

Exploring the NEXUS: different definitions, challenges to be faced, applications of complex toolkits to case studies

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1. Different definitions

1.1 The nexus refers to the existence of an **entanglement between the flows** of water, energy and food within the metabolic pattern of Social-ecological systems.

1.2 The nexus refers to the **representations** of the entanglement across metabolic flows across different dimensions and levels of analysis. These representations must be able to address the non-equivalent aspects of performance (multicriteria analysis) relevant for different social actors.

1.3 The nexus refers to a problem of **governance**: how to guarantee the “quality” (including fairness) of the process used to evaluate different trade-offs under large doses of uncertainty – i.e. how to avoid the silo-governance syndrome.

2. Challenges to be faced

2.1 The complexity of the nexus entails dealing with processes taking place simultaneously across different scales. This translates into the need of using non-equivalent descriptive domains, that in turn translates into the use of not-reducible models.

2.2 The complexity of the nexus entails that it is difficult to guarantee the quality of the process of decision making when coming to the phase of governance.

2.3 The complexity of the nexus entails the need of developing complex analytical tools that helps deliberation and negotiation among the social actors (conflict prevention/management).

3. Examples of possible analytical models

3.1 Diagnostic anticipation toolkit – case study of Canary Islands

3.2 Diagnostic/anticipation tool-kit - case study of Mauritius

3.2 Deliberation support – case study of Kuwililand (imaginary African country)

4. Conclusions