Negotiating scenarios of a desirable ecological infrastructure for Switzerland

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ValPar.CH

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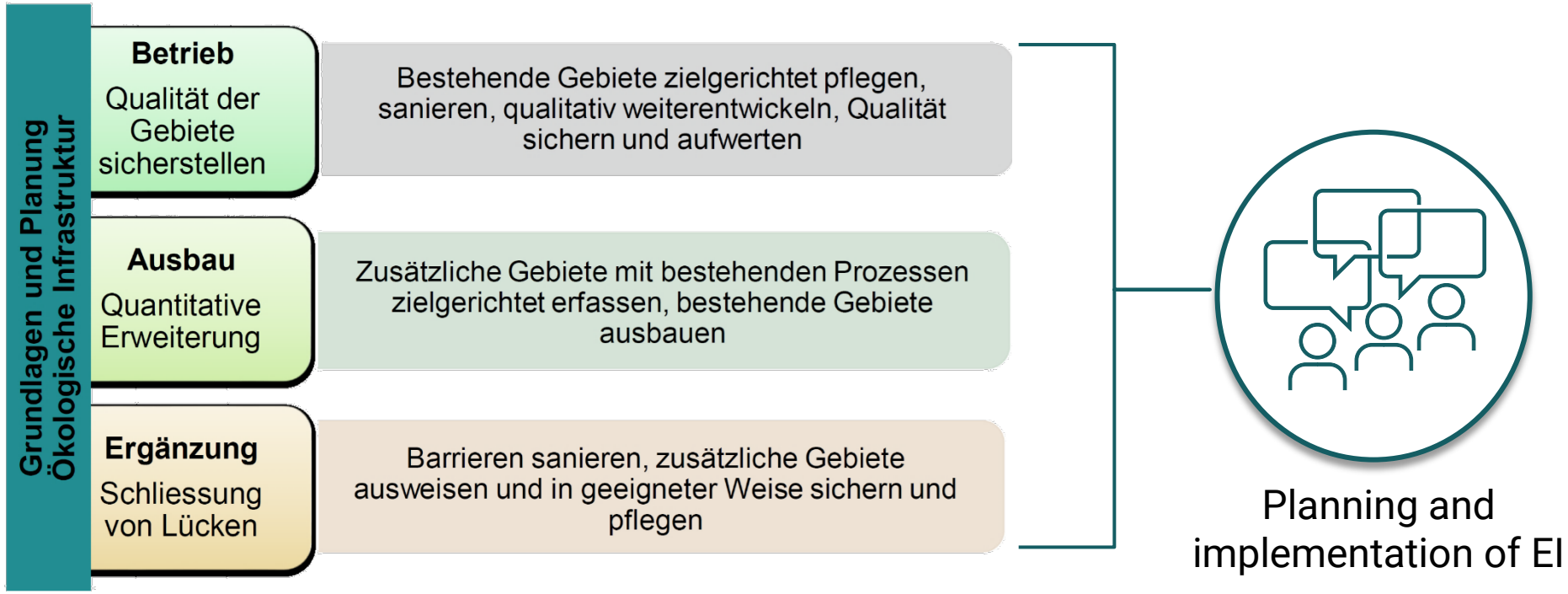
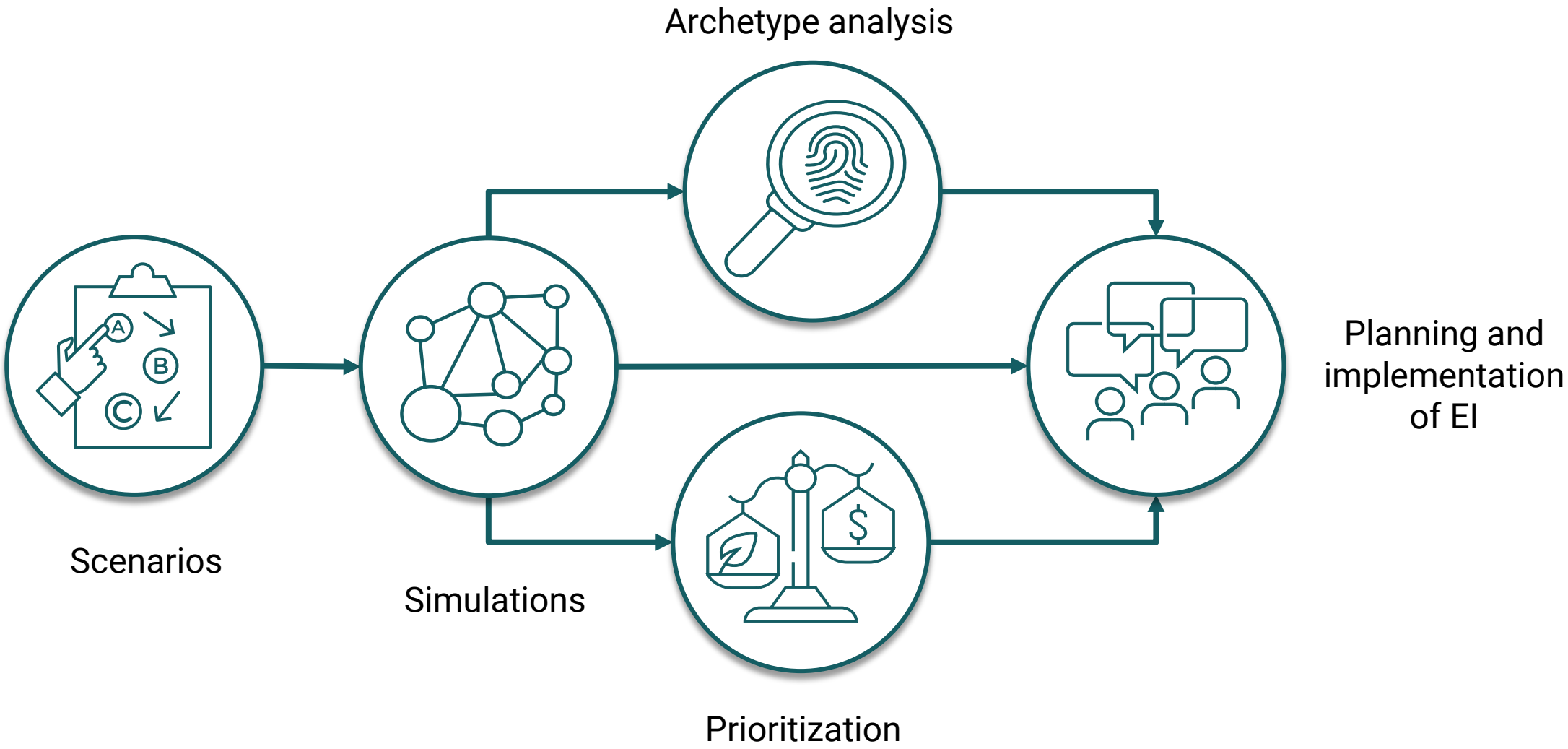
Ecological Infrastructure

- Switzerland has a target to ensure a functioning national Ecological Infrastructure by 2040

- Achieving this target has its challenges:
  - ‘Functioning’ must take into account future change processes (climatic change).
  - It will necessitate decisions about which areas to include and how to manage them which must be negotiated by society.

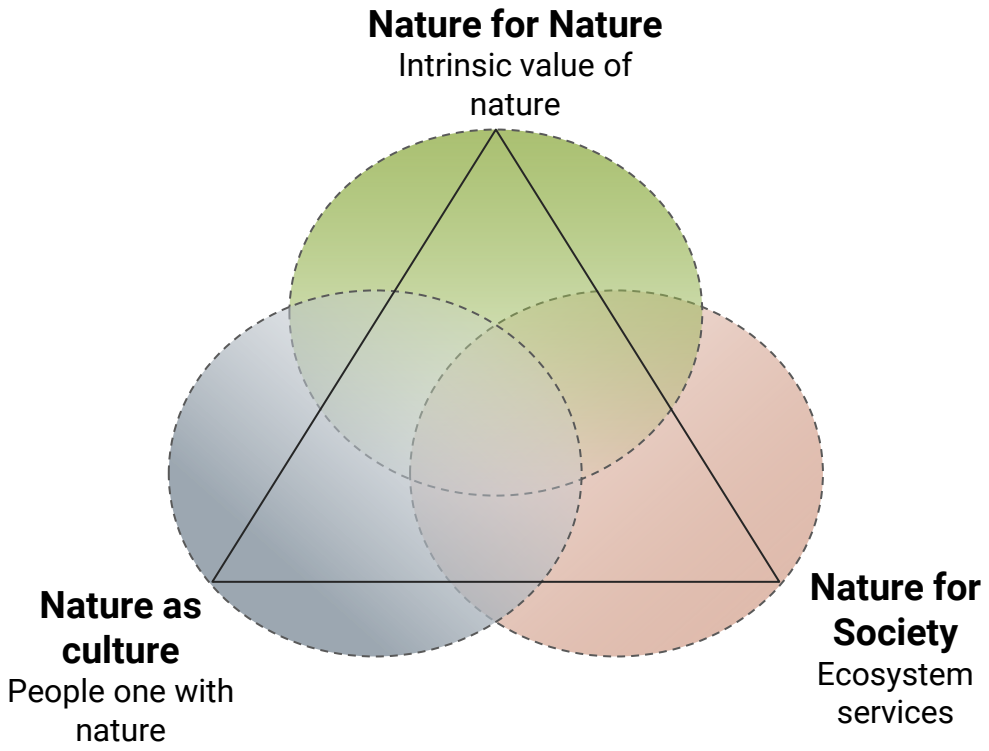


Methods to support EI decision making



Scenarios

Societal-nature value perspectives



Future trends in drivers of system change

	+1.4°C RCP 2.6	+2.3°C RCP 4.5	+1.4°C RCP 2.6	+2.3°C RCP 4.5	+3.1°C RCP 8.5
	Low 9.5M	Reference 10.5M	Reference 10.5M	Reference 10.5M	High 11.5M
	22% (2030) 30% (2060)	17% (2030) 22% (2060)	17% (2030) 25% (2060)	15% (2030) 20% (2060)	15% (2030) 0% (2060)
	SSP 1 Green Road	SSP 2 Middle of the road	SSP 1 Green Road	SSP 2 Middle of the road	SSP 3 Rocky Road

