

## Workshop on Addressing Environmental Impacts of War in Ukraine

### AGENDA

*This workshop aims to gain a better understanding of the scope of the environmental damage resulting from Russia’s full-scale invasion of Ukraine. Participants will examine and assess environmental damages in different areas and the impact on water, energy, public health, land, and biodiversity. The workshop will also discuss the challenges posed by demining and risks to nuclear and other energy facilities, highlighting ideas for coordinating mechanisms among governments and organizations providing assistance. A key goal will be to highlight existing efforts to monitor and address these impacts, as well as identify opportunities for science and technology to address them. A secondary goal is to connect relevant communities within government, research, the private sector, and non-profit organizations across the U.S. and Ukraine to coordinate these efforts and effectively address the needs in Ukraine.*

\*All times EDT (Washington, D.C.) / EEST (Kyiv)

#### DAY 1: May 1, 2024

9:00 - 9:15 am EDT	<b>Opening Remarks and Background</b>
4:00 - 4:15 pm EEST	Marcia McNutt, President, National Academy of Sciences
	Rita Colwell, <i>Co-Chair, Planning Committee</i>
	Oleksiy Kolehzhuk, <i>Co-Chair, Planning Committee</i>
9:15 - 9:45 am EDT	<b>Welcome Keynotes</b>
4:15 - 4:45 pm EEST	Yulia Ovchynnykova, Parliament of Ukraine
	Ambassador Oksana Markarova, Ambassador of Ukraine to the United States

#### SESSION 1: Demining Ukraine: Coordinating with Global Demining Efforts to Address Environmental Impacts

9:45 – 11:15 am EDT	Moderator: Gerald Galloway, Glenn L. Martin Institute Professor of Engineering, University of Maryland
4:45 – 6:15 pm EEST	

#### Panel Presentations

*The widespread problem of mines is a major barrier to gathering data and initiating environmental restoration in Ukraine. This session will address the scope of the problem in Ukraine, ongoing demining efforts and future plans, and how these efforts are addressing the environmental impacts. This session will also discuss what technologies are being deployed, how they can be utilized for environmental remediation and rebuilding, and what additional research is needed.*

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Suzanne Fiederlein, Director, Center for International Stabilization and Recovery, James Madison University

Jeff Caldwell, Tetra Tech Team Lead Ukraine, U.S. Department of State

Paul Heslop, Programme Manager for Mine Action, UNDP Ukraine

Chris Whatley, Executive Director, The HALO Trust USA

Ihor Bezkaravainyi, Deputy Minister of Economics of Ukraine

(30 mins.)

#### Discussion and Q&A

- How is the impact of mines currently being monitored and assessed?
- How are current efforts addressing environmental impacts?
- How can current efforts be scaled up?
- How are existing efforts being coordinated across the Ukrainian government and with international partners to address the environmental impacts?

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**11:15 – 11:30 am EDT**

**Break**

**6:15 – 6:30 pm EEST**

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### **SESSION 2: Environmental Impacts: Water, Energy, & Health**

**11:30 am – 1:00 pm EDT**

**6:30 – 8:00 pm EEST**

Moderator: Bernard Amadei, Distinguished Professor, Department of Civil Engineering, University of Colorado, Boulder

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#### Panel Presentations

*This session will look at how the invasion has impacted the water-energy-health nexus and more specifically the level of water contamination, energy and health impacts, and socioeconomic costs. Speakers should address what is known about extent of ecological damage since February 2022, and steps to address/mitigate the damage. Speakers may discuss methods for data collection of public health risks, including from water-borne diseases. What capabilities does Ukraine have and what are the needs to support remote monitoring?*

Joseph Hughes, Distinguished University Professor, College of Engineering, Drexel University

Nazar Kholod, Research Scientist and Country Coordinator for Ukraine, Net Zero World, Pacific Northwest National Laboratory

Peter Gleick, Co-Founder and Senior Fellow, Pacific Institute

Antar Jutla, Associate Professor, Department of Environmental Engineering Sciences, University of Florida

Boris Faybishenko, Earth Staff Scientist, Lawrence Berkeley National Lab

(30 mins.)

#### Discussion and Q&A

- What are the greatest dangers to the environment and human health?
- How are the environmental impacts currently being monitored and assessed?
- What technologies are being used to address/mitigate the damage?
- Where are the gaps in terms of technologies or scientific research needed?

1:00 – 1:15pm EDT  
8:00 – 8:15pm EEST

#### Closing Remarks

### DAY 2: May 2, 2024

9:00 – 9:15 am EDT  
4:00 – 4:15pm EEST

#### Welcome and Recap of Day 1

Rita Colwell, Co-Chair, Planning Committee

Oleksiy Kolezhuk, Co-Chair, Planning Committee

9:15 – 9:35am EDT  
4:15 – 4:35pm EEST

#### Keynote

Maksym Popov, Advisor to the Prosecutor General of Ukraine

### SESSION 3: Environmental Impacts: Land, Soil, and Agriculture

9:45 – 11:15 am EDT  
4:45 – 6:15 pm EEST

Moderator: Deanna Behring, Assistant Dean and Director, Ag Sciences Global; Affiliate Faculty, School of International Affairs, Pennsylvania State University

#### Panel Presentations

*This session will address the overall impact of the war on land available for agriculture, the degree of soil contamination, and the impact on agriculture (productivity, socioeconomic, health and ecosystem services). Speakers should address what is known about extent of damage since February 2022, and steps to address/mitigate the damage. Who is doing what? What is not being done? How can groups coordinate more effectively?*

Inbal Becker-Reshef, Director, NASA Harvest Program

Yuriy Kravchenko, Soil Science and Soil Conservation Department, National University of Life and Environmental Sciences of Ukraine

Andrii Martyn, Department of Land-Use Planning, National University of Life and Environmental Sciences of Ukraine

Andriy Zayika, Deputy Chief of Party, Agriculture Growing Rural Opportunities Activity, USAID

Denys Bashlyk, Deputy Minister of the Ministry of Agrarian Policy and Food of Ukraine

(30 mins.)

