Economic assessment of nuclear damage

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The aim of the assessment

Provide guidelines to policy-makers
• Ex ante: safety standard, technological diversity
• Ex post: fair compensation

Main references


Sources of “uncertainties”

What type of accident? Where? When? What frontiers for the assessment?

Effects

They fail to account for:
• Technological progress
• Safety upgrades
• Learning effects

Some studies rely on past events

Others perform Level 3 PSA

They yield lower costs

How accurate and reliable are level 3 PSA?

Damage

Example: Long-term Health Damage, Human-Capital Method (Ottinger)

Costs

Aggregation:
Costs are assessed by different methodologies. Can we add them up?

Existing assessments (G€)

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Cost</th>
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<tbody>
<tr>
<td>IRSN-major (2013)</td>
<td>100 G€</td>
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<tr>
<td>IRSN-severe (2013)</td>
<td>1000 G€</td>
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<tr>
<td>Rabl-High (2012)</td>
<td>10000 G€</td>
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<tr>
<td>Rabl-Central (2012)</td>
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<tr>
<td>Rabl-Low (2012)</td>
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<td>GREF (2011)</td>
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<td>Eckhoudt (2000)</td>
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<td>ExternE (1995)</td>
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<tr>
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<td>Ottinger (1990)</td>
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<td>Hohmeyer (1988)</td>
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<td>CRAC-2 (1982)</td>
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<td>WASH 1400 (1975)</td>
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Mitigation policies

Cost-Benefit analysis of decontamination measures. Taken from Munro, 2013, Environmental Science and Policy, 33

Future research

• Can we combine past events and level-3 PSAs to better assess the damage of a nuclear accident?
• Cost assessments could provide guidelines for mitigation policies
  – Tradeoffs
  – Cost-Benefit Analysis
  – Optimal allocation of mitigation resources