Guiding Principles to Achieve
Food and nutrition security, soil and water functions

Spring 2026

War and conflict contaminate and destroy freshwater and soil resources essential to the production of food and nutrition security, ecosystem health and resilience, farmer livelihoods, and community economic wellbeing. Assessments of damage and contamination, coherent and systematic policies, and sustained investments at local, regional and national levels are urgent and necessary for reconstruction and remediation of war-ravaged agricultural lands and waters. Restoration of agricultural and forestry soil resources and freshwater functionality is essential to enable farmers[1] who manage, lease and own agricultural lands to safely re-engage and accelerate the production of food and nutrition and their livelihoods. Twelve overarching *Reconstruction of Agricultural Lands Principles* are proposed to guide policy, planning and implementation to enable the co-production of food and nutrition security and natural resource reclamation and resilience:

1. **Farmers[1] are the foundation of local, regional and global food and nutritional security** (SfL, 2021)**.** Farmers and their representative organizations must be fully recognized as core design and implementing partners in reconstruction of agricultural lands and water resources degraded and contaminated by war and conflicts.

2. **There are no quick fixes to reconstruct war-ravaged agricultural lands and waters.** Remediation, rebuilding and reconstruction of agricultural landscapes will require immediate, short-term gap responses and longer-term **system approaches that reconnect critical soil-water-biological relationships** to ensure agricultural, food and nutritional productivity and occupational and food safety (SfL, 2021).

3. **Decontamination and remediation of soil resources, including land mine and unexploded ordnance removal** to restore safe access and soil functions for agricultural and food production uses will require a combination of physical, physicochemical and biological/ biochemical assessments and restoration approaches that entail immediate, short-term actions and longer-term systematic persistent assessment, monitoring, remediation and reconstruction methods at multiple scales (farm, local watershed, and regional) (Filho et al., 2024; Santos et al., 2025).

[1] The term "farmers" encompasses farmers, ranchers, foresters, pastoralists, orchardists, fisherfolk, aquaculturists and all those who are guardians and stewards of working agricultural landscapes. Working landscapes are agricultural croplands, grasslands, orchards and forests, vineyards, fisheries, and other lands and waters that are managed for livelihoods and the production of food and nutrition, fiber, energy, and ecosystem services.

4. **Removal of waterborne pollutants and re-establishing functional water infrastructure** for human and agricultural uses must be a high local, regional and national priority. This includes assessments; restoration of community and regional water supply systems, treatment plants and sewerage units; and public and private investments in water resources that enable food production, storage and distribution systems to function effectively and safely (Manoiu et al., 2025).

5. **Rivers, headwaters, wetlands, reservoirs, and riparian assessment, monitoring, remediation and restoration** are essential to ensure adequate farm level access to crop and animal water supplies, irrigation, and well systems for safe food production and drinking water (UNEP, 2022; Manoiu et al., 2025).

6. **Farmers must have a land tenure system** that provides legal and customary arrangements, land ownership and lease rights and responsibilities that are fair and equitable and ensure affordable access to land, water, and the natural resource base.

7. **Research on the decontamination, reconstruction, and restoration of war-ravaged agricultural landscapes** must become a high national and global priority with strong institutional support and public and private funding. **Science-based knowledge and decision making**, in conjunction with **farmer and indigenous innovation** are central to effective adoption of agricultural technologies, innovations and practices that can remediate, reconstruct and restore biodiversity, ecosystem wellbeing and food and nutrition security (SfL, 2021).

8. **Farmers are key partners in the development of research agendas, experimentation and testing of new technologies** and approaches that remediate, improve and enable soil, water, and biological capacities to produce safe abundant nutritious food supplies and agricultural products (Richards, 2006; SfL, 2021; Meaza et al., 2024)

9. **Farmer and landowner skills, knowledge and capacities** to restore and manage war-ravaged agricultural landscapes must be accelerated, strengthened and increased through: 1) environmental education, training and tools; 2) applications of satellite imagery, remote sensing and other technologies, data and information analysis; 3) access to grants and finance to restore, rebuild farms; and 4) facilitated peer to peer knowledge exchanges and partnerships with scientists and technical personnel (Meaza et al., 2024; Manoiu et al., 2025; SfL, 2021).

10. **Farmers need access to a "solutions toolbox" that encompasses all available tools, technologies, innovations, scientific, technical and traditional approaches** appropriate to geographies, ecosystems and watersheds, cultures and a wide variety of agricultural/forestry systems and scales without predetermining or limiting technologies, production type or design components that they may use to achieve decontamination and reconstruction of their farm and watershed level goals (SfL, 2021, Santos et al., 2025).

