Developing Scenarios within a global context
Rik Leemans

Drivers of Global change

There are different dimensions of land use, in terms of organisational units (international, state, municipal, village) and ecological units (continental, biome, landscape, field). Modeling of global change however is done at the highest level but the interactions between society and land happen at the lowest level. Therefore drivers of a human environmental system have to be put both into spatial and temporal scale context.

Example:

The wheat farmer in the USA depends on global international markets, he uses national technology and he uses local education for his children and he depends on global, national and regional climate conditions, regional water availability and local soil conditions. These drivers occur partly permanently, partly discontinously.

What are scenarios?

Throughout centuries scenarios have been used (Malthus about population in 1798). Depending on the knowledge of causality (knowing the interactions) and the degree of uncertainty (data availability), we distinguish between:

facts - low uncertainty, high knowledge
predictions - medium uncertainty, high knowledge
projections - medium uncertainty, low knowledge
scenarios - high uncertainty, high knowledge
speculation - high uncertainty, low knowledge

Three examples of global scenario initiatives

1. Global Scenarios Group (GSG) (Qualitative Scenario Development)

Taking the characteristics of historical eras of mankind into account. (e.g. the organization, economy, communications during stone age, early civilization, modern area), the GSG visages different futures, global scenarios and their driving forces. Scenario assumptions are: conventional world (only few changes to todays drivers), barbarization (breakdown of society and economical values), great transitions (generally conditions enhanced trough lifestyle changes and new sustainability paradigms).

2. The IPCC scenarios simulated with IMAGE 2 (based on the SRES scenarios)

IMAGE 2 applies the four SRES-scenarios (A1: economic golden age; A2: cultural diversity; B1: sustainable development; B2: regional solution) and calculates region- and grid-based values for population, primary energy use, economy, equity issues, human development index, forest area, land cover and climate change parameters.

3. UNEP´s Global Environmental Outlook (GEO)

GEO develops four future scenarios based on market, security, policy, sustainability issues. These scenarios were developed together with regional consultatives. No single policy instrument is

appropriate for all situations.

Summary of scenario development

Further scenario development will use multi-disciplinary, integrated approaches with comprehensive narratives involving stakeholders.

Frieder Graef and Anne Biewald