



UNIVERSITY OF
HOHENHEIM

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Public Participation GIS for Ecosystem Services

Integration of ES / PPGIS in land
management at the community level:

Examples and experiences



What is PPGIS used for ?

Advantages of PPGIS

- Allows integrating the knowledge of different actors
- Is a means to connect individuals to places around them
- Maps can trigger dialogue and discussion at a community level
- Appealing and powerful visualization of map based outputs
- Connect perception-based and socio-economic and biophysical data
- Provides quantifiable results from subjective data
- Allows for different participation formats: workshops, individual surveys



What is PPGIS used for ?

Challenges of PPGIS

- Expensive and limited access to PPGIS technology
- Implies computer literacy of participants and GIS knowledge
- Methodological approach has important impacts on the results
 - Mapping process (points or polygons, scale, boundaries, participants)
 - Selection of spatial databases of analysis (level of detail and inaccuracies)
 - Visualisation of the results
- Uncertainty in the spatial information gathered through participation



What is PPGIS used for ?

Several applications

- Community and neighborhood planning
- Environmental and natural resource management
- Values and preferences of local actors identification
- Ecosystem services mapping
- Traditional ecological and local knowledge preservation
- Intangible cultural heritage preservation
- Future scenario planning

Participatory landscape development: ES scenarios



Example on scenario development on ES with local population:

What will the local cultural landscape look like in the year 2040 in response to global and local land-use trends?

Two municipalities in the Swabian Alb region, SW Germany



Workshops on key questions, using ES as the working tool:

- Which are the **drivers** of local landscape development?
- How will the developments **impact** on the situation of local people?
- How are different **stakeholder groups** affected?
- What **management options** can foster desirable developments and minimize problems?



Participatory landscape development: ES scenarios



Impacts of scenarios on biodiversity and ecosystem services

Scenario	Less is more	AlbGAU	Spirit of invention	Energy silo
Biodiversity	↑↑	↓	↔	↓↓
Provisioning services: food	↑	↓	↑	↓
Provisioning services: energy	↑	↑↑	↑	↑↑
Regulating services	↑	↓	↔	↓↓
Cultural services	↑↑	↓	↑	↓↓

↑ = slight positive trend,
 ↓ = slight negative trend,
 ↔ = no change

↑↑ = strong positive trend,
 ↓↓ = strong negative trend,

(Plieninger et al. 2013)



Participatory landscape development: ES scenarios

Management options for improving ES



What?

Who?

Possible side-effects?

Next steps?

