How to utilize resilience approach when constructing scenarios?

Resilience of the food system – case Forssa region (Kanta-Häme)

Titta Tapiola

Contents

• Resilience: general and specified

• Indicators – preliminary thoughts

• Scenario construction process
Global drivers – increasing complexity

Specified resilience

- System studied has well defined spatial and temporal boundaries.

- Defined “resilience of what to what” (e.g. regional ability to recover from floods or famine).

- Do not take into account unexpected or undefined events or phenomena.

Resilience

2008 the probability of Lehman Brothers’ bankruptcy was 0.0000000000000000000007. Still it happened...

We are not able to foresee all the possible futures - that is why resilience is vital.

INDICATORS, PRELIMINARY

IIASA/Advanced Systems Analysis Program; Leena Ilmola
General resilience parameters

- Tightness of feedbacks; responsiveness - connectedness
- Modularity; subsystems or components able to replace each other
- Diversity in a system
- The ability of a system to develop the capacity for learning and adaptation (e.g. trust, cultural or social capital)
- Capability of self-organizing behavior – resulting innovation and experimentation
- The amount of change a system can withstand and maintain its main functions and structure (identity) – redundancy

(Walker and Salt, 2006, 121, 145-148; Cabell and Oelofse, 2012; Biggs, Schlüter and Schoon, 2015)

Defining boundaries and methods

Regional indicators
- Kanta-Häme province or Forssa region
- Statistical data
- Questionnaire
- Interviews?

Groups of indicators
- Economy
- Ecology
- Social
- Governance
- Food, energy, water (nexus)

S. Meerow et al. / Landscape and Urban Planning, 147 (2016), 45
Indicator development process

• Selection of optional indicators
  – Statistical data and questionnaire
  – Process still ongoing (next slide)

• Together with stakeholders selecting best ones for the region – which areas are most important to be followed up.
  – Too many indicators makes process difficult

• Final set of indicators is also “tested” with questionnaire
  – questions about present value of the indicator

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<th>Sub-dimension</th>
<th>Indicator general</th>
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TWOFOLD SCENARIO PROCESS

Two approaches

- Resilience indicators now
- Resilience indicators 2050
- Cluster analysis and scenario construction -> “cold scenarios”

Questionnaire

- Workshop 1; preliminary scenarios
- Workshop 2; final scenarios with resilience indicators

Stakeholder workshops
Scenario process

**Workshop 1:**
- Identification of **focal issues** or decisions.
  - Resource efficiency, sustainability, well being and development of the region
- **Key factors (micro environment) and driving forces (PESTE, macro environment)** influencing focal issues in the environment are identified.
- Ranking those by **importance and uncertainty**.

**Between workshops**
- Constructing preliminary scenarios

**Workshop 2:**
- Discussion of the preliminary scenarios
- How resilience indicators develop by 2050 in different scenarios -> input from the stakeholders
- Fine tuning the scenario logics.
- Fleshing out the final scenarios.

**Drivers sorted by uncertainty / impact**

```
Degree of Uncertainty
Low       Medium       High

Impact or importance
High       Medium       Low
```

Choosing the scenario axes x and y
Scenarios 2050

Resilience indicators included

Stakeholders input – how the indicators will develop in different scenarios

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<th>Drivers prioritized High and medium</th>
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Scenarios with resilience indicators
2050

"Fostering resilience involves planning for not only recovery from shocks but also seeking potential transformative opportunities which emerge from change."

Davoudi S.
Possible data sources

- ToimialaOnline [http://www2.toimialaonline.fi](http://www2.toimialaonline.fi)