

PARTICIPATORY MAPPING OF CULTURAL ECOSYSTEM SERVICES IN A FEDERAL STATE: LESSONS LEARNT FROM SWITZERLAND

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Introduction – Spatial planning in Switzerland

- Landlocked country of 4.1 million ha
- 26 cantons
- Cantons are further divided into districts and municipalities
- Federal system



Introduction – Cultural ES in Switzerland

- In general, national assessments may ignore CES or use economic valuation to map their values (often recreation)
- In Switzerland, the federal system creates some regional (cantonal) **discrepancies** in the implementation of national spatial planning policies that may affect the provision of ES.
- Research on ES is mostly conducted at the field and regional scale
- Hardcopy participatory mapping was used to gather the resident's perceptions of different landscapes but outside the explicit framework of ecosystem services (Kienast et al., 2012).
- Web participatory mapping can be used **over a large geographical area** to broaden the knowledge base (expert, local, lay knowledge).

PPGIS – spatial extent and objectives

- Web-based mapping was preferred to hard copy mapping because it gave the **flexibility** to work at the national scale
- High response rates of 40-50% were reported from mail-based PPGIS
- The softGIS survey tool Maptionnaire (<https://maptionnaire.com/>) was used to conduct to **locate CES**, to identify **factors affecting CES value**, **drivers of change** and **mitigation measures**.

Cultural ecosystem service	Description
Heritage	I appreciate the local customs, traditions and cultural heritage linked to the place
Landscape beauty	I enjoy the landscape for its beauty or the landmark associated with it.
Outdoor activities	I enjoy spending time outside after work or on week-ends where I practice outdoor sports, walking, hiking, biking, walking the dog, etc.
Inspiration, spiritual and religious	I am inspired by feelings, new thoughts, religious or spiritual meaning.
Simple nature value	I simply appreciate this place just because of its existence regardless of its benefits for me.

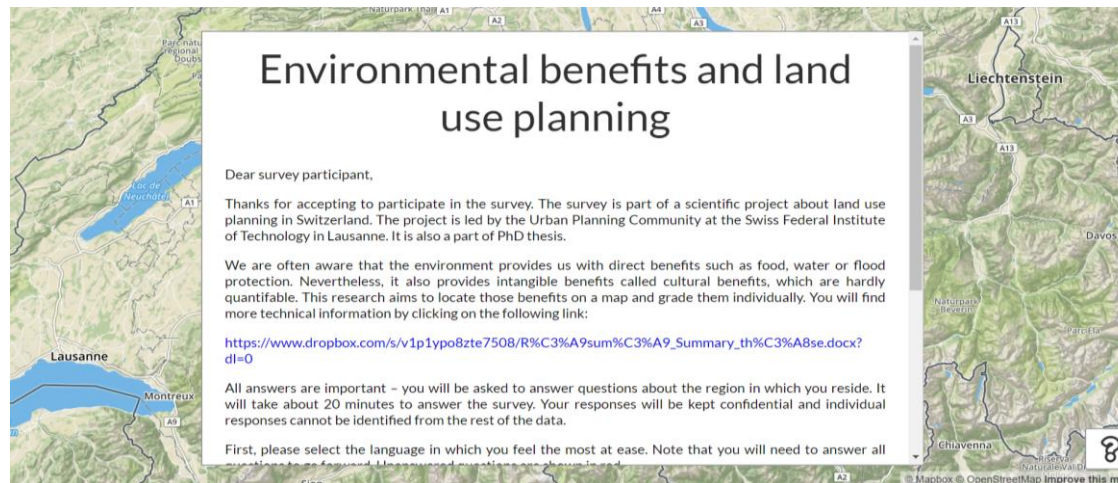
PPGIS – spatial extent

- Regions are groups of cantons based on administrative boundaries and functional territories
- Switzerland was divided into 8 regions. (Valais was considered separately)
- Survey available in one of the three national languages (i.e. French, German, and Italian), as well as in English



