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# SUSTAINABLE LAND MANAGEMENT

## GLUES\*

*Scientific Coordination and Synthesis of the funding  
activity 'sustainable land management'*

*\*Global Assessment of Land Use Dynamics, Greenhouse Gas Emissions and Ecosystem Services*



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4th Annual Meeting of the SGA Network, Stellenbosch, SA

[www.sustainable-landmanagement.net](http://www.sustainable-landmanagement.net)

# SUSTAINABLE LAND MANAGEMENT

- Research programme developed by the **BMBF**
- Aims to produce **new knowledge for effective decision making** in the area of land and natural resource management
- Integrates science and practice in order to develop **new strategies** and **system solutions** based on examples from selected regional case studies

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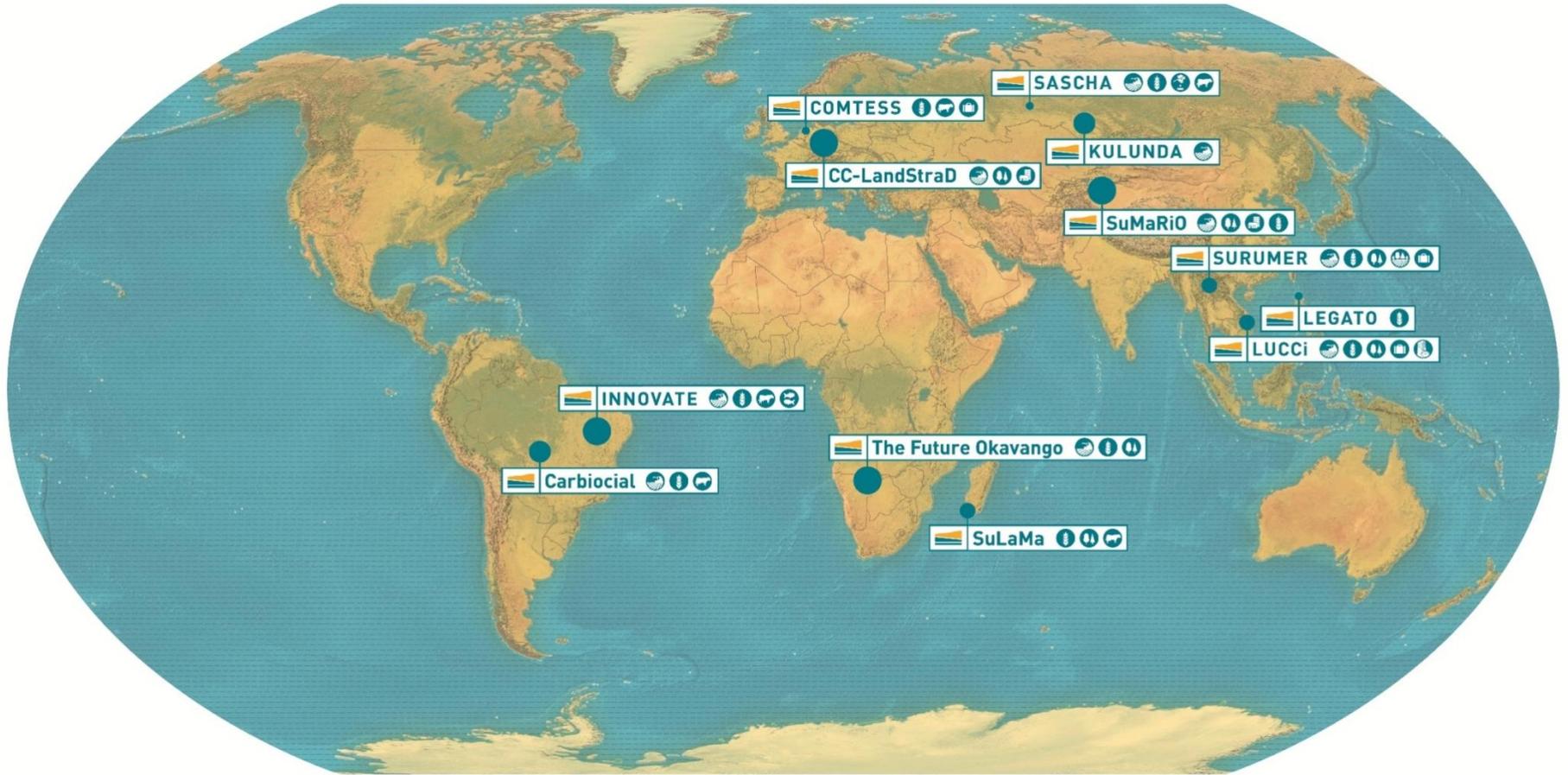


