Preface

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When radioactive contamination enters the environment following a nuclear accident, it does not merely create a technical problem to be solved by experts. It enters the intimate sphere of human life — the air we breathe, the food we eat, the soil we cultivate, the landscapes we cherish. It challenges our relationship with ourselves, with others, and with the territory we inhabit. The presence of radioactivity transforms familiar environments into sources of anxiety, turning an invisible hazard into a defining feature of daily life, and rendering people speechless in the face of dangers they cannot see, measure, or comprehend.

The history of responses to major nuclear accidents — from Chornobyl to Fukushima — has taught us a profound lesson: technical expertise alone, no matter how rigorous, cannot adequately address the multidimensional disruption that such disasters create. When experts measure radiation levels, establish safety standards, and prescribe protective actions without genuine engagement with affected populations, they risk deepening the very sense of exclusion and powerlessness that the disaster has already inflicted. The instrumentalization of protection — reducing complex human realities to physical measurements and regulatory thresholds — can become, as Jacques Lochard says, a "second catastrophe" for those whose lives have been upended.

This book presents a fundamentally different approach: the co-expertise process. Rather than positioning experts as the sole possessors of knowledge who dictate solutions to passive populations, co-expertise recognizes affected people as essential partners in understanding and managing their own situation. It is built on the understanding that expertise takes many forms — not only the scientific and technical knowledge of professionals, but also the practical wisdom and lived experience of those who must navigate daily life in contaminated territories.

The co-expertise process represents more than a methodological innovation; it embodies a shift in the ethical foundations of radiological protection in general, and post-accident recovery in particular. These foundations were explicitly articulated by the International Commission on Radiological Protection (ICRP)

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in its 2018 Publication 138 on "Ethical foundations of the system of radiological protection". The approach adopted is similar to that proposed by Beauchamp and Childress in their seminal "Principles of Biomedical Ethics", but its normative foundations have been identified through an analysis of several decades of ICRP recommendations and their practical application. At their heart lie four core values: beneficence and non-maleficence (doing good and avoiding harm, combined to emphasize the necessity of balancing benefits and risks), prudence (recognizing and following the most reasonable course of action even when full knowledge of consequences is unavailable), justice (distributing benefits and risks fairly), and dignity (treating individuals with unconditional respect and recognizing their capacity to deliberate, decide, and act without constraint). These core values are complemented by three procedural values essential to practical implementation: accountability (being answerable to all those possibly affected by one's actions), transparency (being open about decisions and activities that may affect others and communicating them clearly, accurately, and honestly), and inclusiveness (involving all relevant stakeholders in decision-making processes).

What makes this ethical framework particularly significant is its claim to cross-cultural validity. Rather than imposing an ethical stance based purely in Western philosophy, the ICRP document draws on religious and philosophical traditions from around the world — from the Vedas and Bhagavad-Gita to the teachings of Buddha, from the Torah and Gospels to the Qur'an, from the wisdom of Confucius to the oral traditions of indigenous peoples. This approach demonstrates that the values underlying radiological protection are not culturally relative but reflect a genuinely common morality that is widely shared across human societies.

Together, these values transform abstract principles into practical commitments — to work *with* people rather than *for* them, to share information openly, to respect individual autonomy while building collective resilience, and to act prudently in the face of scientific uncertainty. They provide the ethical compass that guides the co-expertise process, ensuring that technical expertise is at the service of human dignity and the common good rather than becoming an instrument of control or exclusion.

The chapters of this book document the remarkable evolution of this approach across multiple contexts and continents. From the pioneering ETHOS project in Belarus following Chornobyl, through various community experiences in Japan after Fukushima, to the Sami reindeer herders in Norway and upland sheep farmers in the United Kingdom, the book traces how co-expertise has been adapted and refined to meet diverse cultural contexts and local needs. Part I presents these experiences in their rich particularity — showing not abstract theory but lived practice. Part II offers practical guidance for those who would implement similar processes, addressing the essential roles of dialogue, radiation measurements, and local projects. Part III examines the deeper foundations, exploring the science of risk governance and the ethical dimensions that underpin the entire endeavour.

What makes co-expertise particularly valuable is its recognition of incommensurability — the reality that many of the values at stake in post-accident

situations cannot be reduced to a common measure. How do we compare the psychological burden of evacuation with the long-term cancer risk of remaining? How do we weigh individual autonomy against collective well-being? How do we balance radiological protection with the preservation of cultural traditions and community identity? The temptation to translate all these considerations into the calculation of a monetary value for health impact or mortality has proved ethically questionable and challenging to implement in practice. Co-expertise offers an alternative: structured dialogue that makes value judgments explicit, involves diverse stakeholders, and maintains transparency about trade-offs without pretending they can be objectively calculated.

The process is not without challenges, of course. Experts must guard against trivializing radiological risk in their desire to reassure anxious populations. They must resist the temptation to progressively withdraw support, leaving people to manage alone. They must be vigilant not to manipulate outcomes under the guise of participation. And they must ensure that co-expertise opportunities are accessible to all affected communities, not merely those with existing social capital and leadership. Addressing these challenges requires what philosopher Paul Ricœur called "practical wisdom" — the ability to navigate between abstract principles and concrete situations, always oriented toward the fundamental aim of promoting well-being and the quality of living together.

For those who face the daunting task of managing the long-term consequences of nuclear accidents — whether as policymakers, practitioners, researchers, or community leaders — this book offers invaluable guidance. It demonstrates that recovery is fundamentally a social process, not merely a technical one. It shows that rebuilding trust requires sustained commitment, genuine dialogue, and respect for local knowledge and autonomy. Most importantly, it proves that affected people, when given appropriate support and partnership, can become active agents in their own recovery rather than passive recipients of externally imposed solutions.

The co-expertise process is, in the words of scholar Sheila Jasanoff, a "technology of humility" — an institutional framework that openly acknowledges uncertainty and addresses the normative dimensions of risk management head-on. In an age when public participation is often invoked but rarely implemented with genuine commitment, the experiences documented in this volume offer proof that meaningful engagement is both possible and essential.

This book arrives at a moment when the question of how societies prepare for and respond to nuclear accidents remains urgently relevant. As the epilogue suggests, "the path is built by walking" — co-expertise is not a fixed protocol but an evolving practice, continuously refined through experience and reflection. For all who share the commitment to putting ethical values at the service of human dignity and collective well-being in the face of nuclear disaster, these pages offer both inspiration and practical wisdom.

All the chapters of the present textbook represent a truly amazing and groundbreaking effort by all the authors that has greatly improved post-nuclear accident management for the whole of society, and affected local communities in particular.