Scenarios

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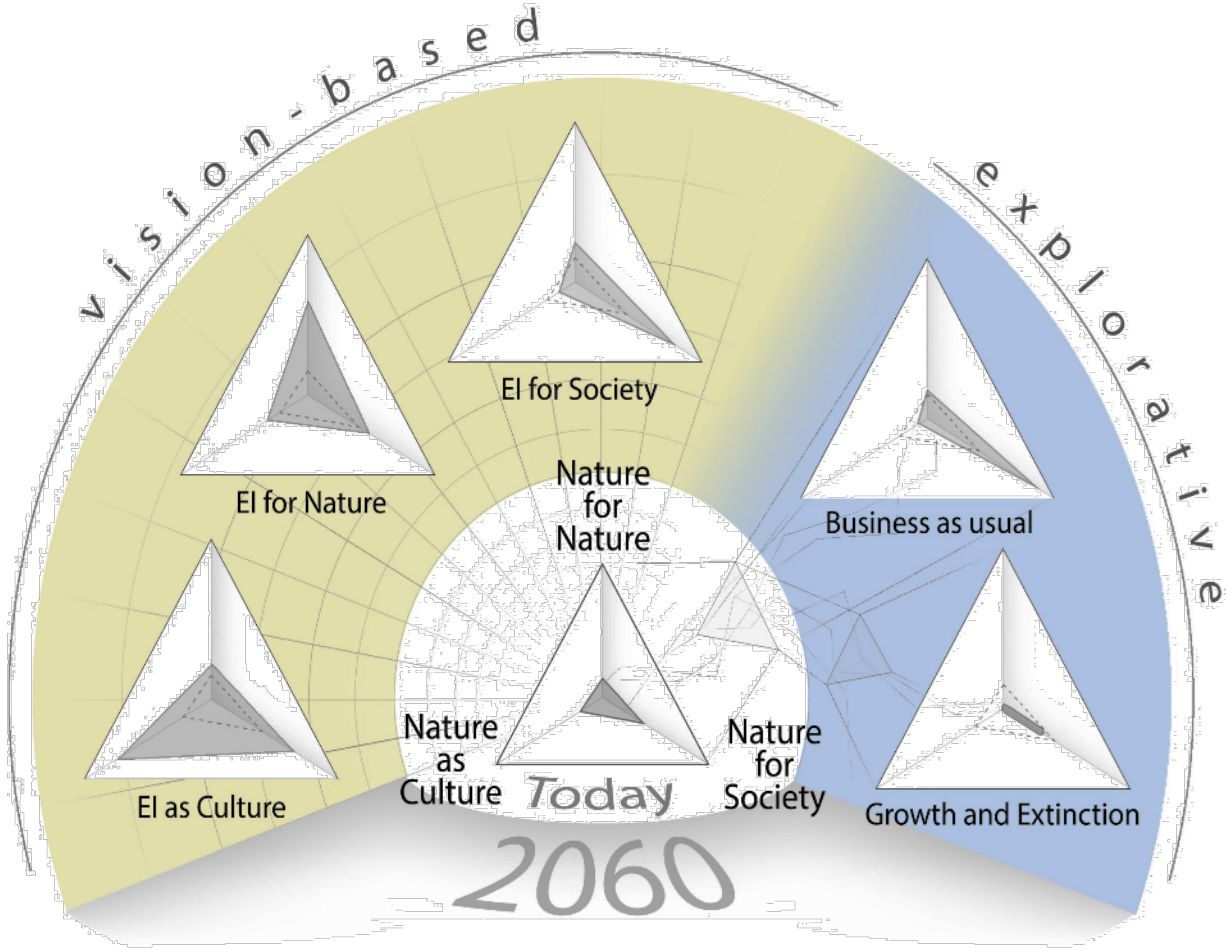
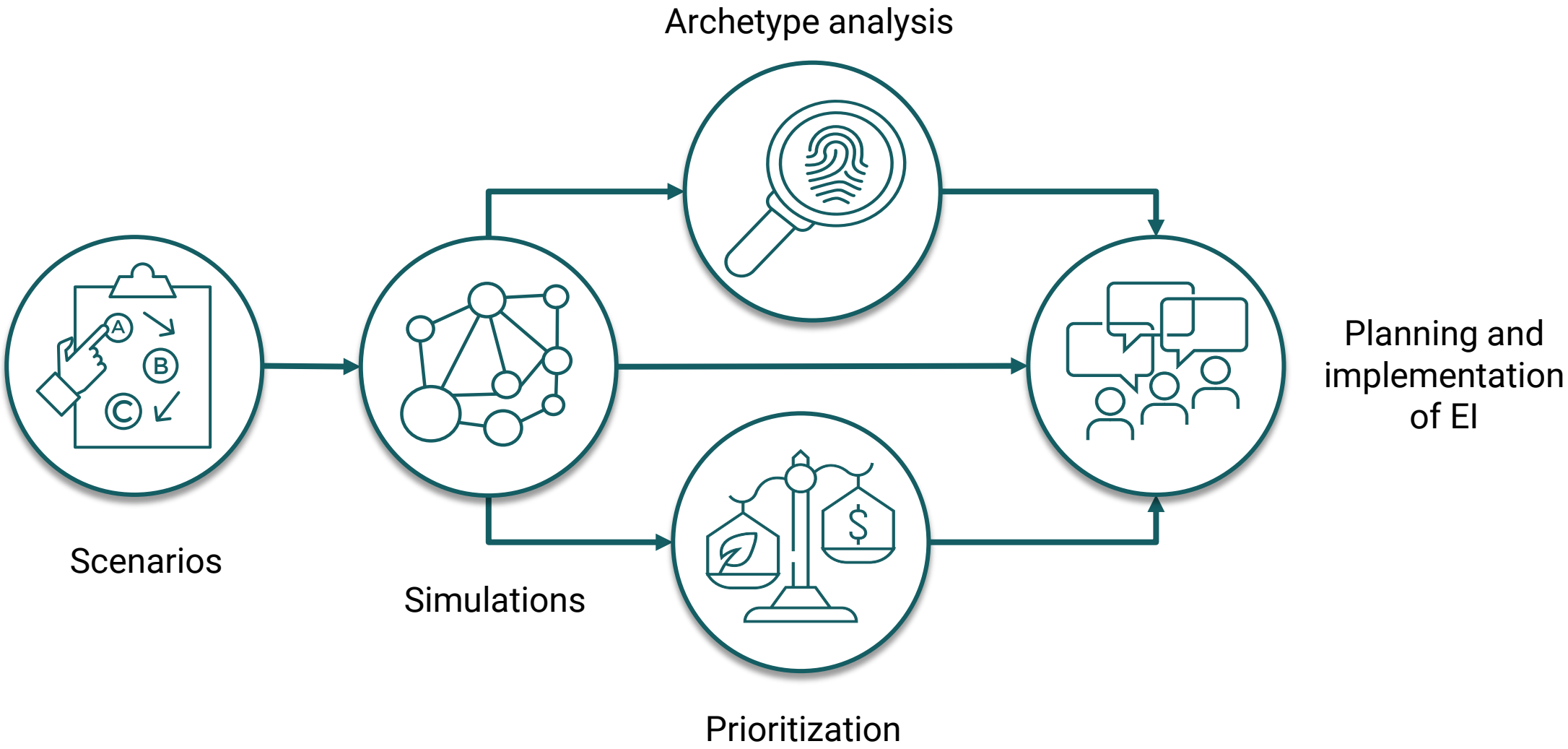
Five scenarios framing the development of EI in Switzerland between 2020-2060

