The Ethics of Nuclear Energy

Despite the nuclear accident at the Fukushima Daiichi plant in Japan, a growing number of countries are interested in expanding or introducing nuclear energy. However, nuclear energy production and nuclear waste disposal give rise to pressing ethical questions that society needs to face. This book takes up this challenge with essays by an international team of scholars focusing on the key issues of risk, justice, and democracy. The essays consider a range of ethical issues, including radiological protection, the influence of gender in the acceptability of nuclear risk, and environmental, international, and intergenerational justice in the context of nuclear energy. They also address the question of when, and under which conditions, nuclear energy should play a role in the world’s future supply of electricity, looking at both developing and industrialized countries. The book will interest readers in ethics and political philosophy, social and political sciences, nuclear engineering, and policy studies.

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The Ethics of Nuclear Energy

*Risk, Justice, and Democracy in the post-Fukushima Era*

Edited by

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Abbreviations

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<tr>
<td>ABWR</td>
<td>Advanced boiling water reactor</td>
</tr>
<tr>
<td>ALARA</td>
<td>As low as reasonably achievable</td>
</tr>
<tr>
<td>ALARP</td>
<td>As low as reasonably practicable</td>
</tr>
<tr>
<td>ALEPP</td>
<td>At Least Equal Protection Principle</td>
</tr>
<tr>
<td>AP</td>
<td>Accountability Principle</td>
</tr>
<tr>
<td>BFE</td>
<td>Bundesamt für Energie (Switzerland)</td>
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<tr>
<td>BNP</td>
<td>Background of Nature Principle</td>
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<tr>
<td>BWR</td>
<td>Boiling water reactor</td>
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<tr>
<td>CDF</td>
<td>Core damage frequency</td>
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<td>CEMP</td>
<td>Comparative Exposure Minimization Principle</td>
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<tr>
<td>CIP</td>
<td>Current Impacts Principle</td>
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<tr>
<td>CNP</td>
<td>Concerned Neighbors of Pilgrim</td>
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<tr>
<td>CoRWM</td>
<td>Committee on Radioactive Waste Management</td>
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<tr>
<td>COWAM-2</td>
<td>Community Waste Management-2 (EU)</td>
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<tr>
<td>CRA</td>
<td>Capability-based Risk Analysis</td>
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<td>CRP</td>
<td>Comparable Risk Principle</td>
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<tr>
<td>DECC</td>
<td>Department of Energy and Climate Change (UK)</td>
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<tr>
<td>DF</td>
<td>Distributive fairness</td>
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<td>DLP</td>
<td>Dose Limit Principle</td>
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<tr>
<td>DOE</td>
<td>Department of Energy (USA)</td>
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<tr>
<td>DTI</td>
<td>Department of Trade and Industry (UK)</td>
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<tr>
<td>EHP</td>
<td>Excessive Harm Principle</td>
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<tr>
<td>EIS</td>
<td>Environmental impact statement</td>
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<td>EISD</td>
<td>Energy Indicators for Sustainable Development</td>
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<td>EPA</td>
<td>Environmental Protection Agency (USA)</td>
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<td>EWA</td>
<td>Institute for Energy Economics (Germany)</td>
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<tr>
<td>GRP</td>
<td>Generator’s Responsibility Principle</td>
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<td>HDI</td>
<td>Human Development Index</td>
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<td>HGW</td>
<td>High-level waste</td>
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<td>IAEA</td>
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<td>IARC</td>
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List of abbreviations

ICRP  International Commission on Radiological Protection
IP  Inclusiveness Principle
IPCC  Intergovernmental Panel on Climate Change
ISS  International Security Studies
JP  Justification Principle
JRWA  Jones River Watershed Association
KASAM  Swedish National Council for Nuclear Waste
LOCA  Loss of coolant accident
LWR  Light water reactor
MADPH  Massachusetts Department of Public Health
MBP  Maximizing Benefit Principle
MEMA  Massachusetts Emergency Management Agency
MPLP  Minimal Practical Level Principle
NAIIC  Nuclear Accident Independent Investigation Commission (Japan)
NAT  Normal Accident Theory
NBP  Net Benefit Principle
NEA  Nuclear Energy Agency (OECD)
NHP  No Harm Principle
NP  Necessity Principle
NPDES  National Pollutant Discharge Elimination System
NPT  Non-Proliferation Treaty
NRA  Nuclear Regulation Authority (Japan)
NRC  Nuclear Regulatory Commission (USA)
NSAP  No Significant Action Principle
NWMO  Nuclear Waste Management Organization (Canada)
OBP  Optimal Balancing Principle
OHP  Offsetting Harm Principle
OP  Optimization Principle
OV  Outcome valence
P&T  Partitioning and transmutation
PF  Procedural fairness
PNBP  Presumptive Net Benefit Principle
PP  Publicity Principle
PPFGP  Protection of Present and Future Generations Principle
PRA  Probabilistic risk assessment
PWR  Pressurized water reactor
QALY  Quality Adjusted Life Years
RCA  Reliability-based capability approach
RY  Reactor year
SALT  Strategic Arms Limitation Talks
SEMP  Subordinate Exposure Minimization Principle
SF  Spent fuel
List of abbreviations

SFOE	Swiss Federal Office of Energy
SMHS	Southeastern Massachusetts Health Study
SRP	Special Representation Principle
TEPCO	Tokyo Electric Power Company
TMI	Three Mile Island
UBP	Undue Burdens Principle
UCS	Union of Concerned Scientists
VP	Vulnerability Principle
WCED	World Commission on Environment and Development
WHO	World Health Organization
WNA	World Nuclear Association
WTA	Willingness-to-accept
WTP	Willingness to pay
WWF	Worldwide Fund for Nature