11. **Post-conflict restoration projects and programs should involve farmers and a range of farm sizes (large, medium and small) and vulnerable groups (women, indigenous peoples, youth);** and provide practical lessons on agricultural landscape remediation, strategies and methods for restoration management of soil and freshwater resources, and investment frameworks that allow farmers, farmer organizations and agricultural value chains to rebuild their food and agricultural systems and develop public–private partnerships, risk-sharing instruments, and aggregation models that improve access to finance. Proven strategies and successful remediation models that can be replicated and scaled up or down need to be

daylighted and catalogued as part of the "solutions toolbox" (UNEP, 2022-2025; Meaza et al., 2024; UNFCCC Farmers Constituency, 2026).

12. War and conflict too frequently spill over and transcend geo-political boundaries. **Transboundary cooperation and multi-lateral integrated management** of water, forests, grasslands and other natural resources should be implmented as appropriate (Morton et al., 2024; UNEP, 2022; UNECE, 2026)

SOURCES

Filho, W.L. Fedoruk, M., Eustachio, JHPP, Splodytel, A., Smaliychuk, A., Szynkowska-Jozwik, M I. 2024. The environment as the first victim: the impacts of the war on the preservation areas in Ukraine. Journal of Environmental Management 364 https://doi.org/10.1016/j.jenvman.2024.121399

Gordienko, O.A. 2025. Impact of war on soils (a review) Eurasian Soil Science 58:127 https://doi:10.1134/S1064229325601209

Manoiu, VM, Costache, MS, Nica, MA. .2025. The impact of the Russia-Ukraine War on water resources and infrastructure of Ukraine-A comprehensive review. MDPI p1-30.

Meaza, H., Ghebreyohannes, T, Nyssen, J, Tesfamariam, Z, Demissie, B, Poesen, J. Gerehiwot, M, Weldmichel, T.G., Deckers, S, Gidey, D.G., Vanmaercke, M. 2024. Managing the environmental impacts of war: what can be learned from conflict-vulnerable communities. Science of the Total Environment 927171974 https://doi.org/10.1016/j.iswcr.2024.11.004

Morton, L.W., Girgis, C. Shea, E. 2024. Cross-Boundary Collaboration in Large Working Landscape Management: Anticipating and Planning for Climate Disruption and Continuous Change in US West Grassland-Forest Working Landscapes. Solutions from the Land, Lutherville MD USA Headwaters of the Colorado - Solutions from the Land

Pereira, P., Basic, F. Bogunovic, I., Barcelo, D. 2022. Russian-Ukrainian war impacts the total environment. Science of the Total Environment https://doi.org/10.1016/j.ecoenv.2022.114322

Richards, P. 2006. The history and future of African Rice: Food security and survival in a West African war zone. Afrika Spectrum 41:1:7-93.

Santos, M, Rebola, S. Evtuguin, D,V. 2025. Soil remediation: current approaches and emerging bio-based trends. Soil System 9: 35 https://doi.org/10.3390/soilsystems9020035

SfL (Solutions from the Land), Morton, L.W., Hatfield, J., Kawamura, A.G., Kimble, M., Lovejoy, T., O'Toole, P., Shapiro, H., Vats, V., Williams, B., Yoder, F. 2021. 21st Century Renaissance: Solutions from the Land. Solutions from the Land. Lutherville, MD USA

SfL (Solutions from the Land): LW Morton, F Yoder, E Shea, J Anderson, K Bridgeforth, B Doyle, R Gaesser, AG Kawamura, A Kent, M Kimble, B LaCross, A Moller, H Shapiro, V Ulibarri. 2023. Solutions from the Land Data Policy Guidance on Farm Data: Strengthening Collection, Analysis and

Use of Agriculture and Food System Data for Sustainable Development Attainment (SDGs). Solutions from the Land. Lutherville, MD USA. 2023.10.10-SfL-Data_Policy_Guide_2023-Final1.pdf

SfL (Solutions from the Land). 2026. Guiding Principles to Enable Agriculture to Meet Global Goals: Food and Nutrition Security, Biodiversity, Climate, Environment, Energy, Water and Improved Health and Livelihoods. Lutherville, MD USA

UNEP (United Nations environmental Program) 2022. Freshwater Priorities 2022-2025. To implement UNEP's medium-term strategy. Inter-Divisional Water Group. Freshwater Strategic Priorities 2022-2025 | UNEP - UN Environment Programme

UNECE (United Nations Economic Commission for Europe) 2026.The Water Convention and Protocol on Water and Health . Convention on the Protection and Use of Transboundary Watercourse and International Lakes . Intergovernmental platform to facilitate cooperation on sustainable use of transboundary water resources unece.org/environment-policy/water