

Sustainable land subsidence scenario development for the Netherlands

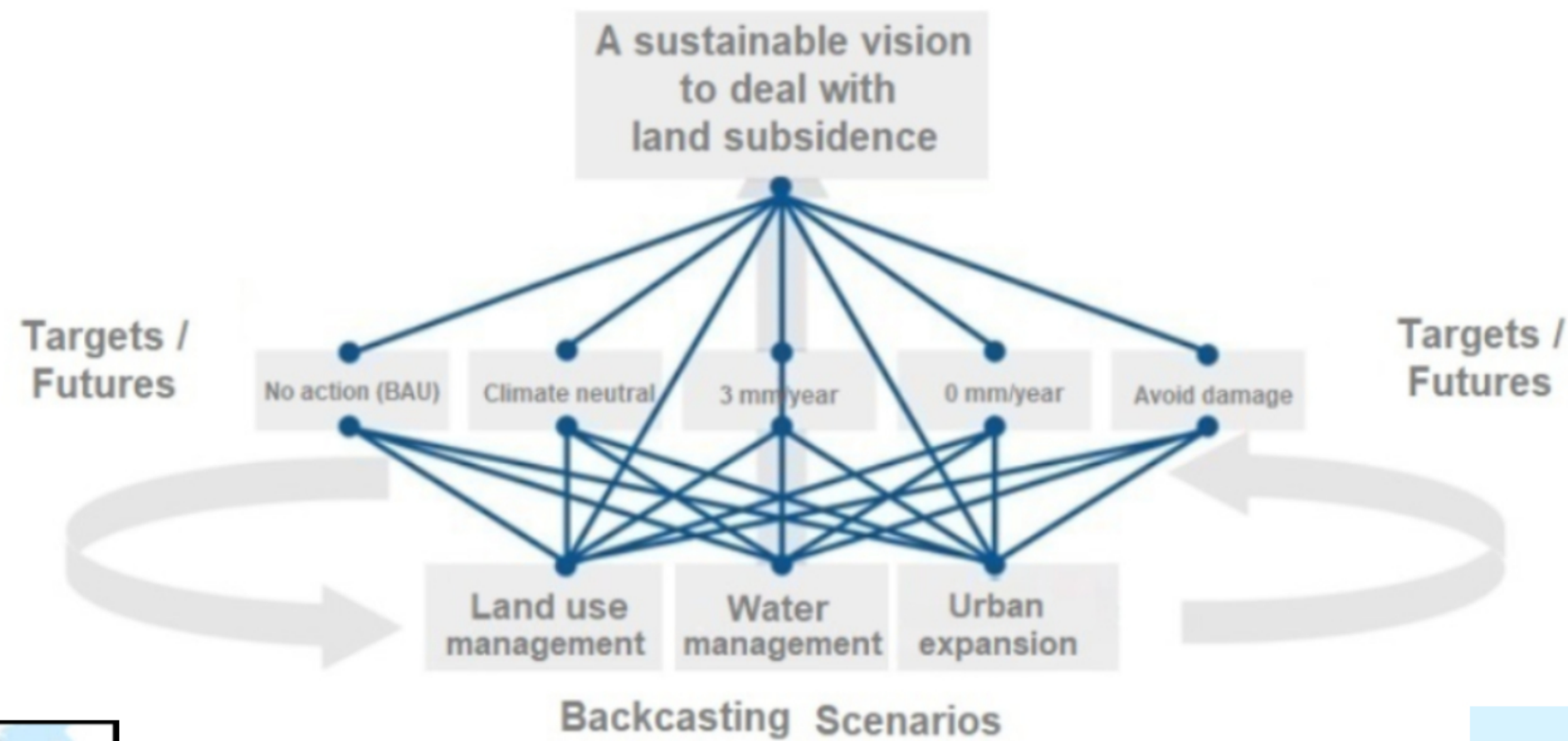