Source: UFZ

- Duration: **2010 to 2016**
- Budget approx. **115 Mio. €**



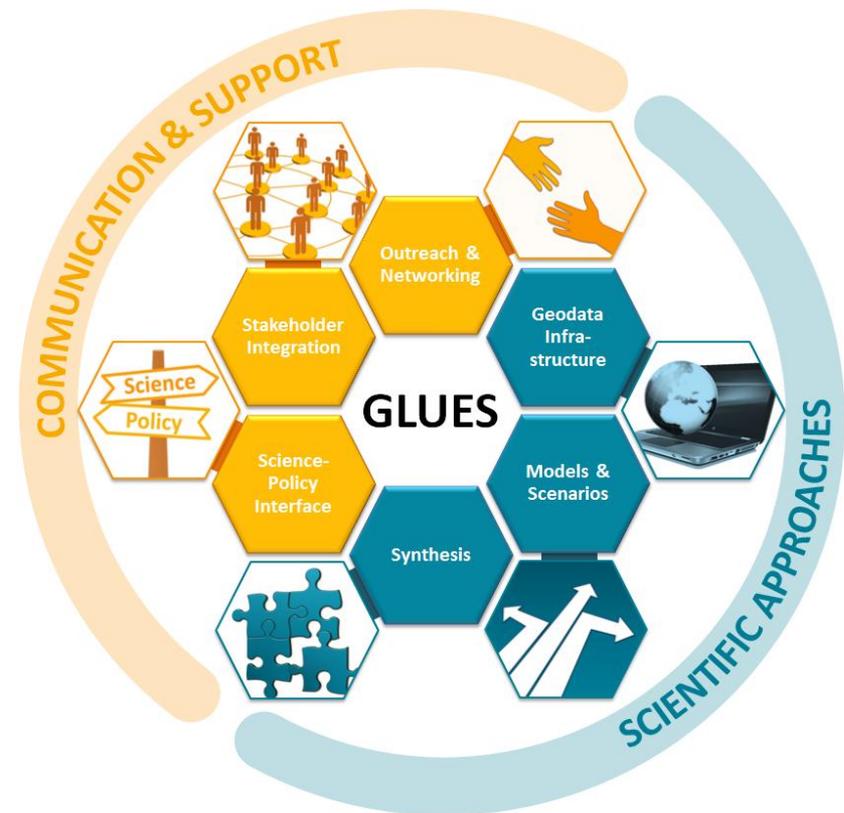
Source: UFZ



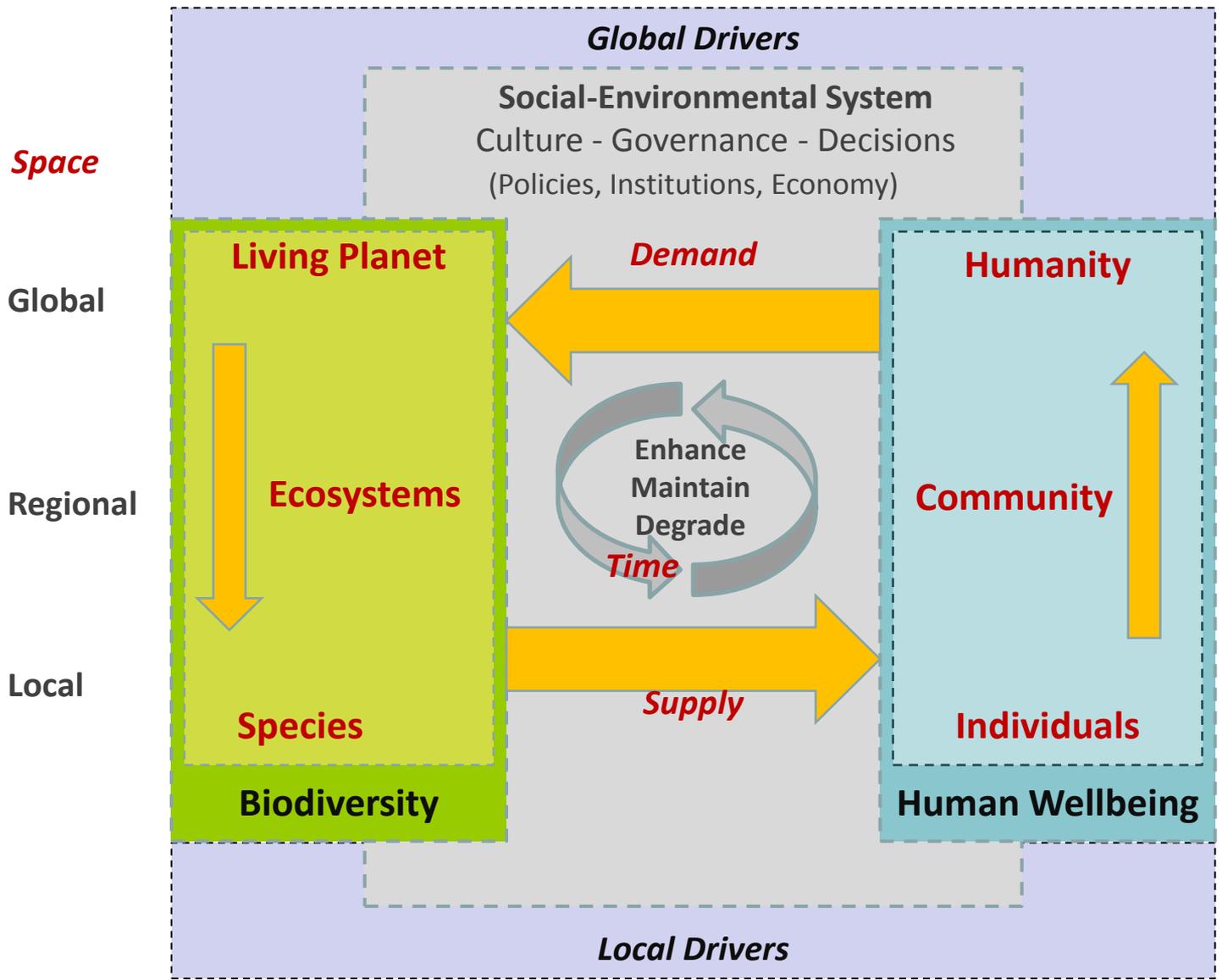
# SCIENTIFIC COORDINATION AND SYNTHESIS GLUES\*

■ Supports the **regional projects** within the **Sustainable Land Management** programme by:

- I. Supporting outreach and communication activities
- II. Providing a base for scientific synthesis and product development

