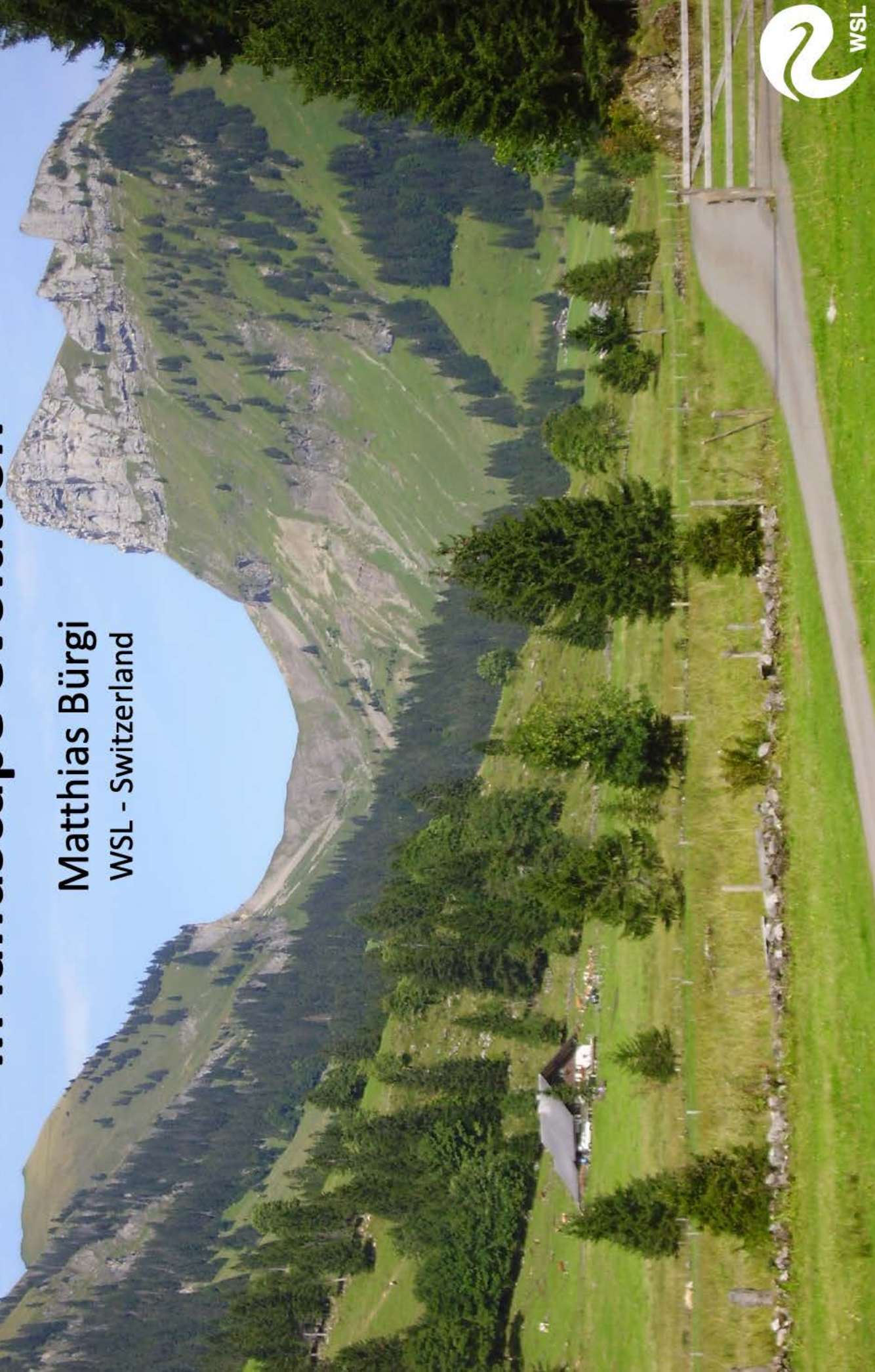


The role of agricultural production systems in landscape evolution

Matthias Bürgi
WSL - Switzerland



Content

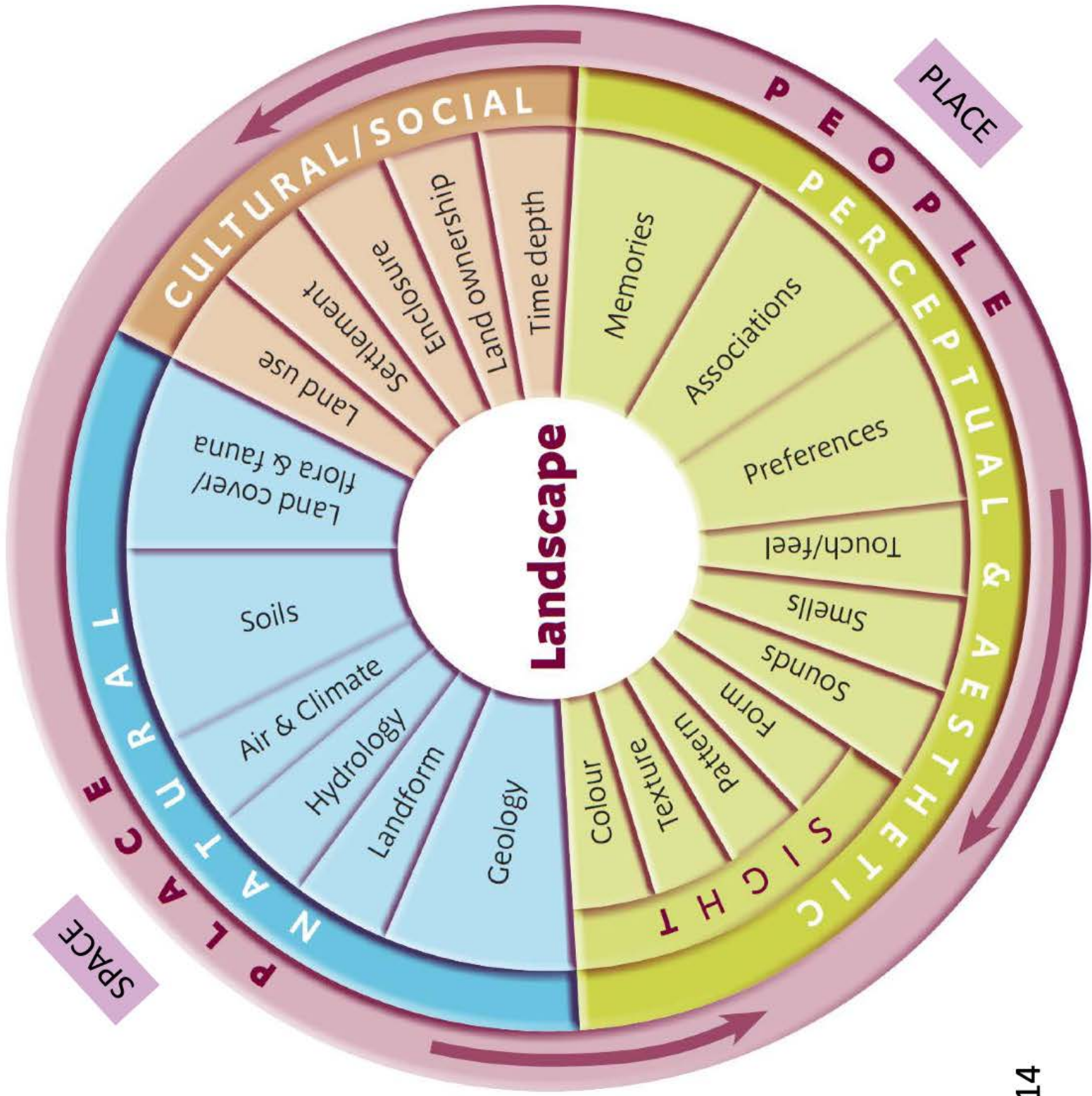
- What is a landscape?
- How to assess landscapes?
- Why do landscapes change?
- And why do landscapes not change?
- Agriculture as a driver of change and persistence
- Summary

Content

- **What is a landscape?**
- How to assess landscapes?
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What is a landscape?





Landscape(s)

“ ... encompass the entire space **within and outside settlements**. They result from the **dynamic interplay** of natural variables (e.g. bedrock, soil, water, air, climate, fauna and flora) with cultural, societal and economic factors “

Landschaftskonzept Schweiz, BAFU

“ ... is an area, **as perceived by people**, whose character is the result of the **action and interaction** of natural and/or human factors”

