

WG1: Determination of critical areas for climate variability and change

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WG1 CONCLUSIONS

- 1. Increasing rates of climate variability and change are observed during the last decades in some regions around the world:**
 - a) Global warming has been registered since the second half of the 20th century causing an increase in frequency of various extreme weather events and natural hazards (such as droughts, heat waves, intensive precipitation, floods, storms, sea level rise, forest fires, water and wind soil erosion, etc) in many regions.**
 - b) This tendency is expected to continue in the future.**

WG1 CONCLUSIONS

2. Climate variability and change affect all sectors with a different level of their impacts. However, agriculture is considered among the most vulnerable sectors in many regions due to negative impacts of unfavorable variations and changes in weather and climate.

WG1 CONCLUSIONS

The IPCC WG2 II (Impacts, adaptation and vulnerability) in 4AR has identified future impacts and particular vulnerabilities for 6 specific sectors:

- **Freshwater resources;**
- **Ecosystems;**
- **Food;**
- **Coastal systems and low-lying areas;**
- **Industry, settlement and society;**
- **Human health.**

WG1 CONCLUSIONS

- **According to IPCC the most vulnerable regions are considered to be:**
- **The Arctic, because of the impacts of projected warming;**
- **Sub-Saharan Africa, because of low adaptive capacity;**
- **Small islands, due to high exposure to sea-level rise and increased storm surge; and**
- **Asian mega-deltas, due to their large populations and high exposure.**

WG1 CONCLUSIONS

3. Most vulnerable agricultural regions are those:

- a) adversely affected by current and projected climate variability and change**
- b) damaged by occurrence of new pests, diseases and weeds**
- c) faced by insufficient financial resources and methodological experience**

Examples from Europe: located in Mediterranean region, the Balkan Peninsula, NW Russia and likely Fennoscandia (thermal regime)

WG1 RECOMMENDATIONS

- 1. Strengthening CVC monitoring; developing/improvement, decision support systems and seasonal climate prediction applying innovative techniques and approaches, at local and regional level.**

WG1 RECOMMENDATIONS

2. National/international/regional cooperation in the field of CVC:

- exchange of know how, info, etc**
- Development of common methodologies (e.g. determination of vulnerable regions – criteria; new agroclimatic zoning)**

WG1 RECOMMENDATIONS

3. Develop/improve/update and utilize adaptation and mitigation options for agriculture under CVC

For example: improving plant breeding and protection, assuring resistance to heat stress, dry spells, UV radiation negative effects, etc.

WG1 RECOMMENDATIONS

4. Working on CVC related scientific uncertainties

Figure 2: Cascade of Uncertainty (Adapted from Mearns et al., 2001.)