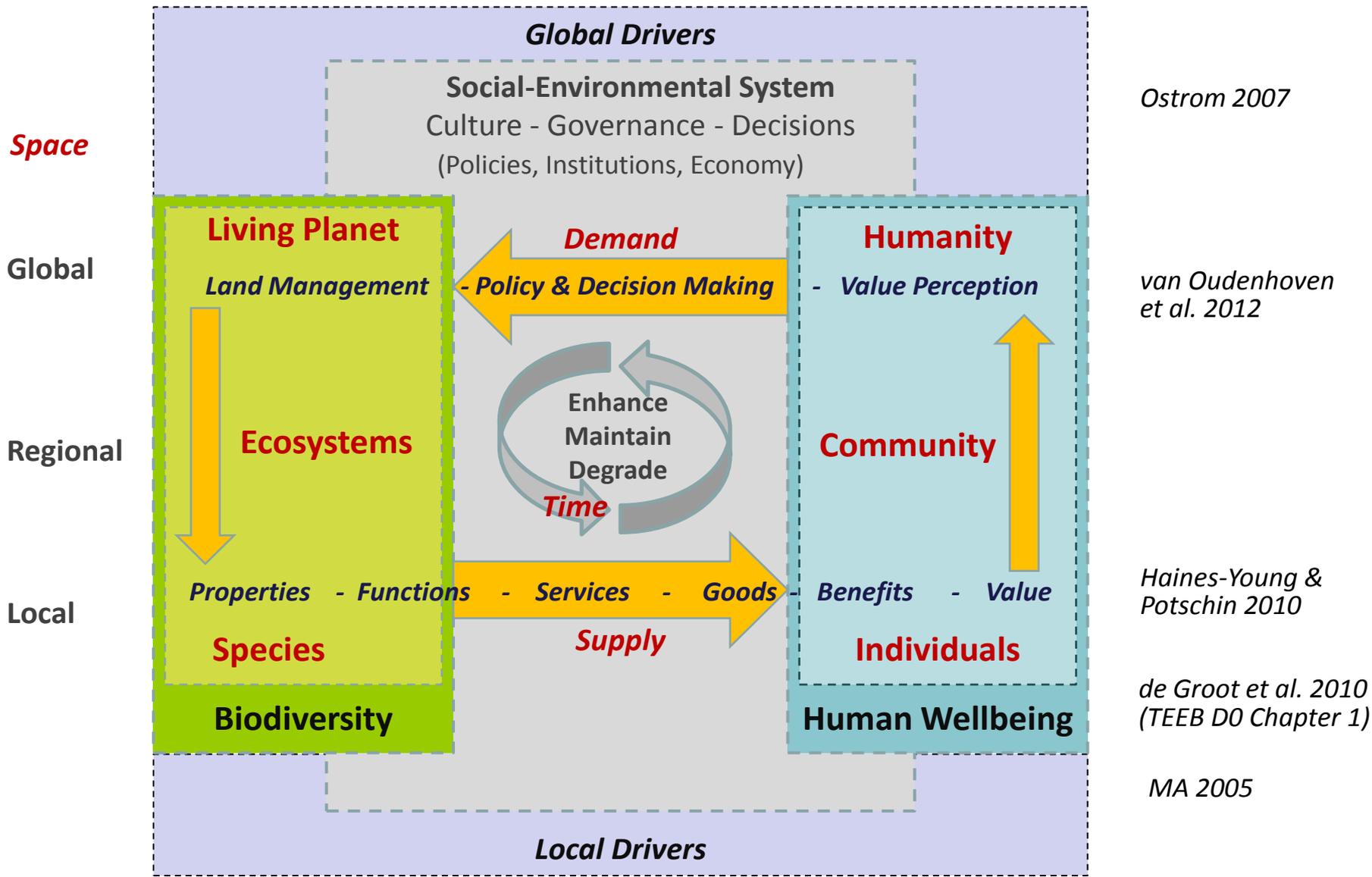


# Framework for analysing the role of ecosystem services in land management



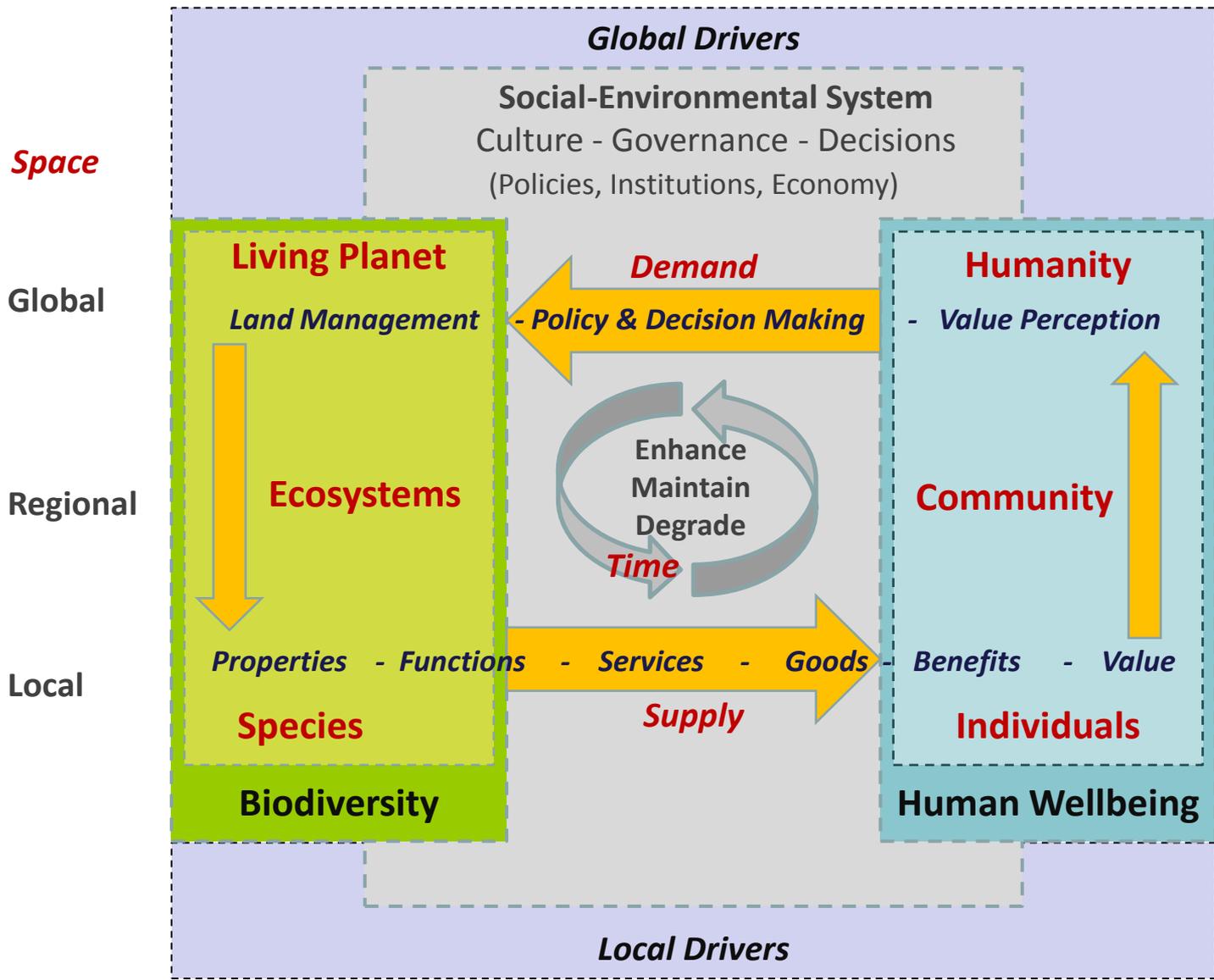
Förster and Seppelt in prep.

# Framework for analysing the role of ecosystem services in land management

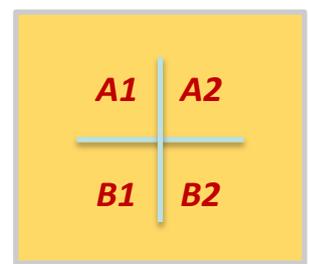


Förster and Seppelt in prep.

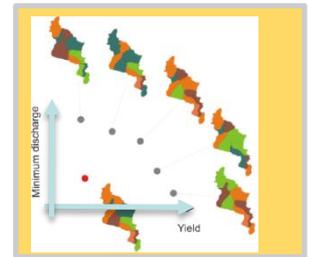
# Framework for analysing the role of ecosystem services in land management



## Scenarios



## Synergies & Trade-offs



Förster and Seppelt in prep.