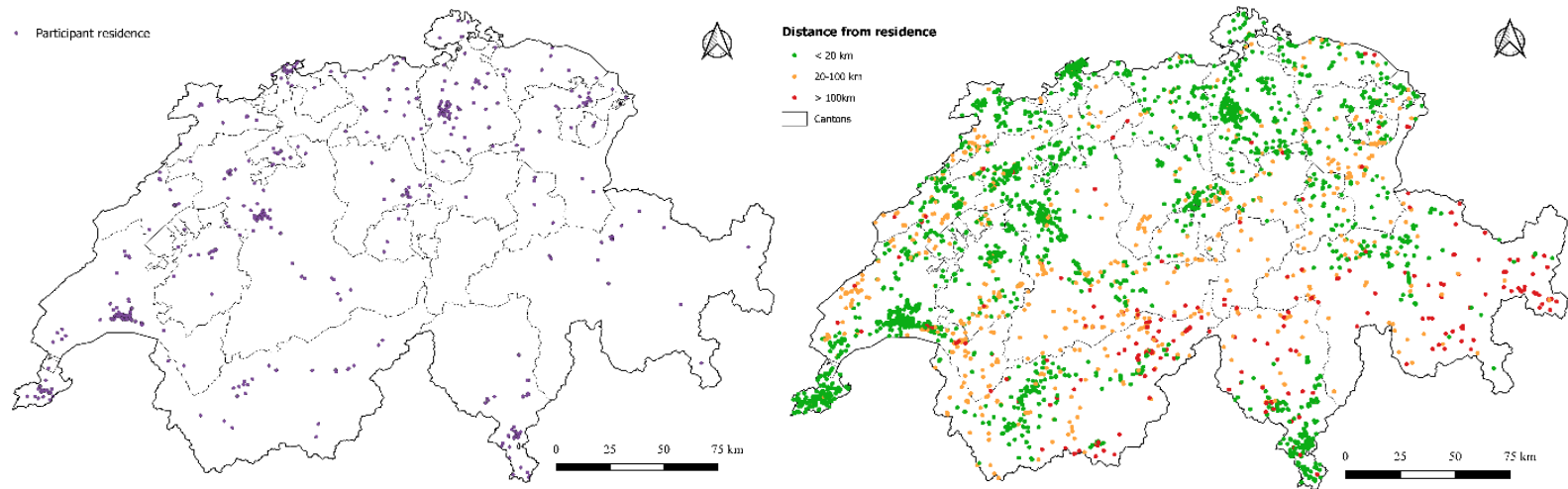
PPGIS – sampling approach

- **Convenience and targeted sampling** to minimize coverage bias.
- 11,300 email addresses from academic institutions, city councils, cantonal offices and environmental / planning associations
- Responses were monitored as the survey progressed, with targeted efforts to **boost samples** from low population density regions
- Survey ran for two months, from April to June 2018.



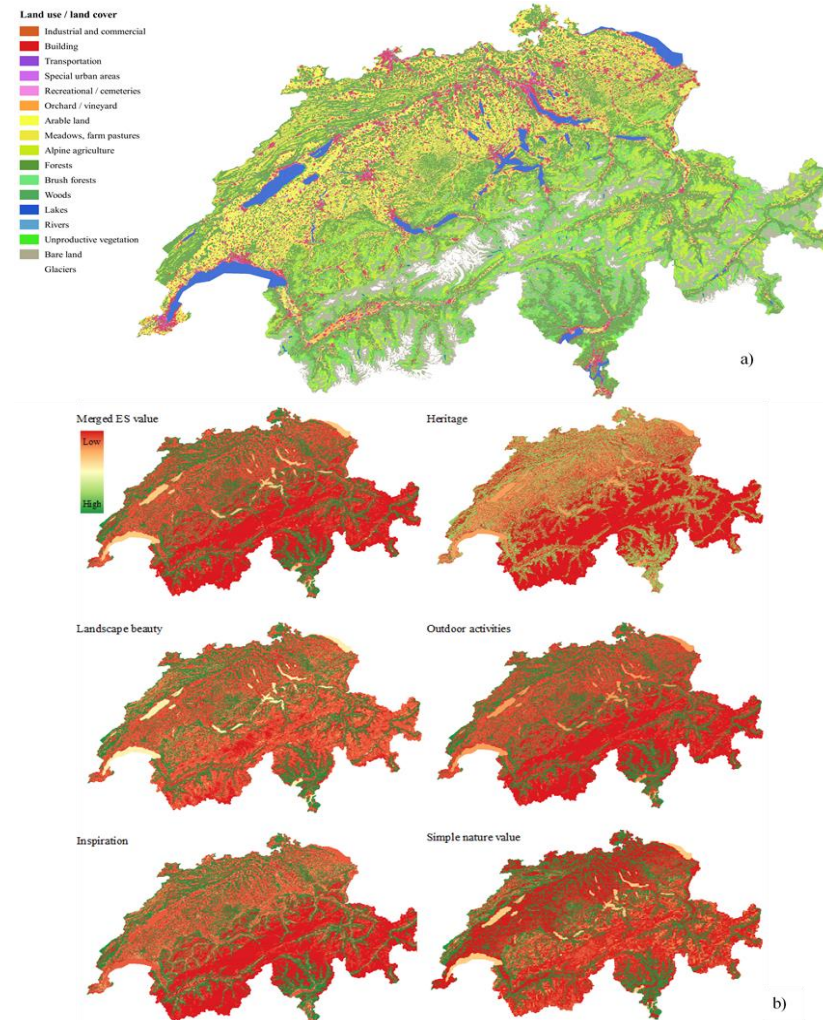
Results and recommendation – outcome

- 77% of the total points located at less than 20-km of the participants' residences.
- 16% between 20 and 100-km, and 7% were located at distances greater than 100-km with a maximum distance of 302-km.
- Short-range points **clustered in urban areas** where most respondents reside
- Medium-range points appear more **scattered** across the study area
- Long-range points mainly location in **the alpine area** (southern part).