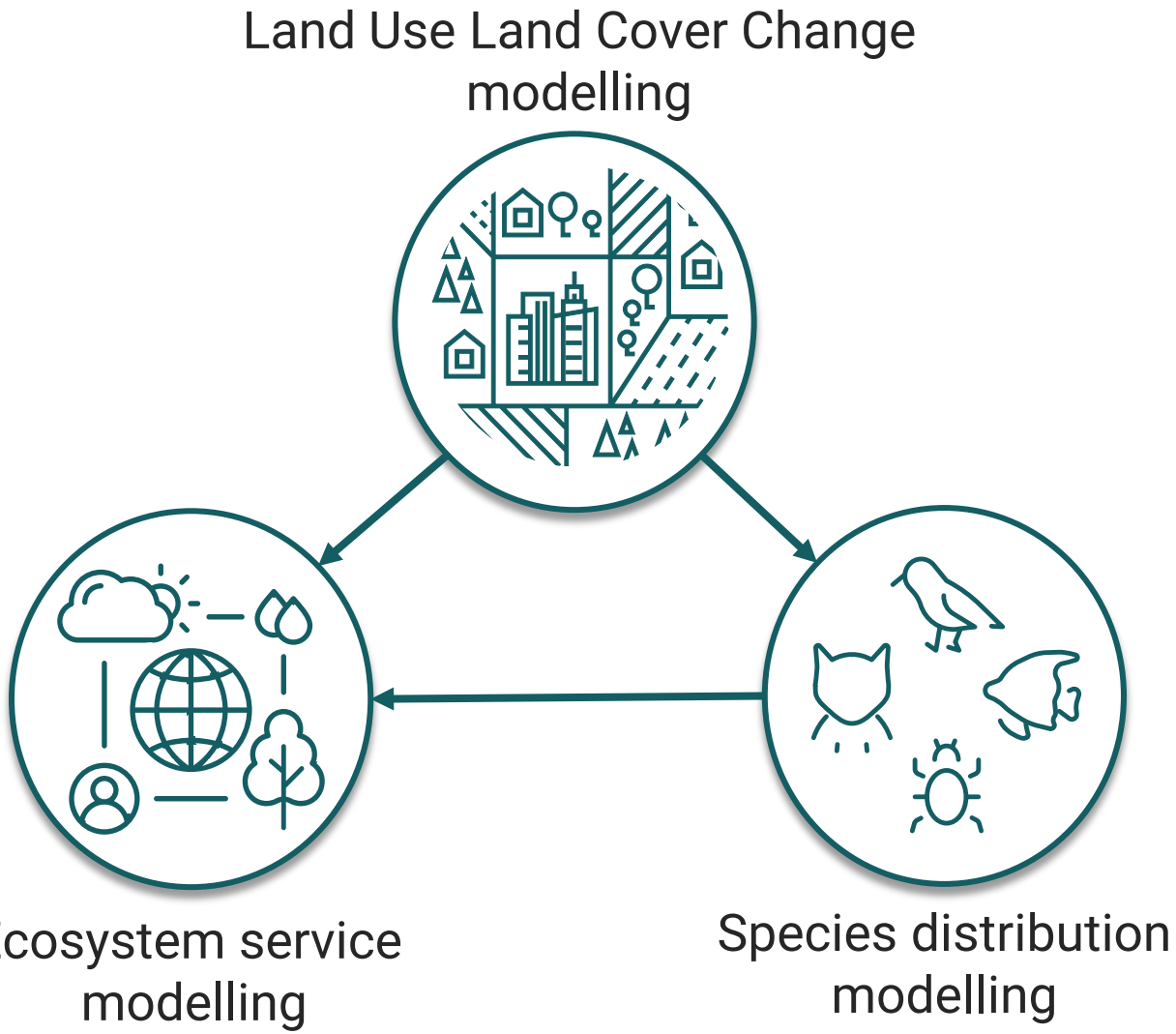


Mayer et al. 2023

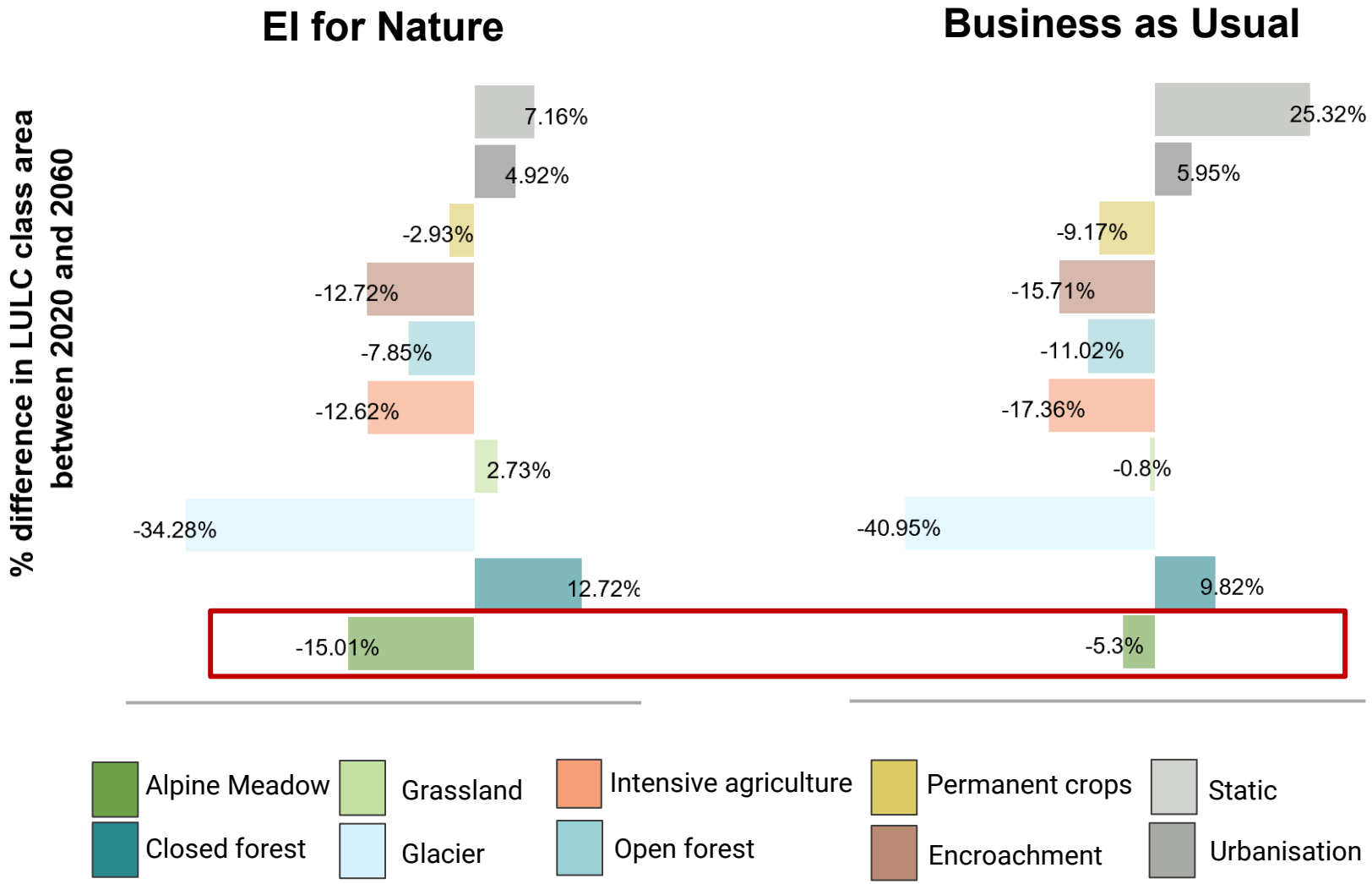
Methods to support EI decision making



Simulations

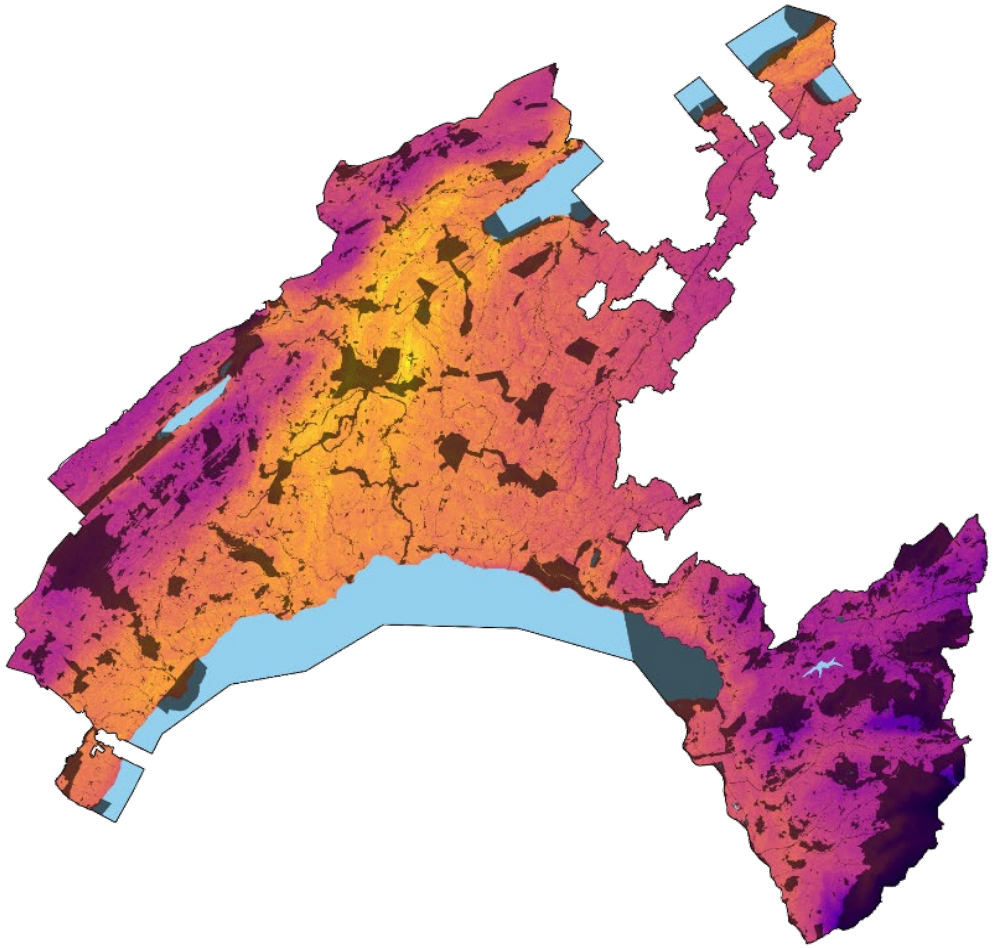


Simulations

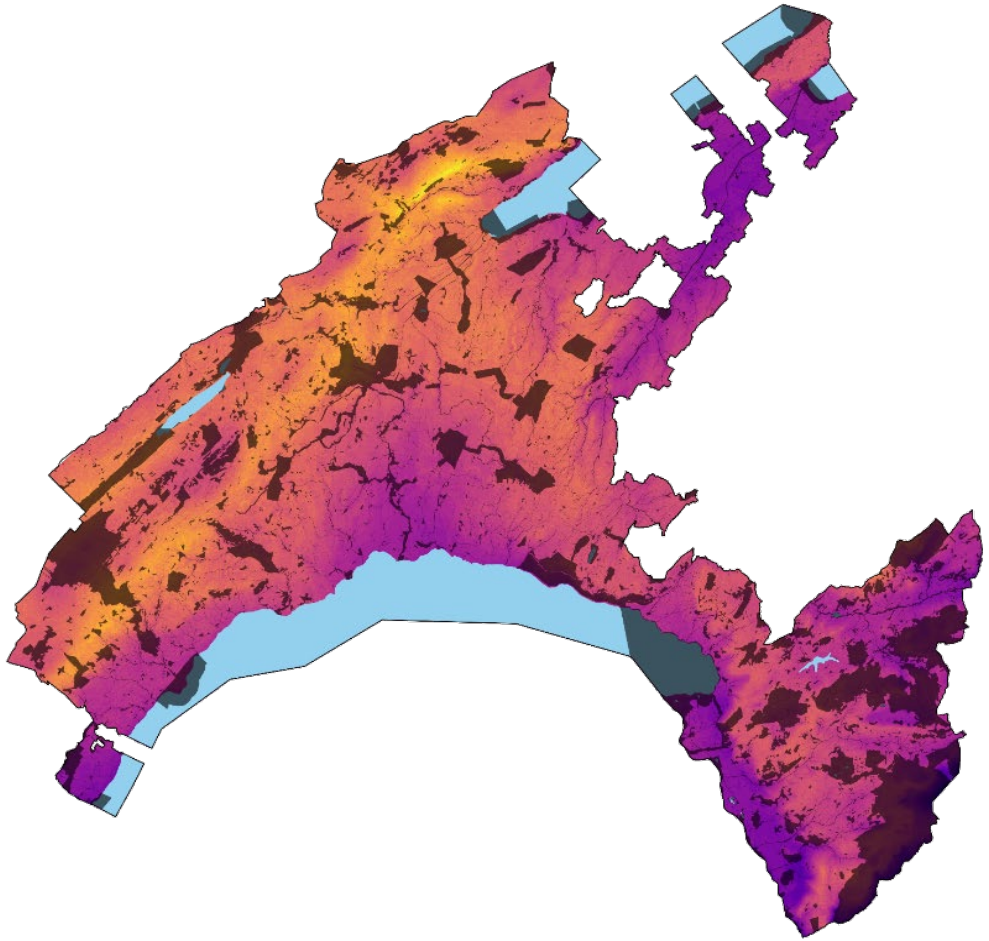