# Analytical framework

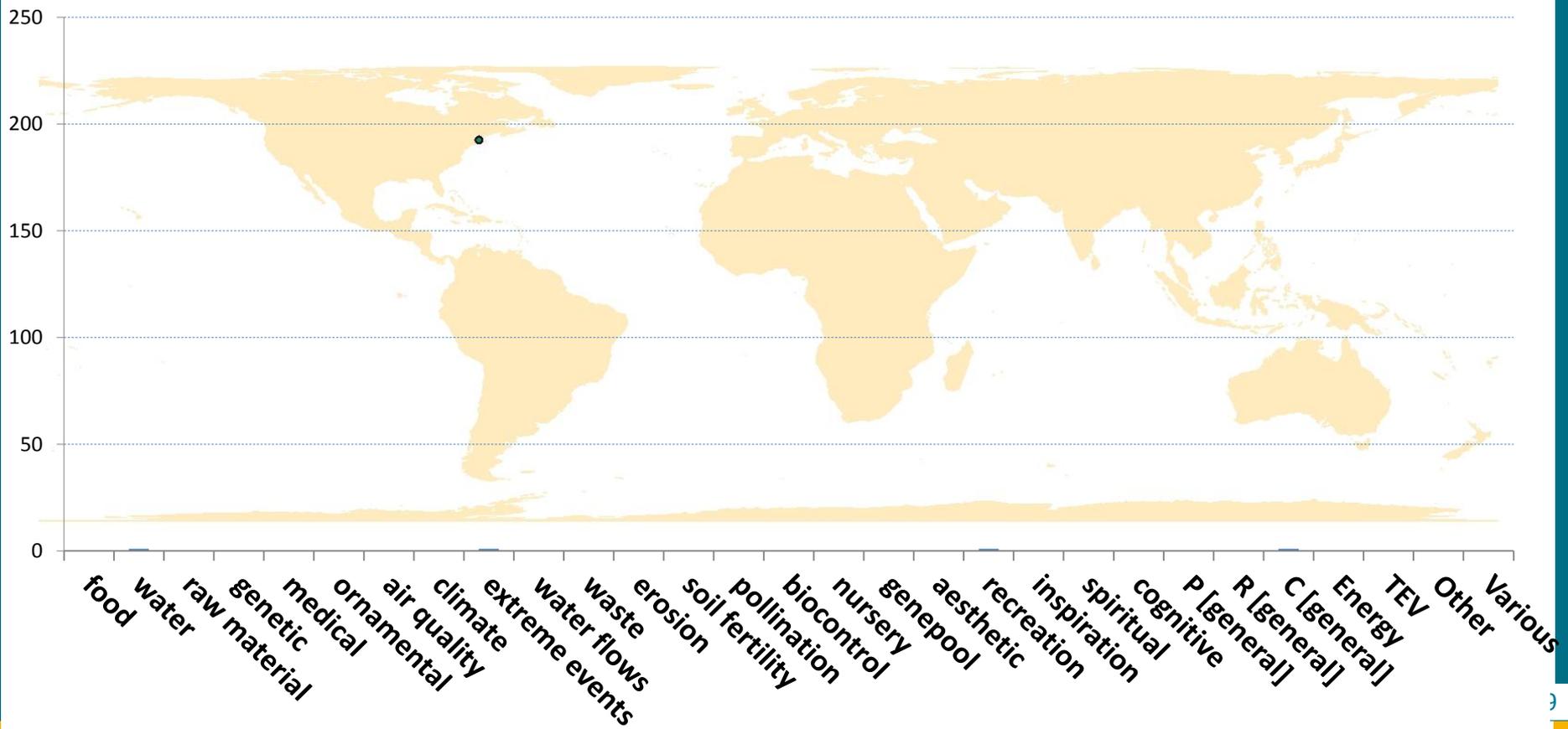
Based on CICES version 4, extended by Förster and Seppelt (in prep.)

<b>Biodiversity</b>		<b>Ecosystem Services</b>					<b>Human well-being</b>			<b>Social - environmental system (SES)</b>					<b>Sustainability</b>	
Ecosystems/ Species/ Genes		Classification following CICES					Humanity / Community /Individual			Decisions making					Impact	
Properties	Functions	ES category		Demand & supply			ES quantification & valuation			Scenarios: impacts of decision making on ES					Trade-offs & Synergies	
<i>Biophys. Charact.</i>	<i>Biophys. Charact.</i>	<i>Section</i>	<i>Divisi on</i>	<i>Group</i>	<i>Class</i>	<i>Class types</i>	<i>Provider/ Beneficiary</i>	<i>Quantity in biophys. &amp; monetary</i>	<i>Value perception (scarcity)</i>	<i>Policy Option A, B, C</i>	<i>Land Mgmt Option i,ii,iii</i>	<i>Local driver</i>	<i>Global driver</i>	<i>Scale</i>	<i>Time</i>	<i>Cost &amp; benefits, Winner &amp; loser, Degradation, Enhancement, etc.</i>