ELC European Landscape Convention

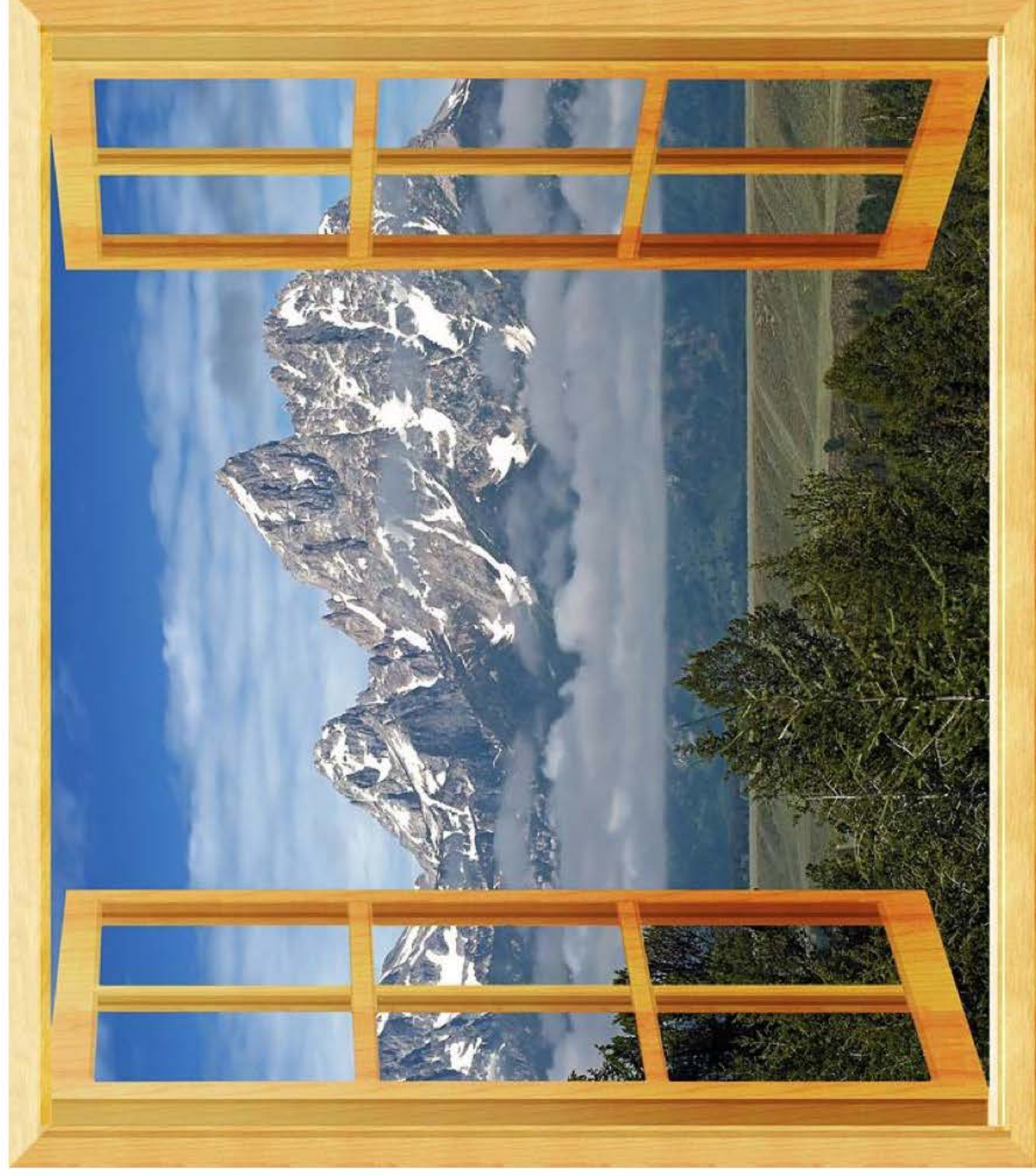
What is a landscape?

- We know it, when we see it...
- Not restricted to area outside settlements.
- A physical reality as well as its perception.
- The result of human and natural factors.

Content

- What is a landscape?
- **How to assess landscapes?**
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How to assess landscapes?



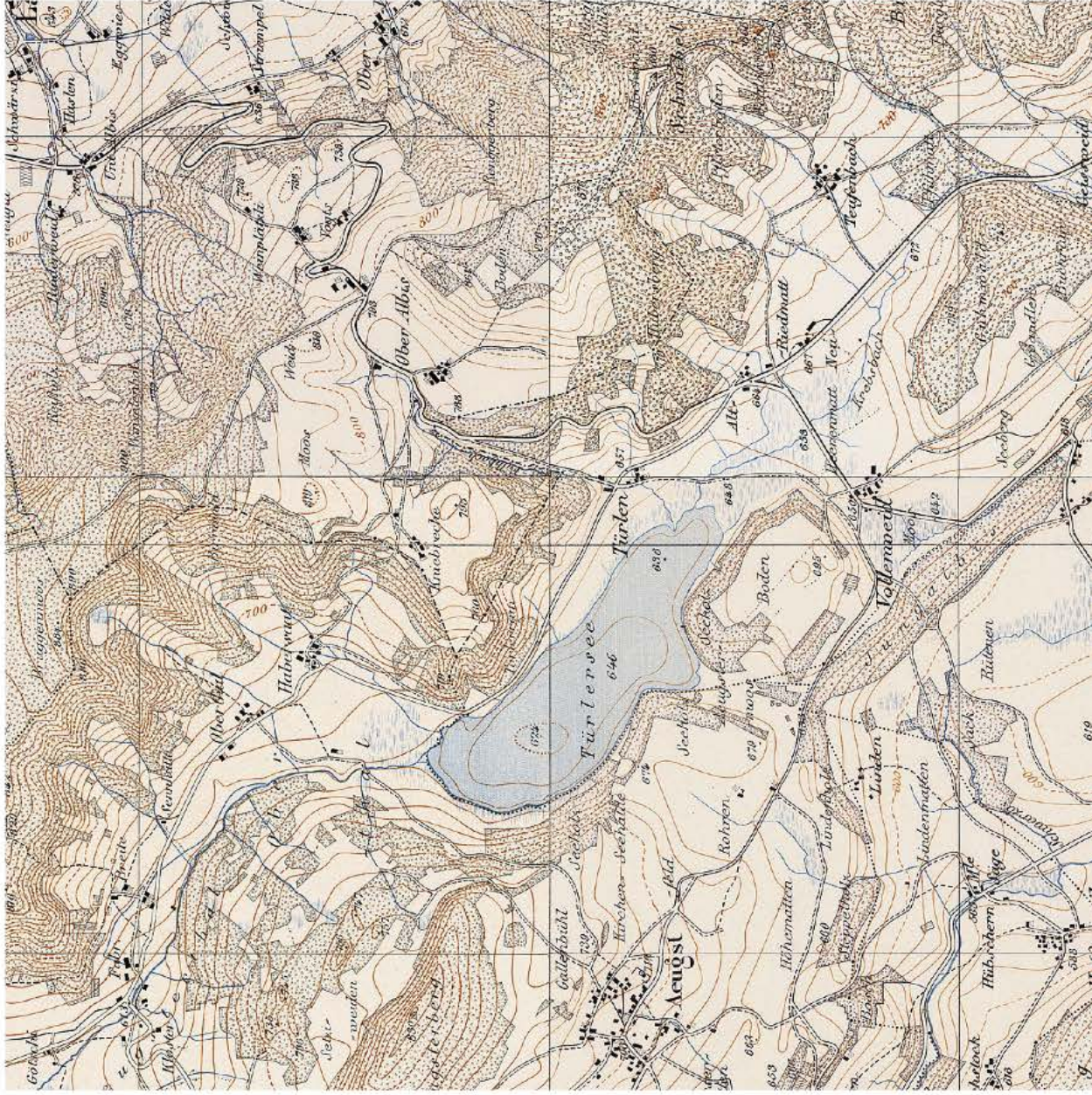
How to assess landscapes?



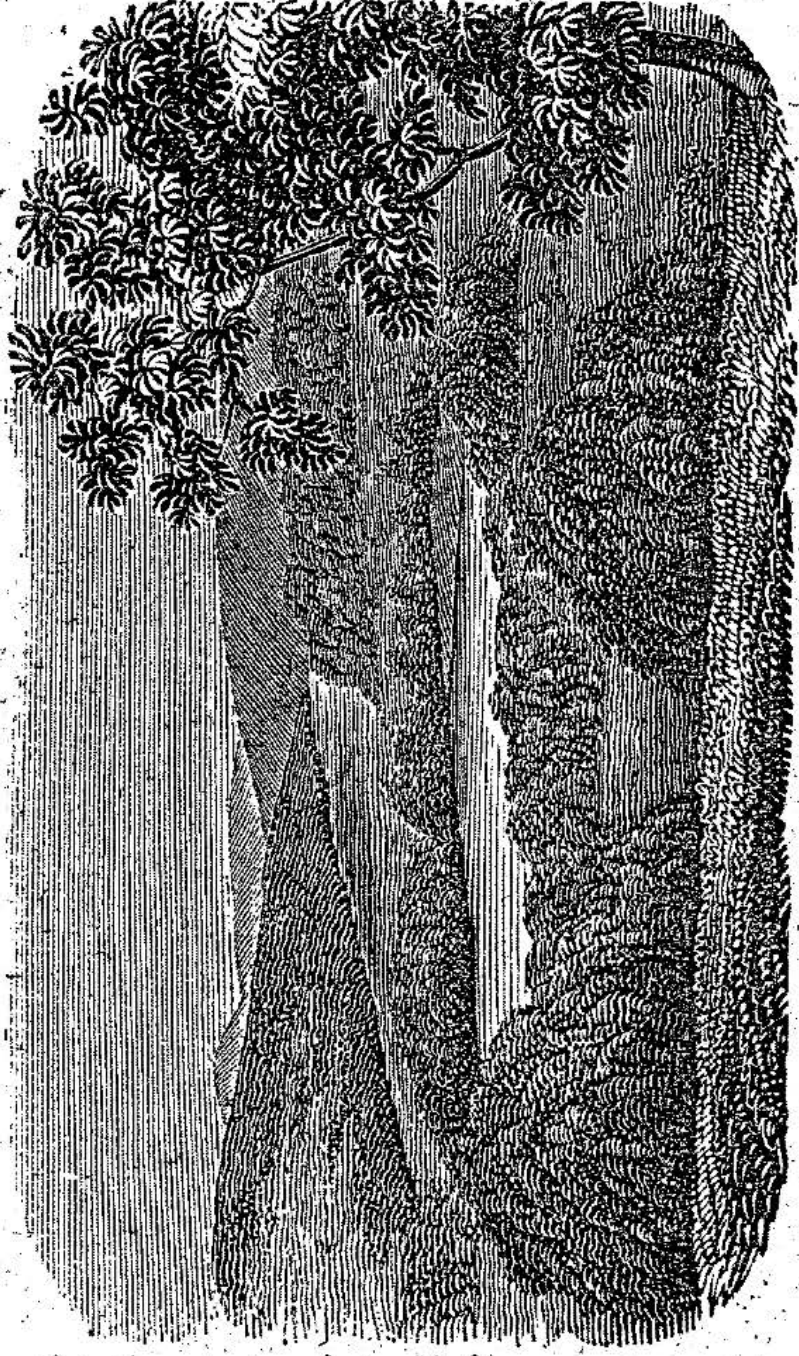
How to assess landscapes?



