

**Systematic and transparent  
exploration of scenario spaces:  
Socio-economic scenarios for local  
climate change adaptation**

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# Starting points

- 1. The local, regional or sectoral level is the starting point when constructing socio-economic scenarios. (c.f. e.g. downscaling of global change scenarios)**
- 2. A specific set of scenarios is constructed for each specific planning situation, and if necessary the national level is described from the point of view of the actual focal issue.**

# How do we construct scenarios?

## Requirements on scenarios:

- 1) Each scenario should be relevant
- 2) Each scenario should be plausible
- 3) Each scenario should be challenging

**N.B.:** These are requirements on *individual* scenarios.

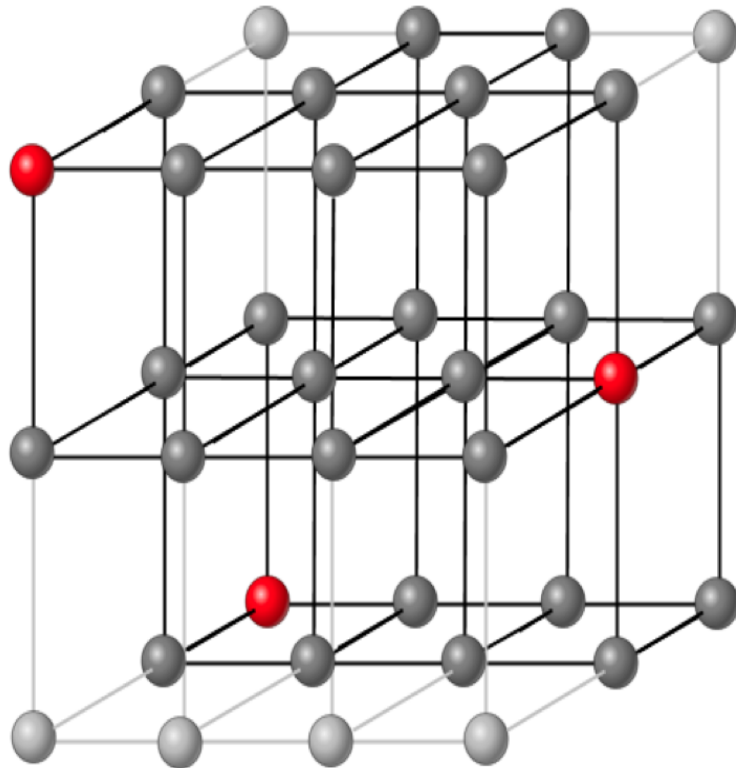
**In planning situations with deep structural uncertainty it is of primary interest to explore the outer limits of the relevant socio-economic uncertainties.**

**Add a fourth requirement: The *set* should span the range of relevant uncertainties.**

**The idea:**

**Develop a methodological framework which systematically and transparently combines socio-economic driving forces and maximally span the relevant uncertainties.**

# A simple 3D example of a 'maximally' spanning set



**In higher dimension this is very tricky. We have therefore developed a supporting software tool.**

# Exemplifying via the well-known SRES

## Driving forces

| Population growth | Economic development | Energy use    | Land-use change | Resources availability | Tech-nological change | Future energy system |
|-------------------|----------------------|---------------|-----------------|------------------------|-----------------------|----------------------|
| Low (0)           | Medium (0)           | Low (0)       | Low (0)         | Low (0)                | Slow (0)              | Coal, oil, gas       |
| Medium (1)        | High (1)             | Medium (1)    | Low-medium (1)  | Medium (1)             | Medium (1)            | Balanced             |
| High (2)          | Very high (2)        | High (2)      | Medium (2)      | High (2)               | Rapid (2)             | Non-fossils          |
|                   |                      | Very high (3) | Medium/high (3) |                        |                       | Regional             |
|                   |                      |               | High (4)        |                        |                       | Efficiency           |
|                   |                      |               |                 |                        |                       | "Dynamics as usual"  |

States



... and the distances are:

|      | A1B    | A1FI   | A1T    | A2     | B1    | B2 |
|------|--------|--------|--------|--------|-------|----|
| A1B  |        |        |        |        |       |    |
| A1FI | 3      |        |        |        |       |    |
| A1T  | 3 (11) | 4      |        |        |       |    |
| A2   | 2 (11) | 4 (9)  |        |        |       |    |
| B1   | 12     | 12     | 11     |        |       |    |
| B2   | 12 (9) | 12 (9) | 11 (9) |        |       |    |
|      | 11     | 11     | 10     | 8      |       |    |
|      | 11 (9) | 11 (9) | 10 (9) | 8 (11) |       |    |
|      | 9      | 9      | 8      | 6      | 7     |    |
|      | 9 (9)  | 9 (9)  | 8 (13) | 6 (9)  | 7 (9) |    |

The average distance between any two SRES scenarios amounts to only 80 percent of what is maximally possible.

# Conclusions

**The methodology is not suitable for all planning situations.**

**Scenario-building should not become a mechanised practice, but combining our tool with more qualitative approaches would reduce the problem of too little variation in scenario sets.**

**The tool will stimulate scenario developers to consider other combinations of states, i.e. other socio-economic scenarios, than those felt most natural to them.**

***Thank you!***