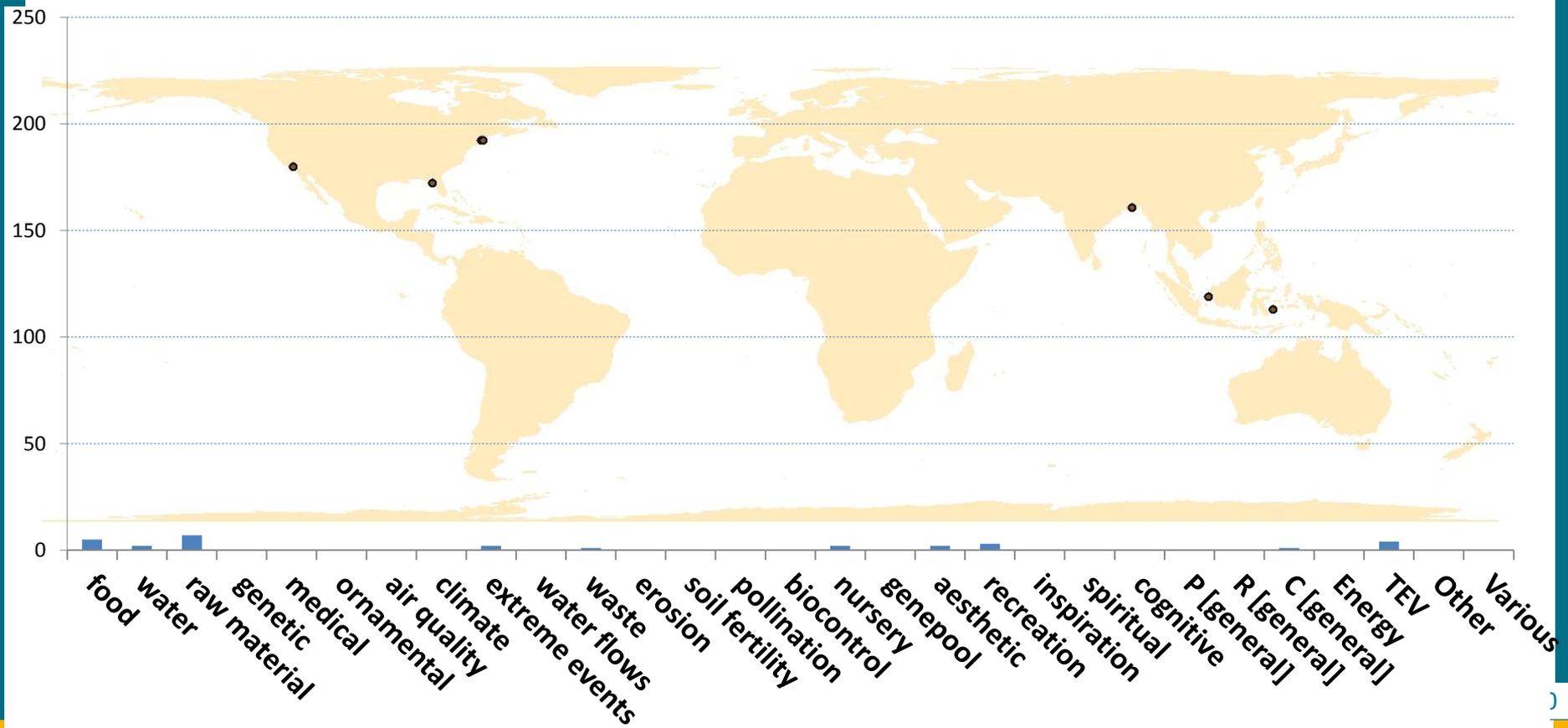
# Global analysis of ES case studies

1975-1980



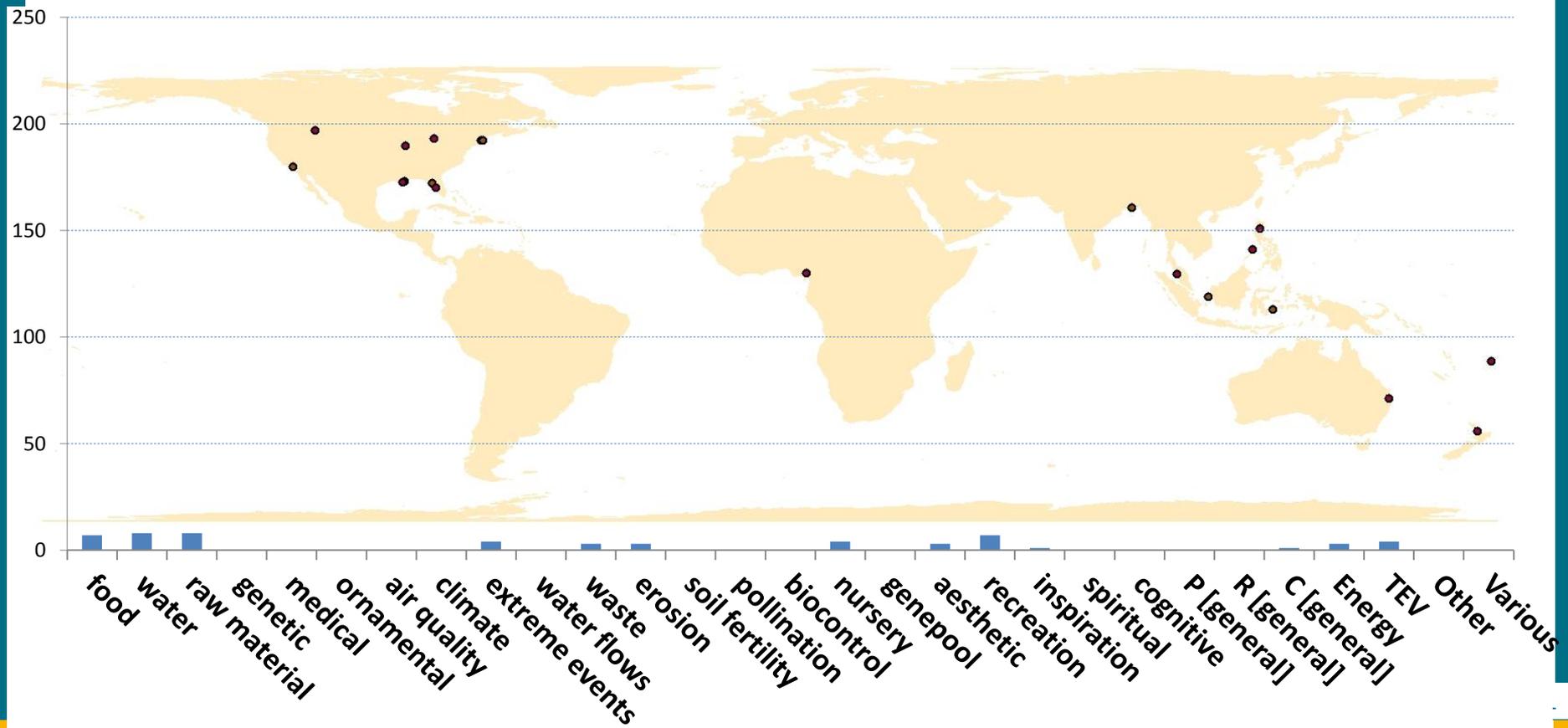
# Global analysis of ES case studies

1975-1985



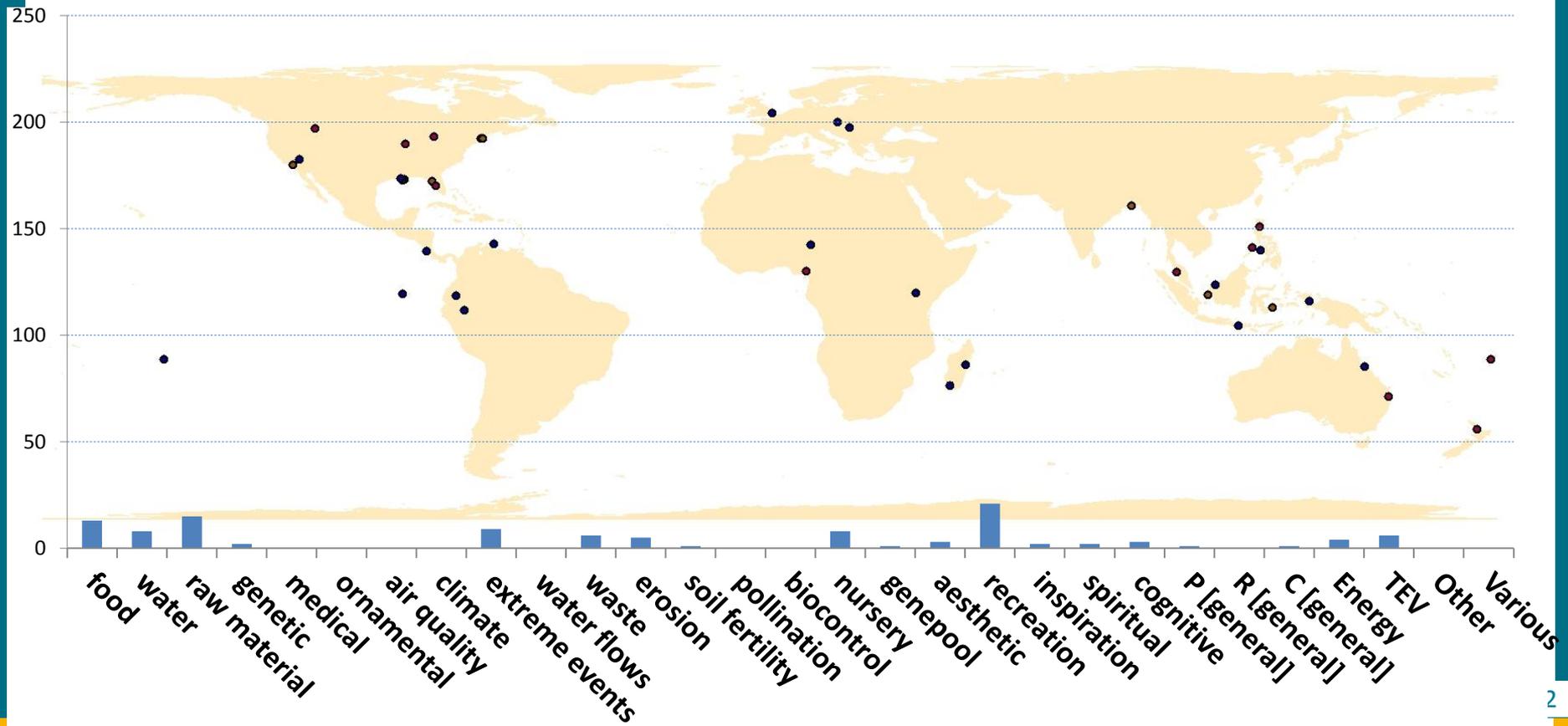
# Global analysis of ES case studies

1975-1990



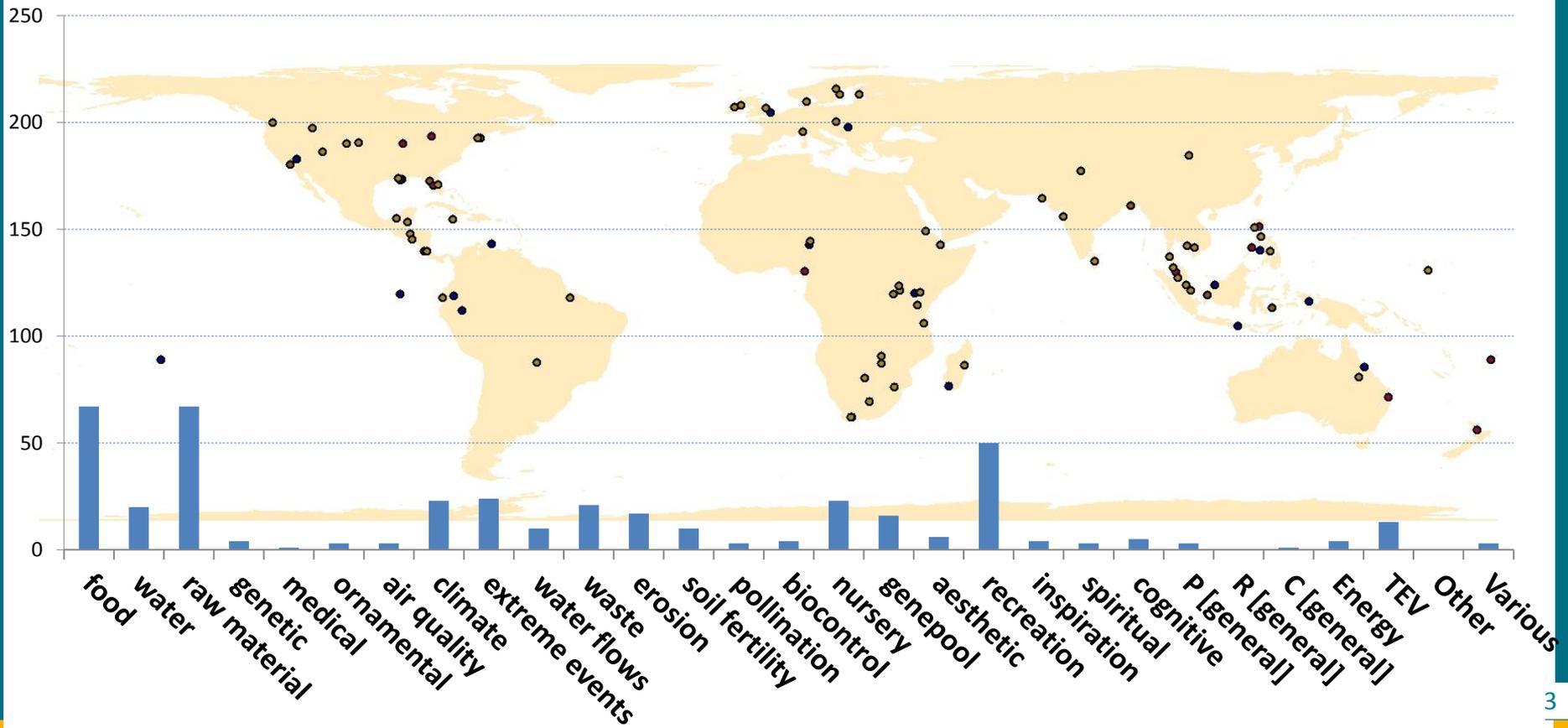
# Global analysis of ES case studies

1975-1995



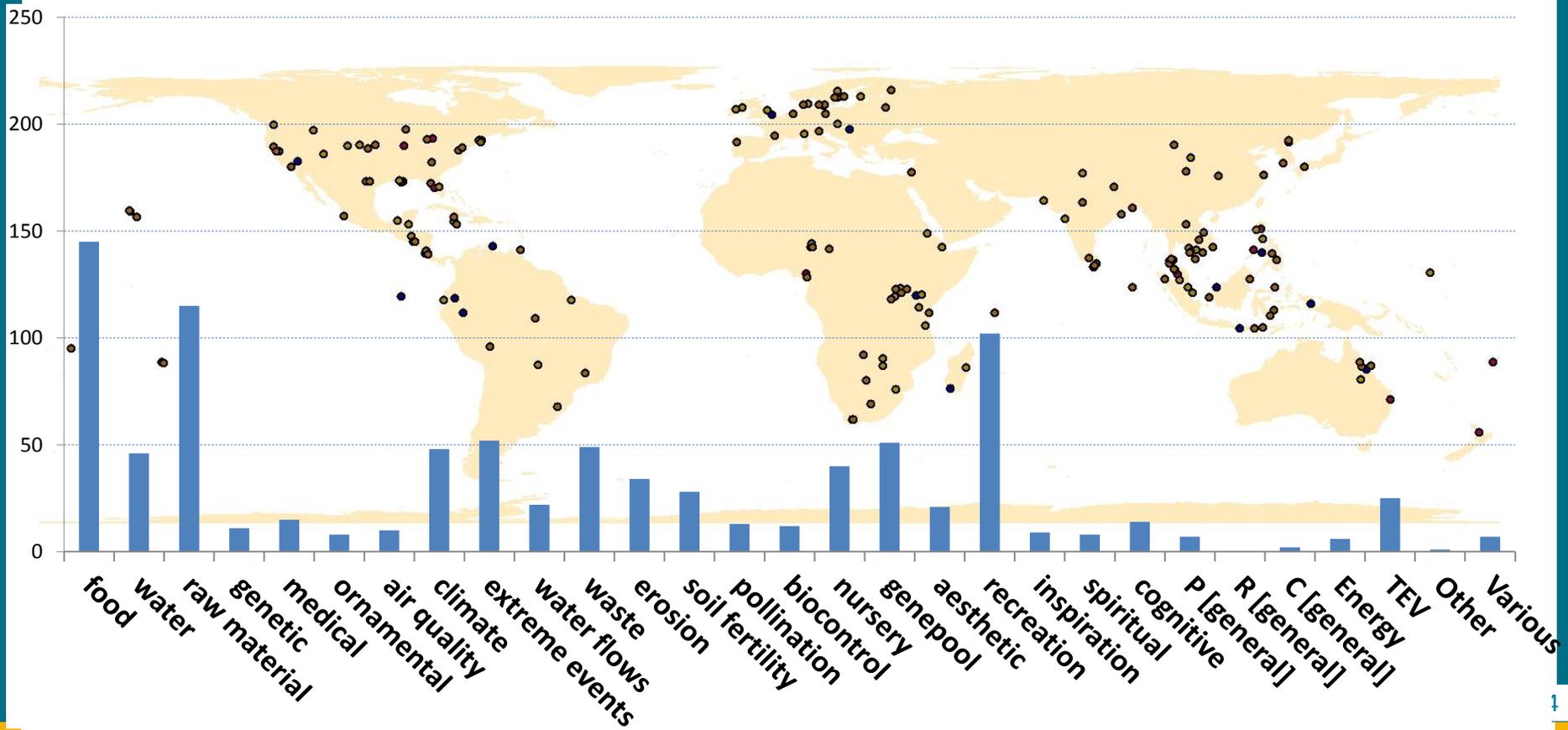
# Global analysis of ES case studies

1975-2000