How to assess landscapes?

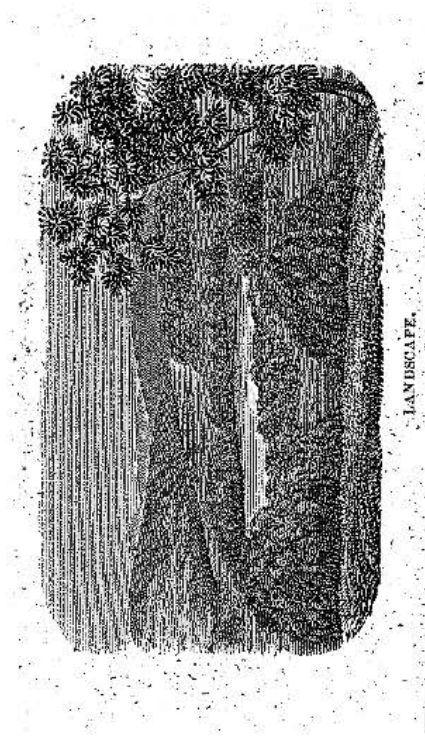


How to assess landscapes?



LANDSCAPE.

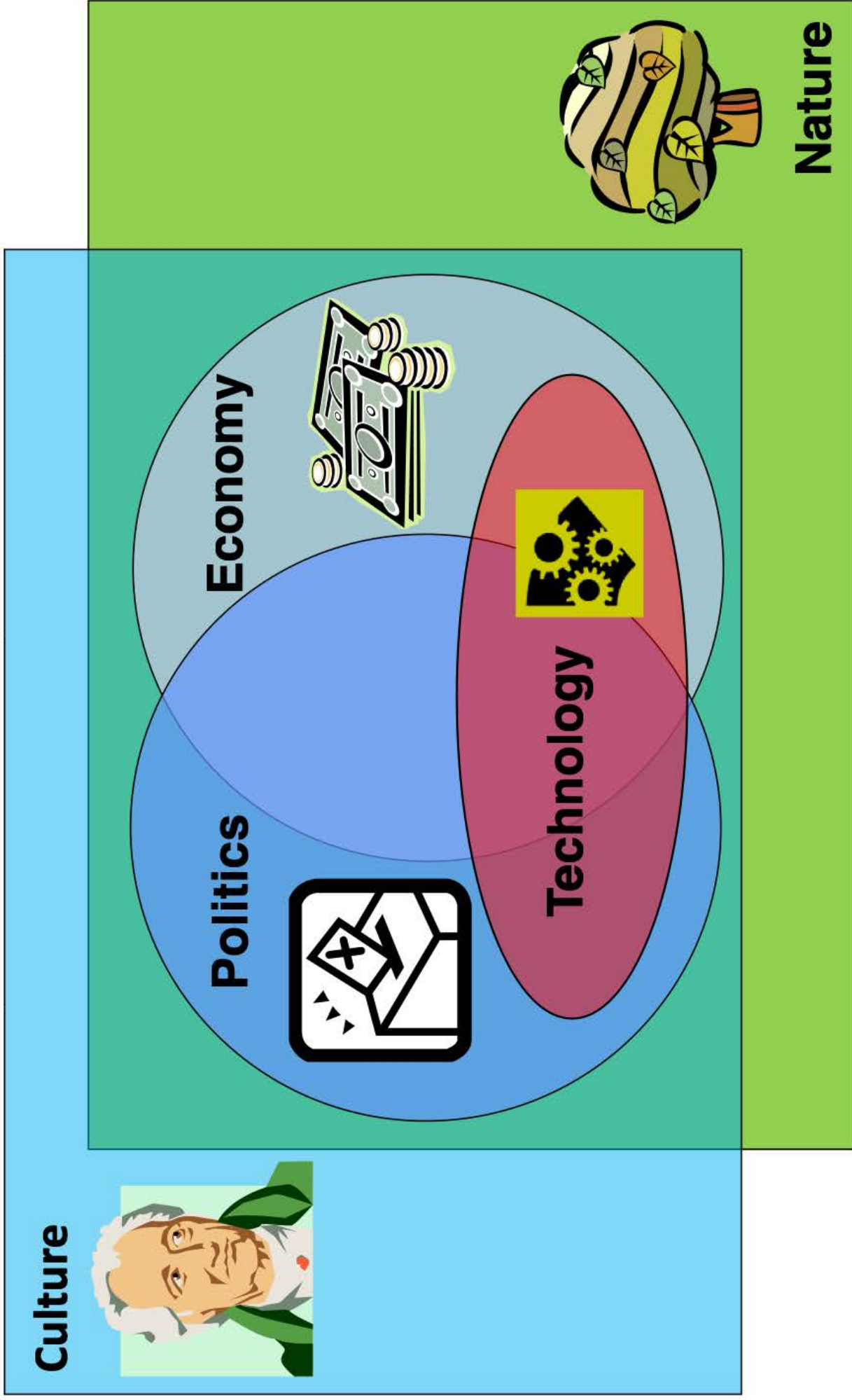
How to assess landscapes?



Content

- What is a landscape?
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Why do landscapes change?





HERCULES

Sustainable Futures for Europe's Heritage in Cultural Landscapes:

Tools for understanding, managing, and protecting landscape functions and values

Driving forces of landscape change: A pan-European, comparative analysis

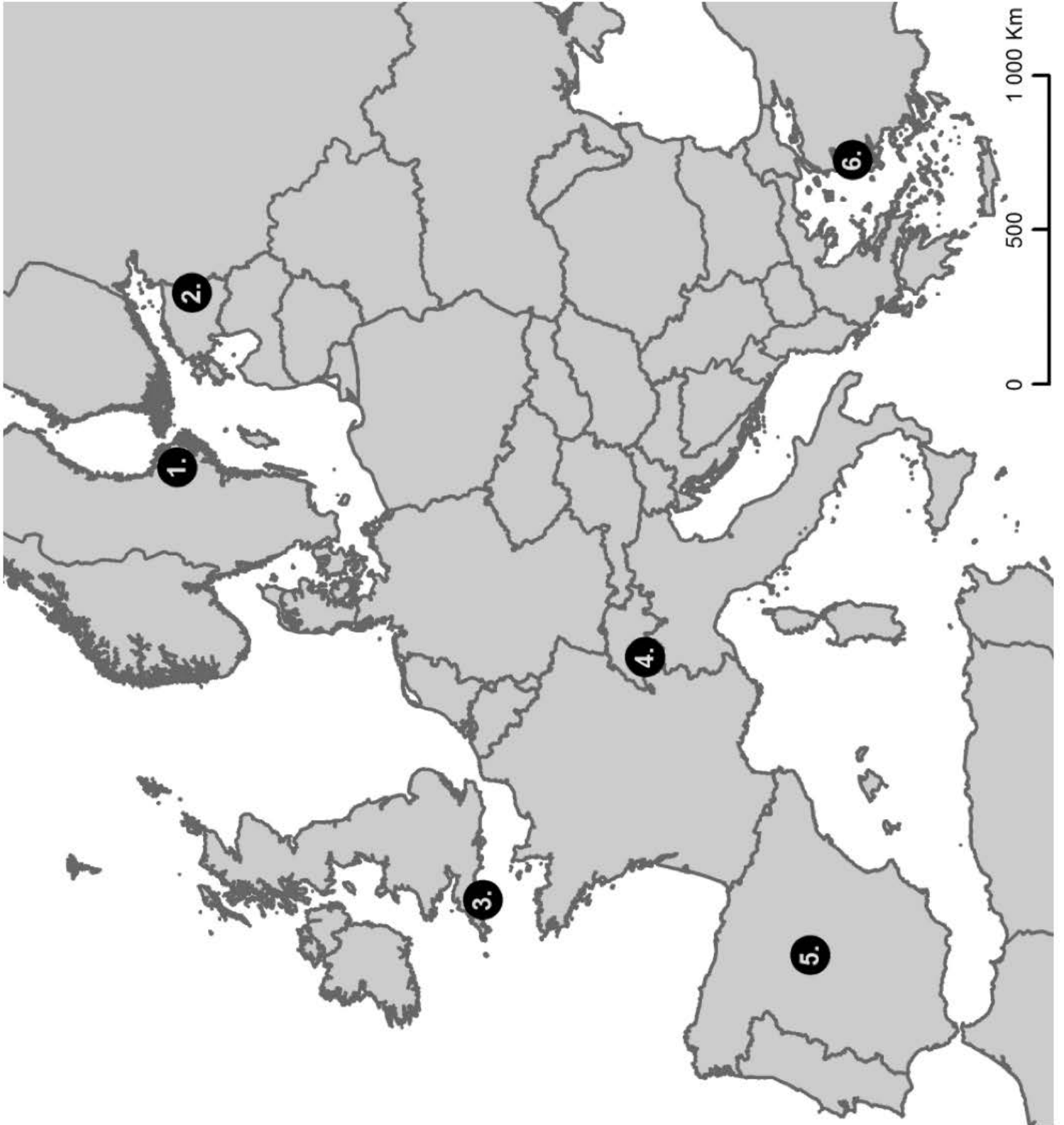


Gutenbrunnen, study municipality Lenk, Switzerland. © Albert Sommer

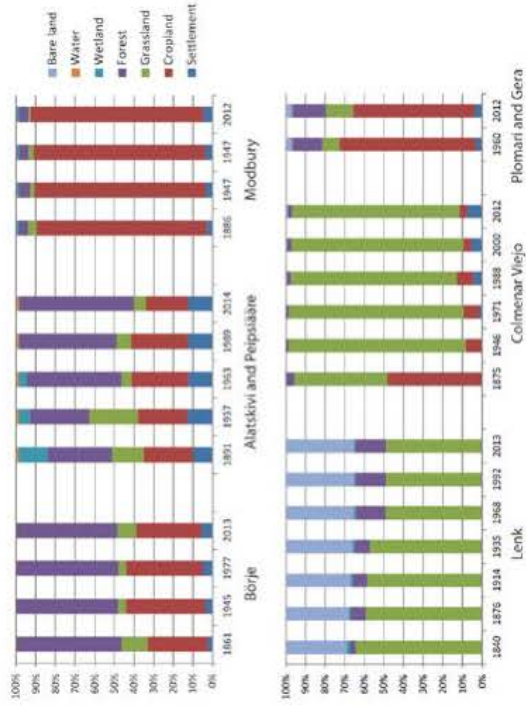
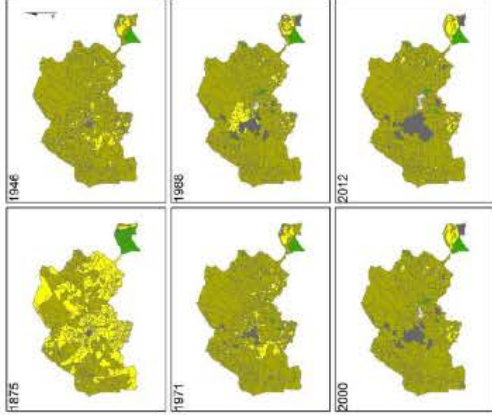
This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 603447

FP7, Collaborative Project
1 December 2013 – 30 November 2016





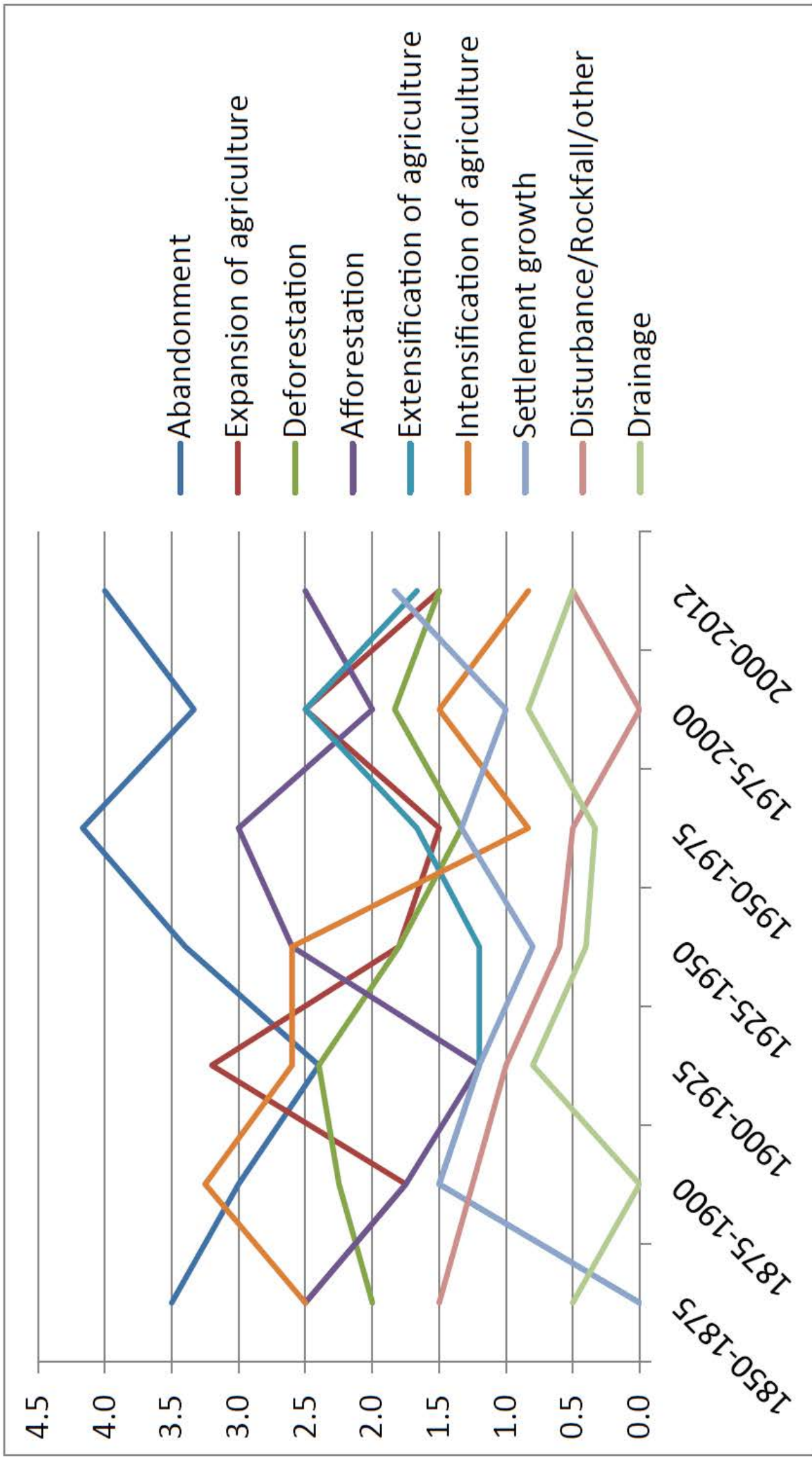
Results



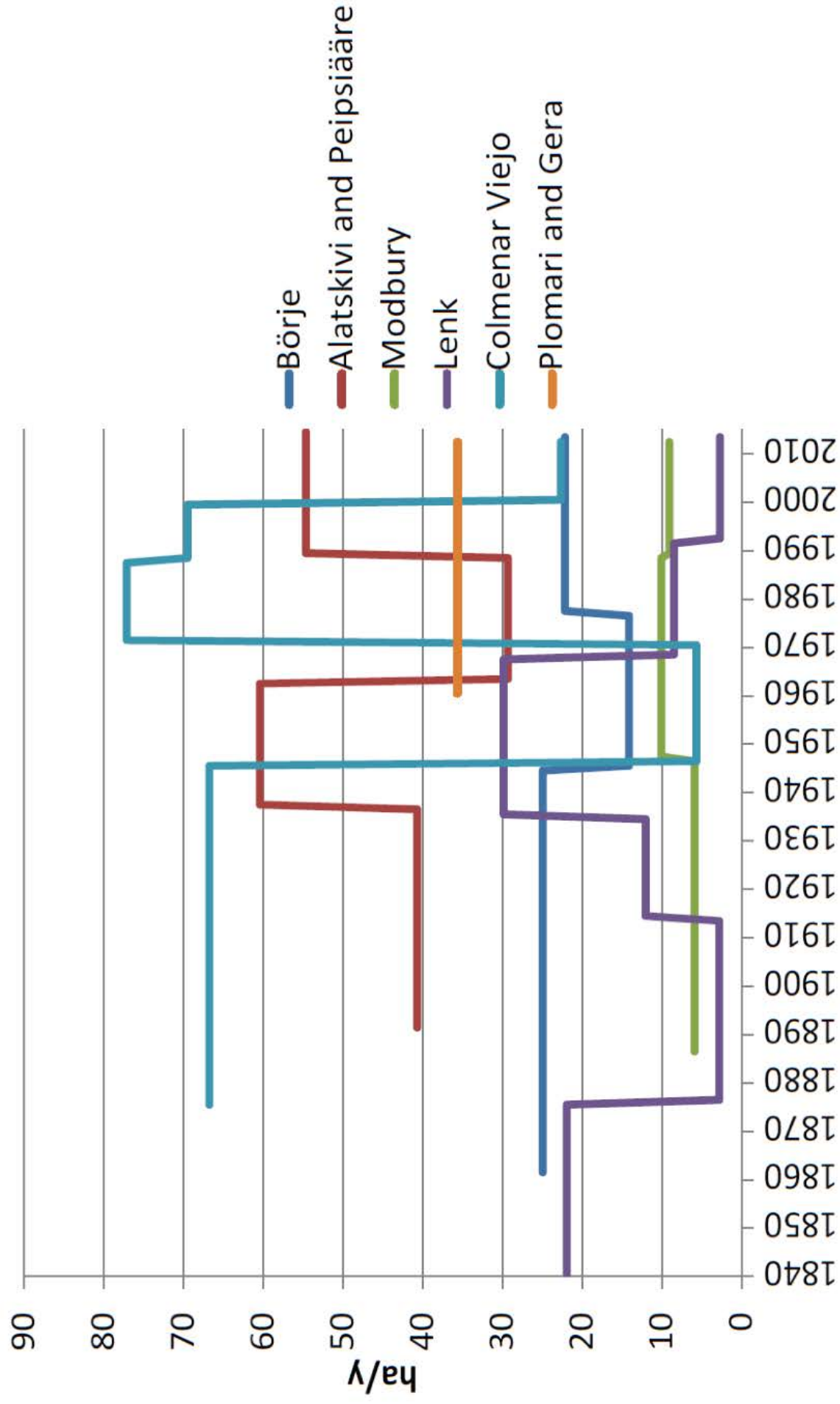
“Everybody in the village had some benefits from the building industry and so it is impossible to stop it.”