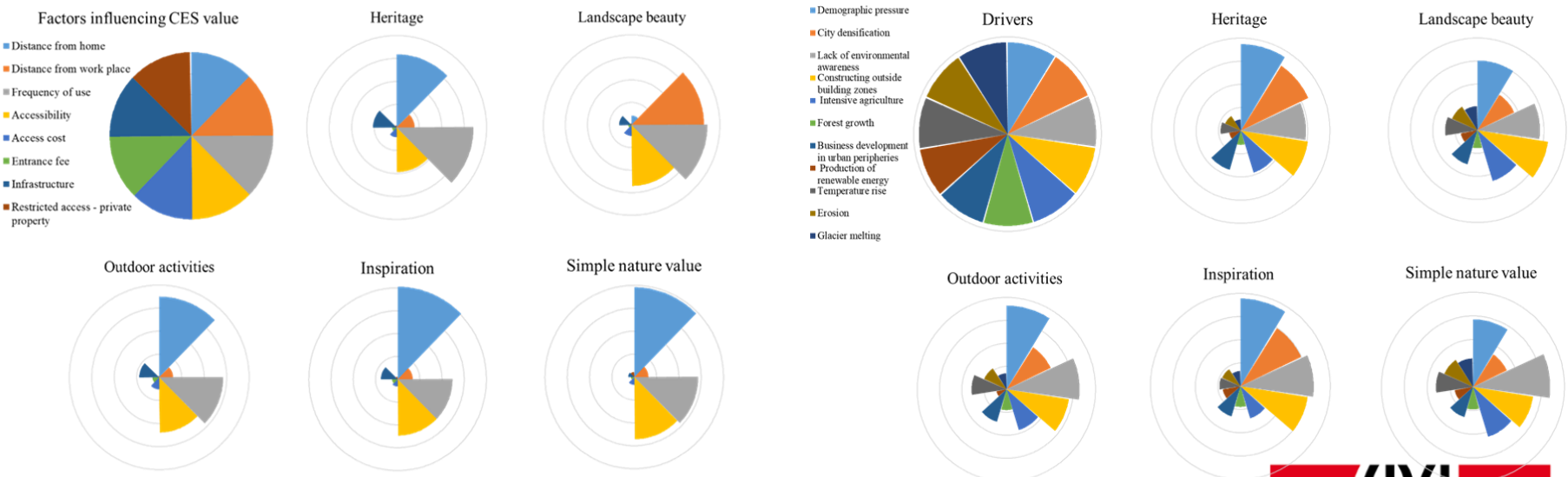
Results and recommendation – outcome

- For all CES except cultural heritage, **forests** were the main service providing areas (SPA).
- For heritage, **paths and public parks** were the two main SPA.
- Public parks were the second SPA for outdoor activities and the third for inspiration and landscape beauty
- Importance of **lake areas** for landscape beauty and simple nature value
- Interestingly, **urban areas** and **agricultural areas** were mostly **less considered** as SPA than previously thought



Results and recommendation – participation rate

- High response rates of 40-50% reported in mail-based PPGIS. In this study:
 - **25%** of the participants who started the survey completed it.
 - Total response rate was **5%**
- The first three CES received most attention
- Last in the list, simple nature value received more responses than the previous one confirming that participants continued the survey.



Limitations - structure

- Biggest limitation to high response rate:
 - **Questionnaire duration**
 - **Online mapping** was a challenge for some participants
- **Vague** and **spatially inexplicit character** of inspiration and simple nature value so fewer places were mapped
- **Question order** had a lower impact than the **intrinsic ambiguity** of the CES
 - A hardcopy, polygon-orientated approach could be more appropriate
- Useful approach for an assessment of **multiple CES at the national scale**
 - **Lighter version** may be more suitable for assessments on **fewer ES** with **broader range of participant** profile

Limitations - question types

- **Close-ended questions** for **factors influencing CES value** and **drivers of change** to ease the workload and limit the questionnaire duration.
- **Open-ended questions** are time-consuming to process and analyze, but appropriate to **retrieve context-specific mitigation measures**
- Participants differentiated CES and provided relevant **mitigation measures**. Each CES needed **specific solutions**.
 - Still, the categories remained **too broad** to detangle applicable **field measures**.
 - **Focus group** can help to obtain information on the specific measures required to mitigate the loss of SPA in a particular region

Conclusion

- Assessing cultural ecosystem services is essential to design applications for use in planning and management
- Participants were **able to differentiate CES** and to **provide relevant mitigation measures** to negative change
- Mitigation categories specific enough to **drive national policy** implementation but too **broad for local application**.
- Overall, this study showed that participatory mapping of CES at national level **benefits planning and land management** by providing an overview of the most valued services and key drivers of change.
- Participatory methods support planning policies with CES-specific mitigation measures.

Conclusion

Thank you for listening
Any questions?



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