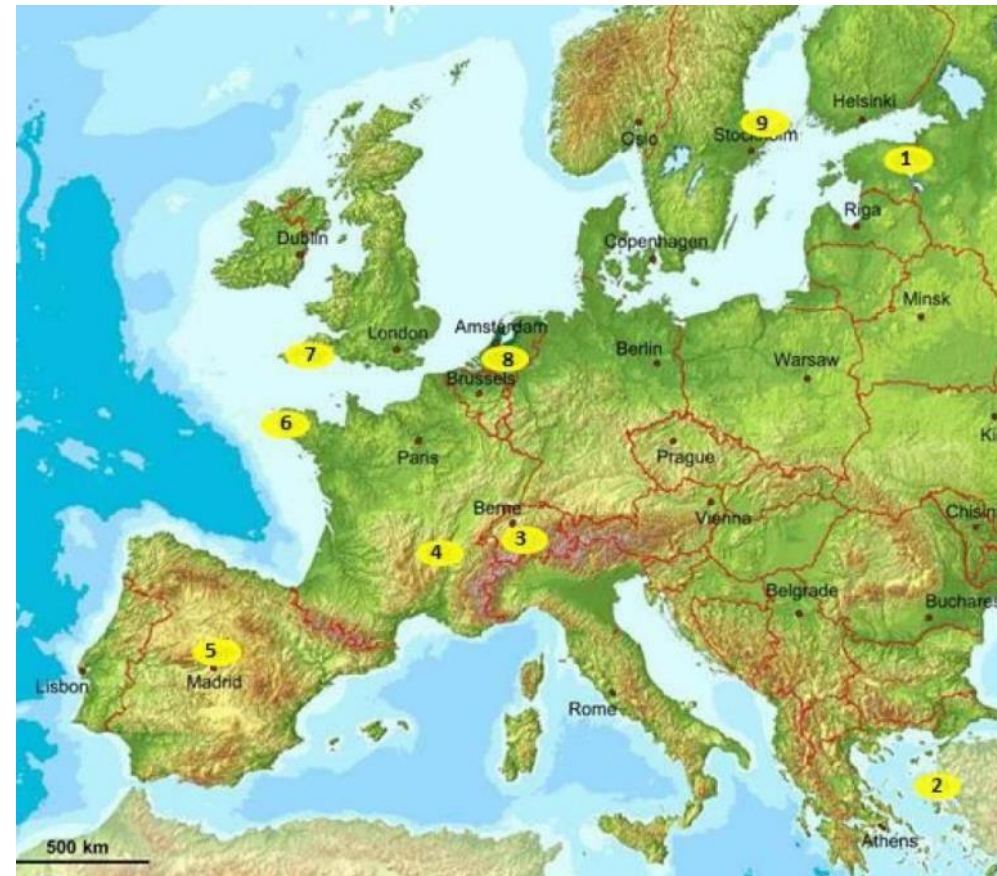
e.g. declining soil fertility:

- Promotion of low-intensity and organic farming
- Increased use of compost
- Regular soil inspections



PPGIS in Colmenar Viejo

European research project on cultural landscapes



Towards the sustainable management of the landscape





Adults (332)

¿Hay algún lugar o área en la zona que consideras especial?

Por favor, utiliza los marcadores que aparecen a continuación para marcar tus lugares especiales en el mapa. Puedes marcar tantos como quieras y un mismo lugar puede ser marcado para indicar diferentes actividades y sensaciones.

Actividades

Aquí practico deportes al aire libre como trekking, montañismo, montar en bici, pasear al perro, etc.



Aquí recolecto frutos, moras, flores, setas, espárragos, etc.; pesco o cazo.



Aquí aprecio, produzco o compro productos agrícolas.



Aquí me reúno con gente.



Sentimientos o valores

Me gusta admirar la belleza de este paisaje o lugar.



De aquí aprecio la cultural local, el patrimonio cultural o la historia.



Este lugar me inspira sensaciones, nuevos pensamientos, sentimientos religiosos o espirituales, etc.



Aprecio este lugar en sí mismo, sólo porque existe, independientemente de los beneficios que me genere a mí o a otras personas.



Aquí aprecio la fauna, la flora, los ecosistemas, etc.