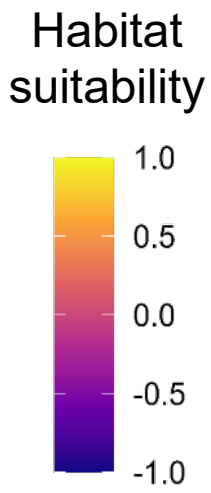
Simulations

Habitat suitability in proposed EI sites in 2020



but in 2060 under climate change (+2.5C)





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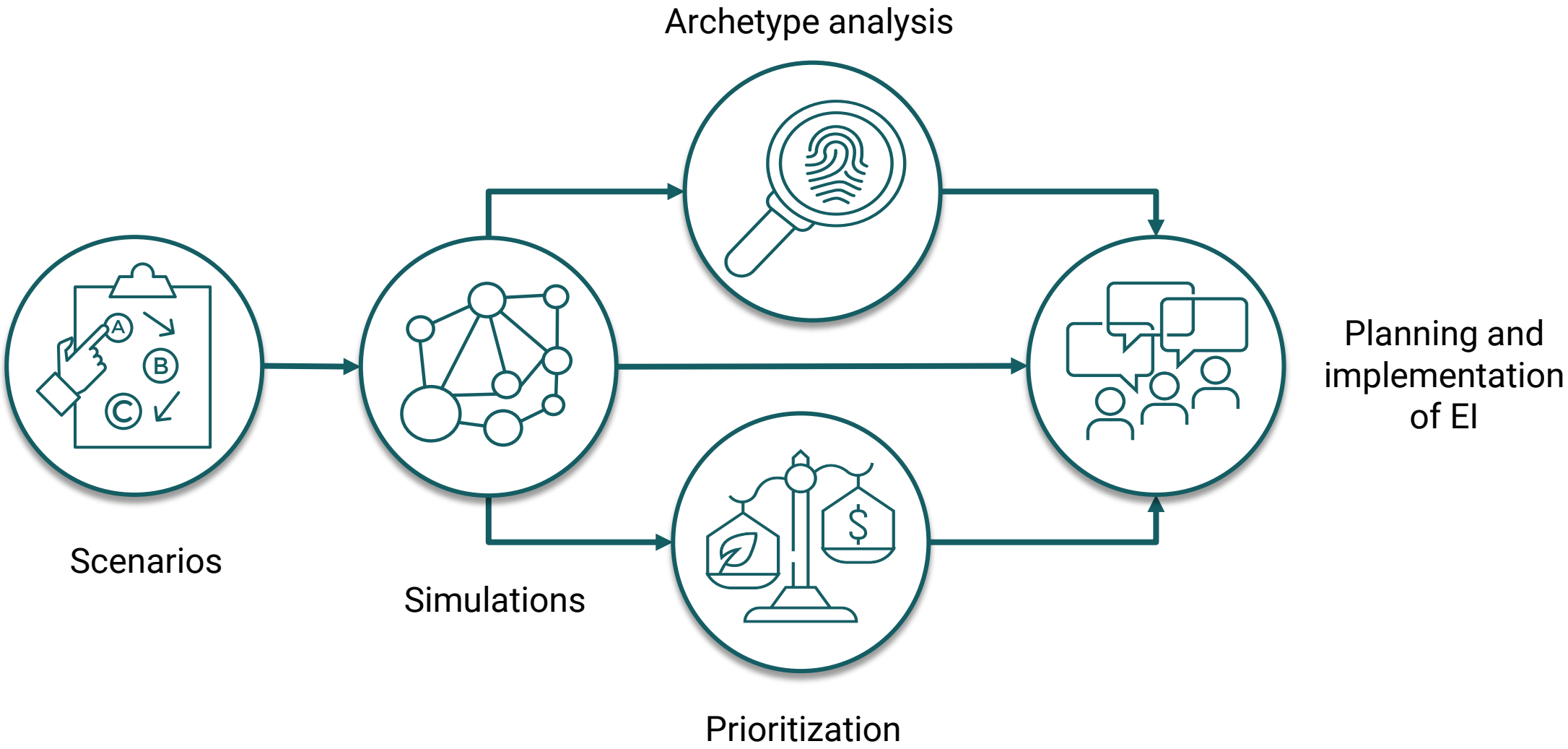
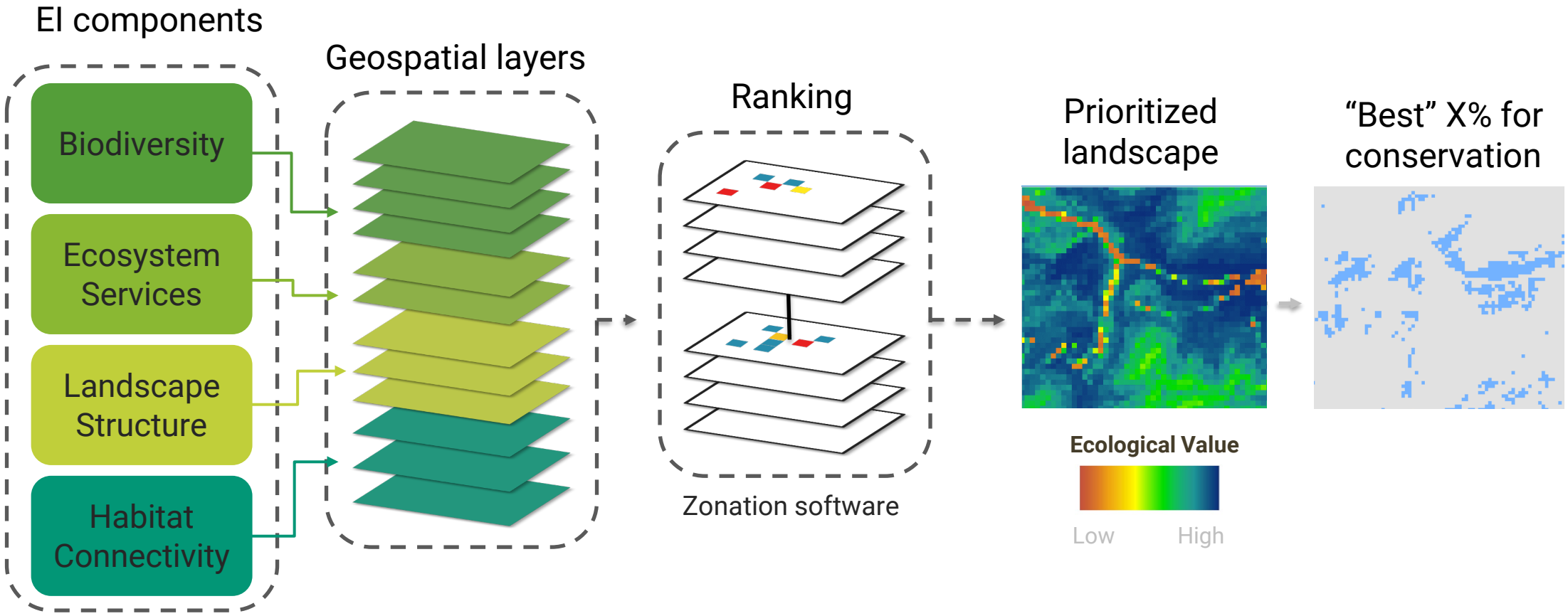