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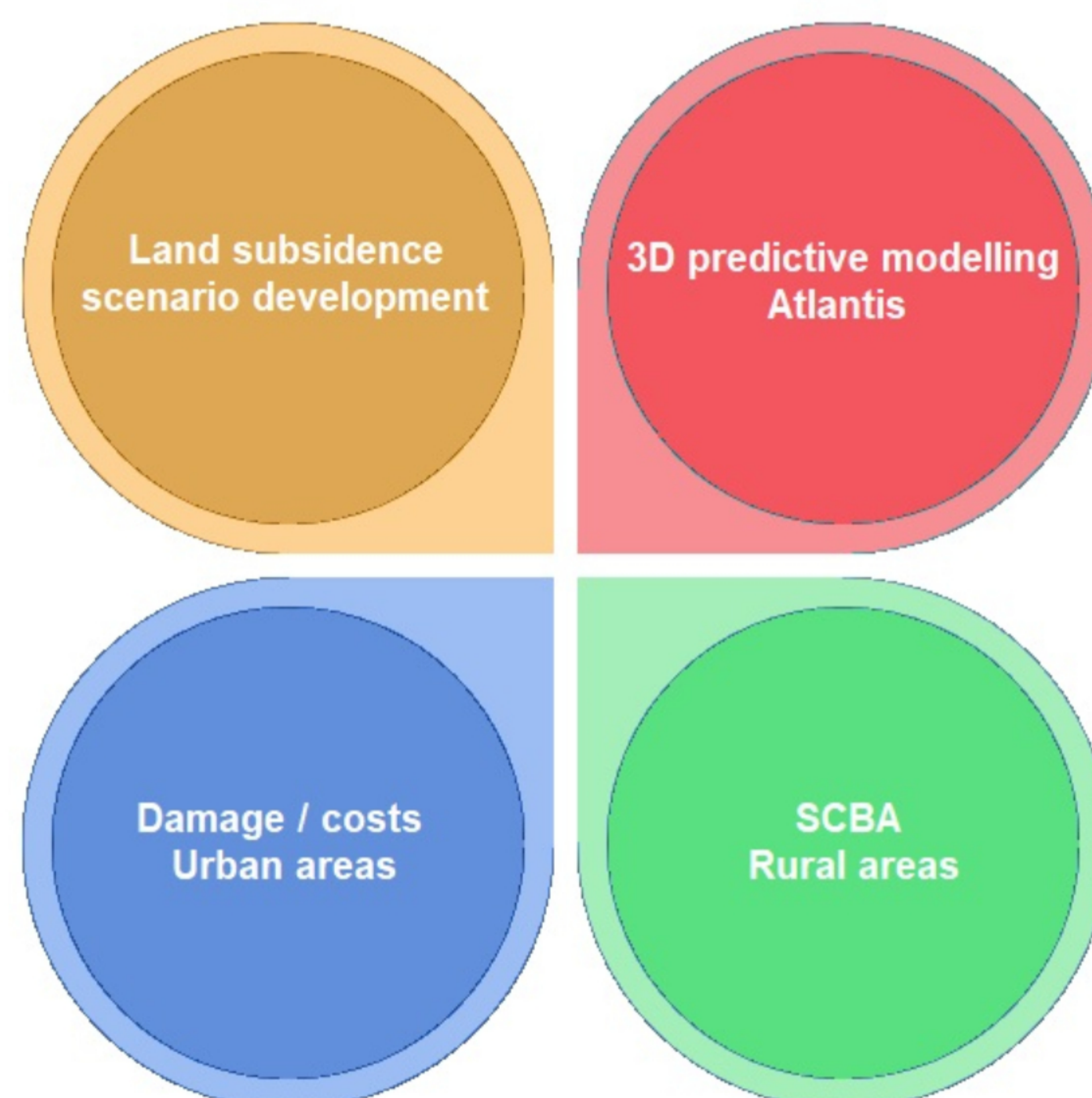
Introduction:

Land subsidence is a major challenge in many parts of the Netherlands, and in order to develop practically plausible scenarios and pathways of possible mitigation and adaptation measures under inclusive governance, it is necessary to take sustainability into consideration. For land subsidence in the Netherlands, it is important to explore the trade-offs between reducing subsidence as a main goal and reducing both of GHG emissions and damage to infrastructure and their costs, while maintaining net revenues for farmers in rural areas.

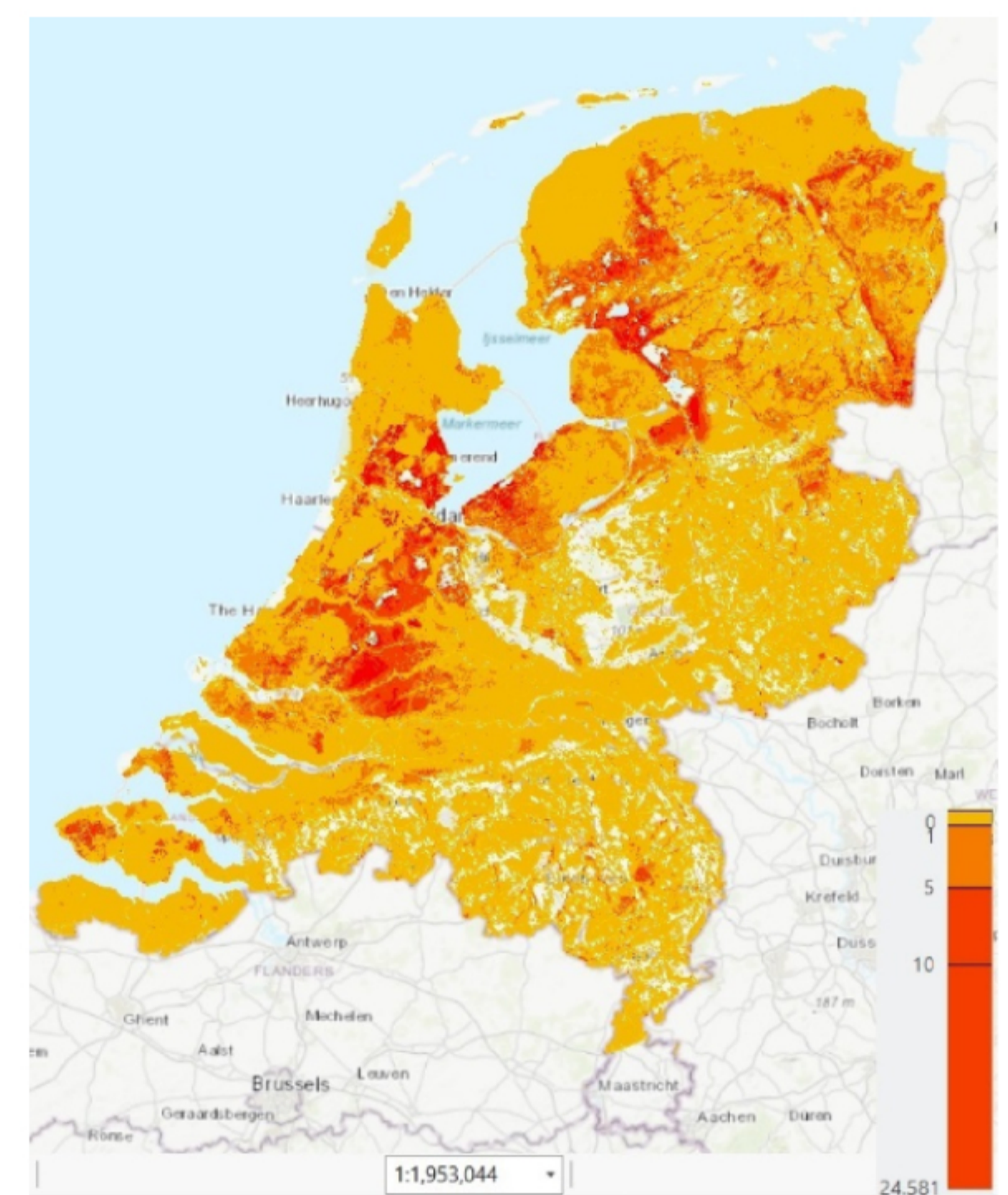
Methodology:



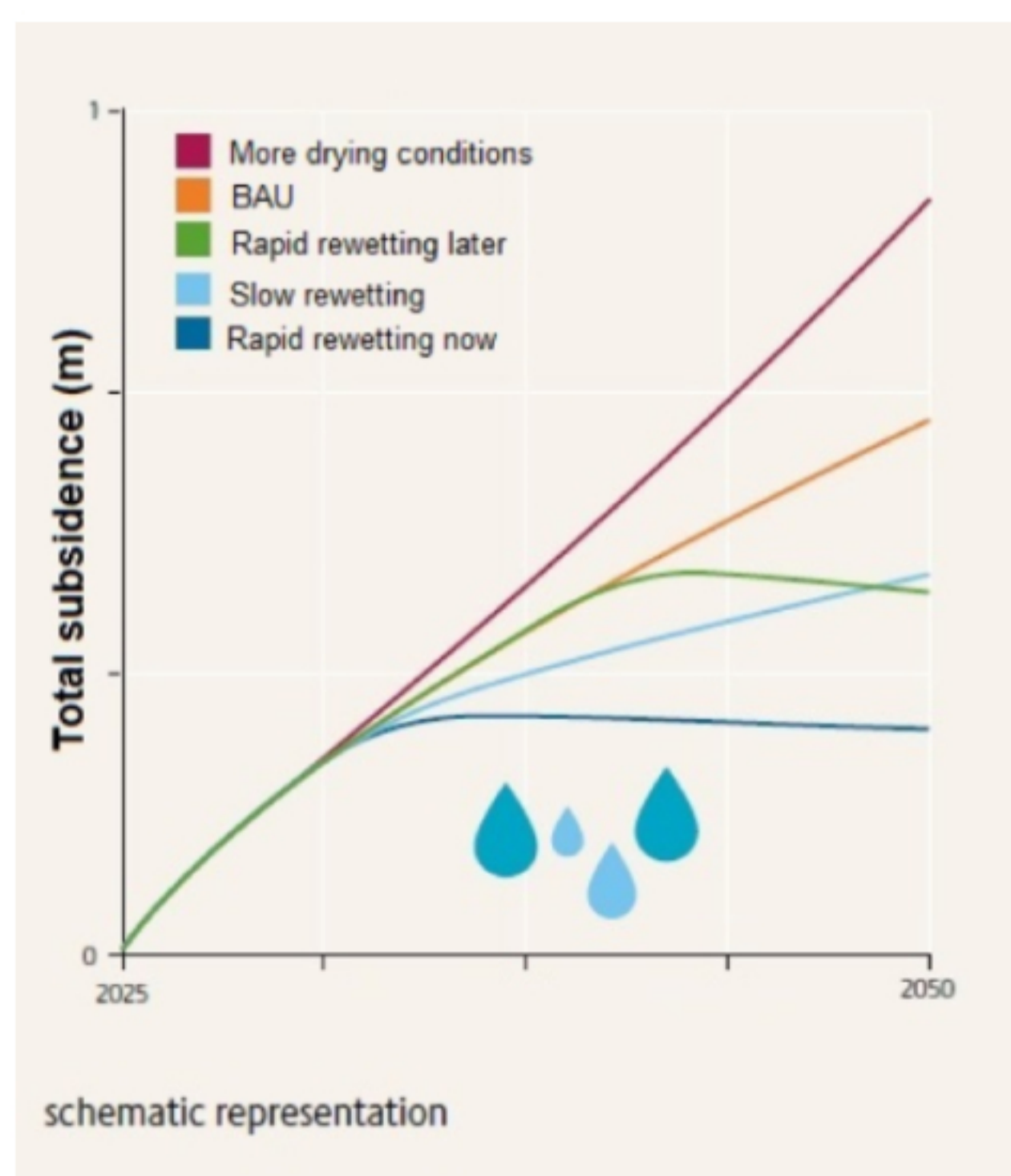
An analysis of remote sensing land subsidence data between 2017-2022 (Hammad et al. 2024)