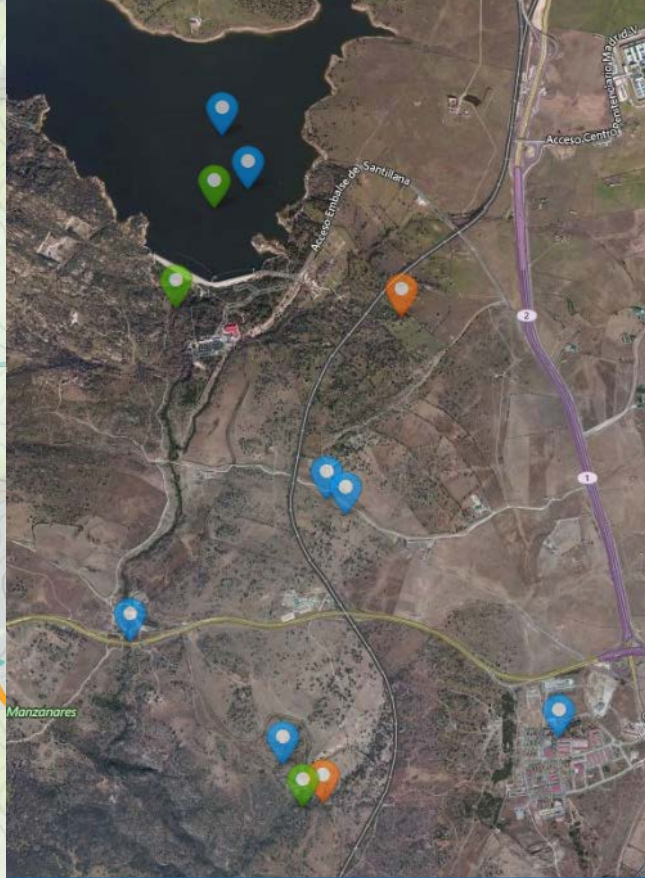


Aprecio esta zona por su capacidad para producir, preservar, limpiar y renovar el aire, el suelo y/o el agua.

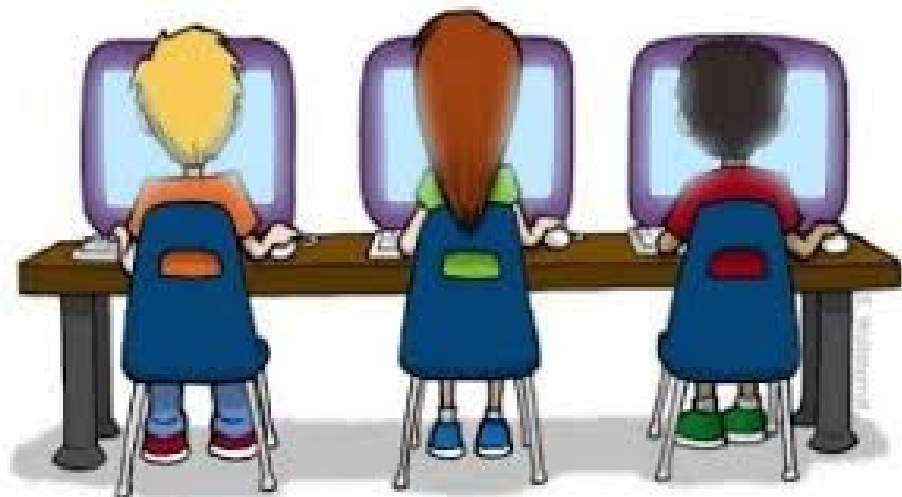


otros

Otro lugar o zona especial para mí.



Adolescents (720)