Prioritization

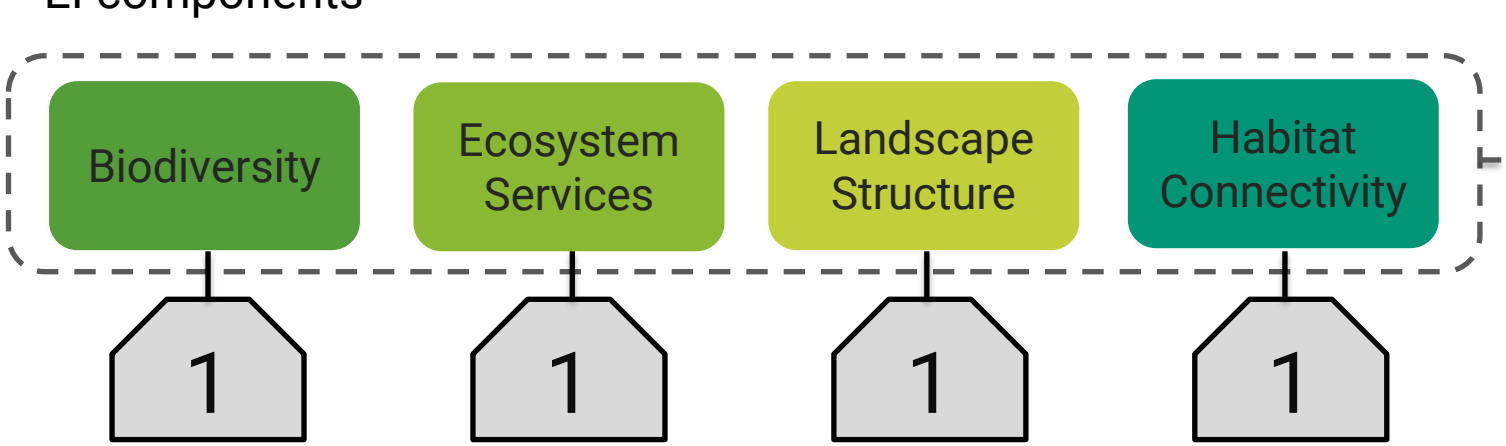
Ranking of areas in the landscape based on their importance for Nature conservation