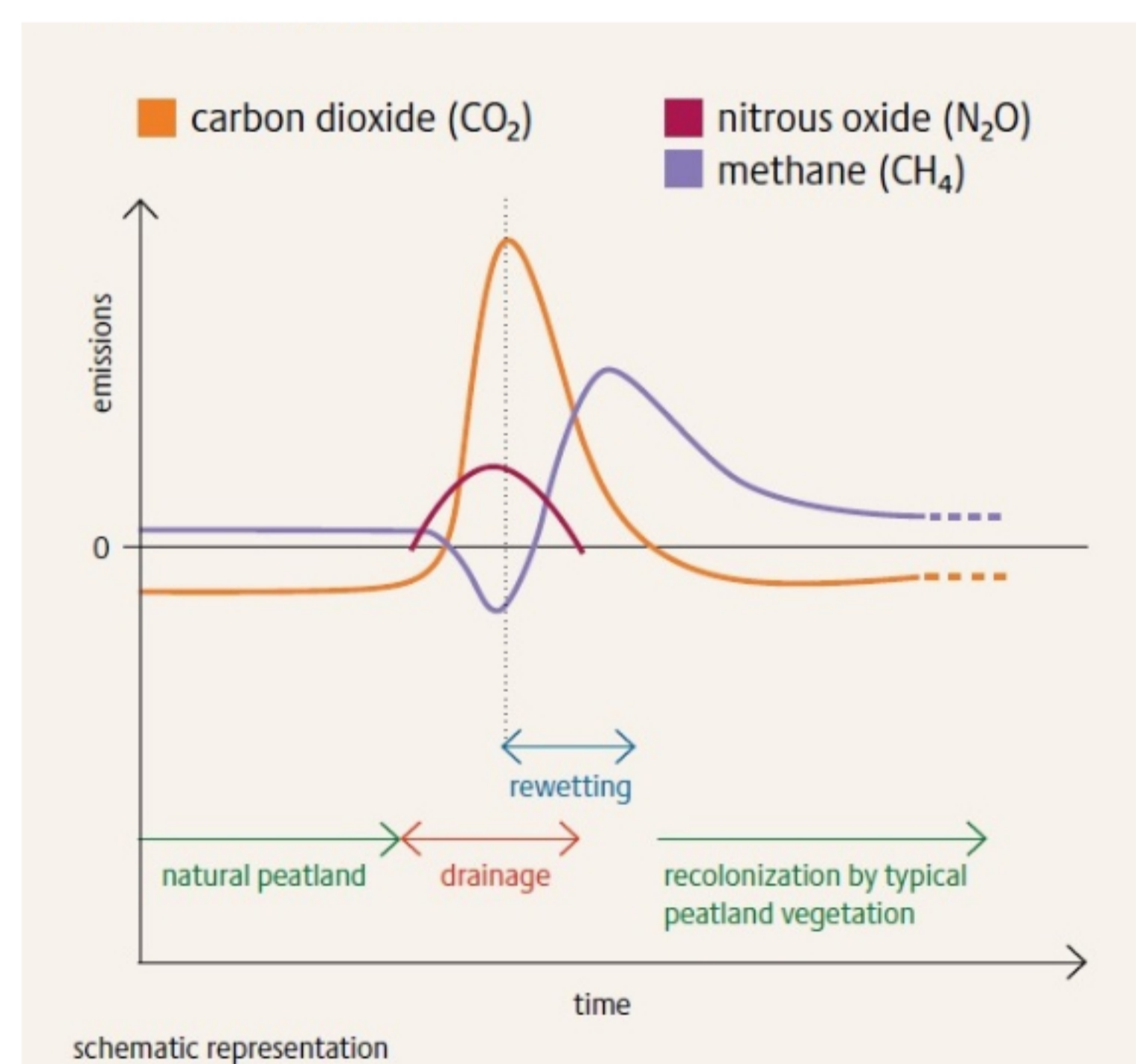
Different modelling parts within the LOSS project



Forecasting land subsidence rates until 2100 for the strong climate change scenario



Land subsidence amount within different water management scenario projections



Greenhouse gas emissions from drained and rewetted peatlands (Peatland Atlas, 2023)

	construction	fuel	biogas	livestock bedding	fodder (pasture)	fodder (silage)	medicine	food	peat substitute
bogbean									
cranberry									
reed canary grass									
bulrush									
reed									
black alder									
sedge									
sundew									
peat moss									
gypsywort									
willow									

Examples of paludiculture (Peatland Atlas, 2023)

Conclusion:

The backcasting planning scenarios to deal with land subsidence in the Netherlands involves a comprehensive approach that combines water management scenarios, such as rapid and slow raising of the groundwater level, with land use management pathways, such as promoting paludiculture through rewetting peatlands. These scenarios and pathways will enable the policy-makers to make informed decisions based on their specific priorities and requirements.

References:

- 1- Peatland Atlas 2023, Heinrich-Böll-Stiftung & others.
- 2- Hammad, M., Stouthamer, E., and Erkens, G.: An analysis of remote sensing land subsidence data in the Netherlands, EGU General Assembly 2024, Vienna, Austria, 14-19 Apr 2024, EGU24-20524, <https://doi.org/10.5194/egusphere-egu24-20524>.