“You don’t see the glaciers from down here any more. The glaciers are melting fast.”

“Everything is done for speed now, so there is no time to watch and gaze around the countryside like we used to.”



Rates of change 1840 - 2010



Generally relevant driving forces are...

Access and infrastructure



Climate change



Labour market



Political shifts



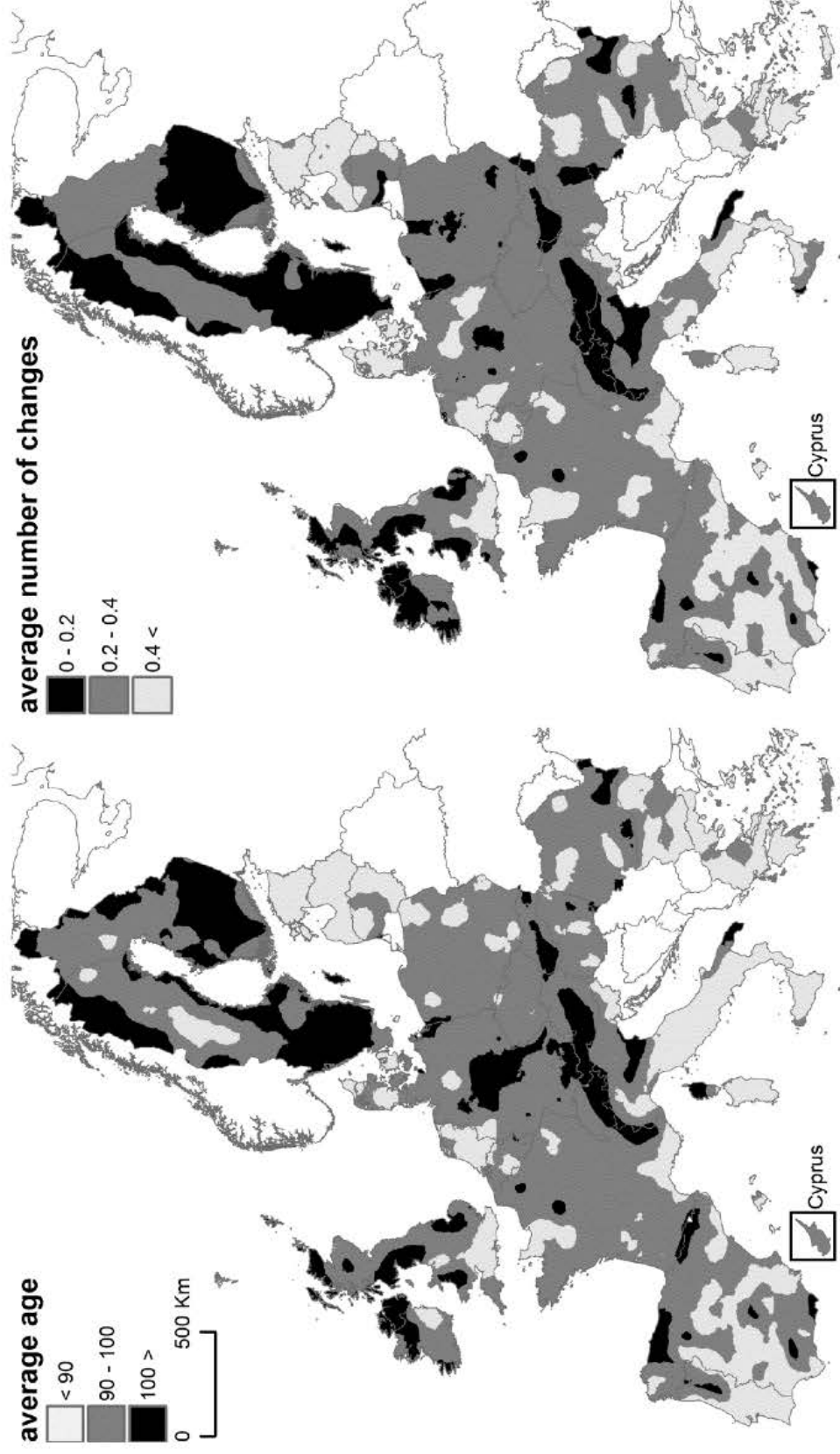
Technological innovations



Content

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And why do landscapes not change?



Where to find (agri-)cultural landscape hotspots?

Landscape Research,
Vol. 36, No. 1, 3–18, February 2011



Indicators for the Identification of Cultural Landscape Hotspots in Europe

KATALIN SOLYMOSI
Institute for Landscape Management, University of Freiburg, Germany

Preconditions determined:

- Geographic, economic, infrastructural and political isolation
- Marginal agricultural land
- Population that differs from the surrounding national mainstream.

Wilderness Quality Index



Kienast & Rutherford submitted

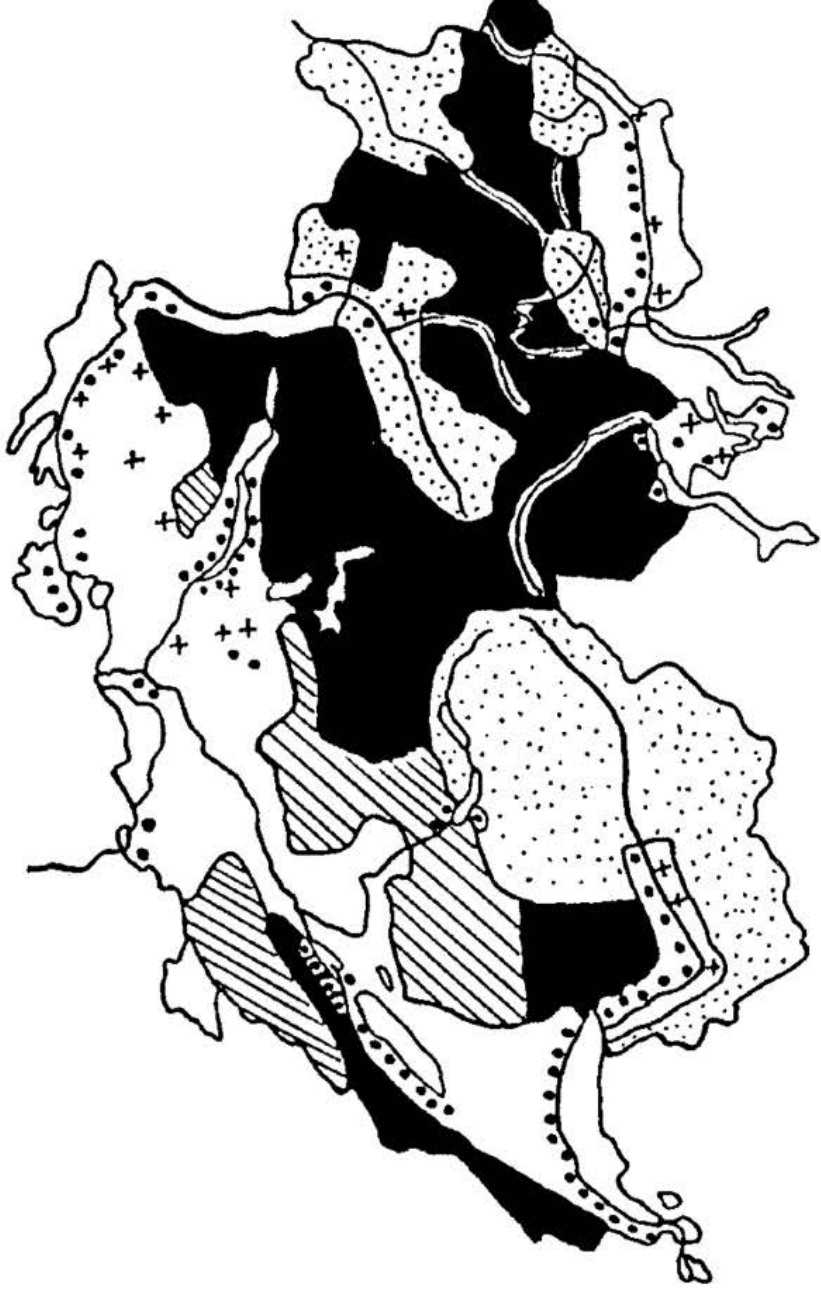
GIAHS and Wilderness represent different societal demands put upon the landscape – they might compete for the same places.

