Scenarios on Global Change
Tim Carter

This summary aims to provide pointers to the main points raised by Tim and full details can be found in his presentation.

At the beginning of the session everyone filled in a questionnaire "to consider the current state of the society, economy and environment in Europe in the 2050s".

Presentation on Global Change Scenarios

Definitions
- Tim presented some definitions of global change (long-term changes in the environment affecting many or all areas of the globe and long term changes in the driving factors of the environmental change. Some examples were presented which included eutrophication, hole in the ozone layer, climate change and land degradation.
- Drivers of global change include natural processes (climatic fluctuations, erosion, etc. and anthropogenic (population, land use, etc.)
- Scenarios are alternative images of how the future can unfold and not forecasts or prediction. They are useful in complex systems with high uncertainties. They need not always be a component of vulnerability assessments.

Scenarios can be used by a range of people, such as scientists, policy makers and the general public. Possible uses include assessing long term sustainability of polices and raising awareness of the future and environmental problems.

Classifications
- Different approaches were discussed such as top-down versus bottom-up and exploratory/descriptive versus normative/prescriptive. Different types include qualitative (narrative) descriptions, incremental scenarios, analogue scenarios, model-based scenarios, expert judgement and composites of the above.

Requirements
- A set of requirements were discussed such as choosing a relevant set of changes, suitable time horizons and spatial and temporal resolution. Other factors to consider are internal consistency, uncertainty including non-linear events and changes in variability. A particular focus was paid to choosing time horizons (time lags, signal to noise considerations) and base case scenarios (used as reference/characterisation of current state). Applications of base case scenarios include observed present state, future baseline and point of departure.
- Vulnerability or impact assessments can be very sensitive to the base case.

Examples of global scenarios were presented. These included three archetypal scenarios (Conventional, barbarization and great transitions) and the four IPCC-SRES scenarios (narrative storylines to 2100, located on axes of global - regional and economic - environmental). The SRES scenarios used a cascade of dependencies approach. Scenarios of emission stabilization could be compared with the four SRES types.

Regional and local scenarios
-These are needed to provide vital information not available from global scenarios and to match the spatial scale of vulnerability. Examples given were UKCIP (climate impact

predictions for the UK), ozone deposition at Ähtari (Finland), regionalised climatic scenarios and regionalised models of sea level rise.

Uncertainty
-The importance of uncertainty was discussed. For interpretation purposes, using two central estimates instead of one illustrates this uncertainty. Each level of processing adds extra uncertainty. This forms an "uncertainty cascade". There is scientific discussion as to whether uncertainties should be displayed as probabilities. Scenarios are now moving towards predictions.

"The only certainty is uncertainty" (Pliny the Elder).

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