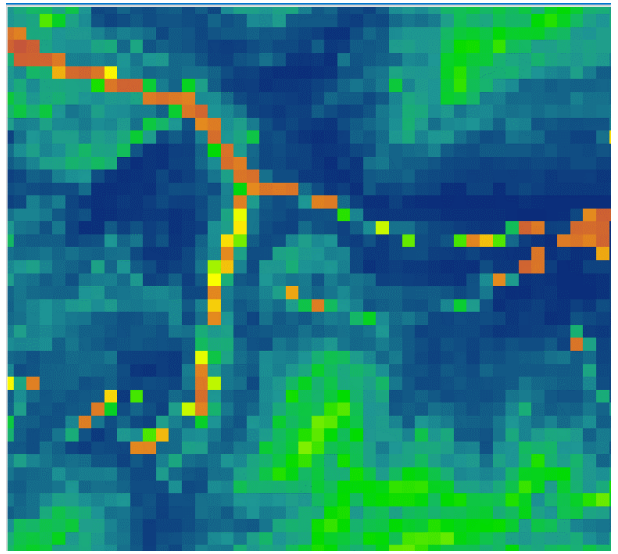


Prioritization

Weighting possibilities

EI components





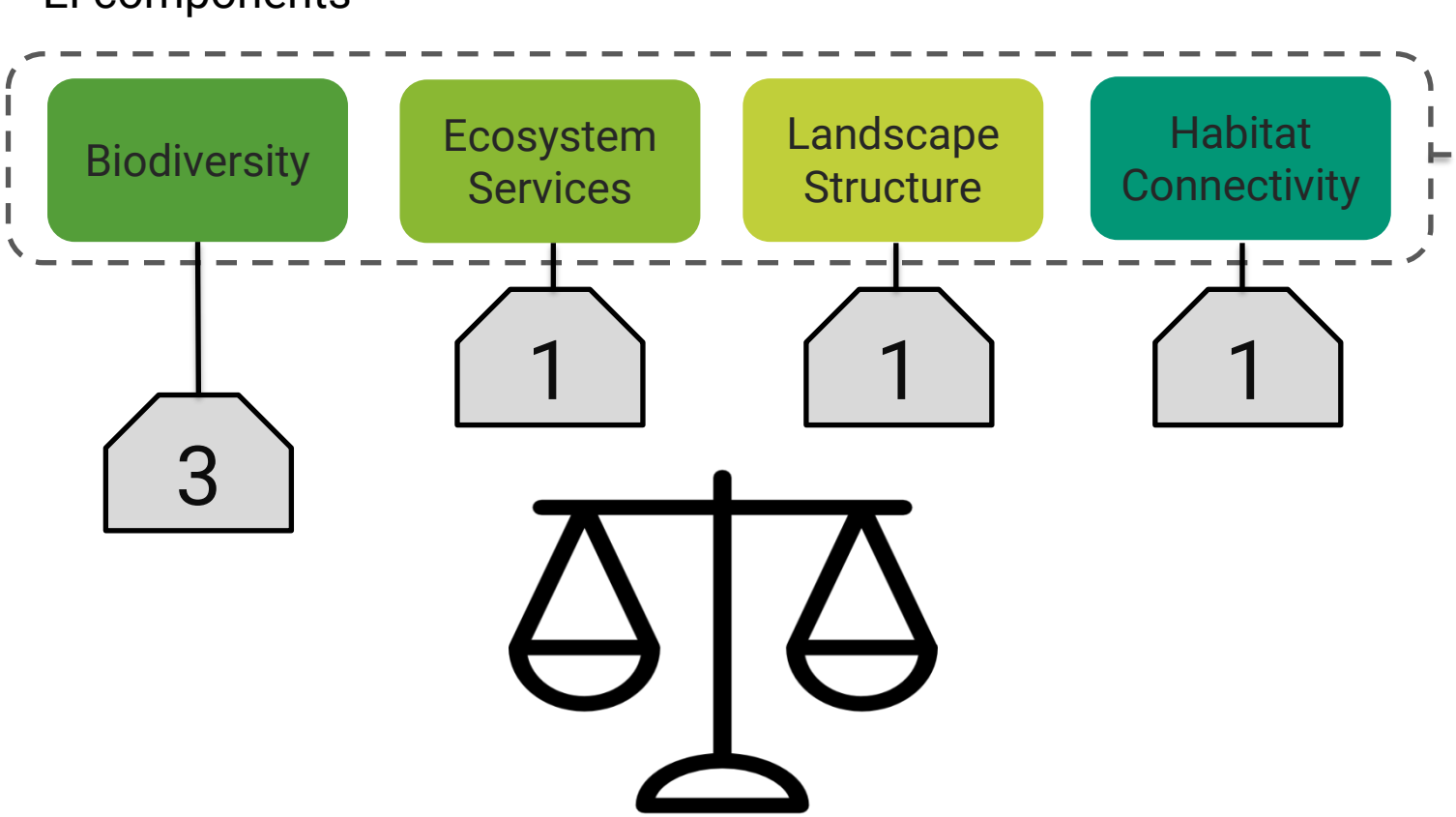
Ecological Value

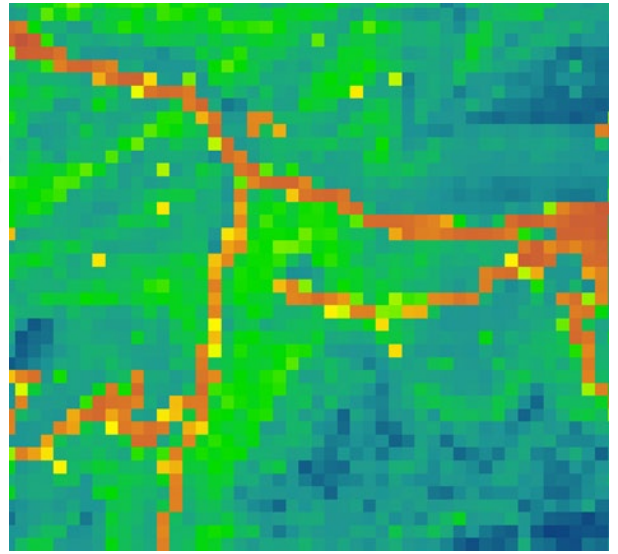
Low High

Prioritization

Weighting possibilities

EI components





Ecological Value

Low High

Prioritization

Example with 362 species

EI components

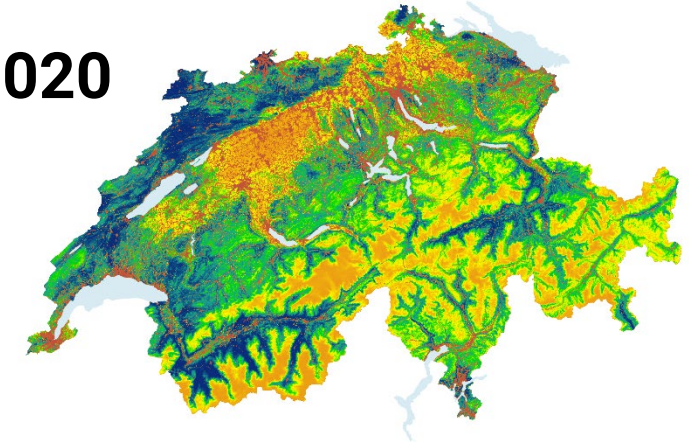
Biodiversity

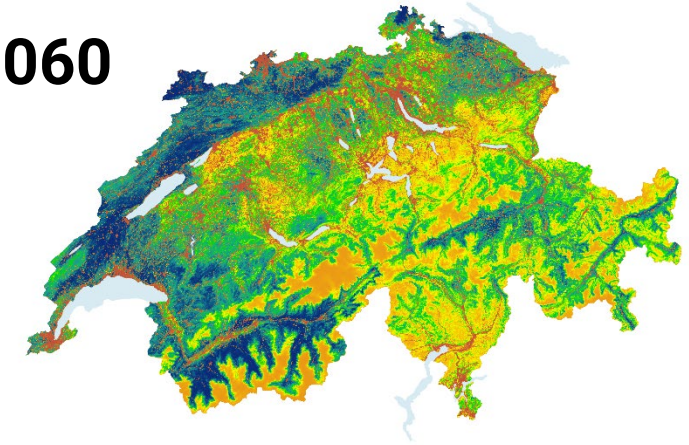
Habitat Connectivity

Ec Services

Lar… Structure

304	Vascular plants
34	Birds
15	Mammals
5	Ferns & mosses
4	Reptiles



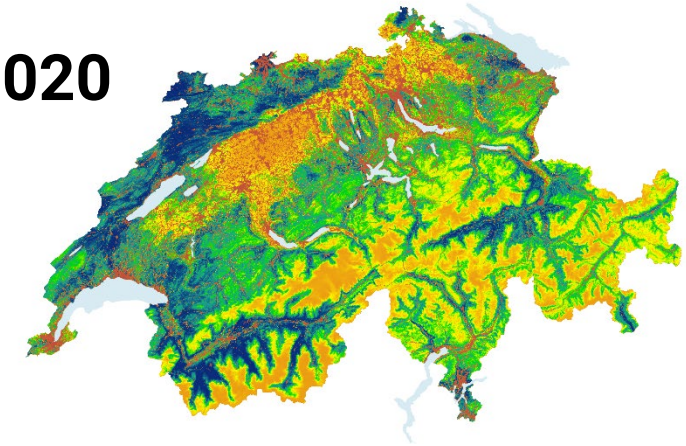


BAU scenario

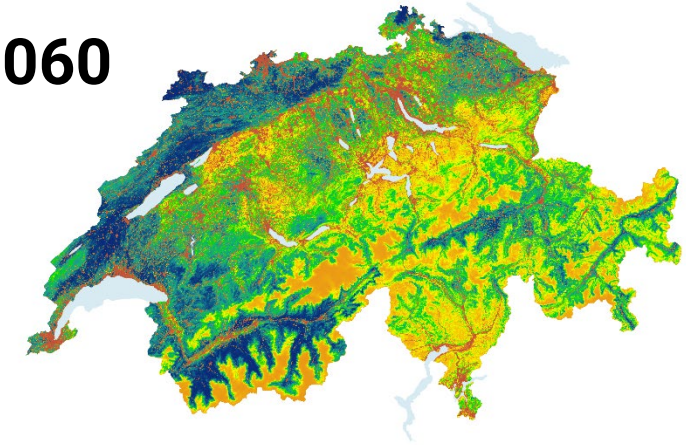
Prioritization

Example with 362 species

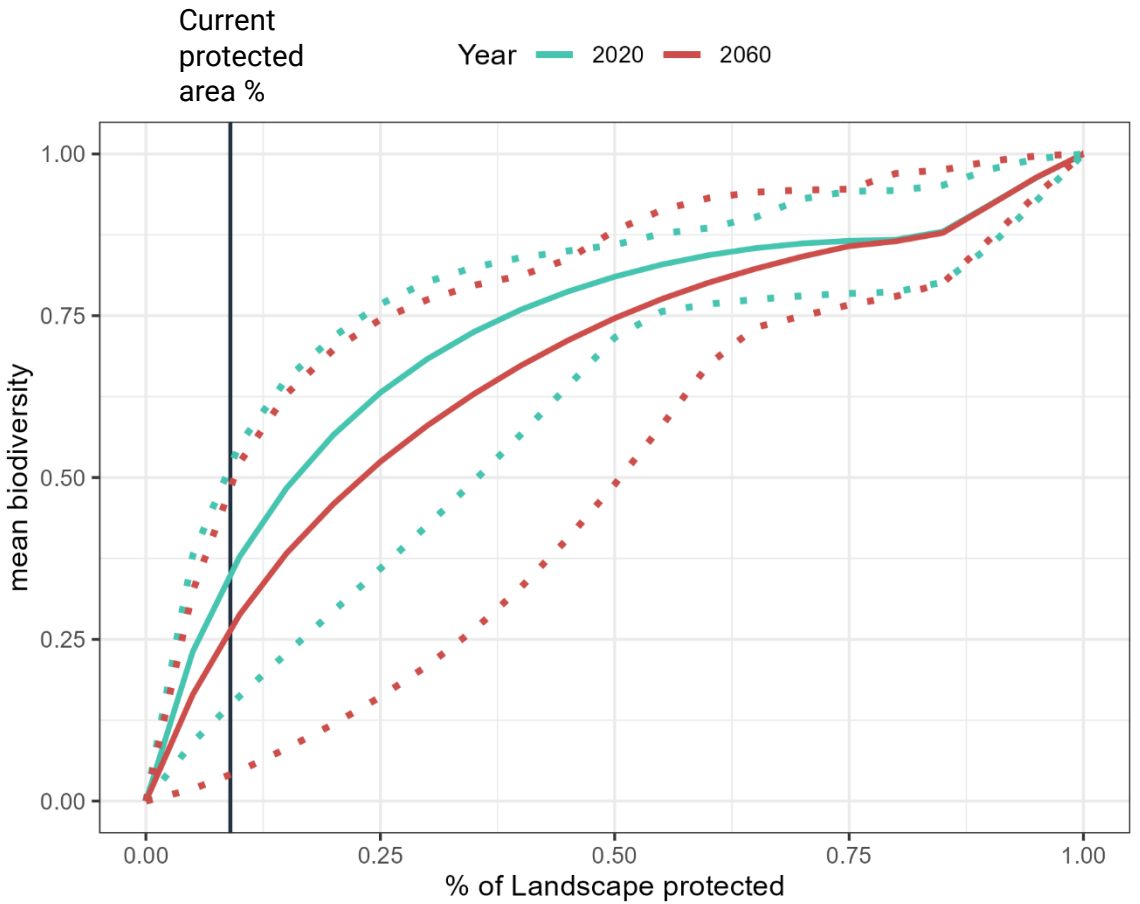
2020



2060

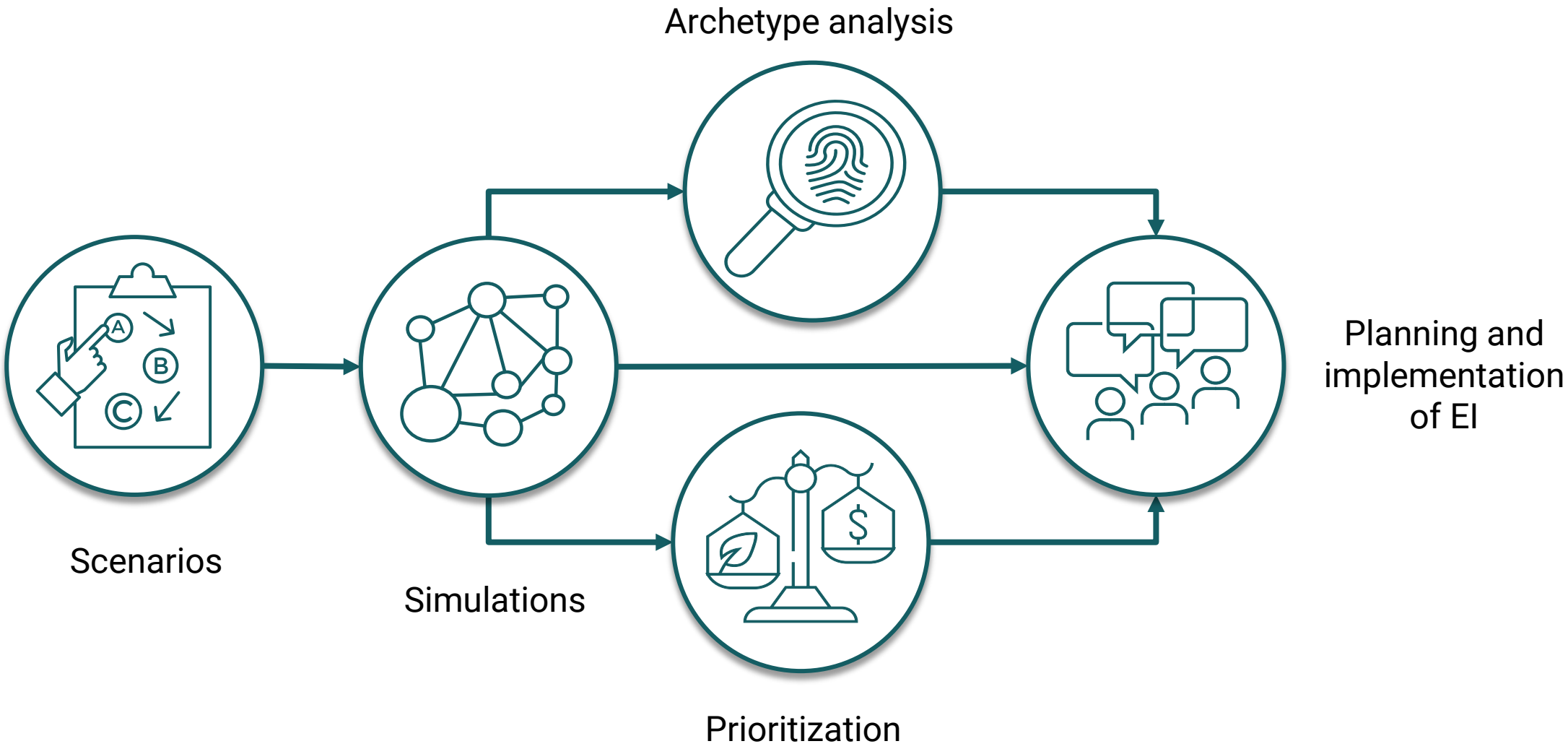


BAU scenario



→ The best areas of the EI identified today may be less suited to the species in the future