Content

- What is a landscape?
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- **Agriculture as a driver of change and persistence**
- Summary

Spatial structure of agriculture

(aprox. 1400-1800)



— Vorwiegend Ackerbau «Kornland» (Dreizelgenwirtschaft)

▨ Mischzone «Selbstversorger» (Feldgraswirtschaft)

⋯ Vorwiegend Viehwirtschaft «Hirtenland»

- - - Alpine Selbstversorgungszone

+ Obst

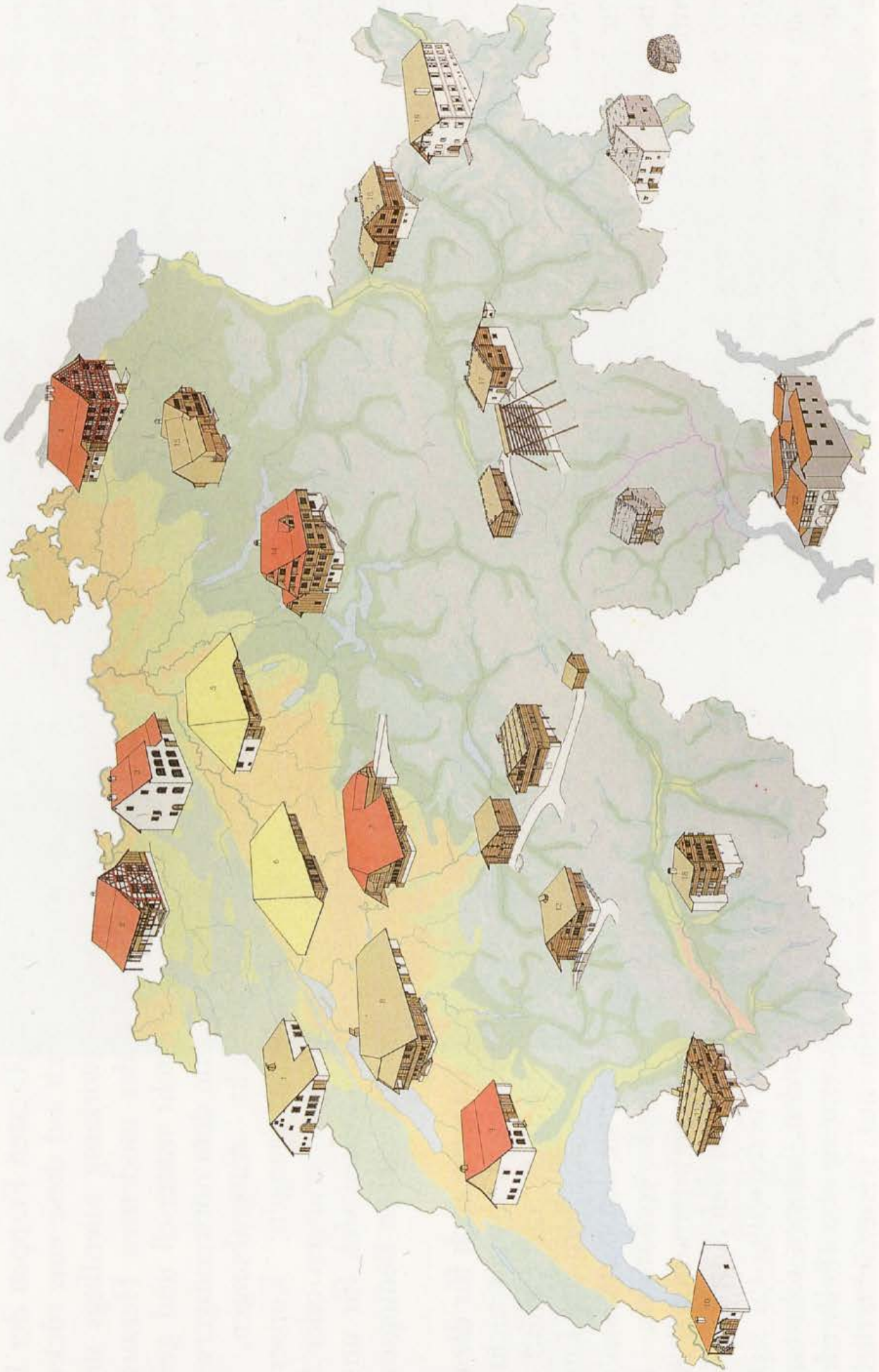
• Wein

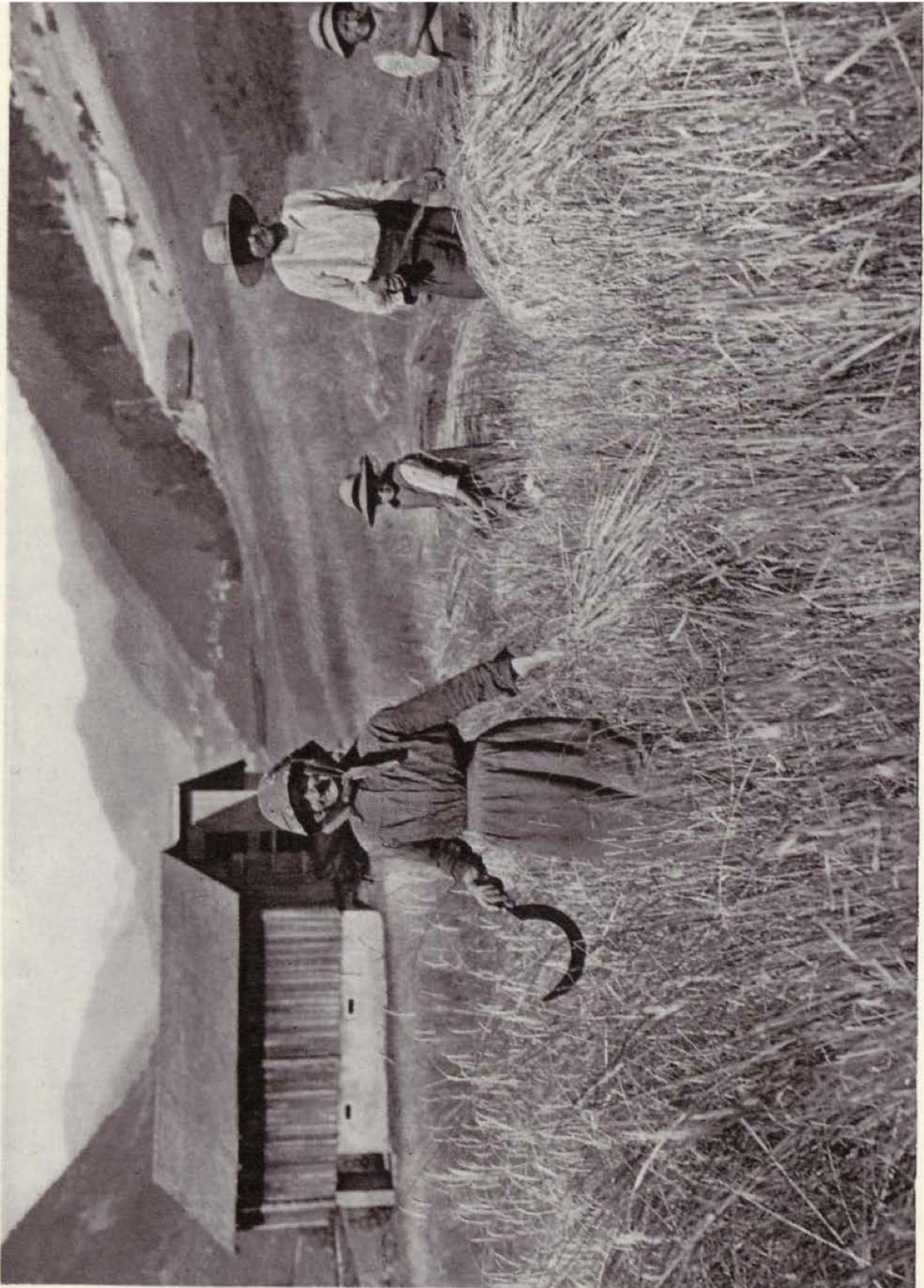
NATUR WIRTSCHAFT HAUS UND SIEDLUNG LEBENSWEISE MENSCH

KLIMA	WIRTSCHAFTSART	BAUSTOFF	BAUWEISE	HAUSFORM	HOF FORM	SIEDLUNGSFORM	ERNÄHRUNG	BAUERTYP
MITTELLAND TROCKEN Sonne	ACKERBAU Weizen, Roggen	LAUBHOLZ Eiche, Buche	STEILDACH STROH STÄNDERBAU	DREI-SÄSSENHAUS FACHWERK	EINHOF	GESCHLOSSENE DÖRFER MIT DREIFELDERFLUR	BROT	ACKERBAUER
NORDALPINES FEUCHT Regen	VIEHZUCHT Kühe, Ziegen	NADELHOLZ Tanne, Fichte	FLACHES SCHINDELDACH BLOCKBAU	REINER HOLZBAU	ALP MAIENSASS MEHRHOF: ALPWIRTSCHAFTL. STREUHOF	EINZELHÖFE MIT GESCHLOSSENER FLUR ODER DÖRFER MIT STREUUNG DER WIRTSCHAFTS- GEBÄUDE	MILCH	HIRT
INNERSÜD- ALPINES TROCKEN Sonne	VIEHZUCHT UND ACKERBAU (WEINBAU)	HOLZ STEIN	SCHINDELDACH PLATTENDACH HOLZ+STEINBAU STEINBAU	HOLZ/STEINBAU STEINBAU	ALP MAIENSASS ACKERBAU WEINBAU MEHRHOF: STREUHOF DES MEHRZWECK- BAUERN	DÖRFER MIT FILIALSIEDLUNGEN	BROT UND MILCH	MEHRZWECK- BAUER

Richard Weiss, Häuser und Landschaften der Schweiz, (1959), Erlenbach-Zürich: Eugen Rentsch Verlag, 2. Auflage 1973 (Graphiker Hans Egli); Abb. 97: Landstypen in ihren Zusammenhängen zwischen Natur und Mensch.