#### Discussion and Q&A

- How are the environmental impacts currently being monitored and assessed?
- How do we prioritize what needs to be addressed to gain efficiency and make progress?
- What technologies are being used to address/mitigate the damage?
- Where are the gaps in terms of technologies or scientific research needed?

11:15 – 11:30 am EDT

Break

6:15 – 6:30 pm EEST

#### SESSION 4: Environmental Impacts: Biodiversity

11:30 am – 1:00 pm EDT

Moderators:

6:30 – 8:00 pm EEST

Pavel Gol'din, Professor and Leading Researcher, Department of Evolutionary Morphology, Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine

Anna Kuzemko, Leading Researcher, M.G. Kholodny Institute of Botany, National Academy of Sciences of Ukraine

#### Panel Presentations

*This session will examine the impacts on Ukraine's biota and marine environment, including forests, flora, fauna, and wildlife. Speakers will discuss the level of contamination, health impacts, socioeconomic costs, overall impact on ecosystem services. Speakers should address what is known about extent of damage since February 2022, and steps to address/mitigate the damage. Who is doing what? What is not being done? Speakers may also discuss methods for monitoring and data collection.*

Yakiv Didukh, Head of the Department, Kholodny Institute of Botany, NAS of Ukraine

Yurii Kuzmin, Leading Researcher, Schmalhausen Institute of Zoology, NAS of Ukraine

Mykhailo Son, Senior Researcher, Institute of Marine Biology, NAS of Ukraine

Oleh Prylutskyi, Karazin Kharkiv National University

Anastasiia Drapaliuk, Ukrainian Nature Conservation Group

(30 mins.)

#### Discussion and Q&A

- How are the environmental impacts currently being monitored and assessed?
- What technologies are being used to address/mitigate the damage?
- Where are the gaps in terms of technologies or scientific research needed?

1:00 – 1:15pm EDT

Closing Remarks

8:00 – 8:15pm EEST

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### DAY 3: May 3, 2024

9:00 – 9:15 am EDT  
4:00 – 4:15pm EEST

#### Welcome and Recap of Day 2

Rita Colwell, Co-Chair, Planning Committee

Oleksiy Kolezhuk, Co-Chair, Planning Committee

9:15 – 9:45 am EDT  
4:15 – 4:35 pm EEST

#### Keynote

### SESSION 5: Environmental Impacts: Risks from Damage to Nuclear Infrastructure

9:45 – 11:15 am EDT  
4:45 – 6:15 pm EEST

Moderator: John Zimmerman, Adjunct Professor, Department of Physics and Astronomy, James Madison University

#### Panel Presentations

*Speakers may address the current risks posed to and by nuclear facilities in Ukraine resulting from Russia's invasion and the potential environmental impact should the situation deteriorate. Speakers may also address effects of damage to other energy sources, including oil storage depots.*

BJ Bjelajac, Executive Director, Science and Technology Center in Ukraine

Alexander Sich, Assistant Professor of Physics, Kennesaw State University

Olena Pareniuk, Senior Researcher, Institute for Safety Problems for Nuclear Power Plants, NASU, Kyiv

Denys Vyshnevski, Head of the Research Department, Chornobyl Radiation and Ecological Biosphere Reserve, Ivankiv, Ukraine

Mark Zheleznyak, Adjunct Senior Researcher, Department of Environmental Modelling, The Institute of Mathematical Machines and Systems Problems, NASU

(30 mins.)

#### Discussion and Q&A

- How are the environmental impacts currently being monitored and assessed?

11:15 – 11:30 am EDT  
6:15 – 6:30 pm EEST

#### Break

### SESSION 6: Quantifying the Cost of Environmental Remediation in Ukraine

11:30 am – 1:00 pm EDT  
6:30 – 8:00 pm EEST

Moderator: Eugene Stakhiv, Adjunct Lecturer, Department of Environment Studies, Johns Hopkins University; Visiting Scholar, UNESCO International Center for Integrated Water Resources Management

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### Panel Presentations

*This session will deal with the current methods for environmental damage assessment, problems and potential solutions. Monitoring and measurement of war damages on the environment is difficult enough in an active war zone. Translating these physical impacts into reconstruction costs and remediation costs of damages of ecosystem services requires additional data, more sophisticated remote monitoring systems and new economic valuation methods.*

Eoghan Darbyshire, The Conflict and Environment Observatory

Iryna Dronova, University of California Berkeley

Max Nefyodov, Kyiv School of Economics

Oksana Rakovych, Senior Environmental Specialist, The World Bank

(30 mins.)

### Discussion and Q&A

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**1:00 pm – 2:00 pm EDT**  
**8:00 – 9:00 pm EEST**

### **Closing Session**

Moderators: Rita Colwell and Oleksiy Kolehuk, Co-Chairs, Planning Committee

### **Keynote Remarks**

Ihor Bezkaravainyi, Deputy Minister of Economics of Ukraine

Franklin Carrero-Martinez, Senior Director, Science and Technology for Sustainability (STS) Program, NASEM

### **Summary of Key Points from the Workshop**

Planning Committee Members

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