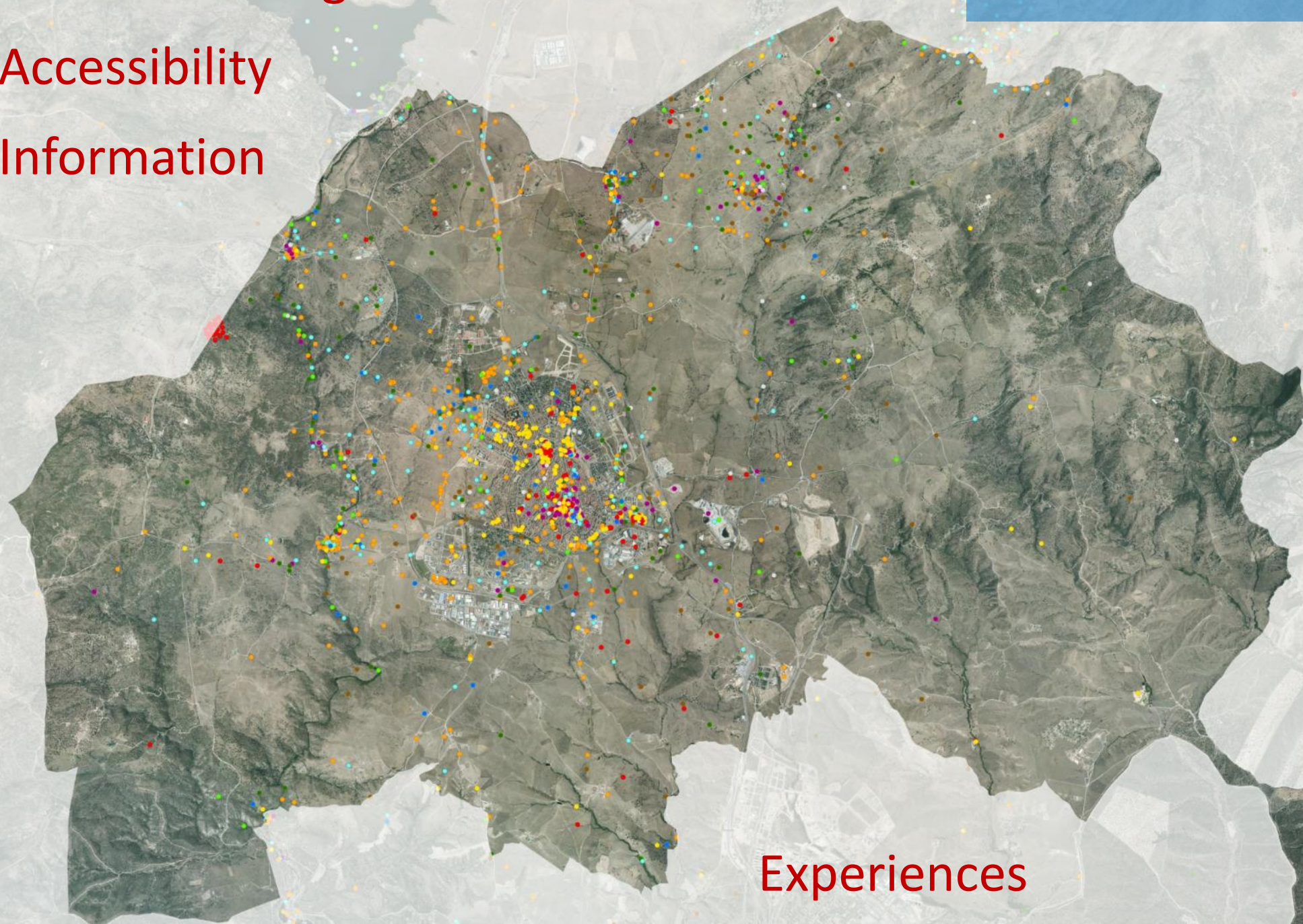


Cultural heritage

Adults

Accessibility

Information

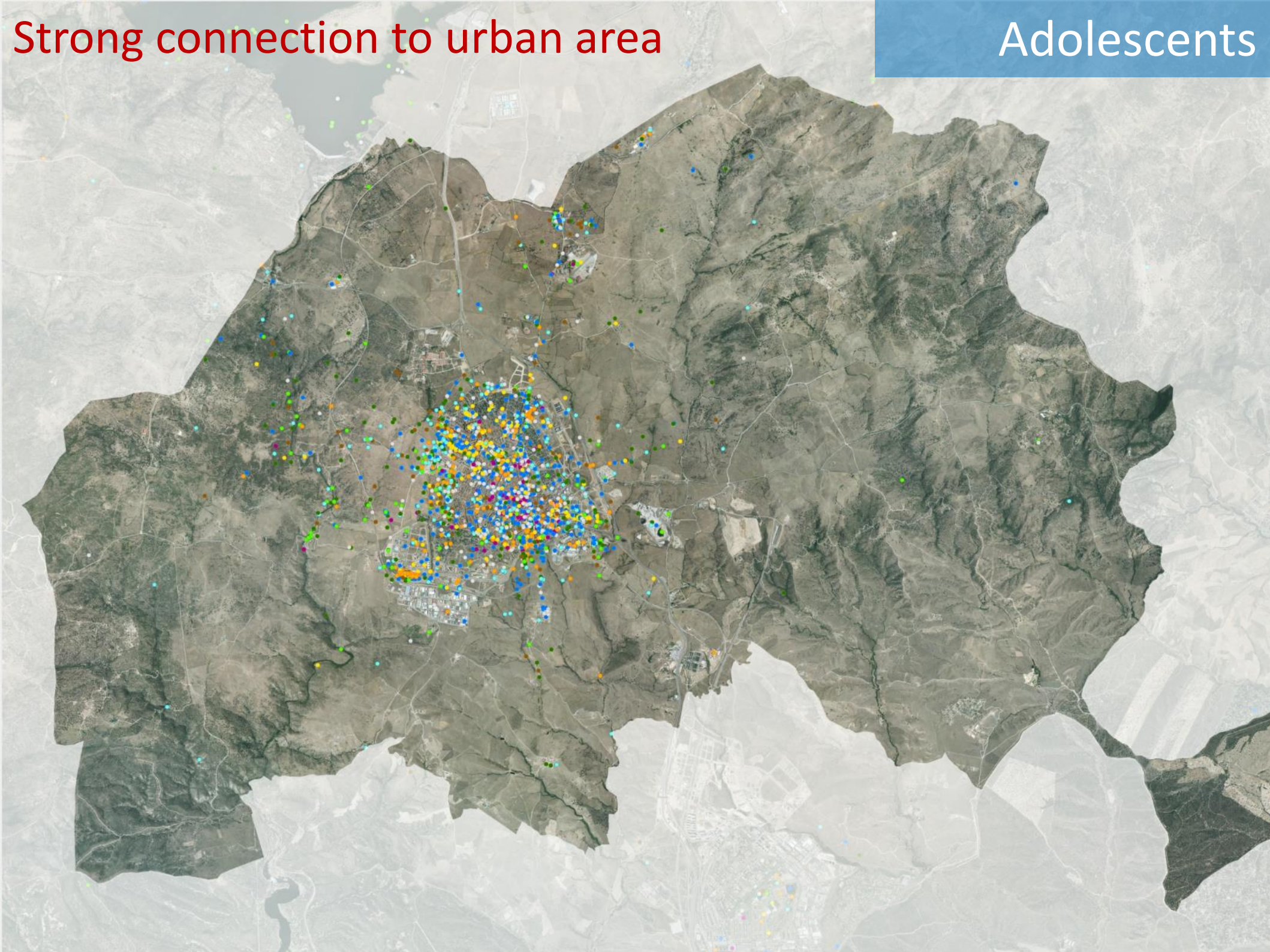


Experiences

Knowledge

Strong connection to urban area

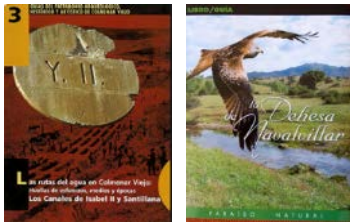
Adolescents



Towards the sustainable management of the landscape