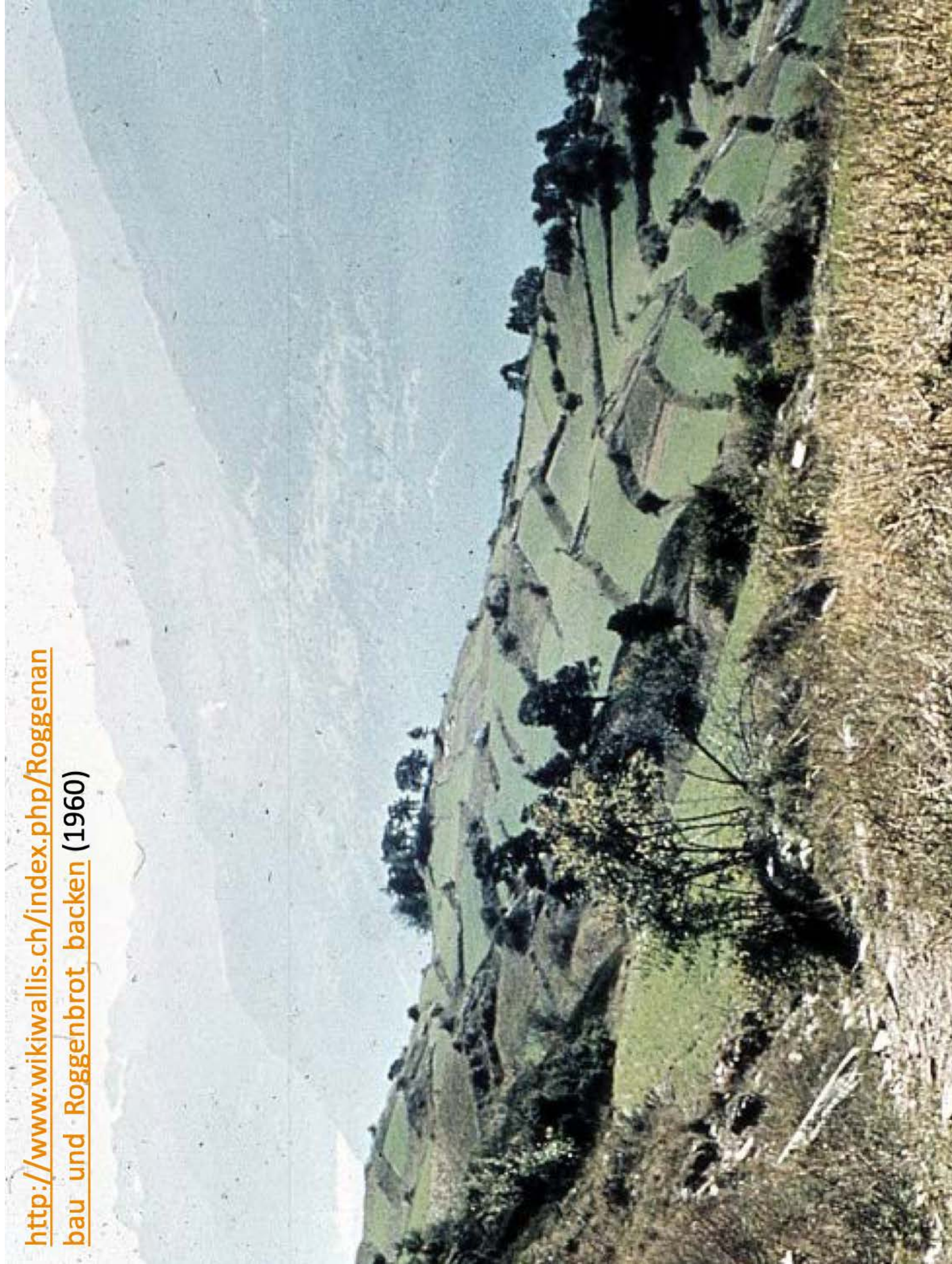
118. Die Getreideernte erfolgt in den höheren Lagen, bevor die Körner völlig reif sind. Mit einer Sichel werden die Ähren abgeschnitten, in kleine Garben gebunden und auf Gestelle zum Ausreifen gebracht, siehe Bild 120

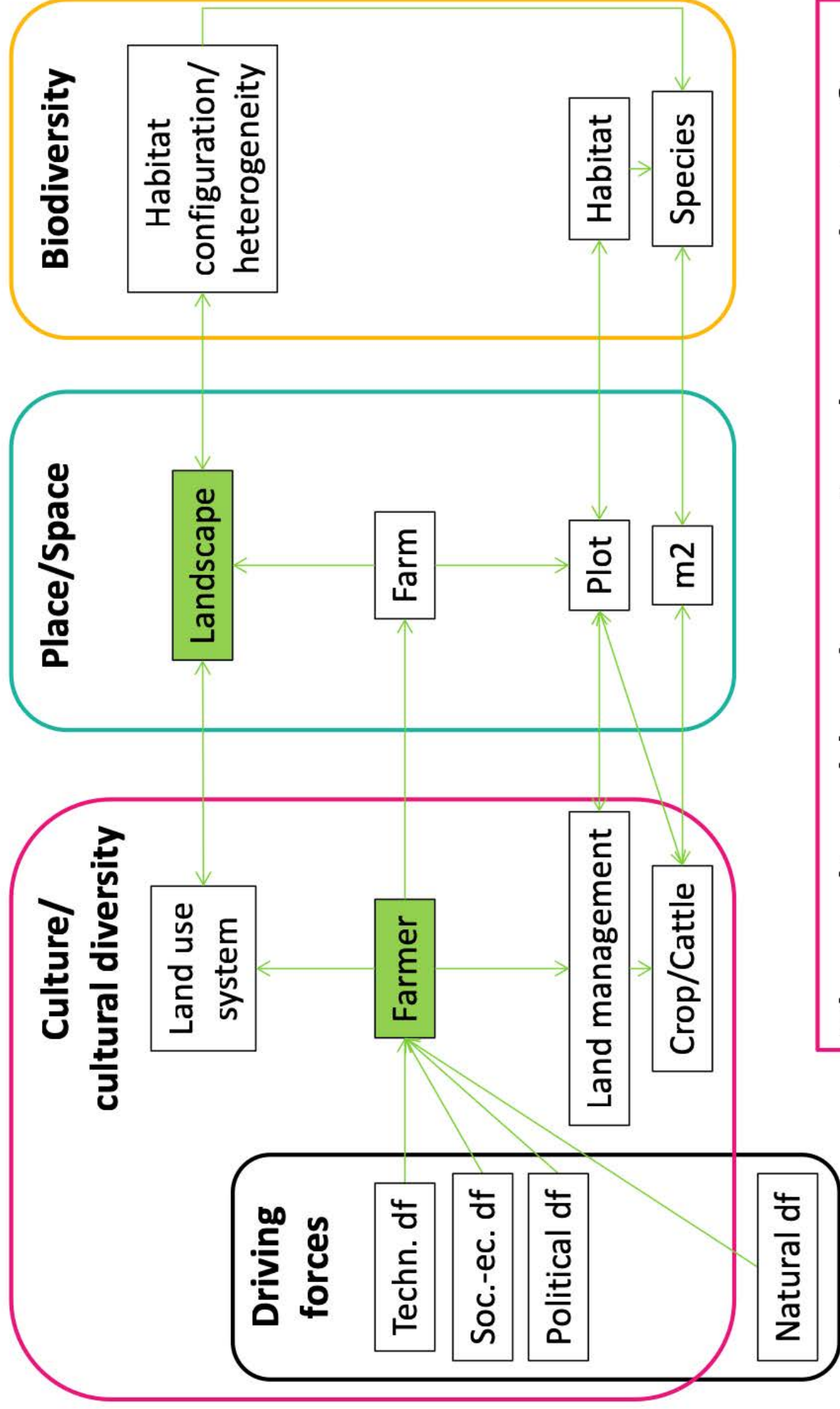
(Phot. Jaberg und Jud)



118. Die Getreideernte erfolgt in den höheren Lagen, bevor die Körner völlig reif sind. Mit einer Sichel werden die Ähren abgeschnitten, in kleine Garben gebunden und auf Gestelle zum Ausreifen gebracht, siehe Bild 120
(Phot. Jaberg und Jud)

http://www.wikiwallis.ch/index.php/Roggenanbau_und_Roggenbrot_backen (1960)





The cultural landscape is a by-product of agricultural activities.

Changes in agricultural technology



Distributing manure (solid)



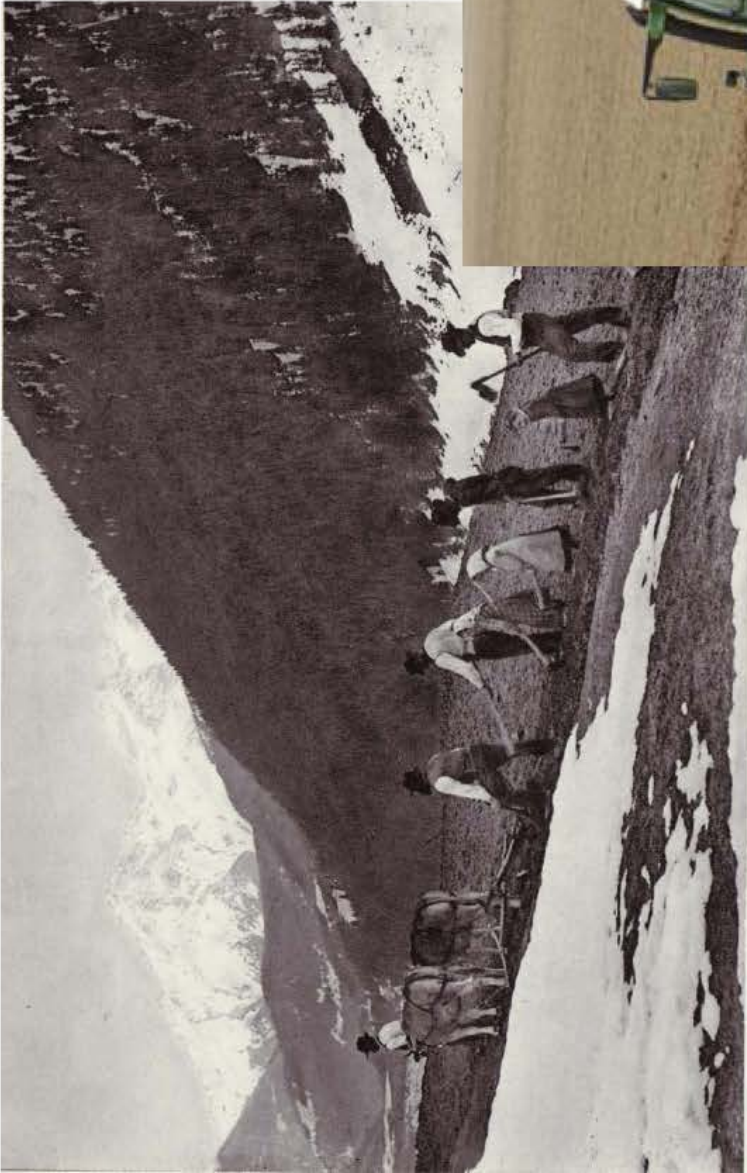
Distributing manure (liquid)



