

The overall objective of RRADEW is to enhance nuclear emergency preparedness, response, and recovery (EPR&R) systems by developing methodological and technological approaches to strengthen resilience in the context of war or armed conflict disasters.



RRADEW

Resilience to Radiological Events*
in Wartime

PASCAL CROÛAIL – CEPN
BUDAPEST – 06.12.2023

* "Capacity to resist, absorb, accommodate, adapt to, transform, and recover from the effects of a radiation emergency in a timely and efficient manner"



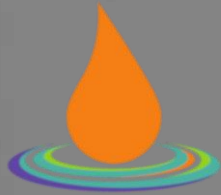
14 PARTNERS WHO ARE WE?

IRADEW

NMBU	Norway - University of Life Sciences
LU	Sweden – LUND UNIVERSITY
UKHSA	United Kingdom – HEALTH SECURITY AGENCY
KIT	Germany – KARLSRUHE INSTITUTE OF TECHNOLOGY
SCK-CEN, UA	Belgium – NUCLEAR RESEARCH CENTER + UNIVERSITY OF ANTWERP
USB	Czechia – UNIVERSITY OF SOUTH BOHEMIA
ISPNNP, NRCRM	Ukraine – INSTITUTE FOR SAFETY PROBLEMS OF NPPS + RESEARCH CENTER FOR RADIATION MEDICINE
CEPN, IRSN, ENSO	France - NUCLEAR PROTECTION EVALUATION CENTER + IRSN + FIRE OFFICERS ACADEMY
APA	Portugal – ENVIRONMENT AGENCY
CIEMAT	Spain - Research Centre for Energy, Environment & Technology

+ THE Project Stakeholder GROUP - ProsG

+ COLLABORATIONS TO BE ESTABLISHED WITH JAPAN & BALKANS (e.g. BOSNIA, CROATIA) (FOR CASE STUDIES/SURVEYS)



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STARTING POINT & OBJECTIVE WHERE DO WE STAND?

- *War in Europe: nuclear facilities and contaminated sites under threat or even attack!*
- *Existing studies and RP guidelines have not yet taken account of the context of armed conflicts, although radiation protection in such situations presents a number of notable challenges, including: the lack of a clear legal framework; a potentially limited access to affected areas; possible damages to critical infrastructures such as transport, electricity supply, water or communication; deterioration of hospitals able to deal with radiation emergencies; limited trained personnel and equipment; difficulties to assess radiation exposure; disruptions and barriers in communication; radioactive sources lost or destroyed; etc.*
- *Furthermore, the safety and well-being of affected populations may be compromised by the ongoing hostilities, making it difficult to identify and prioritise radiation protection countermeasures.*



There is a strong need to better understand the robustness of principles that govern radiation protection, and Emergency Preparedness, Response, and Recovery (EPR&R) strategies in a context of armed conflicts or a war, and to identify needed amendments in guidance to enhance resilience.



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WORK PACKAGES

WHAT DO WE WANT TO DO?

- **WP0** CEPN – **COORDINATION**, WEBSITE, DMP, CDP, PROJECT STAKEHOLDER GROUP
- **WP1** ISP/NPP – WAR **SCENARIOS** LEADING TO RADIOLOGICAL CONSEQUENCES
- **WP2** KIT – CHARACTERISATION (DIMENSIONS, ATTRIBUTES & INDICATORS), ANALYSIS AND ASSESMENT OF **RESILIENCE** (INCL. ANALYTICAL PLATFORM)
- **WP3** IRSN – **CASE STUDIES** ON RESILIENCE (OF FIRST LINE RESPONDERS, AUTHORITIES, NGOs, LOCAL COMMUNITIES) : UKRAINE, CZECHIA, BALKANS, JAPAN
- **WP4** NMBU – **STRATEGIES** FOR BUILDING RESILIENCE (SCENARIO EXERCISES, DESIGN OF TRAINING COURSES FOR RESPONDERS, RECOMMENDATIONS)
- **WP5** USB - **ETHICAL** CHALLENGES & OTHER CROSS-CUTTING ISSUES



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KEY MILESTONES WHERE ARE WE GOING AND WHEN?

FROM 1 FEBRUARY 2024 TO 31 JULY 2026 (30 MONTHS)

- KICK-OFF MEETING (FRANCE - M1)
- PROJECT STAKEHOLDER GROUP CONSTITUTED (M6-M12)
- WORKSHOP ON ETHICAL CHALLENGES (CZECHIA - M8)
- SCENARIO MATRIX (M15)
- 2 DISSEMINATION WORKSHOPS (~M13, ~M22)
- 4 CASE STUDIES BASED ON ON-THE FIELD SURVEYS (M18-25)
 - **UKRAINE**: STAKEHOLDER AND PEOPLE'S BEHAVIOURS – DOSIMETRY CAPABILITIES
 - **CZECHIA**: POSSIBLE EXTENSION OF RUSSIA-UKRAINE WAR IN NEIGHBOUR COUNTRIES
 - **BALKANS**: FIRST RESPONDERS AND NGOS DURING ARMED CONFLICTS (YUGOSLAVIA WARS)
 - **JAPAN**: SIMILARITIES AND LESSONS LEARNED FROM DISRUPTIVE CATASTROPHES (MINAMISOMA CITY AFTER THE FUKUSHIMA ACCIDENT)
- TRAINING MATERIAL FOR FIRST RESPONDERS AND DECISION-MAKERS (M17-30)
- SCENARIO EXERCISES (M20-29)
- RESILIENCE ANALYSIS PLATFORM (M20-29)
- FINAL WORKSHOP (UKRAINE - M28) AND RECOMMENDATIONS (M30)



DELIVERABLES EVEN WAR HAS AN END!

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- FINAL WORKSHOP (EXPECTED IN UKRAINE 40Y AFTER THE CHORNOBYL ACCIDENT)
- TOPICAL PHDs
- DECISION AIDING TOOLS (DSS) & TECHNIQUES AND TRAINING MATERIAL
- FINAL REPORT SET OF RECOMMENDATIONS COVERING:
 - EVACUATION-SHELTERING, ITB, RESTRICTIONS
 - SCENARIO BUILDING, MODELISATION, MONITORING, DOSIMETRY
 - RP COUNTERMEASURES AND RECOVERY STRATEGIES
 - STAKEHOLDER ENGAGEMENT AND ETHICS
- ➔ • BETTER UNDERSTAND AND IMPROVE THE **RESILIENCE** CAPACITIES IN CASE OF WAR OR ARMED CONFLICT