Cultural heritage restoration and preservation



Awareness raising and information about natural and cultural heritage



Bringing adolescents closer to the rural landscape



Improve access to the landscape

PPGIS as a means to identify (potential) conflicts



Global Environmental Change 52 (2018) 162–180



Contents lists available at ScienceDirect

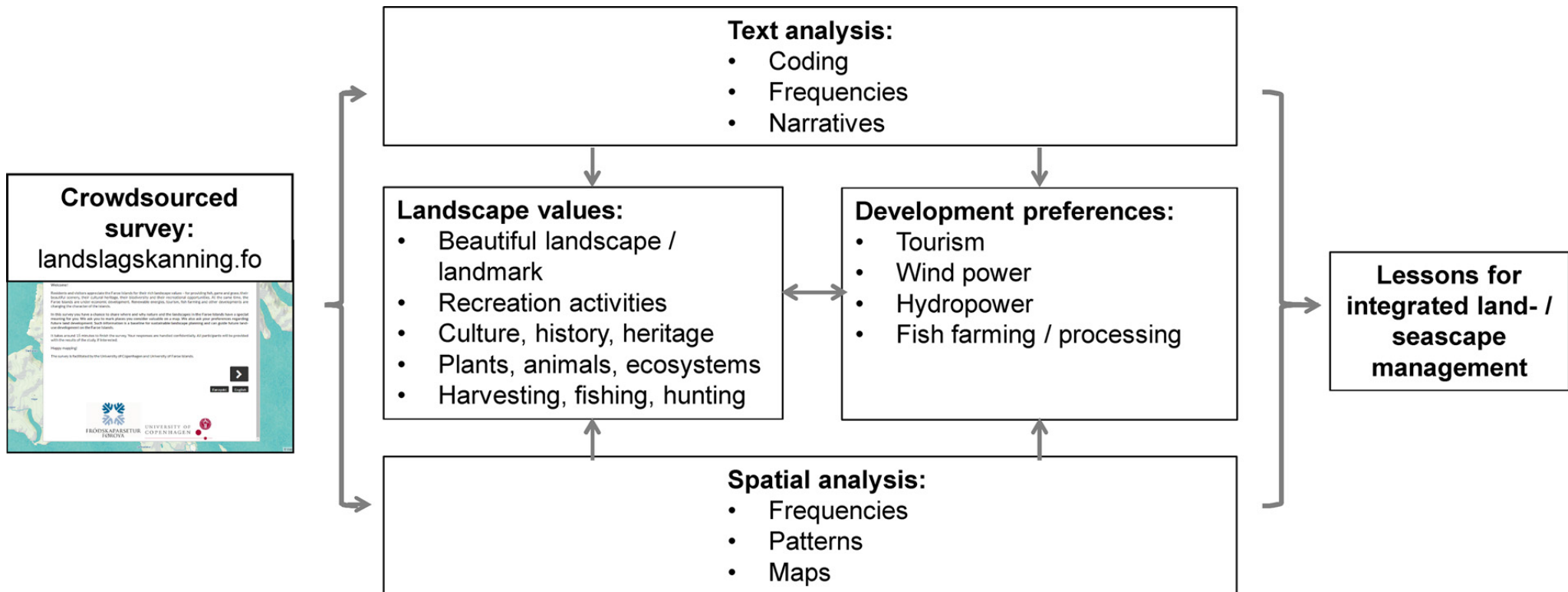
Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha

Identifying and assessing the potential for conflict between landscape values and development preferences on the Faroe Islands