Mowing



Ploughing



117. Dem Pfluge folgt die ganze Familie, jedes mit einer Hacke, um sorgfältig das Erdreich zu lockern.
(Phot. Hager)



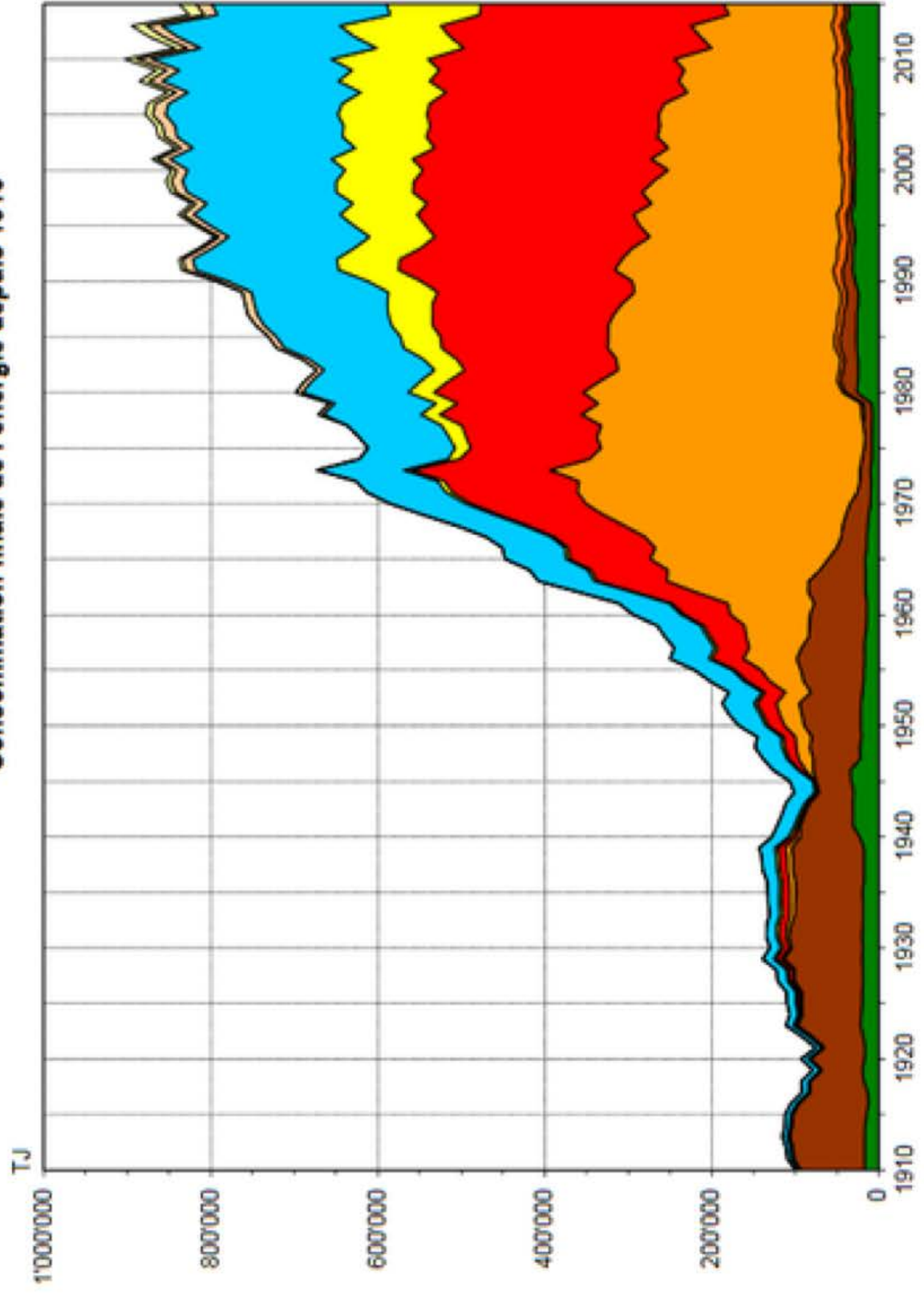
Harvesting



118. Die Getreideernte erfolgt in den höheren Lagen, bevor die Körner völlig reif sind. > die Ähren abgeschnitten, in kleine Garben gebunden und auf Gestelle zum Ausreifen gebracht.
(Phot. Jaberg und Jud)



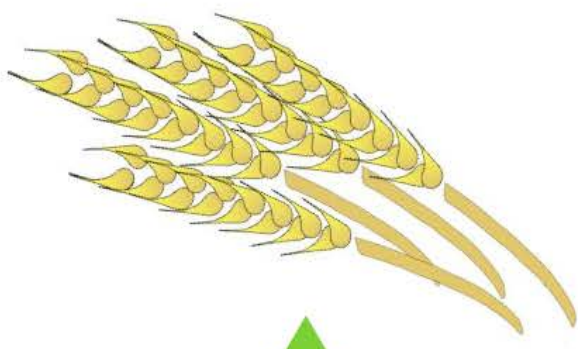
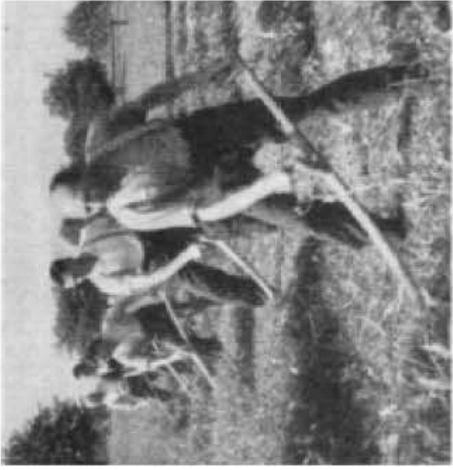
Endenergieverbrauch der Schweiz seit 1910 Consommation finale de l'énergie depuis 1910



- Übrige erneuerbare Energien / Autres énergies renouvelables
- Fernwärme / Chaleur à distance
- Elektrizität / Electricité
- Gas / Gaz
- Treibstoffe / Carburants
- Erdölbrennstoffe / Combustibles pétroliers
- Industrieabfälle / Déchets industriels
- Kohle / Charbon
- Holz / Bois

Changes in context triggered changes in

agriculture



© Can Stock Photo

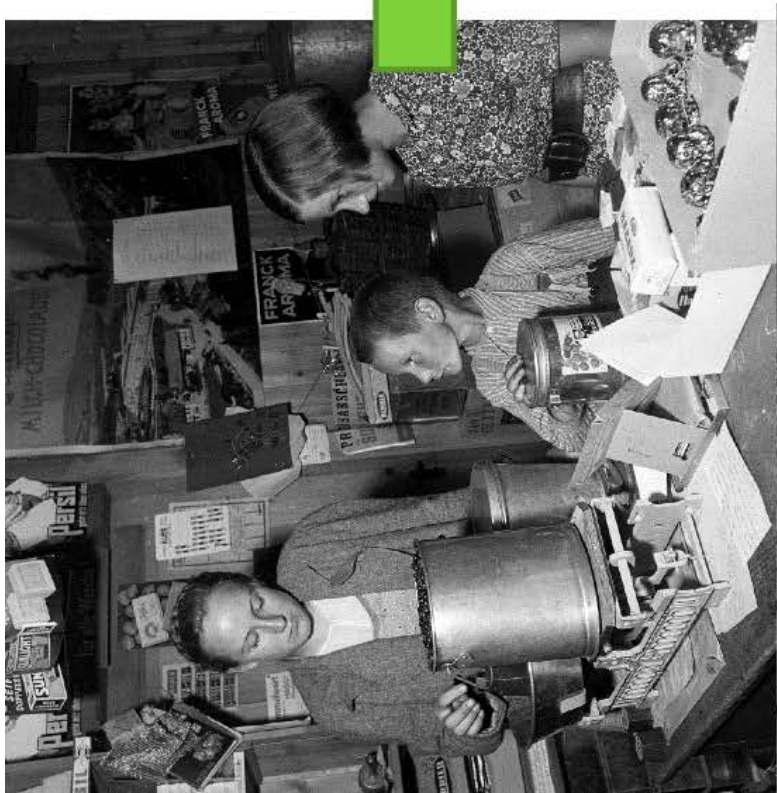




Priority questions for the science, policy and practice of cultural landscapes in Europe

Mónica Hernández-Morcillo · Claudia Bieling · Matthias Bürgi ·
Juraj Lieskovský · Hannes Palang · Anu Printsman · Catharina J. E. Schulp ·
Peter H. Verburg · Tobias Plieninger

How to secure sustainable (?) cultural landscapes where they are not economically profitable?





Content

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Summary

The cultural landscape is a by-product of agricultural activities.

Factors fostering the survival of GIAHS:

- Geographic, economic, infrastructural and political isolation
- Marginal agricultural land
- Population that differs from the surrounding national mainstream.

GIAHS developed in a context which was very different from today (let alone the future...) regarding energy, technology, teleconnections, societal demands, ...

How to secure GIAHS where they are not economically profitable?

Thank you for your attention



Some references

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