Webinar

04 July 2023
14:00 CEST

Exploring Nature Future Scenarios for a resilient Trans-European Nature Network (TEN-N)

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Exploring Nature Future Scenarios for a resilient Trans-European Nature Network (TEN-N)

Carlo Rondinini – Moderation
Sapienza University of Rome

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Webinar Agenda

Welcome and Introduction

Presentations

- **NaturaConnect – Designing a Trans-European Nature Network (TEN-N)**
  Jutta Beher and Piero Visconti
- **Nature Futures Framework – An Introduction** Henrique Pereira
- **Nature Futures Scenarios – Incorporating the Nature Futures Framework in NaturaConnect**
  Peter Verburg

Q&A & short break

Interactive Session on draft Nature Future Scenarios for Europe

Claudia Fornarini, Alessandra D'alessio, Néstor Fernández

Questions and comments

Conclusion and final remarks

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International Institute for Applied Systems Analysis

IIASA

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Designing a Trans-European Nature Network (TEN-N)

Jutta Beher & Piero Visconti
International Insitute for Applied System Analysis (IIASA)

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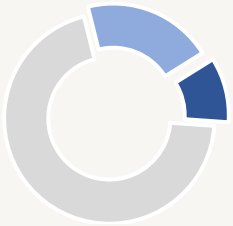
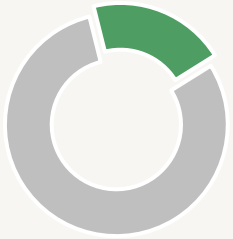
European policy context by 2030

Where to conserve, restore or sustainably manage ecosystems?

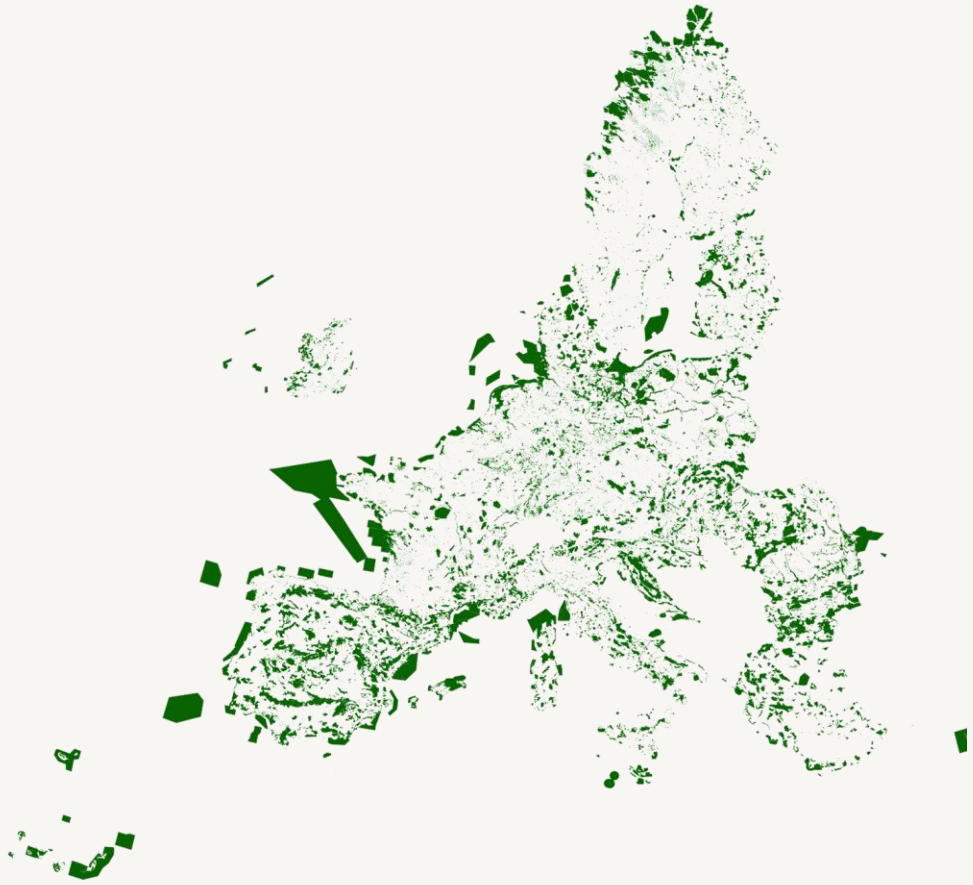


Legally protect at least 30% of the land, including inland waters, and 30% of the sea in the EU. At least **1/3** of this should be **strictly protected**



Include **restoration on 20%** of lands, contributing to the process of actively or passively assisting towards **good condition**

Facilitate ecological corridors and support sustainable land management, while **increasing resilience** through climate mitigation and adaptation



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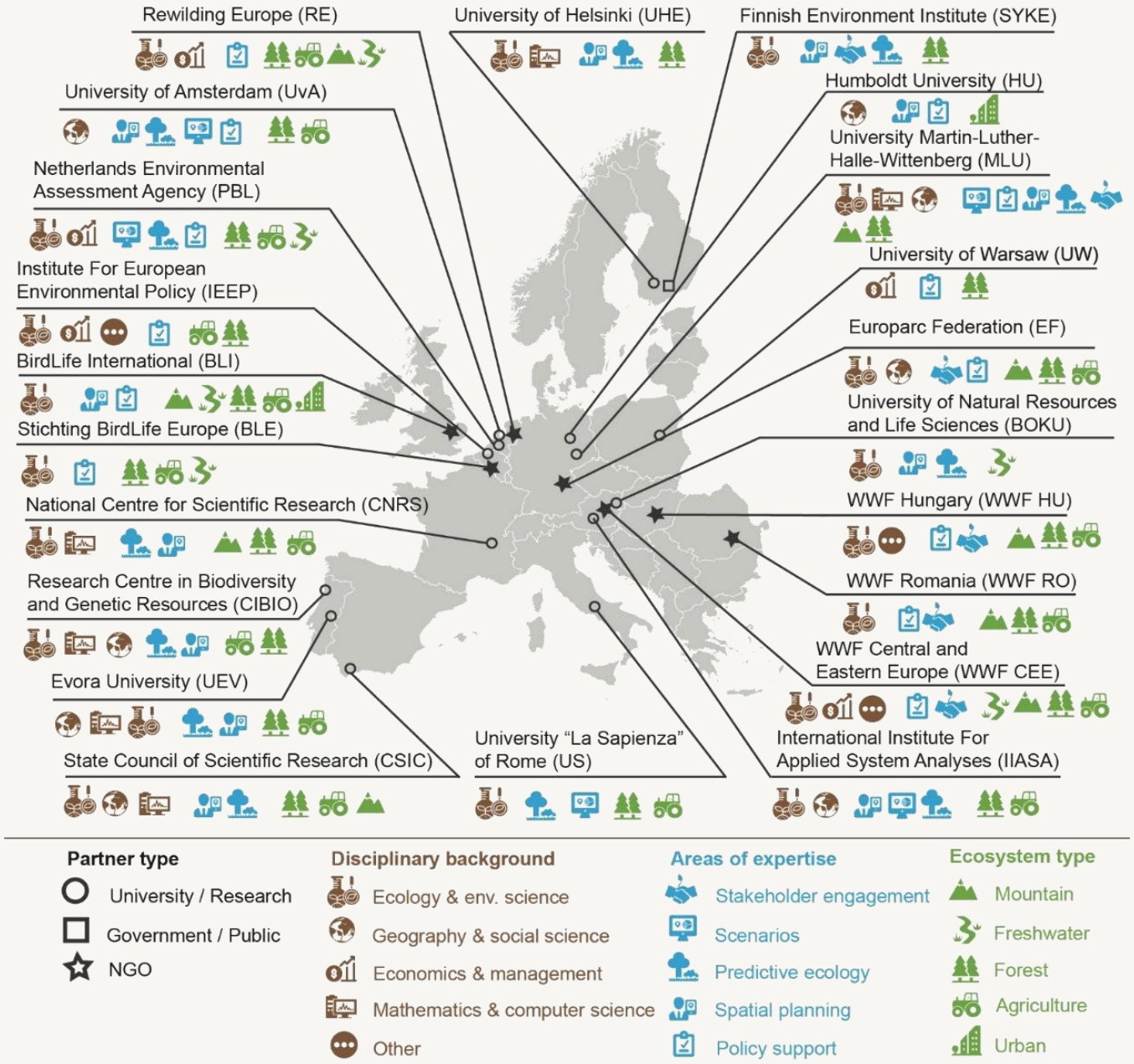
15 Research organizations

7 National agencies & conservation NGOs

6 Case studies across scales

The ambition of NaturaConnect is to co-create with key decision-makers and stakeholders, **knowledge, tools and capacity building to support EU Member States in realizing an ecologically representative, resilient and well-connected network of conserved areas** that contribute to achieving the objectives of the EU Biodiversity Strategy for 2030.



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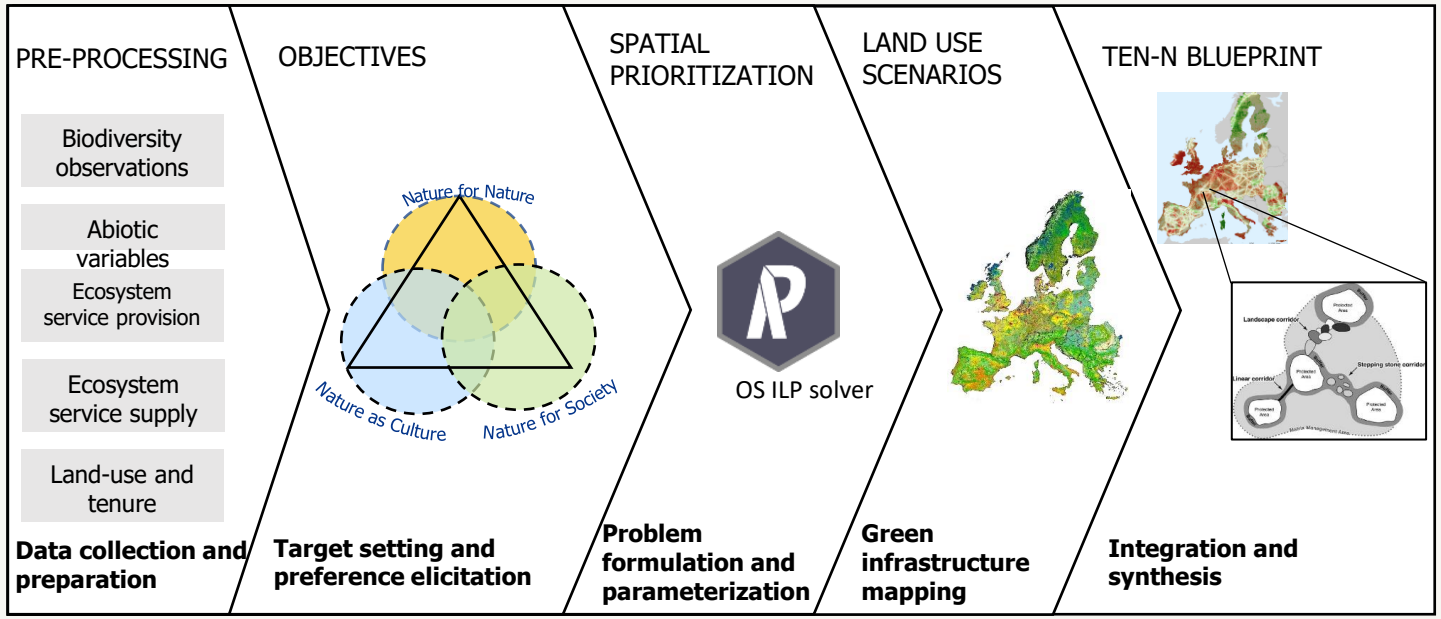
NaturaConnect expected outputs

Define a blueprint for TEN-N that addresses gaps in coherence and ecological representativeness of the protected area network

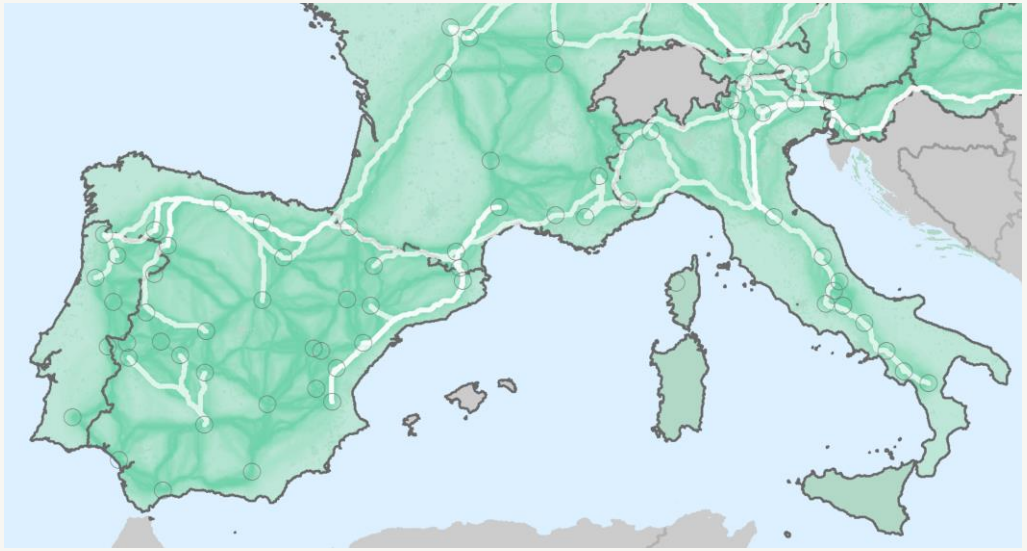
- **Spatial priorities for national and international designations** to support planning of TEN-N reducing conservation gaps.
- Proposal for supporting **monitoring and reporting of TEN-N performance**



NaturaConnect expected outputs

Support protecting and restoring multifunctional corridors across spatial scales, enhancing connectivity in TEN-N

- **Guidelines, data and tools for connectivity conservation** for the designation of corridors from local to pan-European scales
- **Conservation and restoration priorities** to increase the **resilience** of the network



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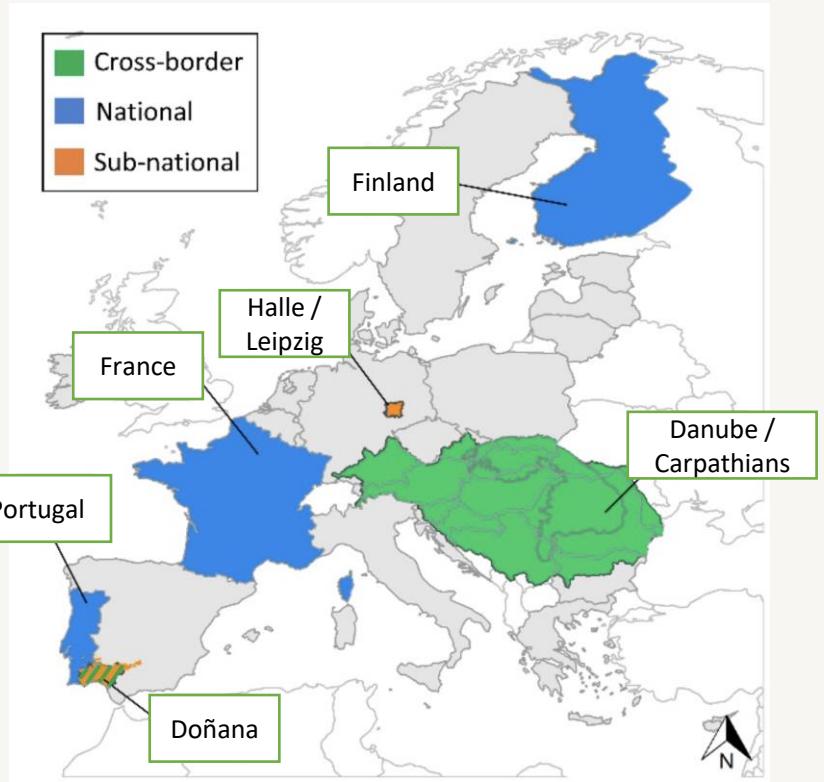
NaturaConnect expected outputs

Review best spatial planning practices and funding mechanisms, engaging stakeholders, co-designing tools and guidelines, and maximizing uptake

- Spatial planning tools
- Stakeholder and members database
- NaturaConnect learning platform
- Financial support and best practices policy guidelines



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Towards Nature Future Scenarios

Henrique M. Pereira
German Centre for Integrative Biodiversity Research (iDiv)
- Martin Luther University Halle-Wittenberg

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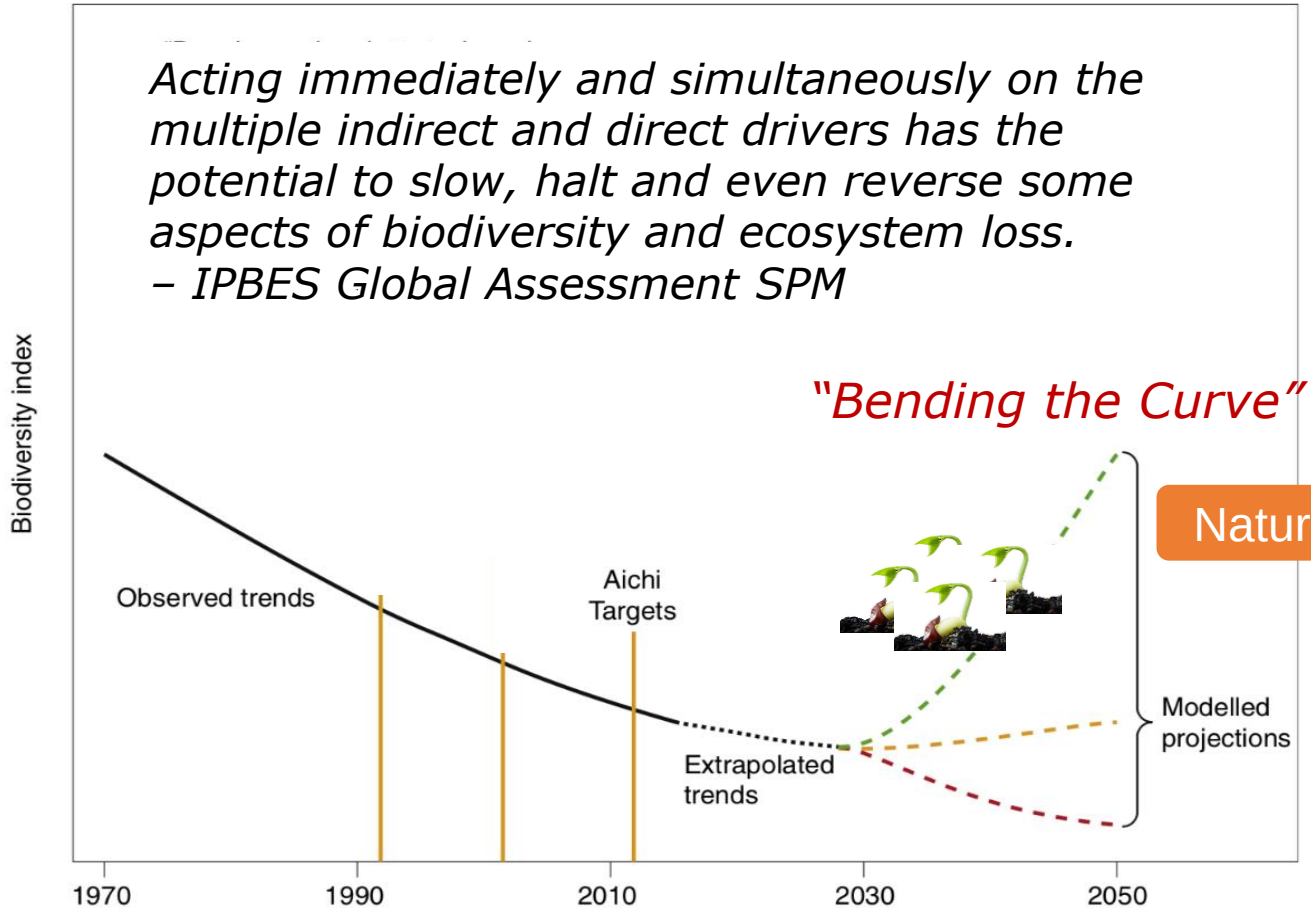
EU Biodiversity Strategy 2030 and Kunming-Montreal Post-2020

Acting immediately and simultaneously on the multiple indirect and direct drivers has the potential to slow, halt and even reverse some aspects of biodiversity and ecosystem loss.
– IPBES Global Assessment SPM



Nature Futures

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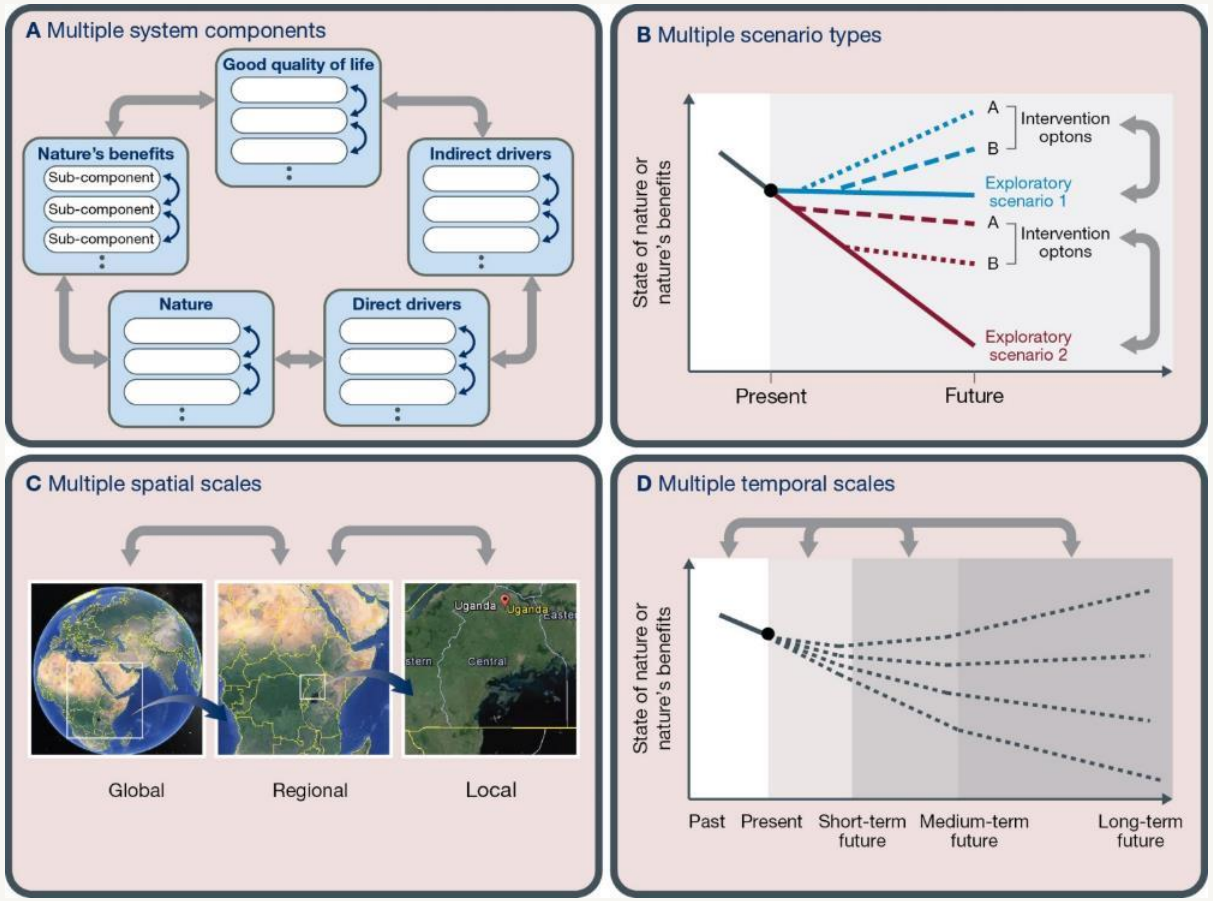
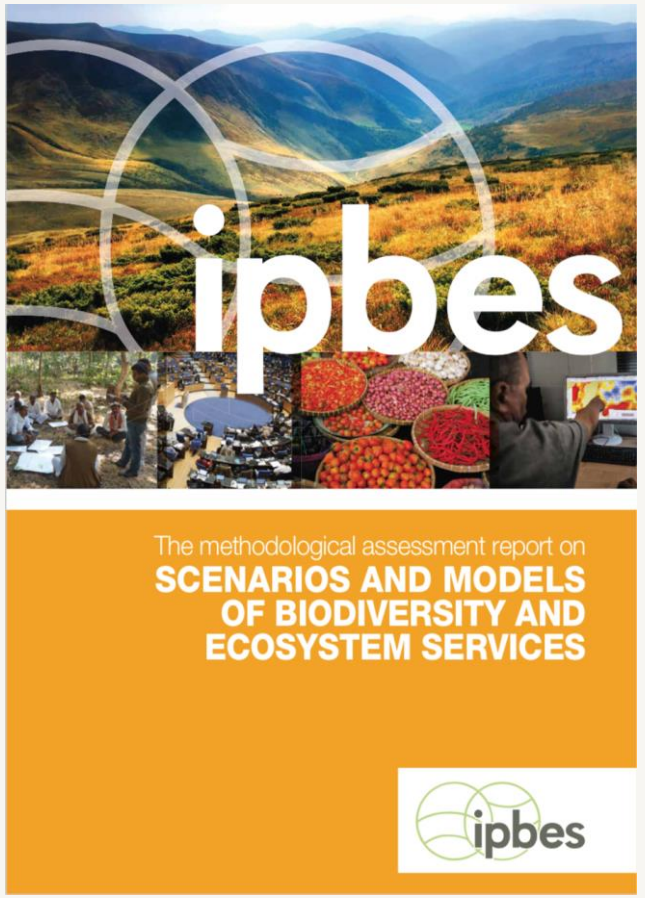
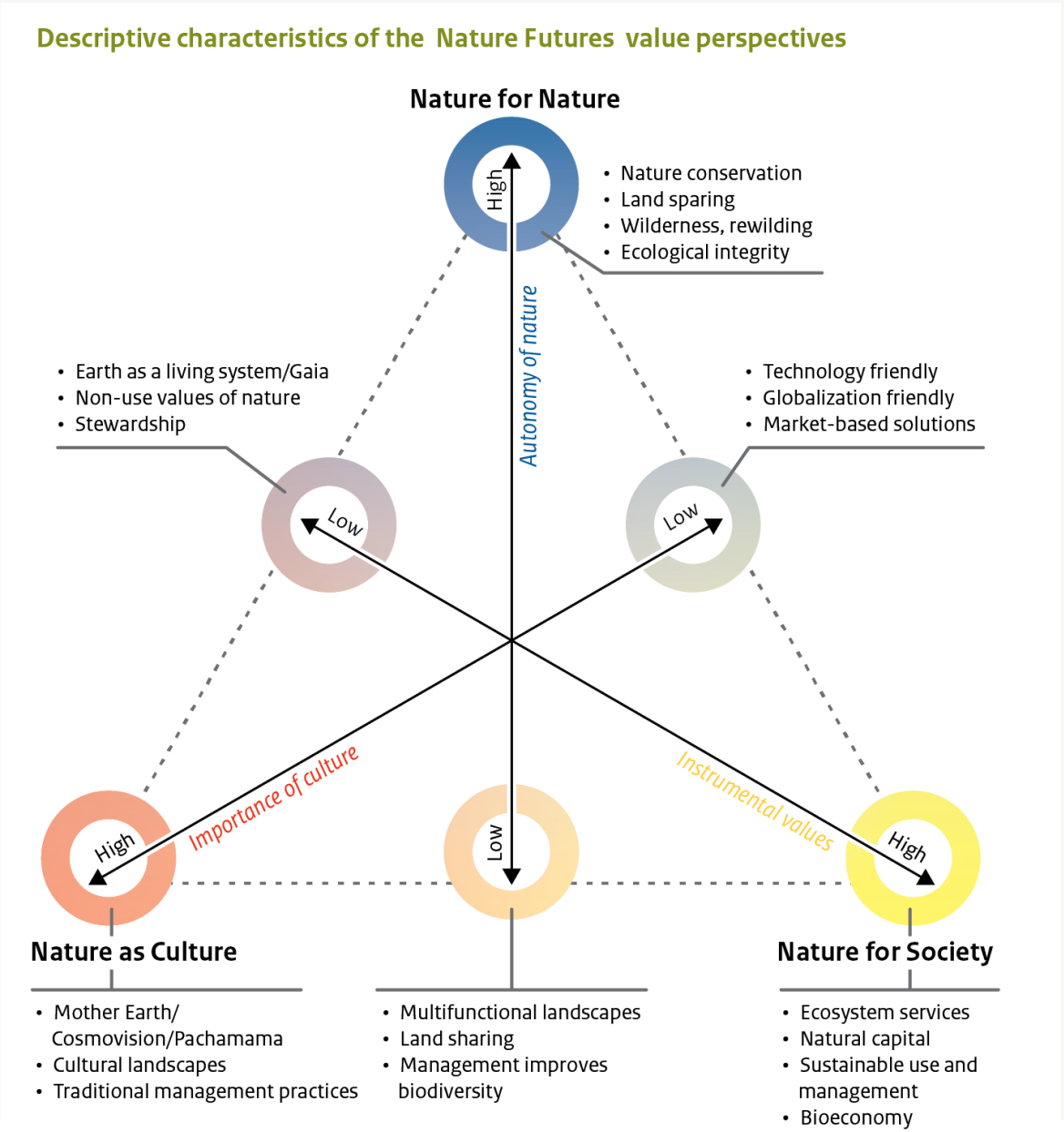
The need for a new generation of scenarios



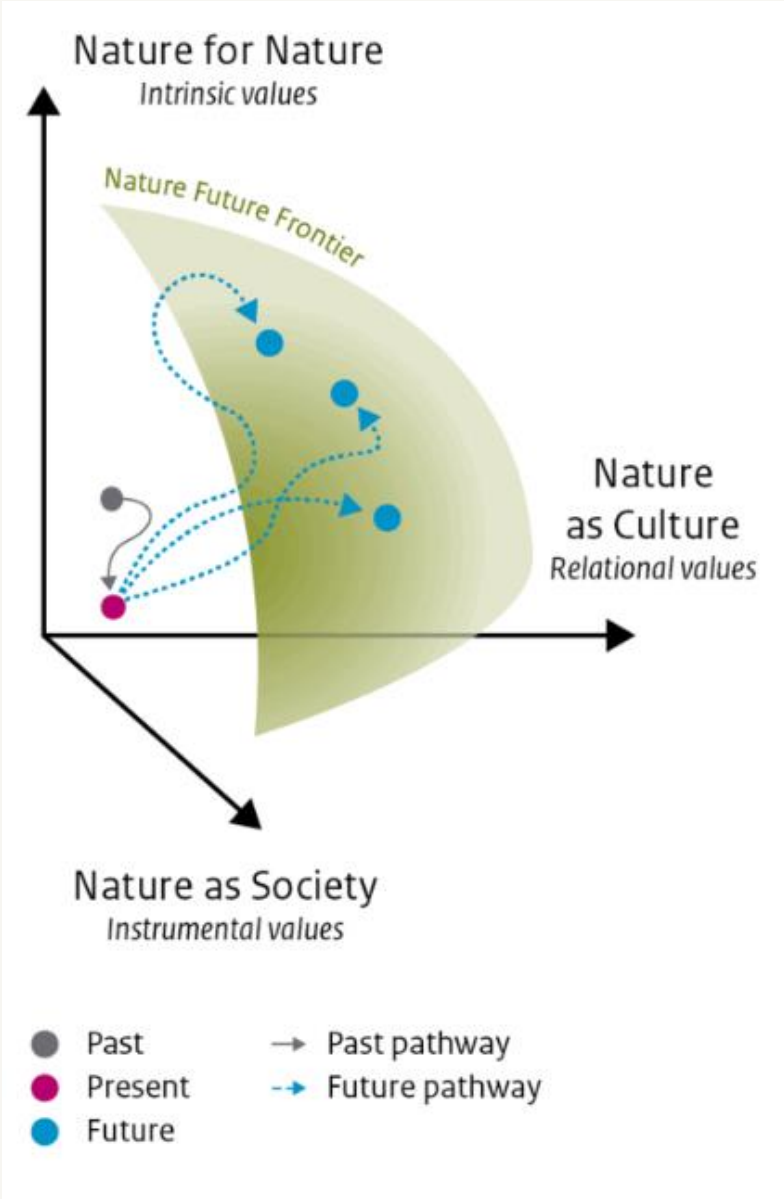


The Nature Futures Framework



Kim et al. 2023

The Nature Futures Framework as a 3D state space



Kim et al. 2023

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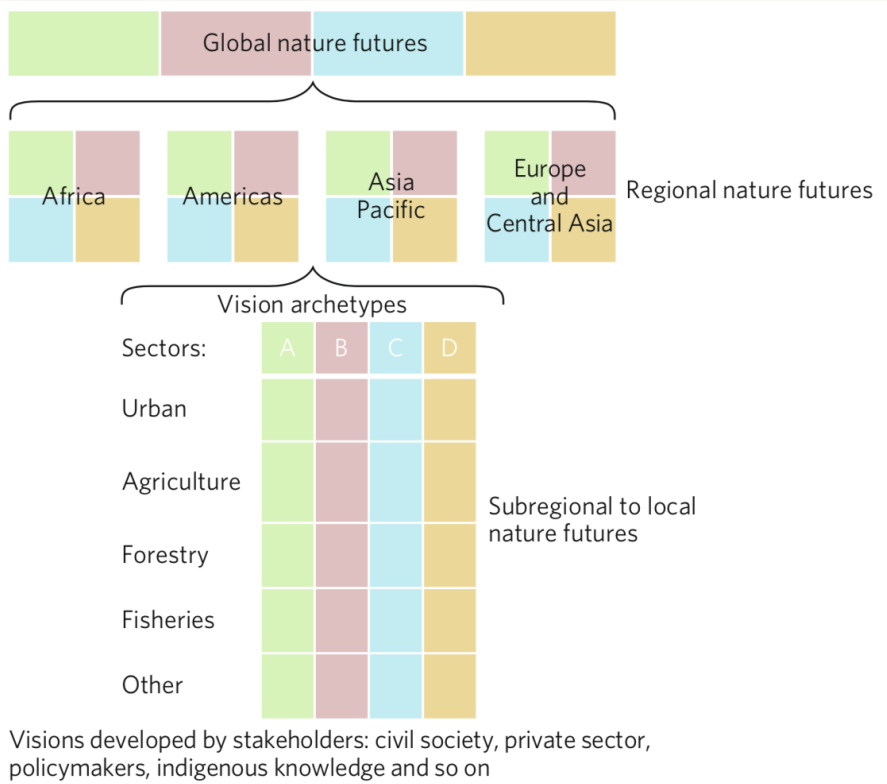
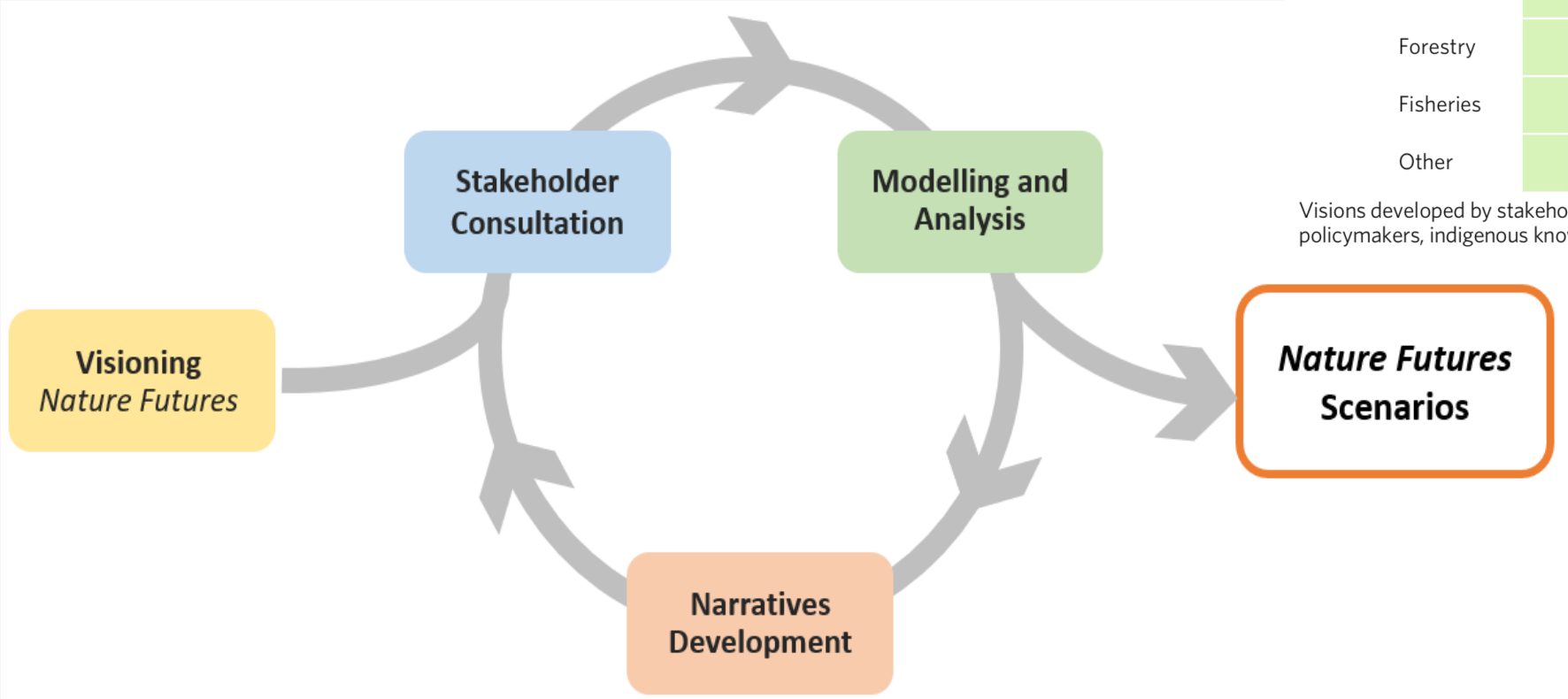
Developing the Nature Futures Scenarios





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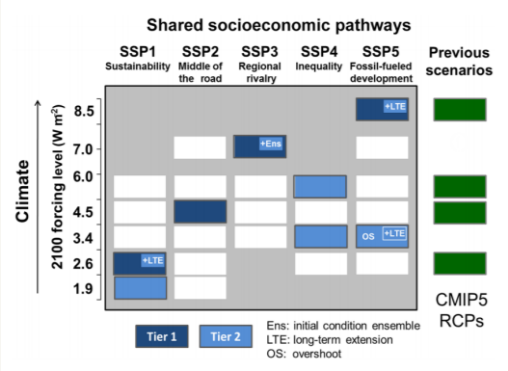
Positive visions with the Nature Futures

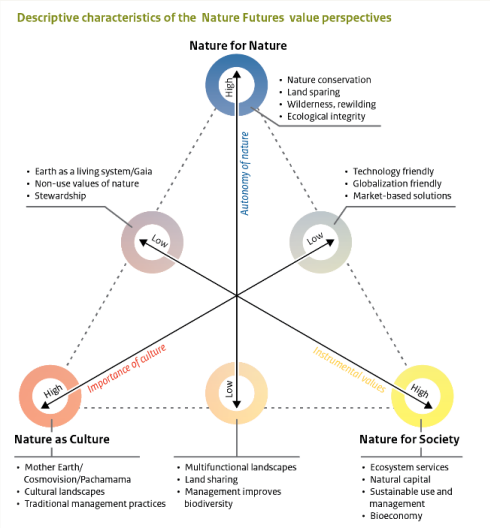
Mansur, A … Pereira, HM (2022)

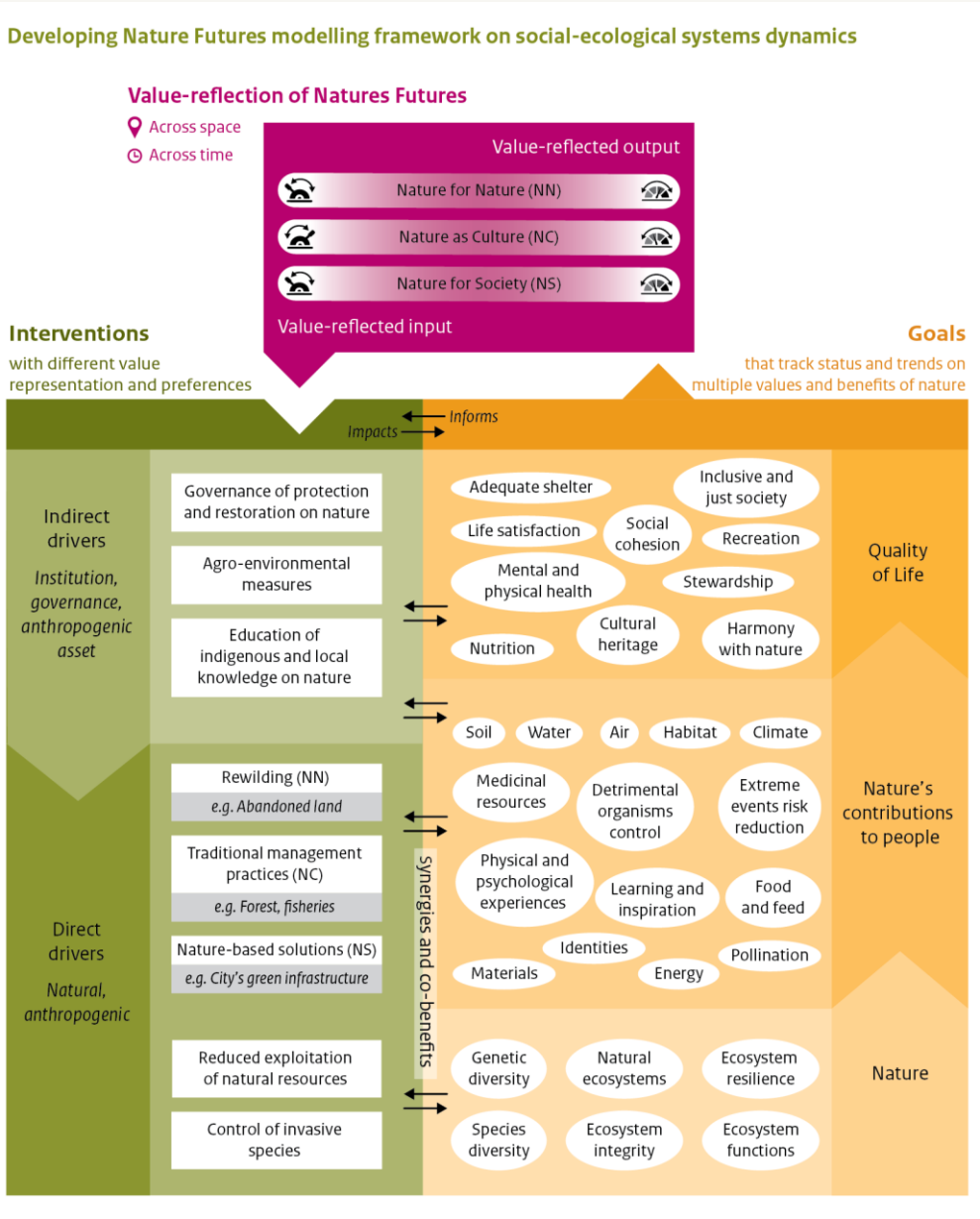
Modelling the Nature Futures Scenarios

Exploratory:
What are the uncertainties?

Normative:
What future do we want?







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H.Kim et al. (2023)

VU VRIJE UNIVERSITEIT AMSTERDAM

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Nature Futures Scenarios – Incorporating the Nature Futures Framework in NaturaConnect

Peter H. Verburg
VU University Amsterdam

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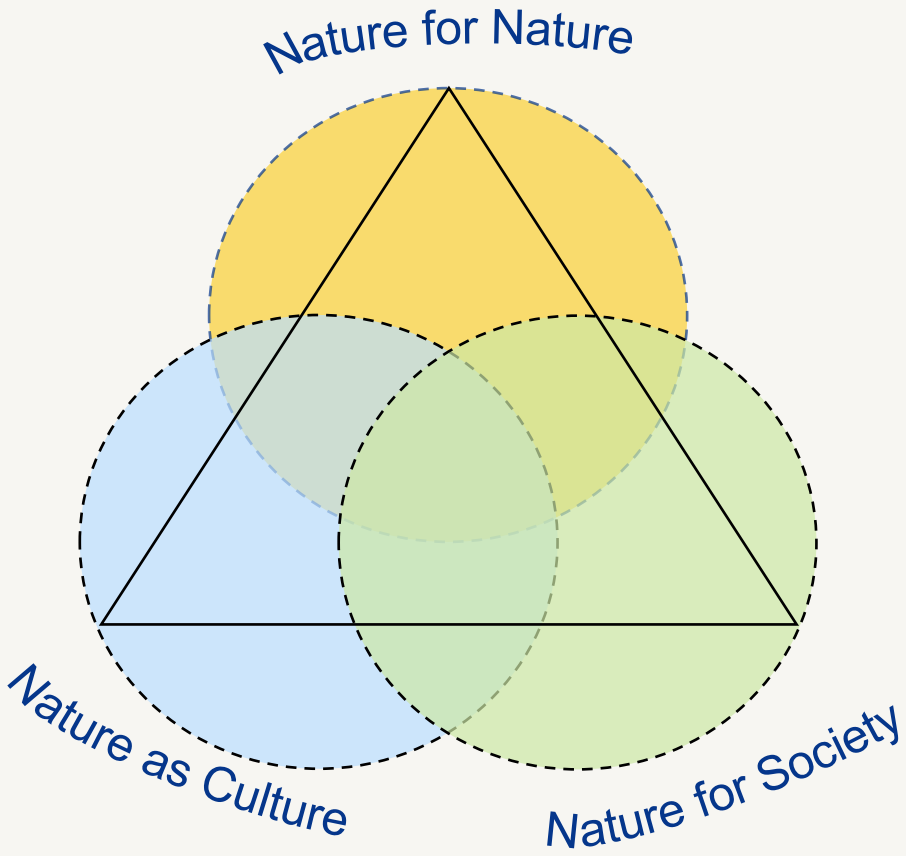

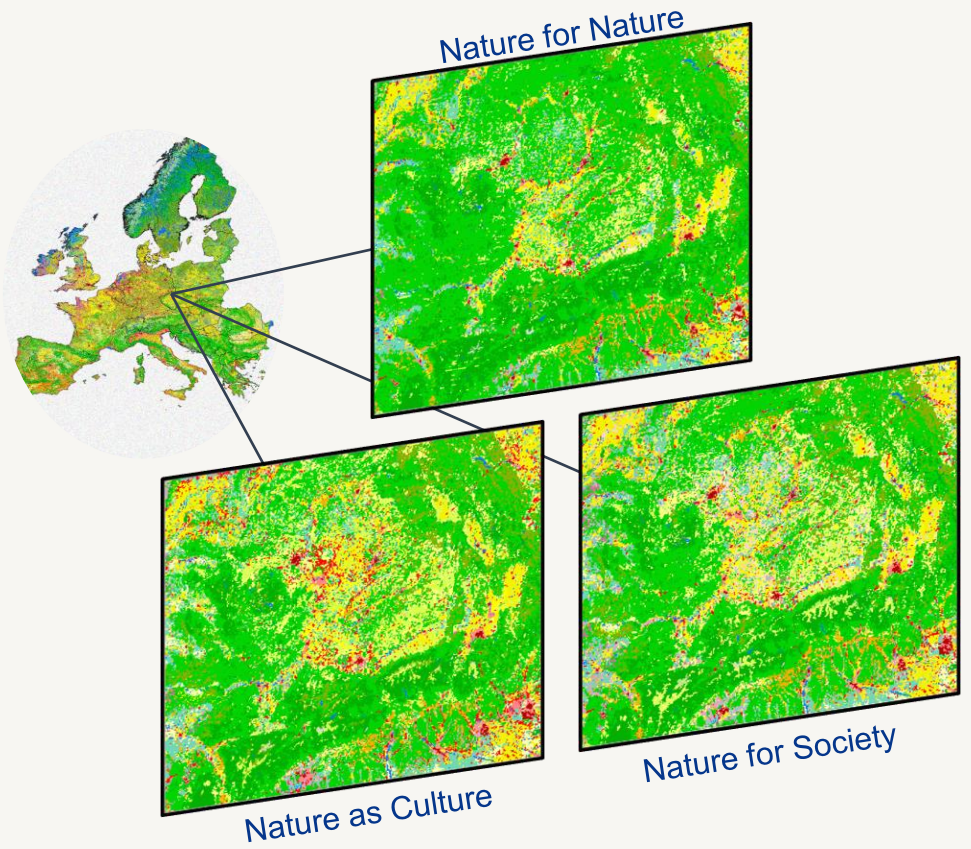

Using the Nature Futures Framework as a lens for developing a protected area network

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Meeting sustainability objectives will require European landscapes to change

Shared Socio-Economic Pathways

Crop yields

Timbe

Popul

Policy

Livestock

EU Policy Environmental targets

Reduce fertilizer use

trees

natural areas

Protect 30% of land

RELATIONAL VALUES TO NATURE DETERMINE HOW LANDSCAPES WILL RESPOND TO THESE CHANGES

Convention on Biological Diversity

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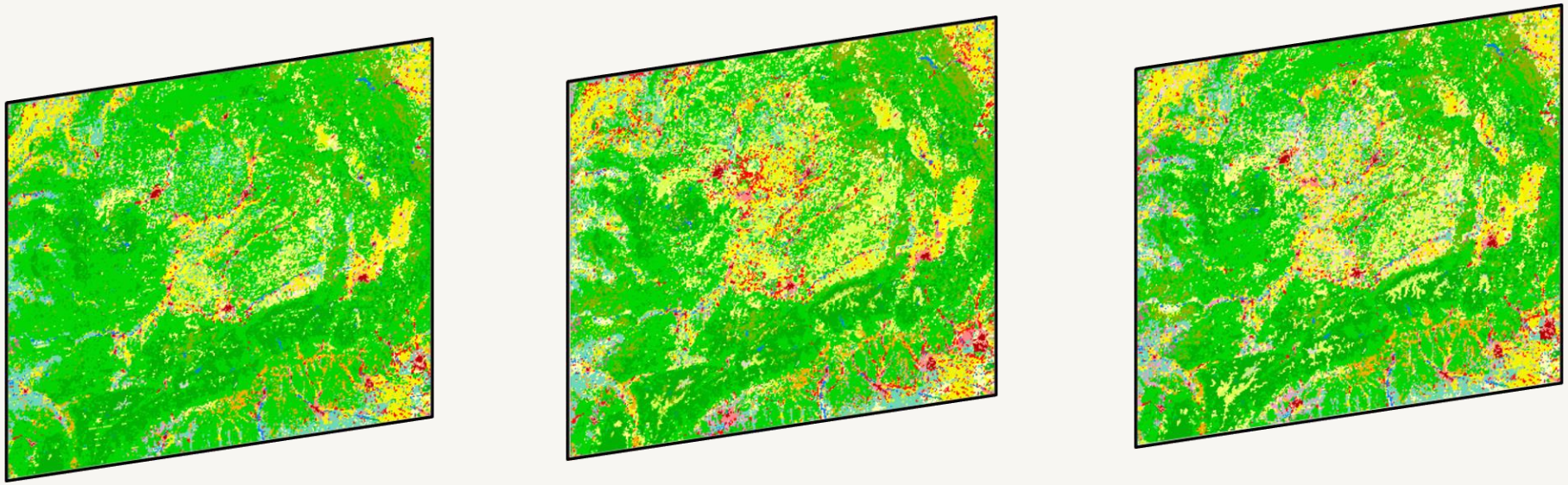
Different landscape configurations may be able to meet these sustainability objectives



Different relational values lead to different prioritization of locations and landscape features

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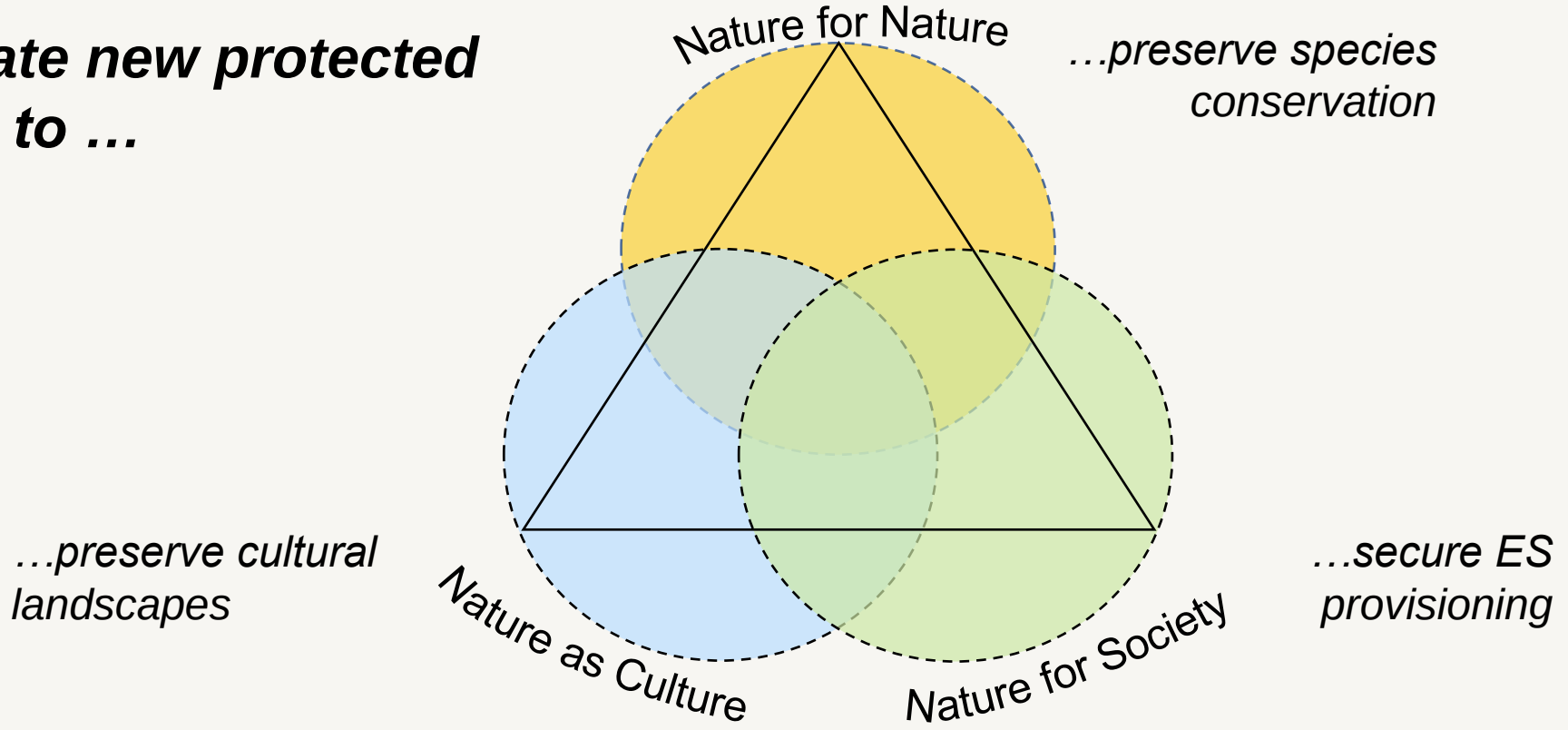
The Nature Futures Framework offers a lens to develop alternative nature network configurations with plural nature values

Allocate new protected areas to …



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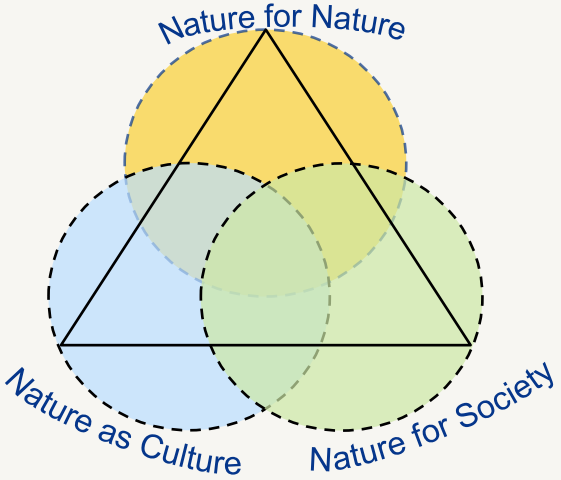
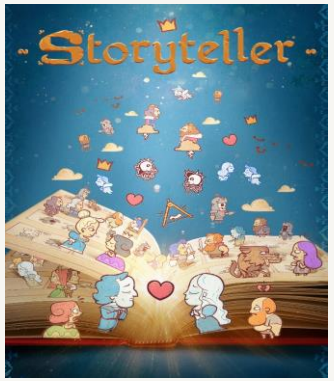
NFF Framework



Stakeholder workshop

EU-centred narratives



Quantitative indicators & constrains

Modelling

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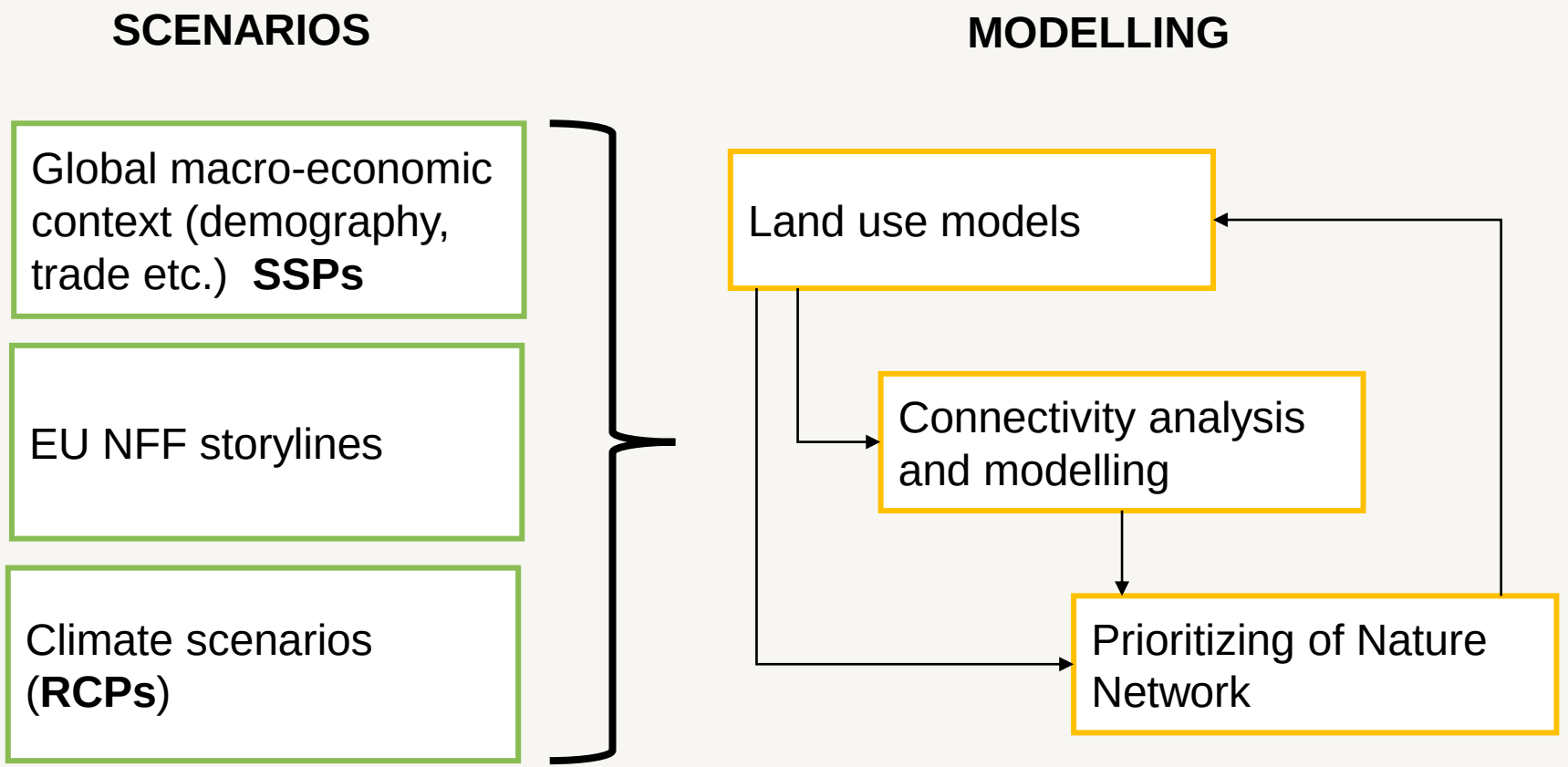
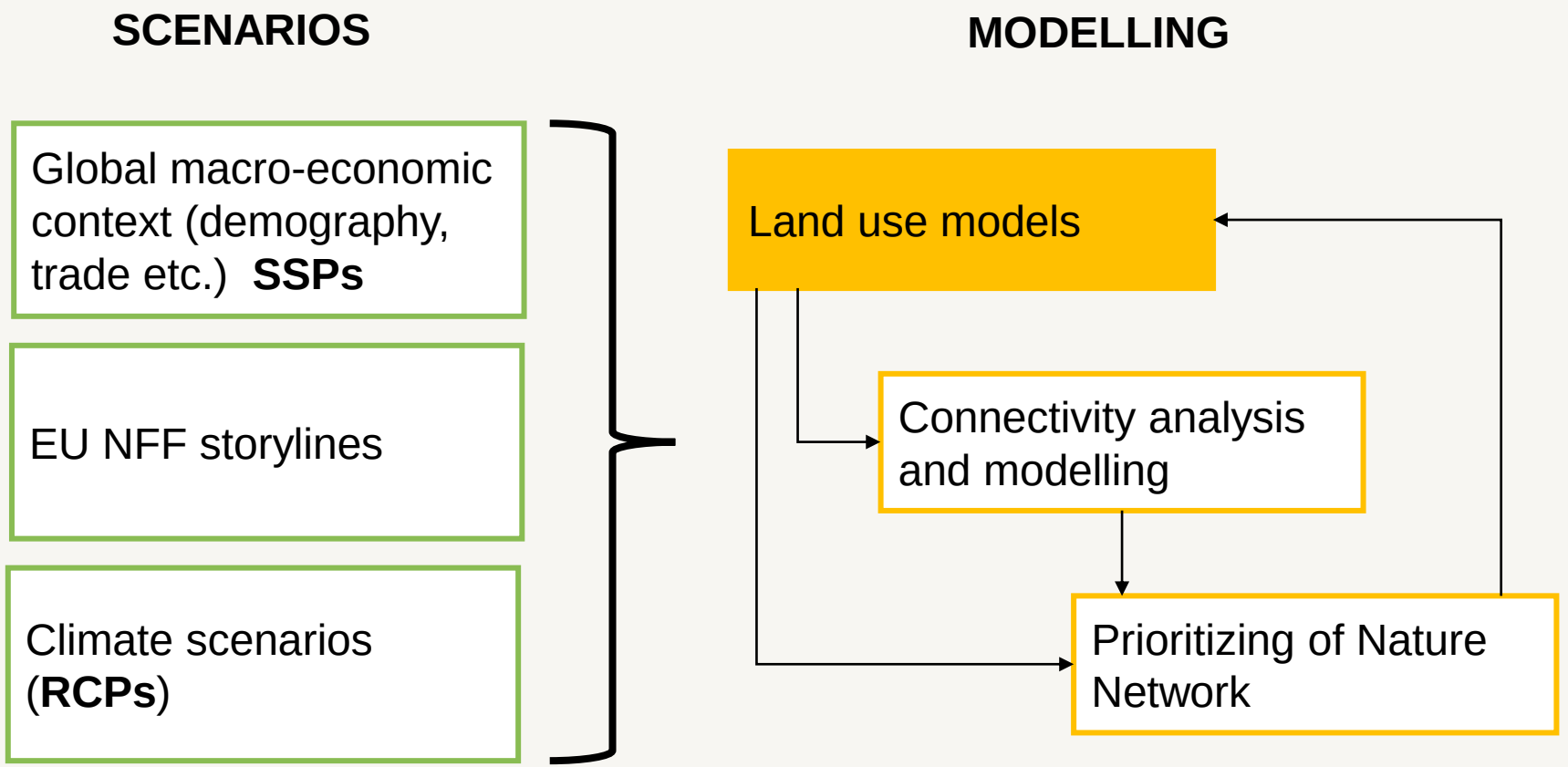
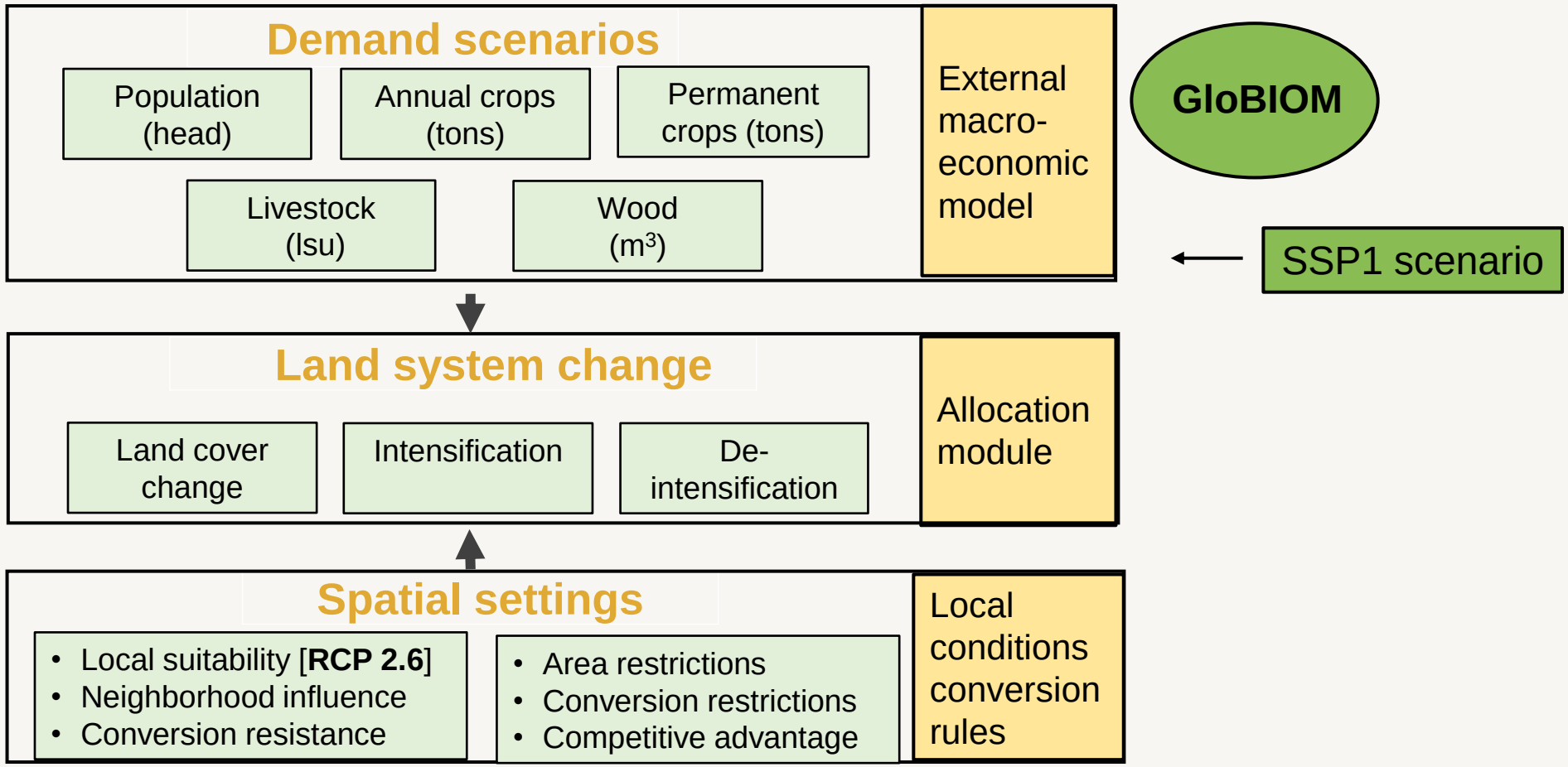
NaturaConnect Workflow



NaturaConnect Workflow



CLUMondo to construct plural sustainable land use scenarios



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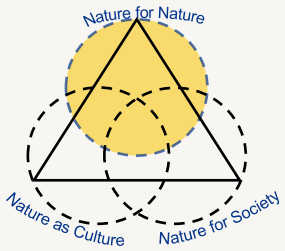
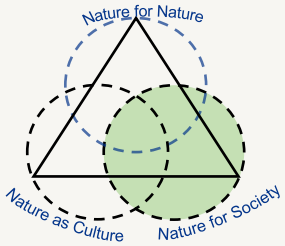
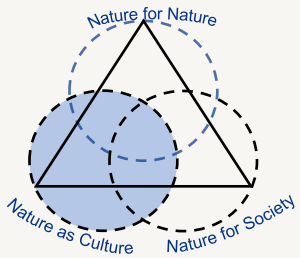
Configuring the NFF implementations

Target areas	Priority NCPs to be supplied	Agricultural management	Agri-environmental management	New urban areas	
	X	Aiming at efficiency except close to vulnerable locations	Focused on important agro-biodiversity species	Increased density in all urban classes (land sparing)	
	Strong focus on enhancing regulating services	Focus on healthy food systems and organic farming	Focused on regulating services	Decreased density in all urban classes (increased urban green)	
	Strong focus on enhancing cultural services	Cultural landscapes strengthened	Focused on cultural elements	Stable density but expansion of villages	

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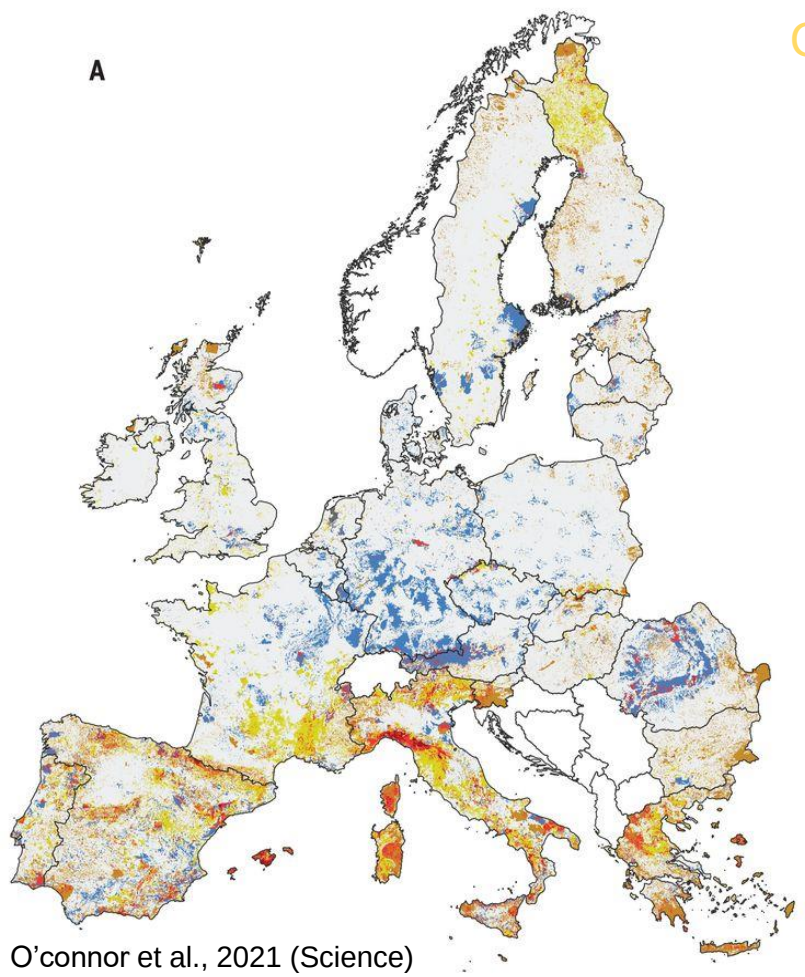
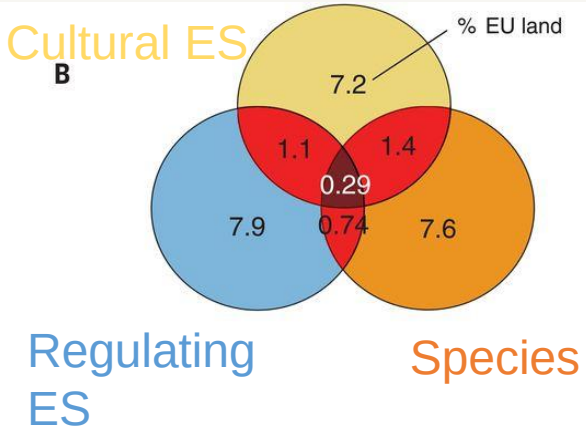
Dou et al., 2023, in review

Priority locations for species or ecosystem services



O'connor et al., 2021 (Science)



Cultural ES

Regulating ES

Species

Top 10% priorities for conservation using an algorithm based on optimizing diversity of species (on EU scale) or maximizing ecosystem services

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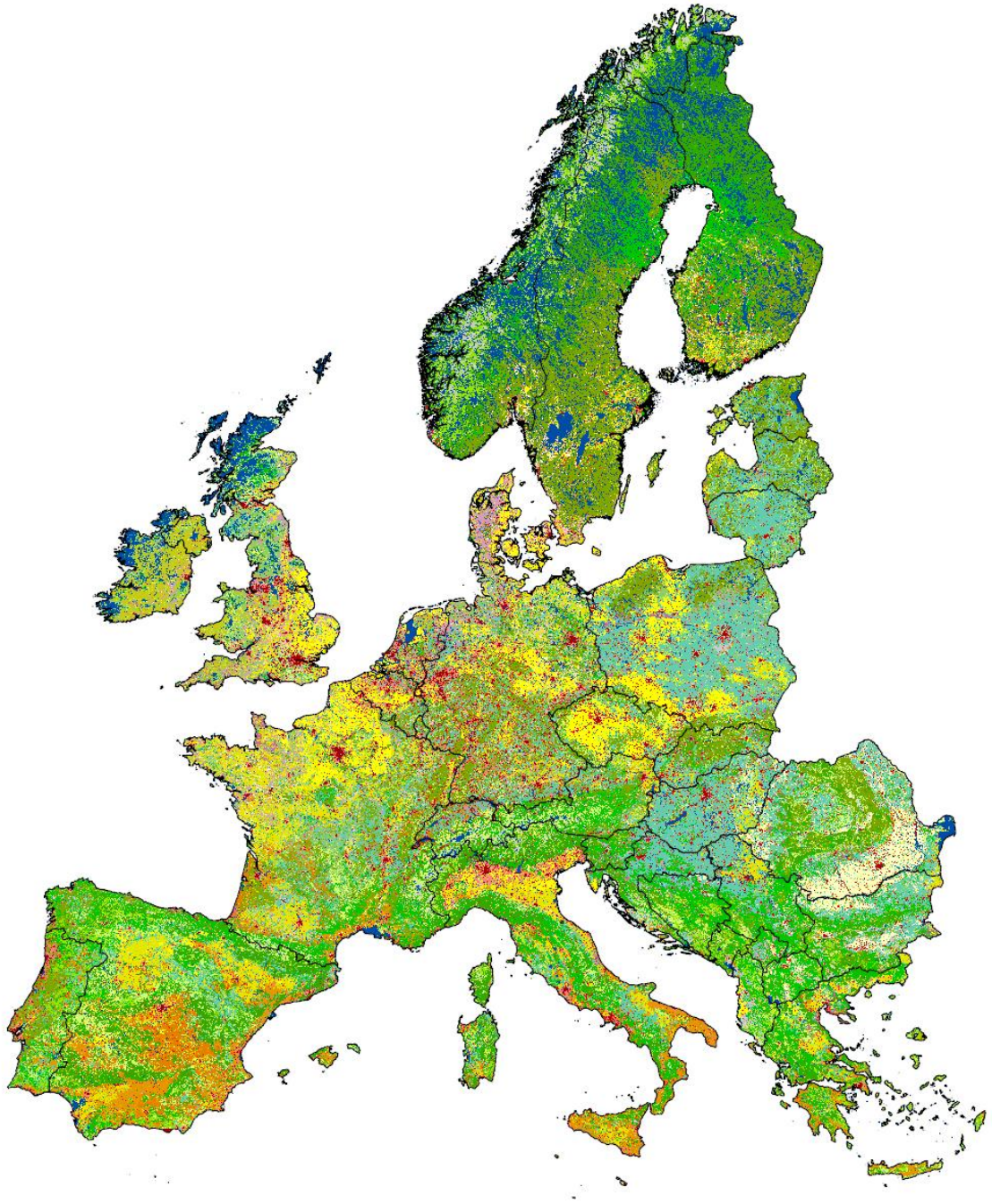
2050: Nature for Nature

- Country boundary
- water
- village
- peri-urban
- urban
- ext-perm
- int-perm
- low int. forest
- med int. forest
- high int. forest
- low int. grass
- med int. grass
- high int. grass
- low int. crop
- med int. crop
- high int. crop
- forest/crop
- forest/grass
- low int. ag mosaics
- med int. ag mosaics
- high int. ag mosaics
- shrubs
- bare and rocks



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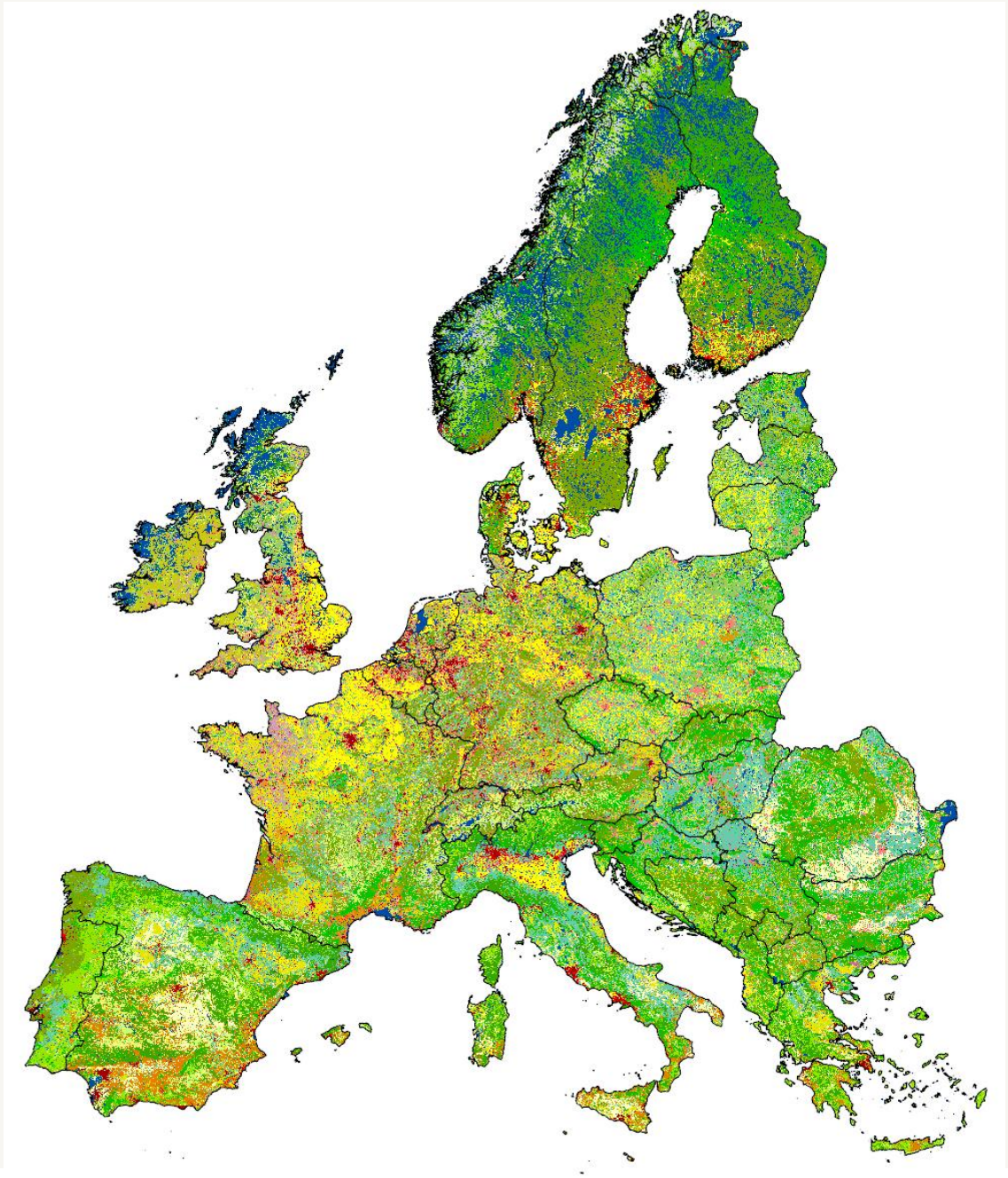
Dou et al., 2023, in review

2050: Nature as Culture

- Country boundary
- water
- village
- peri-urban
- urban
- ext-perm
- int-perm
- low int. forest
- med int. forest
- high int. forest
- low int. grass
- med int. grass
- high int. grass
- low int. crop
- med int. crop
- high int. crop
- forest/crop
- forest/grass
- low int. ag mosaics
- med int. ag mosaics
- high int. ag mosaics
- shrubs
- bare and rocks



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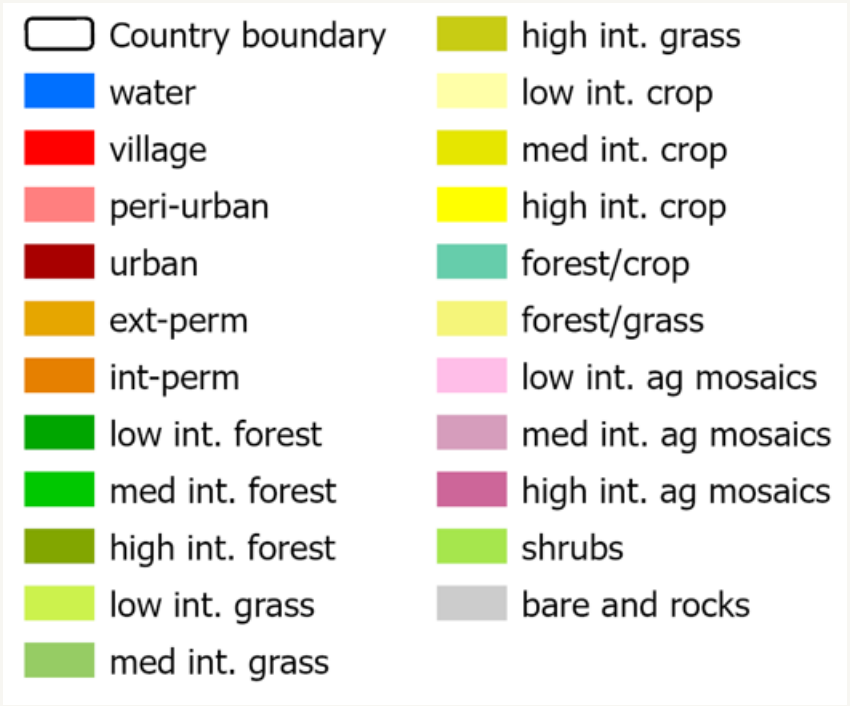
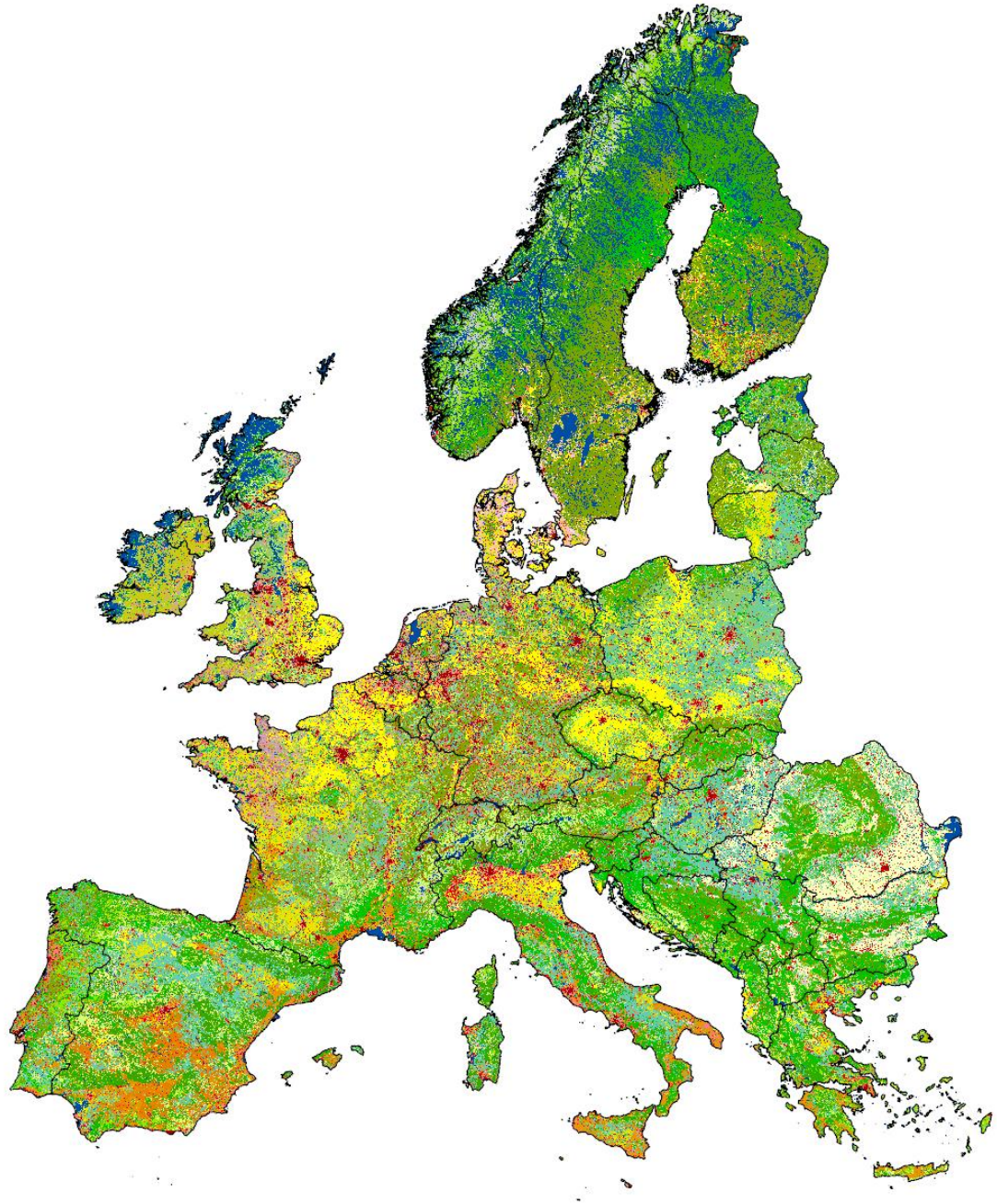
Dou et al., 2023, in review

2050: Nature for Society





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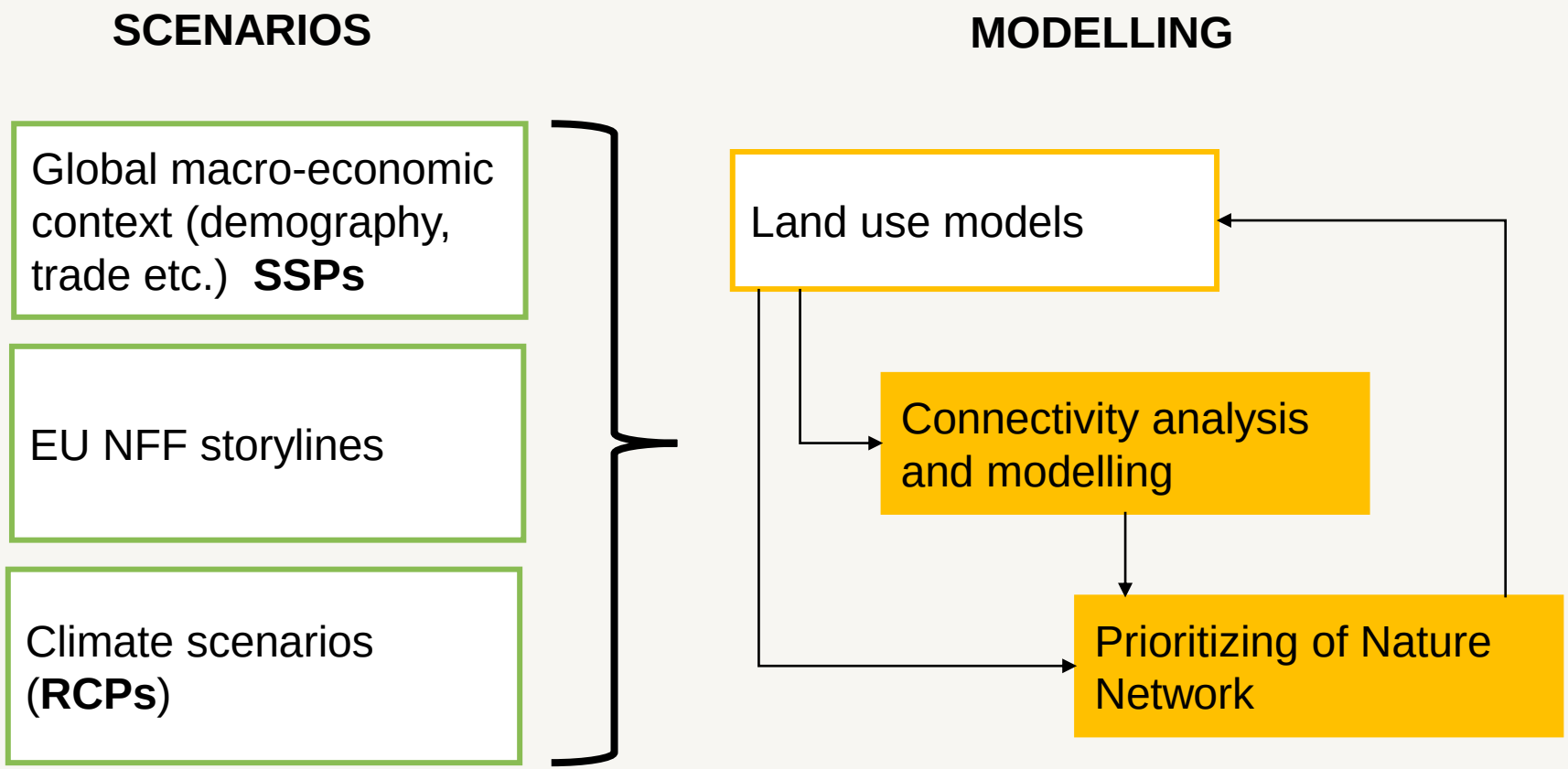
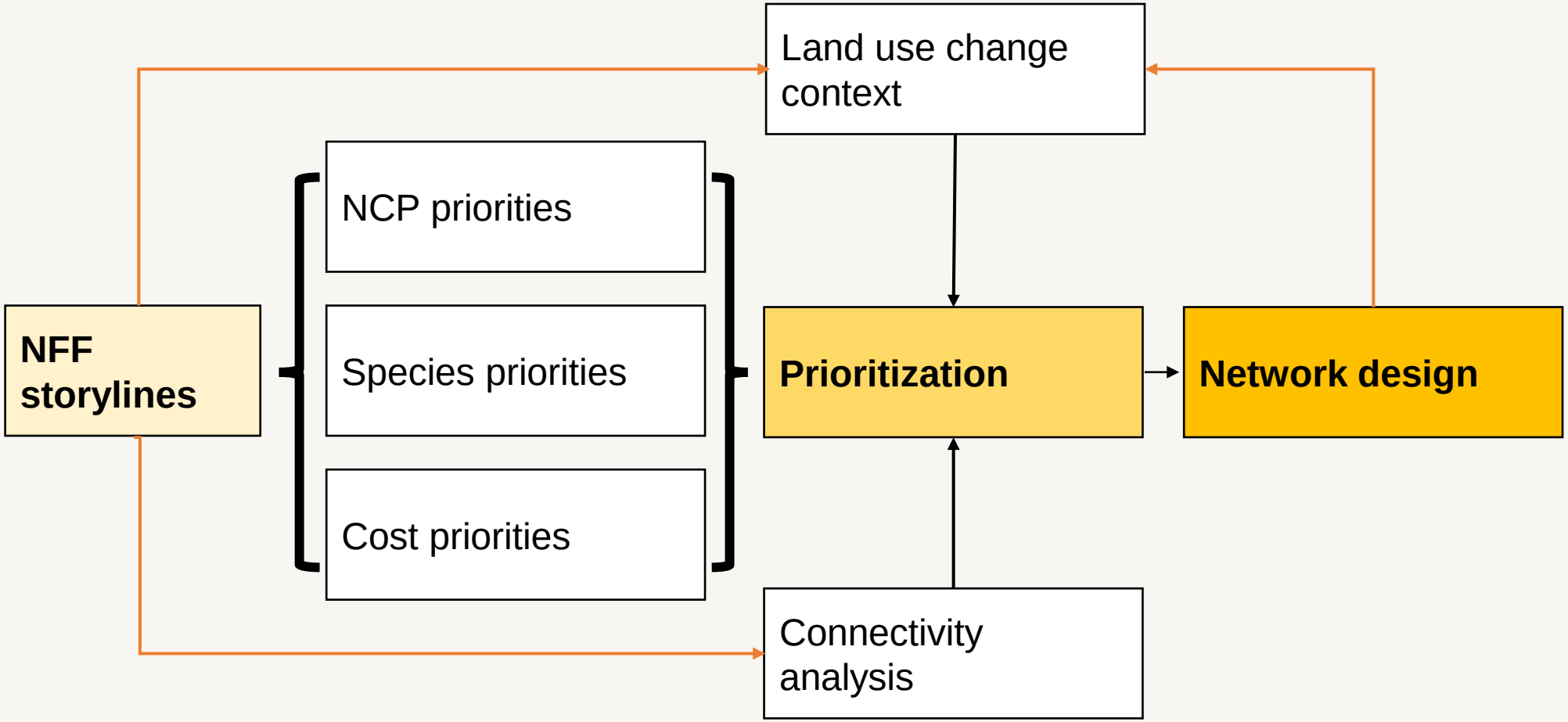
Dou et al., 2023, in review

NaturaConnect Workflow



NaturaConnect Workflow



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BREAK
© Kevin Schafer

Draft Nature Future Scenarios for Europe

Claudia Fornarini – Sapienza University of Rome
Alessandra D'Alessio – Sapienza University of Rome
Néstor Fernández - German Centre for Integrative Biodiversity Research (iDiv) - Martin Luther University Halle-Wittenberg

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Development of the draft Nature Future Narratives for Europe

- Stakeholder workshop in May 2023 to explore visions and preferences for possible Nature Futures

- Follow-up webinar to receive further feedback from wider audience!

© Hildegard Meyer

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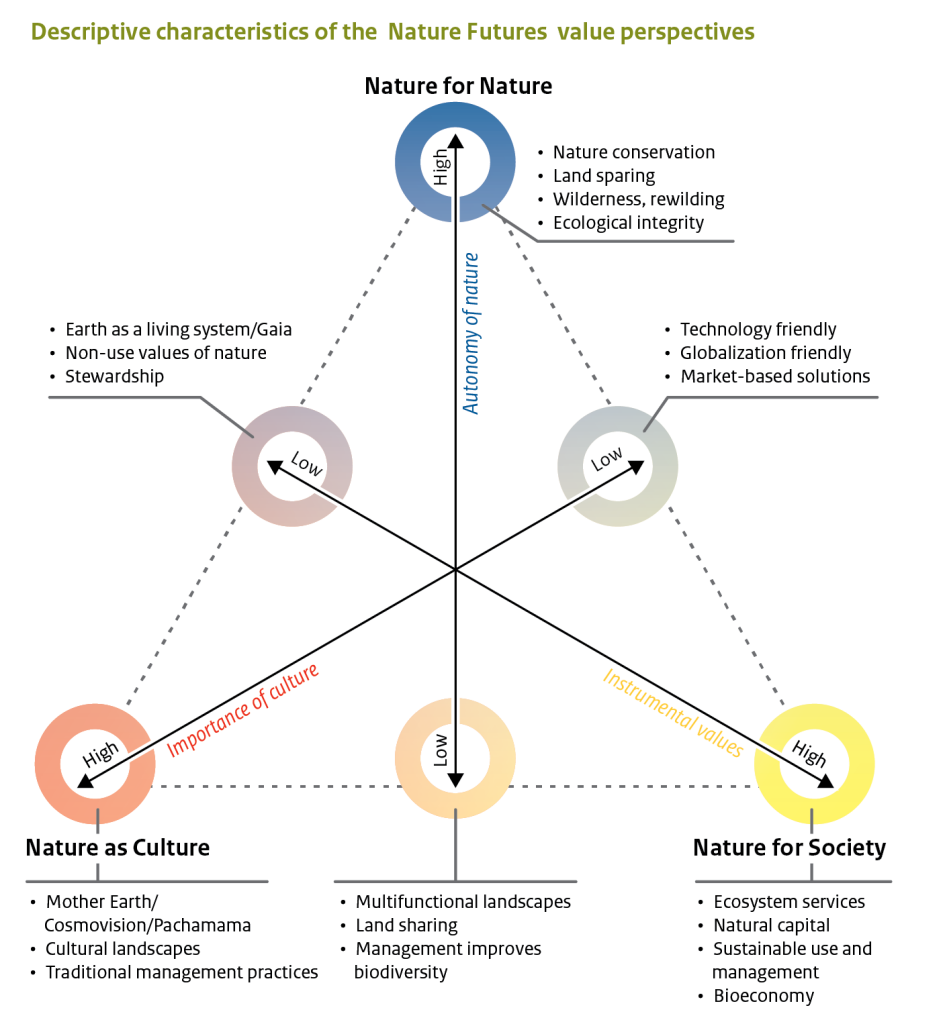
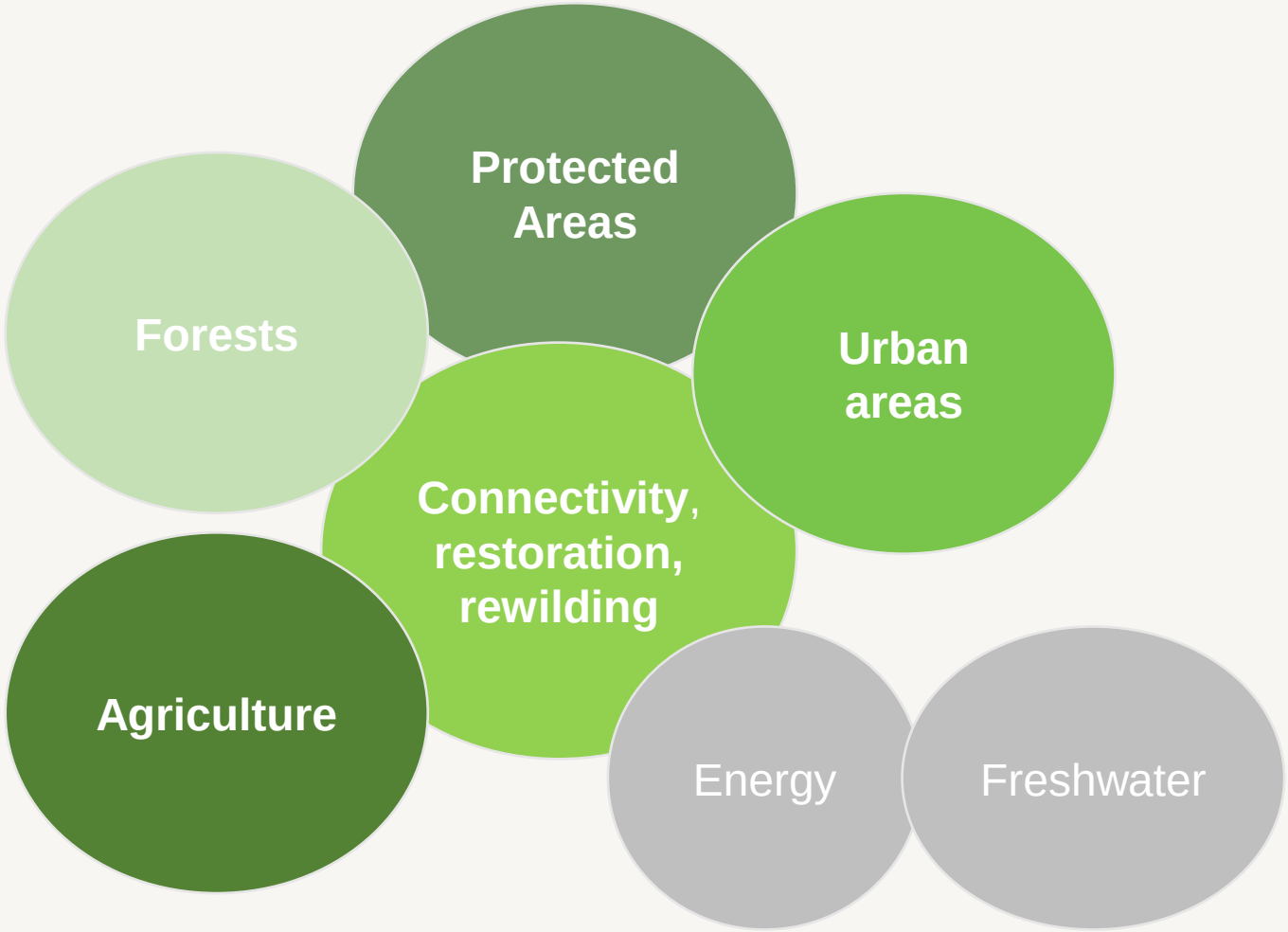
Draft Nature Future Narratives for Europe



Kim et al. 2023



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Protected areas

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Nature for Nature

- Selection of protected areas emphasize **ecological integrity and resilience**
- Management of Natura 2000 pre-existing sites is improved and new PAs (30% coverage) must account for **irreplaceable sites**
- Protected areas are located away from human population

© Luigi Filice –Marsican bear

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Nature for Nature

Strict protection emphasizes no management and no intervention

Most irreplaceable and representative sites

- Biodiversity hotspots
- Primary and old growth forests
- Last wilderness areas
- Climate refugia
- Key areas to preserve ecological processes


© Adam Lawnik-Bialowieza old growth forest, Poland


The Danube river

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Nature for Society

- PAs network aims to maintain the Ecosystem Services (ES) **provisioning in as many places as possible**
- There can be protected areas for particular ESs: pollination, carbon sequestration, micro-climate regulation, soil protection
- PAs are located where ecosystem services are required

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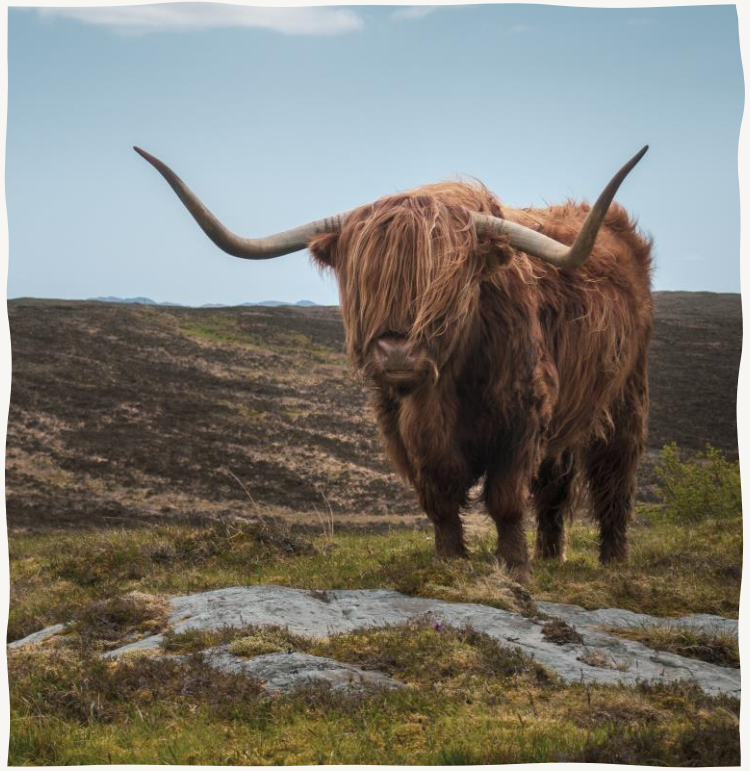
Nature for Society

Strict protection may allow for hunting, timber harvesting and grazing, when contributing to management goal



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Nature as Culture

- The selection of protected areas emphasize **high nature value farmland and cultural landscapes** including many of the early successional habitats in Natura 2000

- PAs are accessible for human populations


© Mikko Ryhänen-Saami with reindeer-

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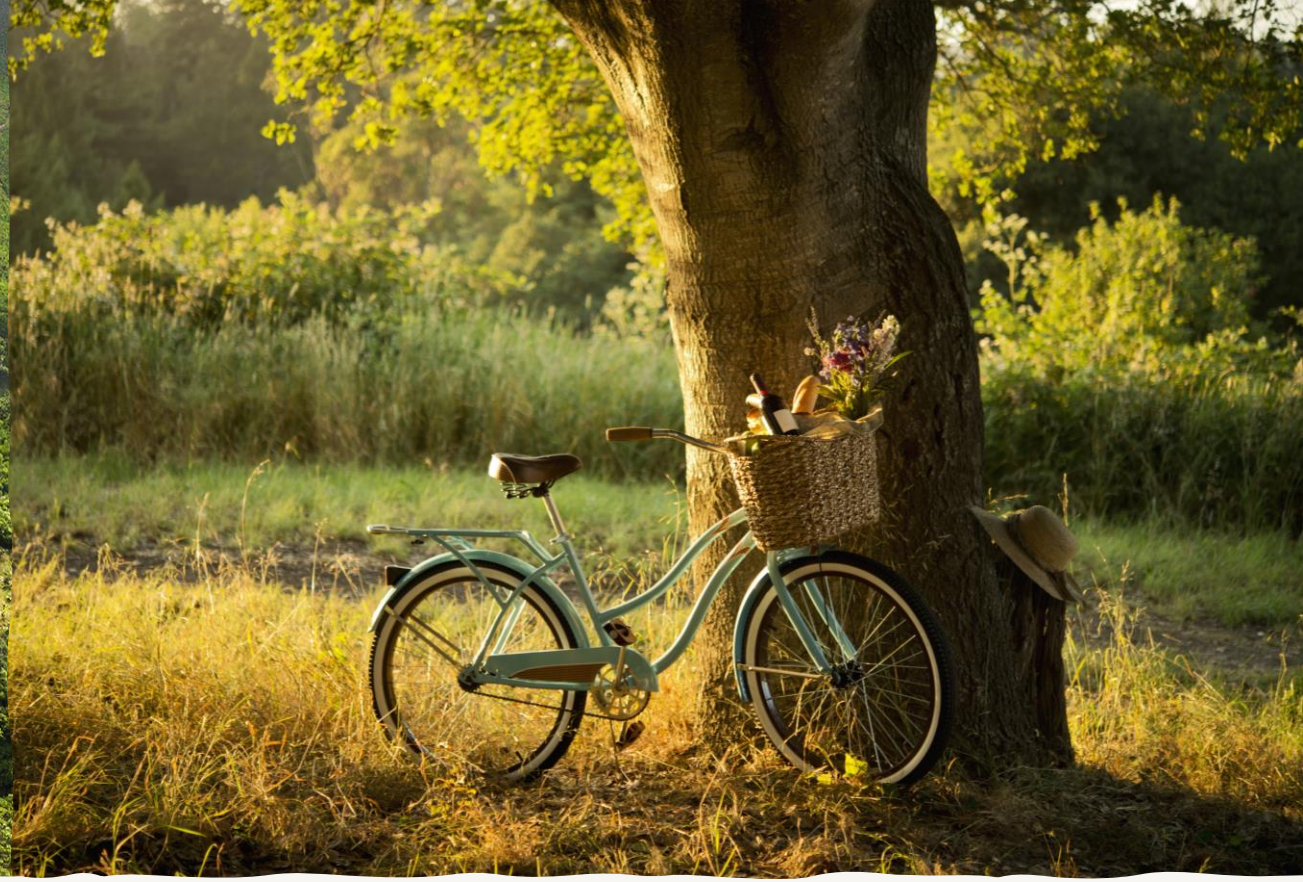
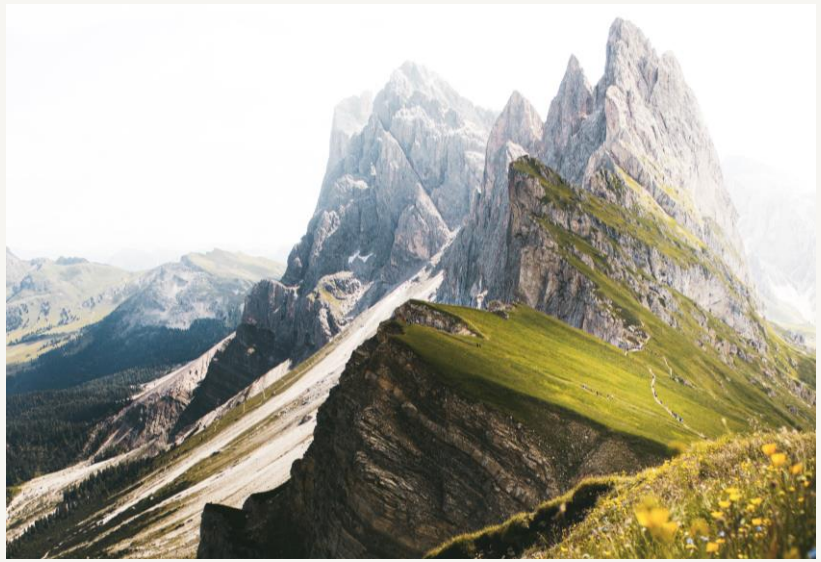


There is a higher tolerance for traditional/community activities and uses, even in **strictly protected areas**

Nature as Culture

NATURA CONNECT



Nature for Nature

Ecological integrity and resilience

Far from humans

No intervention in strictly protected areas

Nature for Society

Ecosystem Services provisioning

Where ESs are needed

Moderate tolerance for some human activities

Nature as Culture

Cultural landscapes

Near humans

High tolerance for cultural human activities

NATURA CONNECT

Connectivity, restoration and rewilding

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Nature for Nature

- Protect and restore **ecological corridors** that support conservation of species and natural ecosystems
- Large-scale restoration of self-sustained ecosystems, e.g., through **rewilding**
- High importance of **barrier removal**

NATURA CONNECT

Nature for Society

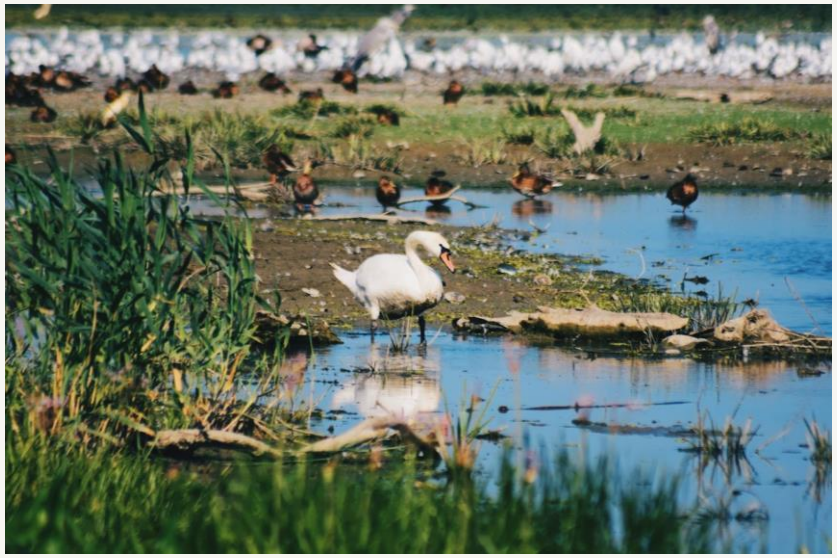
- **Connected ecosystems** support **nature contributions to people:** pollination, fishing, provision of recreational areas, etc.
- **Active restoration** measures increasing carbon sequestration, flood regulation, etc.
- **Some barrier removal** measures

NATURA CONNECT

Nature as culture

- Restore ecosystems with a **cultural, educational and historical importance,** such as agroecological landscapes
- Generation of **green infrastructure**, including active restoration measures
- Connectivity restoration brings green areas and healthy rivers into cities

NATURA CONNECT



Nature for Nature

Corridors connecting large natural areas

Focus on self-sustained complex ecosystems

Remove barriers to support population and genetic processes

Nature for Society

Corridors restored in areas providing multiple services

Restoration measures increase climate change adaptation & mitigation

Flood regulation measures, carbon sequestration etc.

Nature as Culture

Agroecological areas with hedgerows and natural patches

Green infrastructure accessible to people

Rivers and wetlands restored to support traditional uses and recreation

NATURA CONNECT

NATURA CONNECT

Nature for Nature

- **Passive restoration** enhances the structural, functional and compositional complexity of forests
- **Land sparing** approach preferred
- **Old growth forests** strictly protected and connected
- High fire-risk mitigated by promoting **natural grazing**

NATURA CONNECT

Nature for Society

- **Active afforestation** with native species
- Favour **multi-functional** forests
- Maximize carbon sequestration, timber, and biodiversity value
- **Grazing services** promoted using both wild species and livestock

NATURA CONNECT

Nature as Culture

- **Active afforestation** with species of high cultural value
- **Land sharing** prevails with local communities managing forests
- Expansion of **agroforestry landscapes:** wooded grasslands interspersed with forestry areas
- **Fires are prescribed** to support traditional and cultural production systems

© Vincent Brassinne- Sonian forest,Belgium

NATURA CONNECT

Nature for Nature

Ecological integrity and resilience

Complex forests with high biodiversity are connected

Forestry planning driven by land sparing

Trophic interactions restored

Nature for Society

Contributions to people

Active afforestation for C sequestration and timber production

Multifunctional forests

Grazing with livestock and native species

Nature as Culture

Species and landscapes with relational value

Forest composition increases cultural value

Local, community-driven forestry

Traditional fire management

NATURA CONNECT

Agriculture

NATURA CONNECT

Nature for Nature

- **Large scale** farming is envisioned except for areas next to PAs
- **Nature Based Solutions** increase in high intense systems to reduce pesticide use and chemical input
- **Precision farming** increases to optimize agricultural input and output
- **Land sparing** approach is preferred

NATURA CONNECT

Nature for Society

- **Large scale** farming is envisioned
- **Nature Based Solutions** increase in high intense systems to reduce pesticide use and chemical input
- **Precision farming increases** closer to urban areas
- **Land sharing/land sparing** mixed approach is encouraged

NATURA CONNECT

Nature as Culture

- Emphasis on **extensive and traditional agricultural practices and agropastoralism practices** with high conservation value
- **Small scale** farming is envisioned as cultural heritage
- **Organic farming** is developed
- **Precision farming** is not priority
- **Land sharing** is likely

© Valerio Li Vigni - Monferrato vineyard landscape, Italy

© Tourismusverein Schnalstal - Gudrun Muschalla, transhumance in Schnals

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Nature for Nature

Ecological integrity and resilience

Large scale farming

Precision farming

Land sparing

Nature for Society

Ecosystem Services provisioning

Large scale farming

Precision farming

Land sparing/sharing

Nature as Culture

Species, landscapes and practices with cultural value

Small scale farming

Organic farming

Land sharing

NATURA CONNECT

Urban areas

NATURA CONNECT

Nature for Nature

- **High-rise** compact cities to leave space for nature
- **No** increase in urban **sprawl** of cities
- People move **from rural villages** mostly **to cities** and to a smaller extent, regional towns to have less impact on nature
- **Urban green elements** are developed (e.g. green corridors, urban farming, green roofs)

NATURA CONNECT

Nature for Society

- **Moderate trend** in compact cities development
- **Urban sprawl** increases in peri-urban areas and abandoned villages to improve connectivity between cities and natural features (for ESs contact)
- **Urban green elements,** urban agriculture (km0) and **Nature Based Solutions** (e.g. permeable parking, green roofs) increase to ensure environment sustainability and ESs provisioning

NATURA CONNECT

Nature as Culture

- **No high rise** compact cities
- No **urban sprawl** but people shift **from large cities** and peri-urban areas **to** medium and small settlements in **rural areas**, favoring the re-flourishing of rural villages and small regional towns
- **Urban green areas/elements** for culturally important species and to embellish the cities; **urban gardening** (local food production and cultural activities)

NATURA CONNECT

Nature for Nature

Ecological integrity and resilience

Flow from **rural areas** to **cities**

High rise compact cities but no sprawl

Nature for Society

Ecosystem Services provisioning

Moderately compact cities

Urban sprawl in peri-urban areas

Nature as Culture

Species, landscapes and activities with cultural value

No high rise compact cities and no sprawl

Flow from **cities** to **rural areas**

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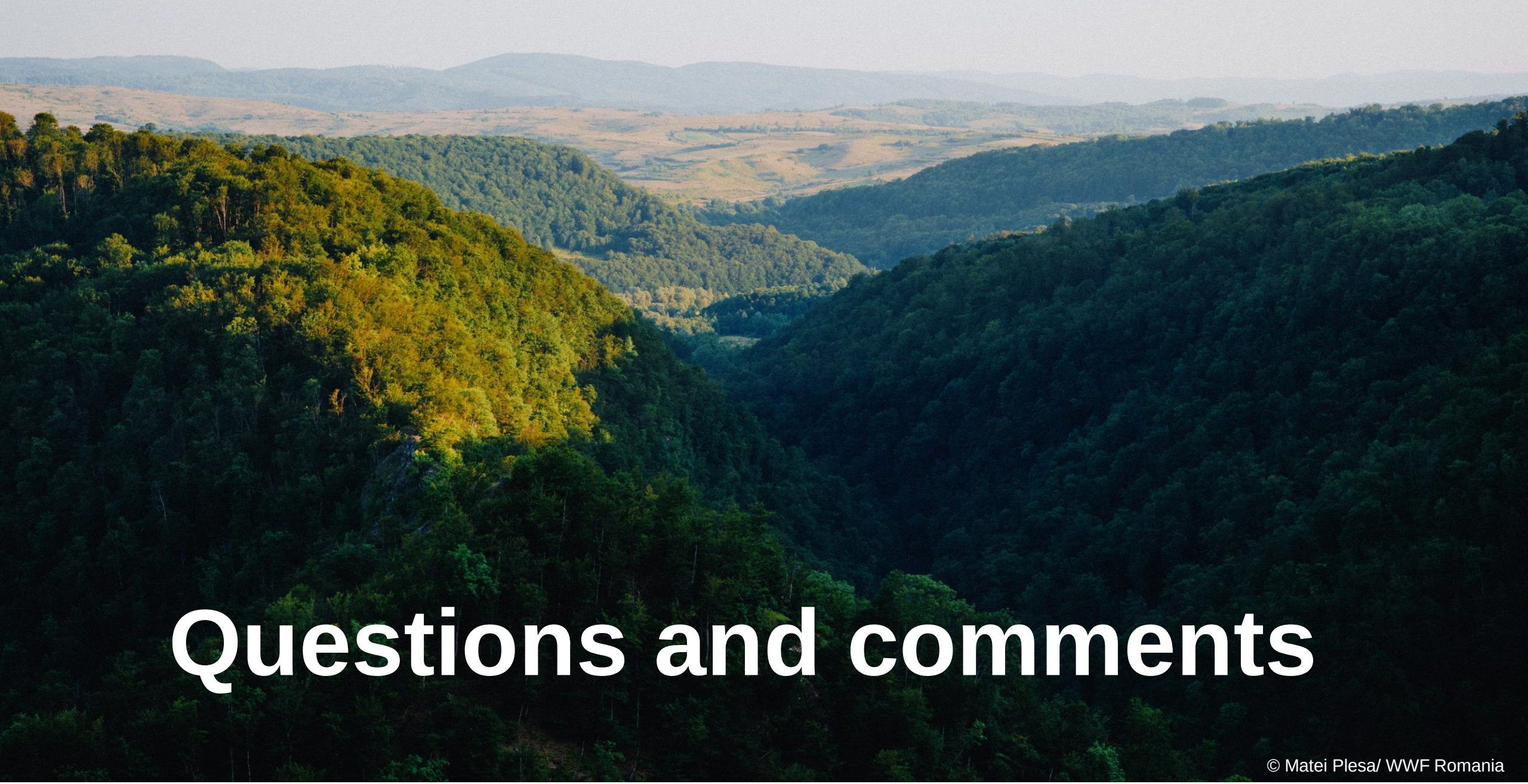

Questions and comments

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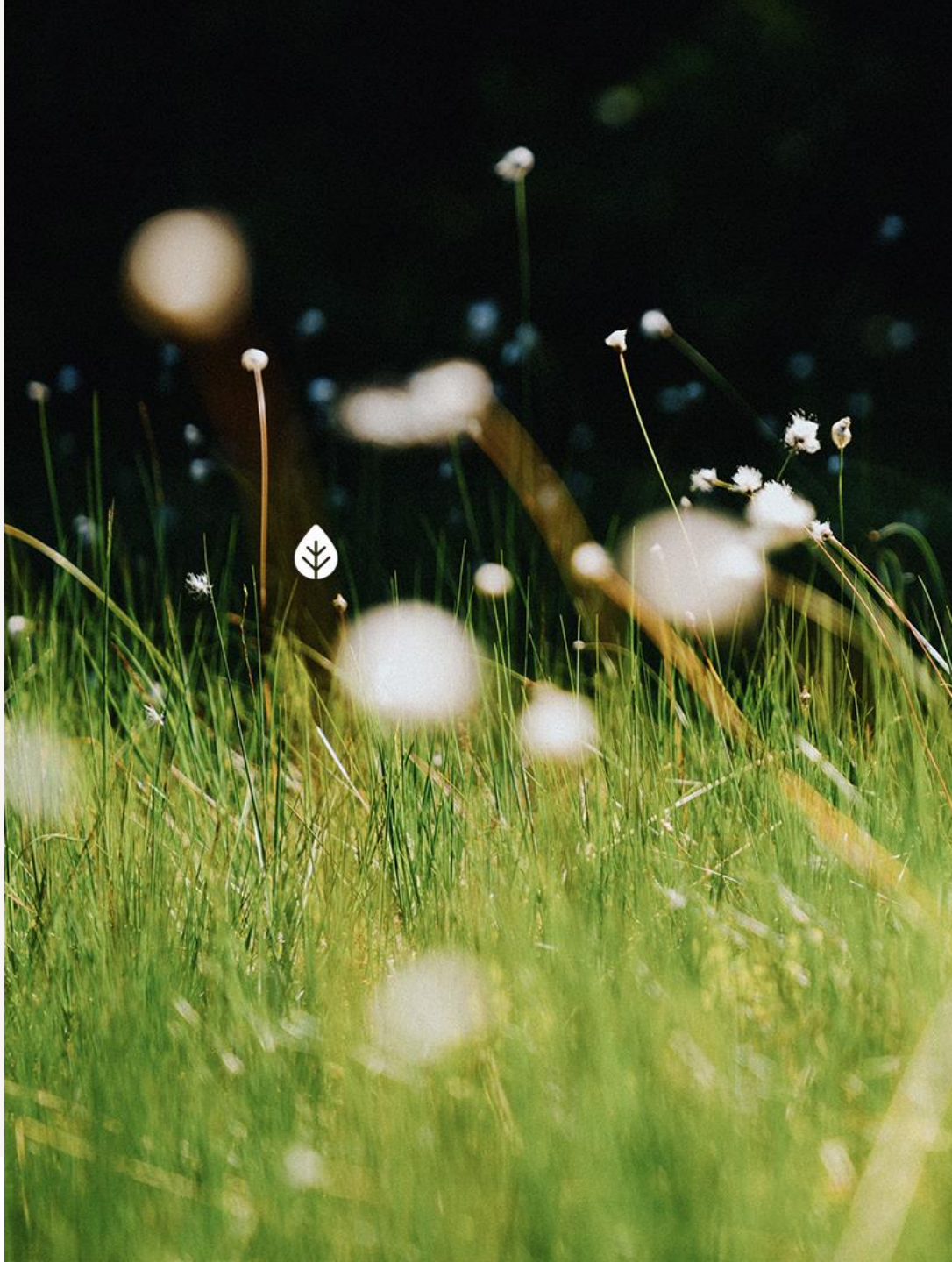
Questions and comments

Are the draft narratives presented consistent in contrasting three positive futures for nature?

Are there some aspects that are better covered in one narrative than others?

Any other thoughts or comments as we work to finalise the narratives?

Please add your comments to the ZOOM chat box, and questions for the panel to the ZOOM Q&A box



Conclusions and next steps

Conclusions and next steps

1) Post-webinar follow up on questions

2) Finalisation of draft narratives based on feedback

3) Sharing of final narratives

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