Methods to support EI decision making



Archetypes

Definition

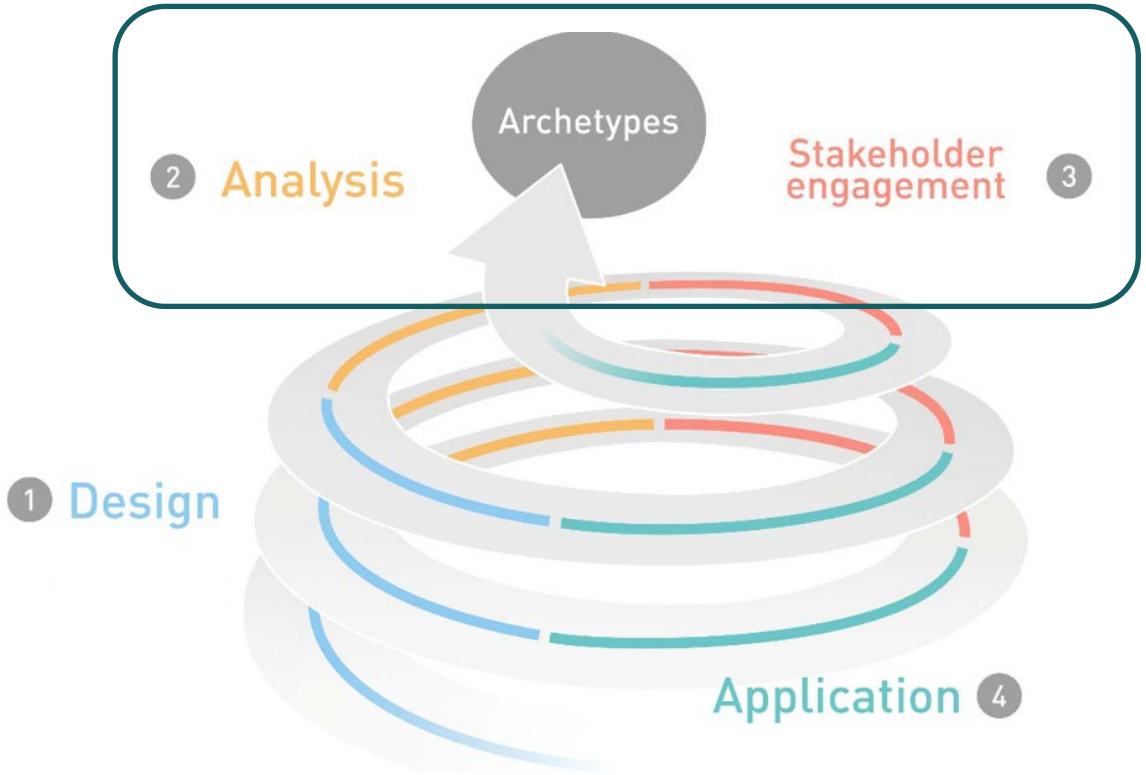
– Archetypes are recurring patterns in landscapes that can represent distinct landscape units or new combinations of landscape attributes designed for specific purposes.

Analysis

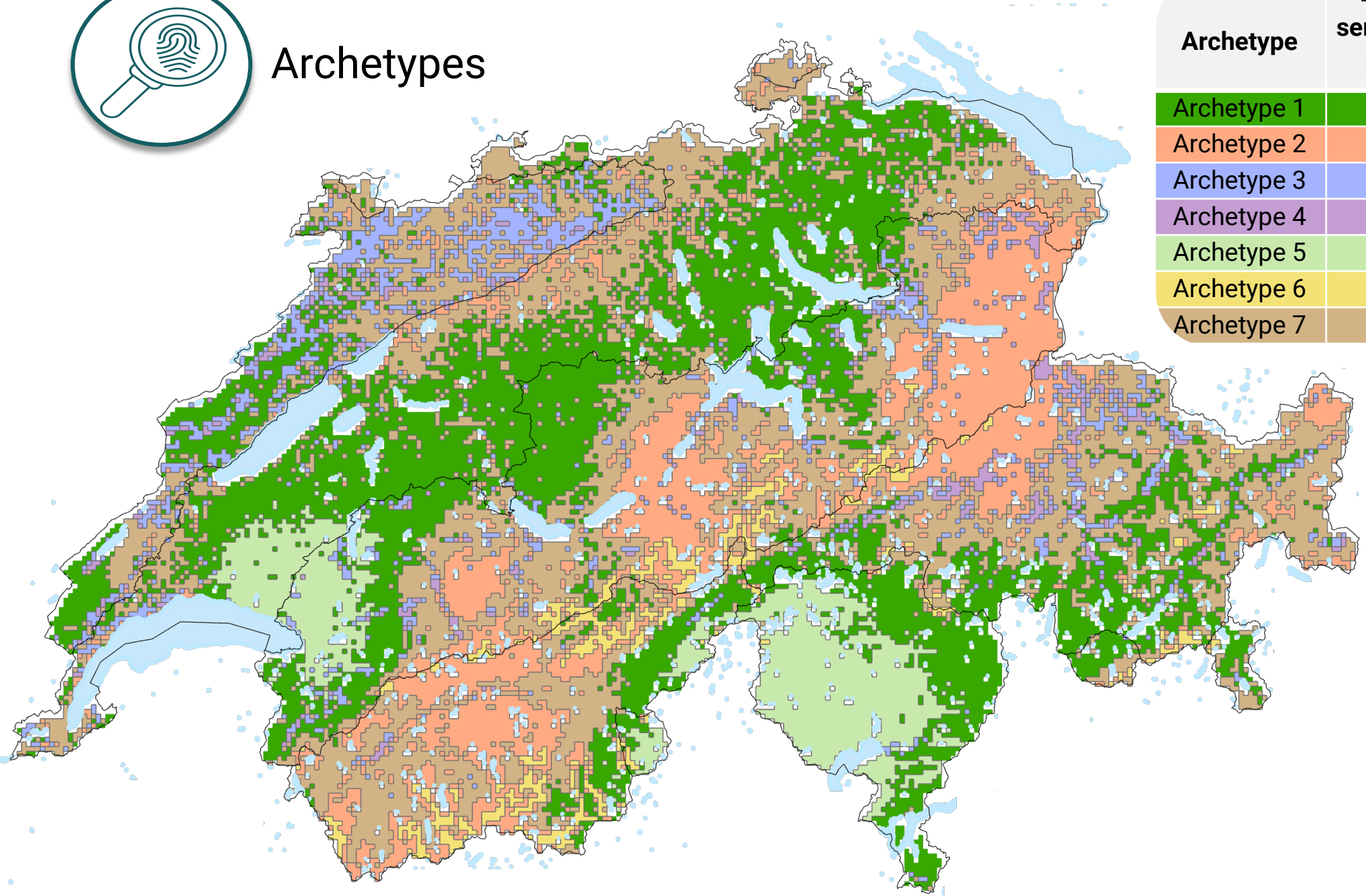
– Clustering and machine learning to detect and group these recurring patterns.

Stakeholder Engagement

– Semi-structured interviews to engage with key stakeholders to provide recommendations for management and policies.



Archetypes



Archetype	Ecosystem service change until 2060	Biodiversity change until 2060
Archetype 1	●▲▲	●▲▲
Archetype 2	●▲	●▲▲▲
Archetype 3	●▼▼▼	●▼▼
Archetype 4	●▼▼▼	●▼▼
Archetype 5	●▼	●▲▲▲
Archetype 6	●▼▼▼	●▲▲
Archetype 7	●▲	●▲▲

- ●▲▲▲: High (top third)
- ●▲▲: Medium (middle third)
- ●▲: Low (bottom third)
- ●▼: Low (top third)
- ●▼▼: Medium (middle third)
- ●▼▼▼: High (bottom third)

Archetypes

Stakeholder Engagement

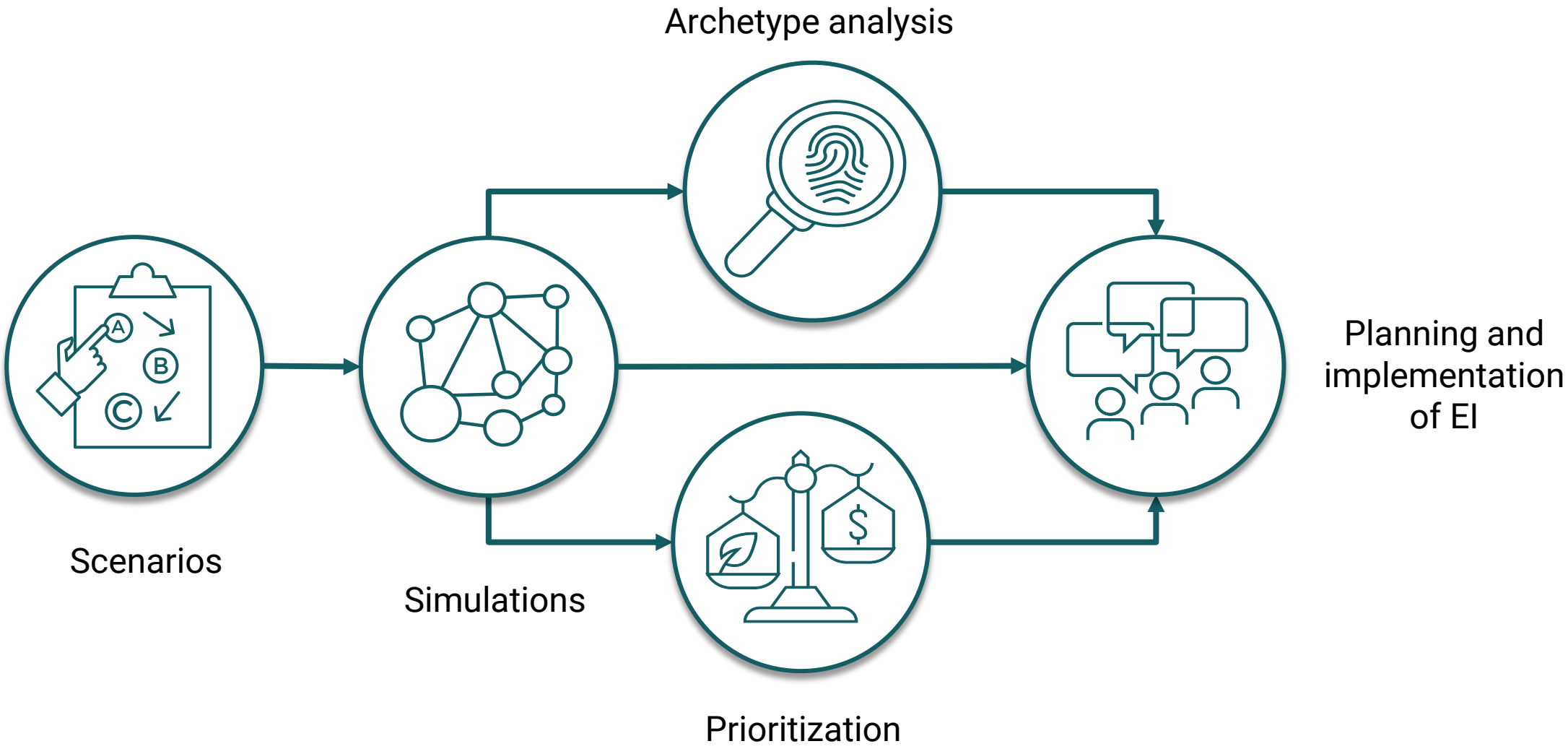
- Using the archetypes we asked stakeholders to provide their expertise.
- Addressing challenges:

  “In (…) we have one major problem or management issue, that we have to conciliate biodiversity conservation with leisure activities in the forest.”

