

Potential toolkit for Vulnerability/Adaptation Assessments

Tools	Present vulnerability	Problem definition	Development futures	Evaluation of adaptation	Strategic planning	Multi-stakeholder analysis	Stakeholder participation
1. Agent-based simulation modelling			✓		?	✓	?
2. Bayesian analysis				✓			
3. Brainstorming	✓	✓	✓	✓	✓	✓	✓
4. Checklists/ multiple attributes	✓			✓		✓	✓
5. Cost-effectiveness/ Cost-benefit/ Expected value			✓	✓			
6. Cross-impact analysis			✓	✓			
7. Decision conferencing			✓	✓			
8. Decision/probability trees				✓			
9. Delphi technique	✓		✓	✓		?	?
10. Environmental assessment/ Strategic environmental assessment			✓	✓	✓		?
11. Expert judgement	✓	✓	✓	✓	✓	✓	
12. Focus groups	✓	?	✓	?		?	✓
13. Indicators/ mapping	✓		?			?	?
14. Influence diagrams/ Mapping tools	✓		✓		✓		✓
15. Monte Carlo analysis				✓			
16. Multi-criterion analysis				✓			
17. Ranking/dominance analysis/pairwise comparisons	✓		✓	✓			✓
18. Risk analysis			?	✓			
19. Scenario analysis	?	?	✓	?	✓	✓	✓
20. Sensitivity analysis/Robustness analysis			✓	✓			
21. Stakeholder consultation	✓	✓	✓	✓		✓	✓
22. Stakeholder Thematic Networks	✓	?	✓		?	✓	
23. Uncertainty radial charts				✓			
24. Vulnerability profiles	✓	?	?			✓	✓

Definitions

1. **Present vulnerability** including development policy (Framework Phase I)
2. **Problem definition** – scoping of issues and options to be included in analysis and design of projects
3. **Development futures** – pathways of future development (Framework Phase II)
4. **Evaluation of adaptation** – to aid decision making between specific measures and the selection of options
5. **Strategic planning** – consideration of alternative futures, including cross-sectoral and regional issues.
6. **Multi-stakeholder analysis** – analysis of individual stakeholders within an institutional context
7. **Stakeholder participation** – whether stakeholders can participate in the tool

Tools

1. **Agent-based simulation modeling** – formalism of agents and their interactions at multiple levels
2. **Bayesian analysis** – use to re-assess probabilistic data in light of new data. Statistical analysis.
3. **Brainstorming** – free-flowing lists/diagrams of all ideas and options
4. **Checklists** – matrix
5. **Cost-effectiveness/ Cost-benefit/ Expected value** – econometric techniques
6. **Cross-impact analysis** – test robustness of risk-assessment and dependencies between events
7. **Decision conferencing** – quantitative analysis of options incorporating the uncertainties in interactive modes
8. **Decision/probability trees** – charts of relationships between decision modes; helpful for generating expected value
9. **Delphi technique** – range of views of experts through iterative written correspondence
10. **Environmental assessment/Strategic environmental assessments** – consideration of all environmental impacts taken into account before deciding on development
11. **Expert judgement** – the assessment of experts in the field on specific propositions
12. **Focus groups** – groups of stakeholders that discuss their opinions on certain topics
13. **Indicators/ mapping** – compilation of indicators into aggregate indices, often mapped
14. **Influence diagrams/ Mapping tools** – graphic identification of options when there are a number of decisions
15. **Monte Carlo analysis** – computer based analysis that explicitly assesses uncertainty
16. **Multi-criterion analysis** – scoring and weighting of options using indicators and more than one decision criteria
17. **Ranking/ dominance analysis/ pairwise comparisons** – preference of options
18. **Risk analysis** – approaches to decision uncertainty including hedging and flexing, regret, minimax and maximin
19. **Scenario analysis** – fuller picture of implications of uncertainty gained through simultaneous variation of key uncertainties
20. **Sensitivity analysis/Robustness analysis** – identify which variable contribute most towards uncertainty
21. **Stakeholder consultation** – consultation with individuals and/or groups affected by future processes
22. **Stakeholder Thematic Networks (STN)** – mapping of the key actors and their interactions
23. **Uncertainty radial charts** – assessment of the potential uncertainty of options
24. **Vulnerability profiles** – mapping of the different indicators of vulnerability for different groups