Scenarios/Narratives

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3rd Annual IAMC Meeting, 28-29 October 2010
The New Scenario Development Process

- **Preparatory Phase**
  - RCPs Selection, Extension to 2300, Downscaling
  - Development of New IAM Scenarios
  - CMC Develops RCP-based Ensemble Runs & Pattern Scaling Analyses
  - Story Lines
  - IAV Research Based on AR4 Climate and SRES IAM scenarios

- **Parallel Phase**
  - Continued Development and Application of IAM Scenarios
  - Integration of CMC Ensembles with IAM NEW Scenarios
  - IAV research based on new CM and IAM scenarios

- **Integration Phase**
  - 12 months
  - 24 months

- **Publication Lag**
  - 18 months
  - 12 month
What was done since IAMC-2?

- Strawman thoughts for SWG plan
- Involvement in NAS and IPCC meetings
- (Limited) contribution to two papers
Strawman thoughts

1. Goal, purpose and ‘client’/product combinations
   - Scenarios/Narratives + supporting tools
   - ST/MT - parallel phase: RCP analysis IAV and IAM
   - LT – integration phase: CM and IAM and IAV

2. Issues to consider:
   - SE scenarios relation with RCPs
   - Confine to RCPs or explore alternative levels/pathways
   - Work backward or forward
   - Resolution – geographic, time, sector; and downscaling
   - Database template for storylines and scenarios
   - Explore alternative scenarios consistent with RCPs (multi-model, multi-baseline, resource/technology and policy uncertainties)

3. Process, next steps
NAS ‘Snowmageddon’ workshop, DC, Feb 2010
- Presentations on SE-RCP relations and downscaling
- Break-out discussion on ideas/proposals for scenario framework

Two papers: van Vuuren et al. & Kriegler et al.

SSG for IPCC expert meeting, Berlin, 1-3 Nov 2010 (scope, agenda, participants)

Small framing document for NAS report + 2 papers
Highlights from (Detlefs) NAS presentation
Further use of RCPs in climate research (RCPs are not the final products)

- RCP are/could be used in different ways:
  - Basis for climate calculations (ongoing)
  - Basis for impact assessment
  - Basis for mitigation analysis

What is needed?

Climate impacts depend on:
- Exposure (climate change)
- The subject at risk (f (population, income etc))
- Adaptive capacity (f (technology, income, governance etc))

Available from RCPs:
- Yes
- Possibly
- Possibly
Further use of RCPs in climate research (RCPs are not the final products)

- RCP are/could be used in different ways:
  - Basis for climate calculations (ongoing)
  - Basis for impact assessment
  - Basis for mitigation analysis

What is needed?
Mitigation depends on:
- Baseline + target
- Assumptions on technology etc.
- Assumptions on climate governance (global cooperation etc.)

Available from RCPs
- Yes
- Possibly
- Possibly
Conclusions on current SE - RCPs

- There are scenarios reaching each RF level, independent of population assumption
- There are scenarios reaching each RF level, independent of income assumption
- Each scenario underlying the RCPs provides a consistent combination of population, GDP, energy, RF; however as a set they provide no logic ordering (not selected for that) nor do they always cover the full range of possible outcomes
What else is new?

Similar future GHG emissions can result from very different socio-economic developments, and similar developments of driving forces can result in different future emissions (SRES).

So: can we create useful storylines for IAV/mitigation work, in accordance with RCPs?

The main observations from current SE assumptions behind each RCP level, and for the current set as a whole, points at need for alternative scenario/narrative assumptions.
Suggested use of RCPs in IAV research

- If the intention of the impact analysis is to map out all possibilities → analysis shows that it is safe to assume decoupling (within bounds?) of climate change and socio-economic assumptions

- Impacts = f (Climate Change, Vulnerability)

\[
\begin{align*}
\text{Climate Change} & = \begin{cases} \text{High} : 2.6 \\ \text{Low} : 6.0 \end{cases} \\
\text{Vulnerability} & = \begin{cases} \text{High} : 8.5 \\ \text{Low} : 4.5 \end{cases}
\end{align*}
\]

Adaptive capacity = f(education, technology, income, governance, etc.)

Start filling in the matrix
Suggested use of RCPs in IAV research

Impacts = f (Climate Change, Vulnerability)

\[
\text{IMPACT} = \text{Climate} + \text{Vulnerability}
\]

- **High**
  - High population; Low GDP; low tech;
  - Intermediate assumptions
  - Low population; High GDP; high tech; good governance

- **Mid**
  - 2.6
  - 4.5
  - 6

- **Low**
  - 8.5

**IMPACT** = Climate + Vulnerability!
‘The Matrix’ idea picked up and elaborated in two papers (sneak preview)
Van Vuuren et al.: Developing new scenarios as a common thread for future climate research.
Kriegler et al.: Socioeconomic Scenario Development for Climate Change Analysis

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Increasing mitigation effort

Increasing climate hazard

Baseline warming
Progress and prospects

- Way too little done as IAMC activity!
- Process ongoing by other initiatives: meetings, papers (many IAMC members involved)
- Progress on:
  - RCPs replication
  - structuring ideas for frameworks, key characteristics
  - involving IAV expertise (slow process)
  - building bridges between research communities
- Not so much yet on:
  - Narratives/driving forces; ranges and discrete scenario settings
  - common views on common set(s)
  - different requirements and how to meet them
  - SE assumptions across spatial scales