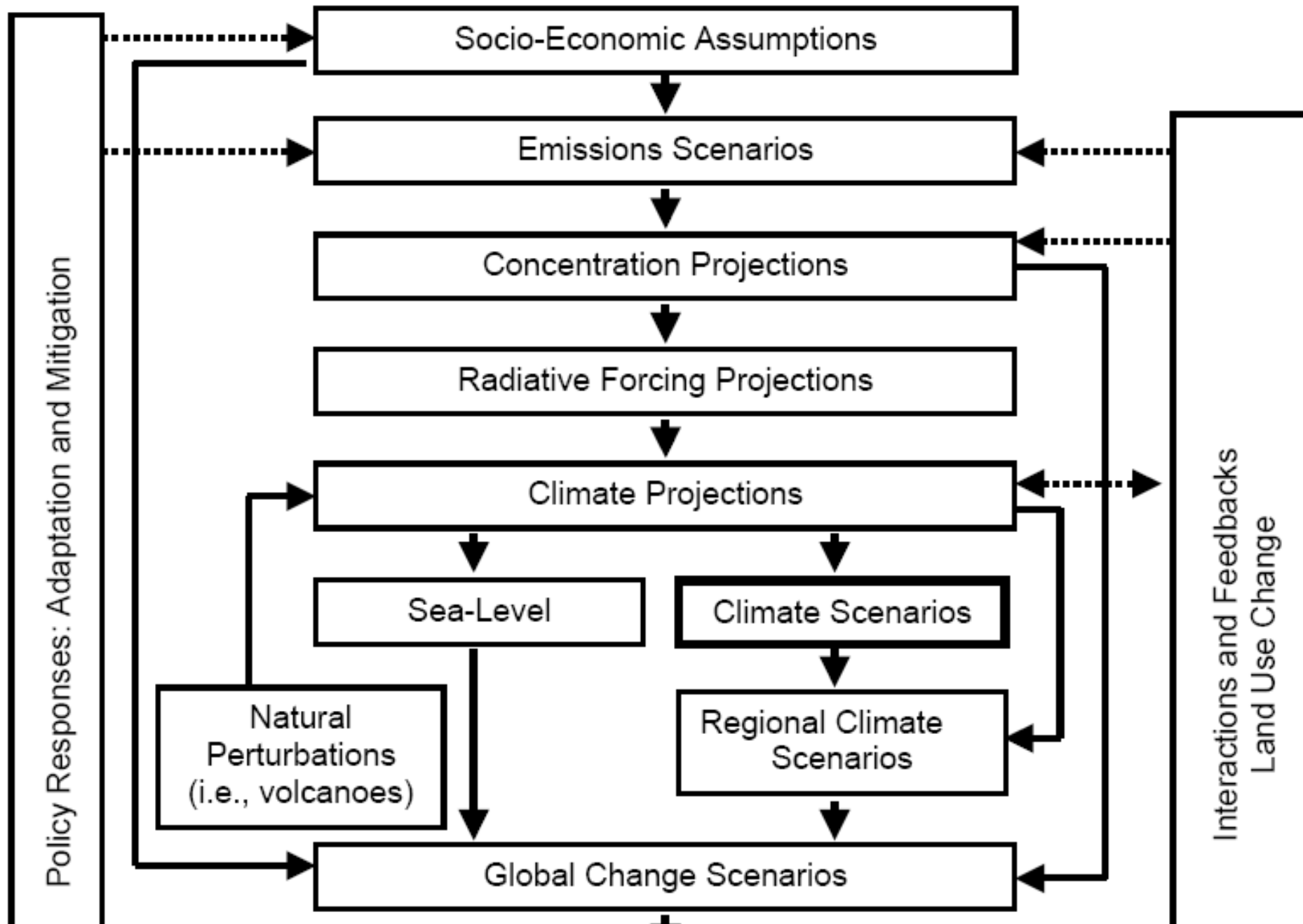
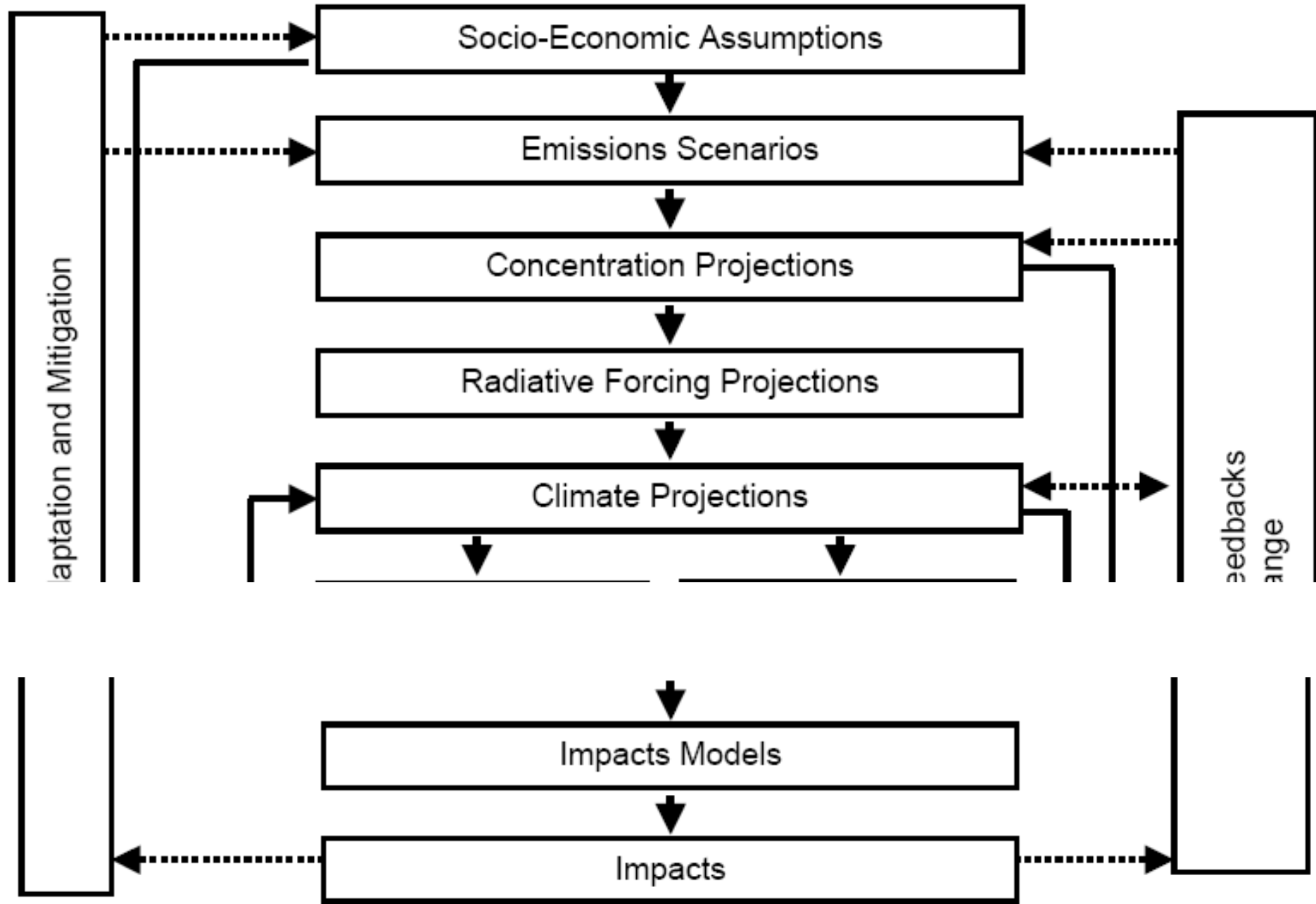


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Vulnerability: limitations

- **Unknown consequences of crop damages due to pests, diseases, insects**
- **Variability of the direct CO₂ impact on crops**
- **Other yield impacting factors, e.g. ozone, drought tolerance, UV, hail, wind storms, etc.**
- **Change in weather extremes or climate variability can have an overwhelming effect on crop yields**
- **Potential long-term changes in soils often are not considered, e.g. increased soil erosion**
- **Interactions to other environmental damages are also not considered:**
 - **drought and heat vs. UV radiation and ozone**
 - **early vegetation period vs. frost damage**

WG1 RECOMMENDATIONS

5. **Bringing science to society**: to transmit the CVC and related impacts research results in appropriate way to the society including policy makers, stake holders, end users and broad community by:
 - b) More close/direct contacts
 - c) Increase the knowledge of advisers and farmers (end users), etc.
 - d) Incorporation of the media