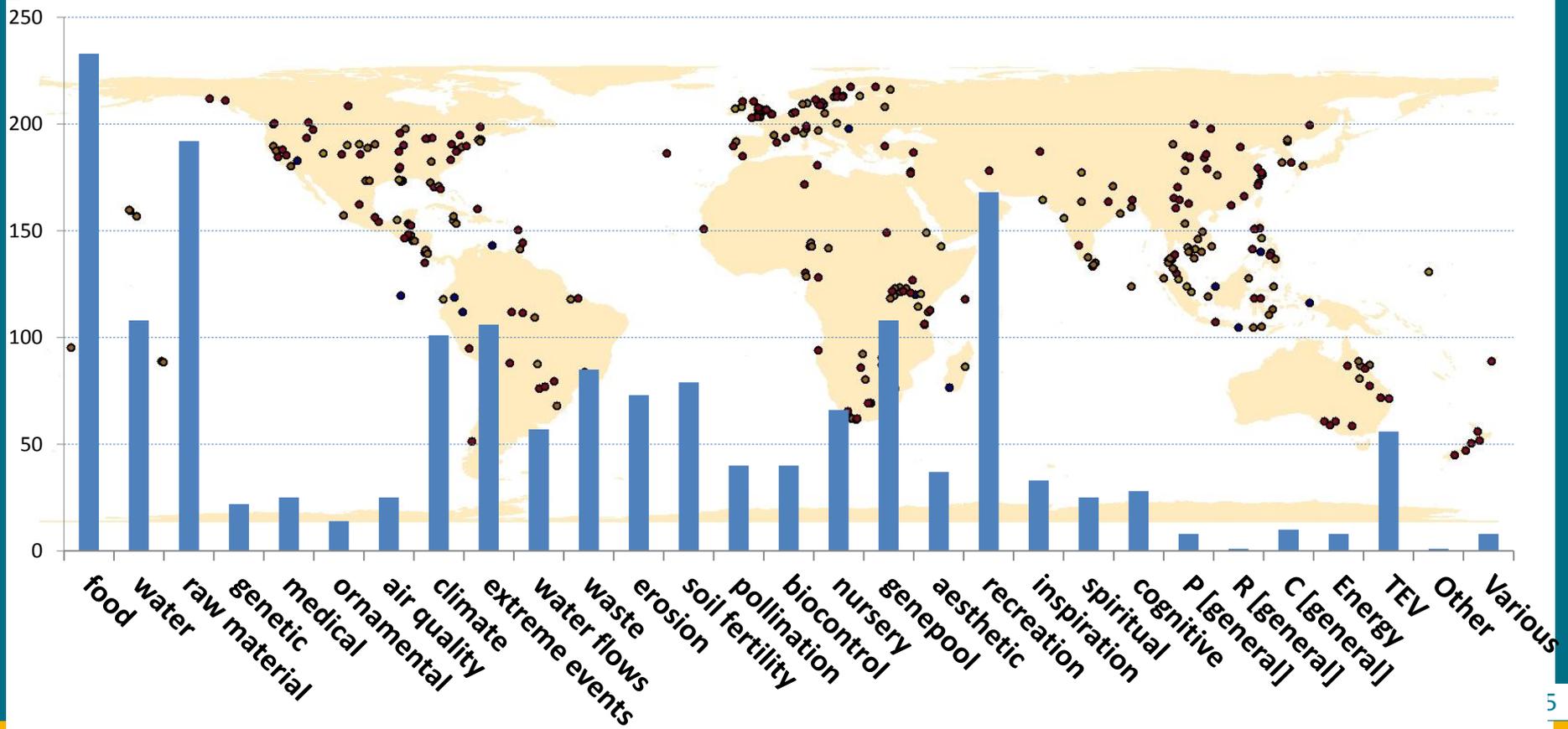
# Global analysis of ES case studies

1975-2005



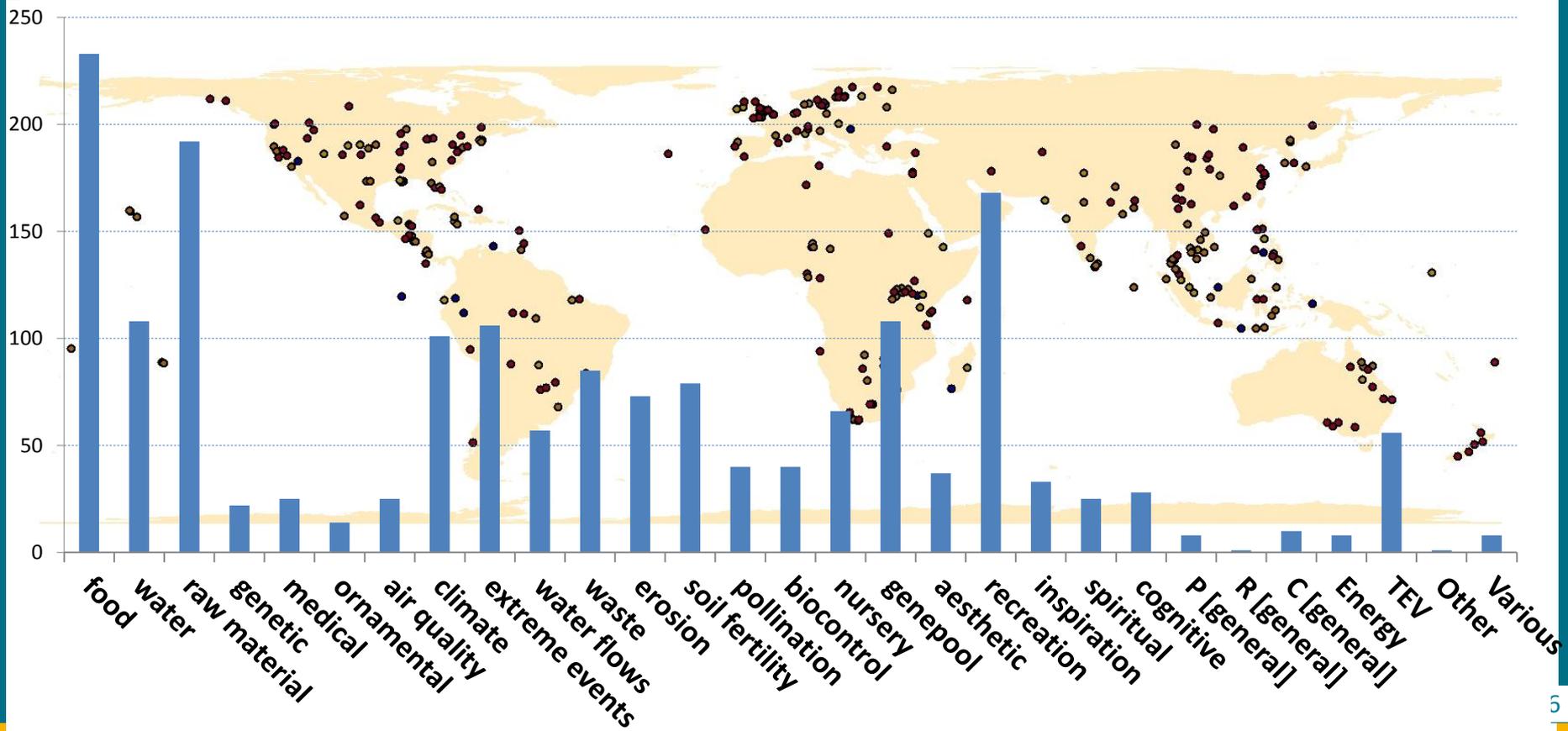
# Global analysis of ES case studies

1975-2010



# Global analysis of ES case studies

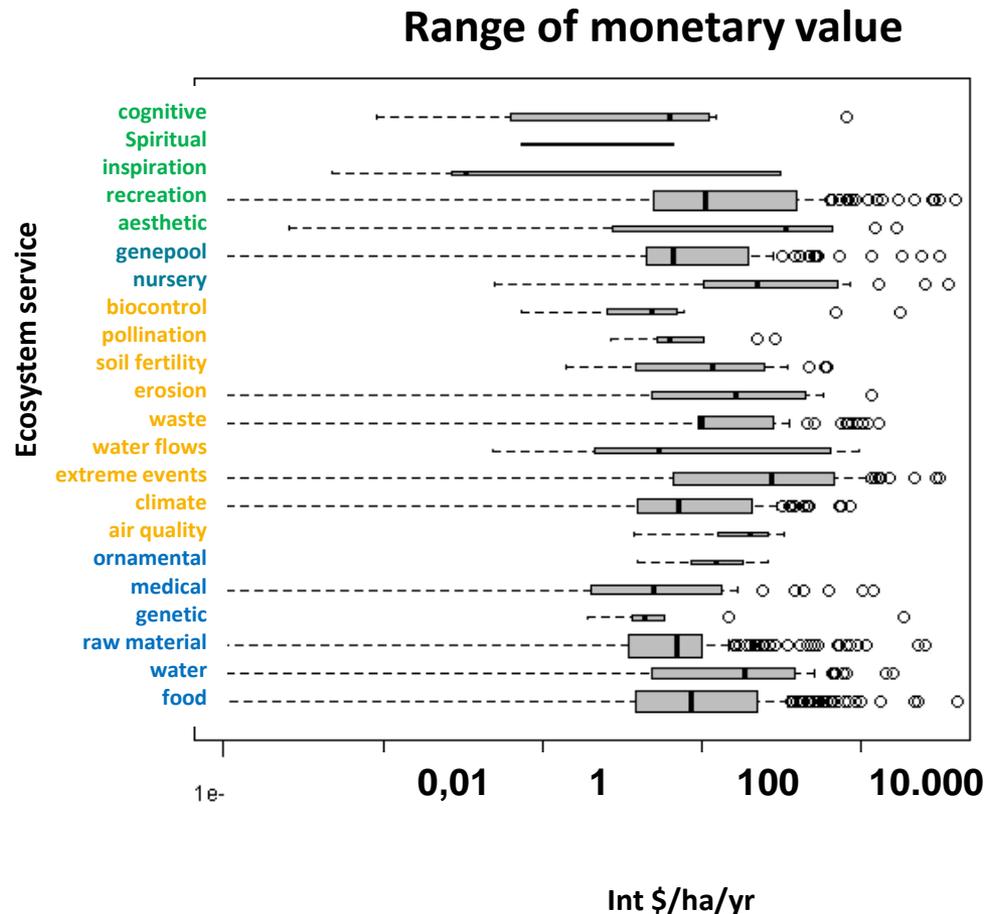
1975-2010



→ 386 case studies, based on ESVD (van der Ploeg, de Groot 2010) & ZEN database (Seppelt et al. 2011)

# Monetary Valuation

- Aim of valuation (Sutton 2003)