- Addressing pathways to tackle these challenges:

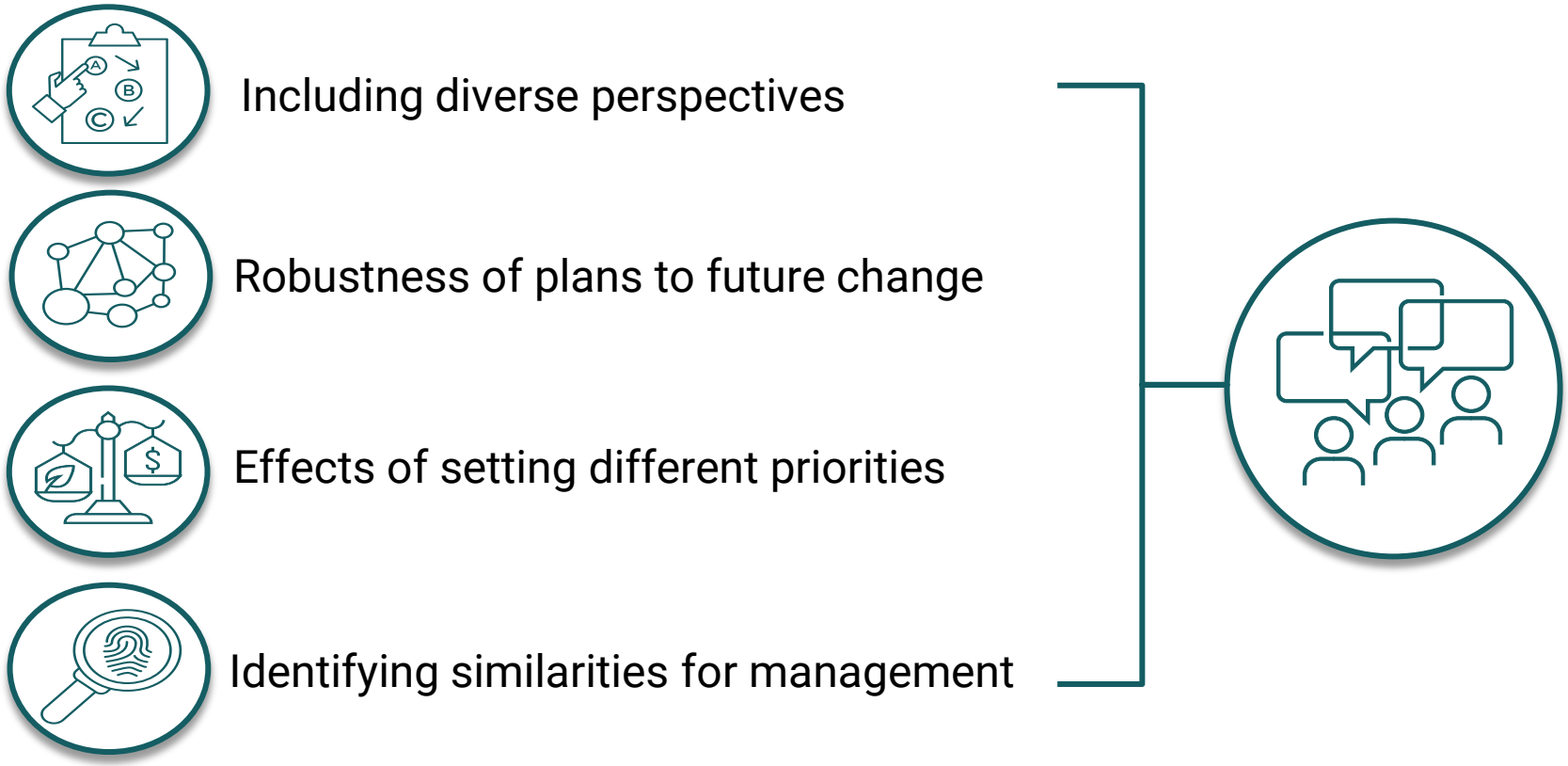
  “We also need multi disciplinary work groups, so that policymakers also have biologists or other scientists around the table to talk and exchange on these two metrics [ecosystem services and biodiversity]”

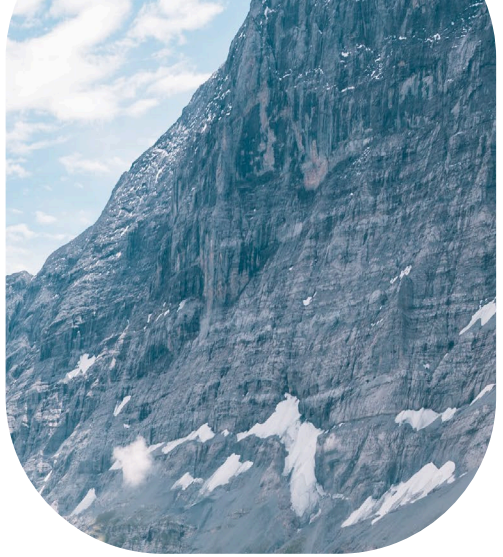
Methods to support EI decision making

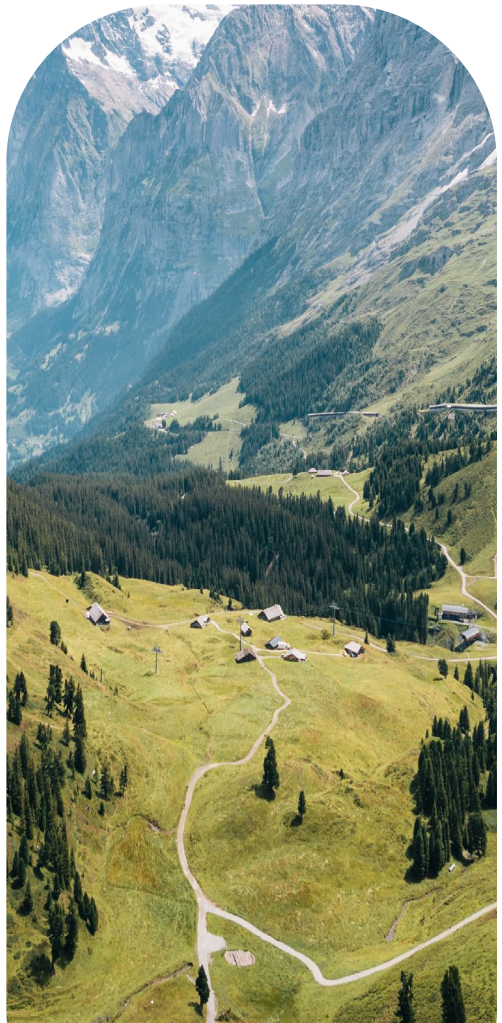


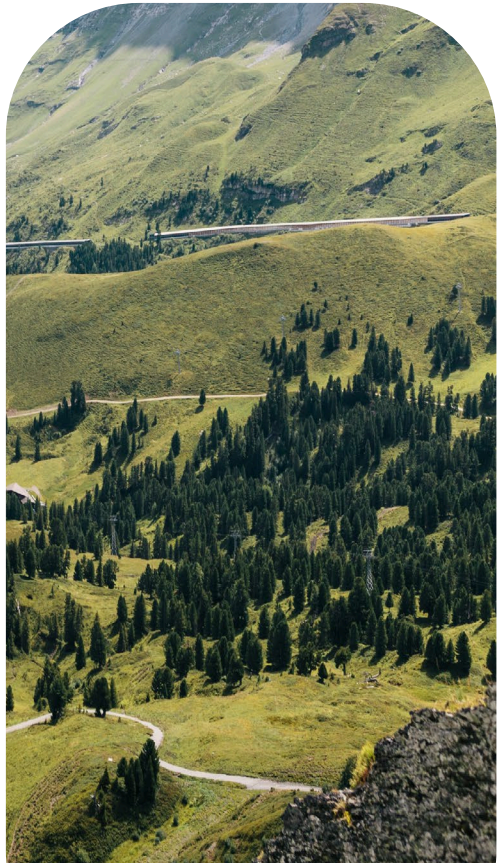
Conclusion

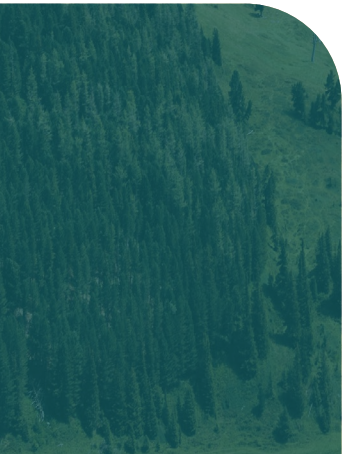
- Models and simulations are **not exact representations of reality**
- Rather they should be considered ‘boundary objects’ we can use to discuss aspects of decisions with stakeholders











Thank you for listening

I will now take any questions.