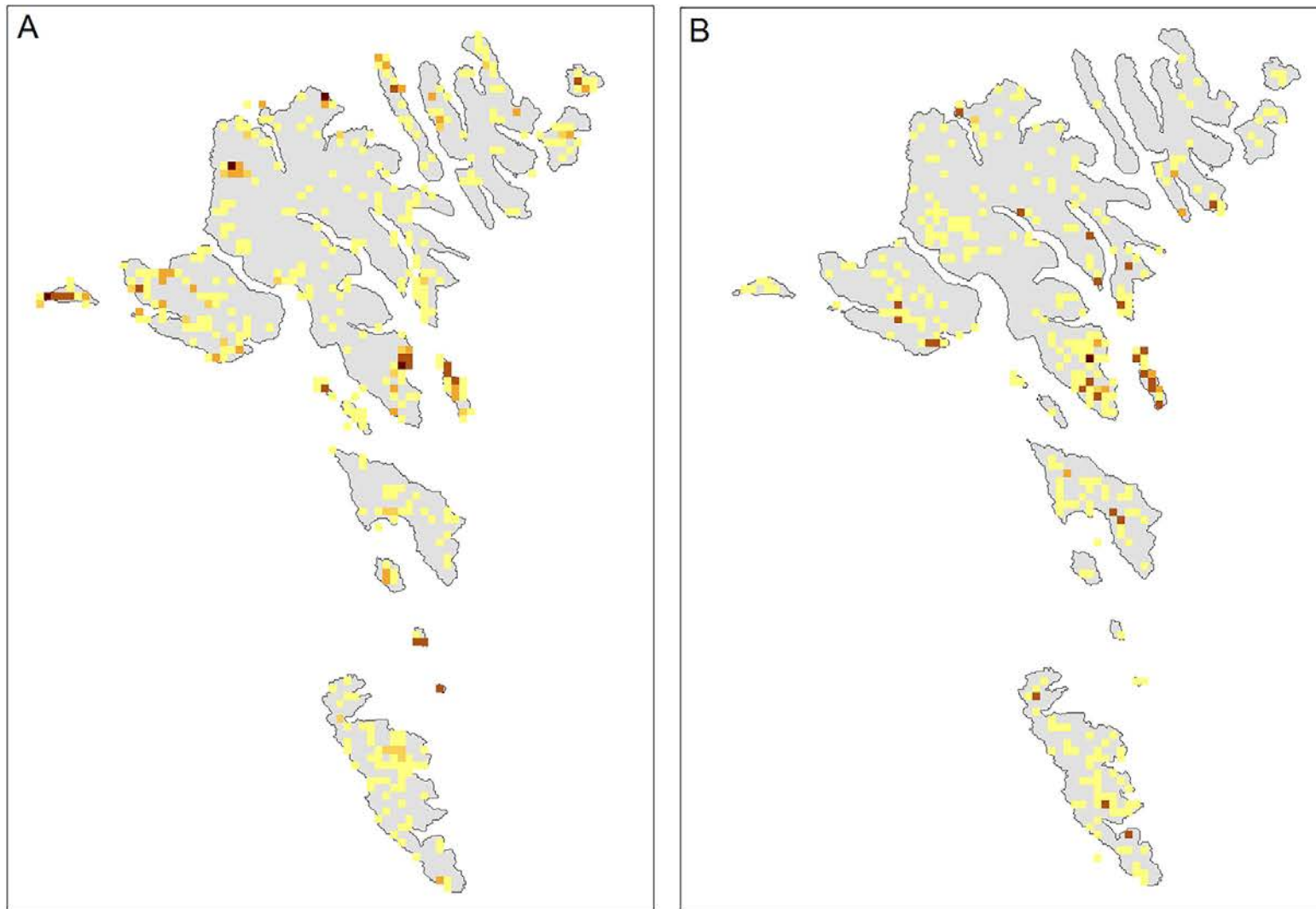
Tobias Plieninger^{a,*}, Halla Áargarð av Rana^b, Nora Fagerholm^{b,c},
Gunnvá Fossaberg Ellingsgaard^b, Eyðfinn Magnussen^d, Christopher M. Raymond^e,
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PPGIS as a means to identify (potential) conflicts



(Plieninger et al. 2018)

PPGIS as a means to identify (potential) conflicts



(Plieninger et al. 2018)

Areas with potential for land-use conflicts regarding A) Tourism development; B) Wind power development (yellow: low, brown: high potential for land-use conflicts)

PPGIS as a means to identify (potential) conflicts



Some of the conclusions

- Respondents “identify landscape values comprehensively, and this does not fit well into current landscape value or ecosystem services frameworks”
- “Concerns about land development and the potential for land-use conflicts are particularly high in the case of tourism.”
- “Though people show deeply diverging viewpoints on the future development of tourism, renewable energies, and fish farming/ processing, a high potential for land-use conflicts is concentrated on only a few sites.”

(Plieningen et al. 2018)

ES and PPGIS in landscape management at the community level



Your thoughts and ideas?



THANK YOU



References

Plieninger, T., Bieling, C., Ohnesorge, B., Schaich, H., Schleyer, C. & Wolff, F. (2013): Exploring futures of ecosystem services in cultural landscapes through participatory scenario development in the Swabian Alb, Germany. *Ecology and Society* 18(3): art. 39