- Location (Ready et al. 2002)
- Scale (Hein et al. 2006)
- ES type and definition (double counting) (Nahlik et al. 2012)
- Methods (Oteros-Rozas et al. 2009)

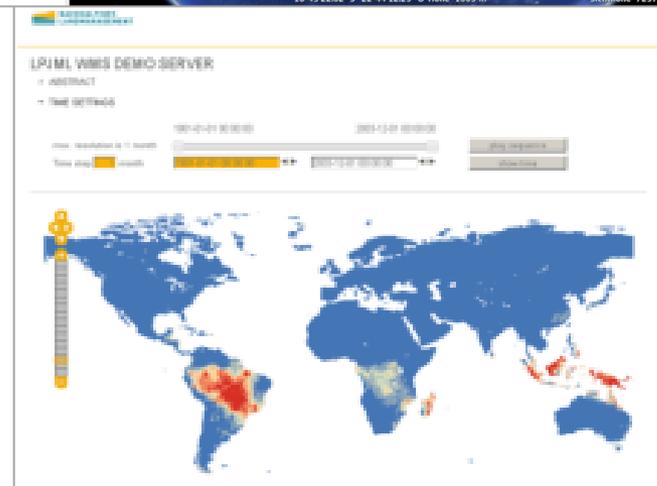
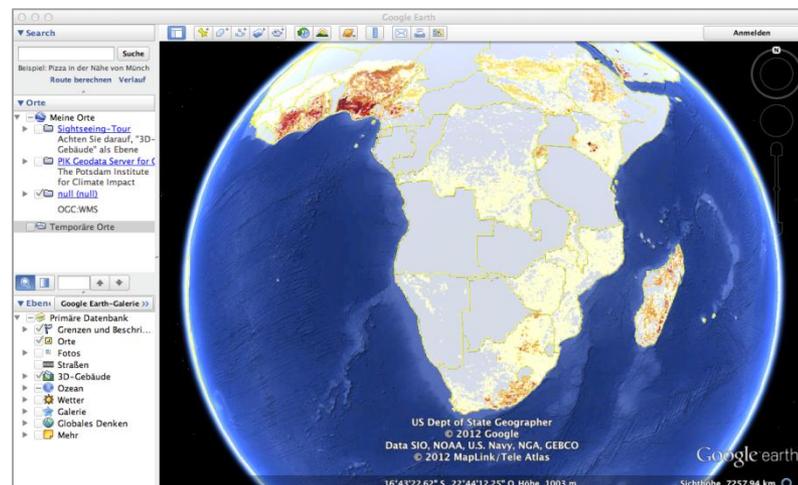


## GLUES GDI – an open platform for data exchange

- Catalog for data/service search and discovery
- Metadata acquisition interface
- Services for visualization & download
- Direct link into ArcGIS

### Examples:

- Meta-data of ES review (Seppelt et al., 2011)
- Climate Data Scenario Server (PIK)
- Pollination-Service Valuation (Seppelt et al., 2012)
- IPCC-SRES Data



# Summary

- Collaboration strengthens knowledge base
- Enable collaboration in open scientific database structure (GLUES-GDI)
- Methodological advancements for synthesis, scenario development and trade-off analysis.
- Problem specific development of analysis



## GLUES contributes to:

