Alpine SPACE
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EUROPEAN TERRITORIAL COOPERATION
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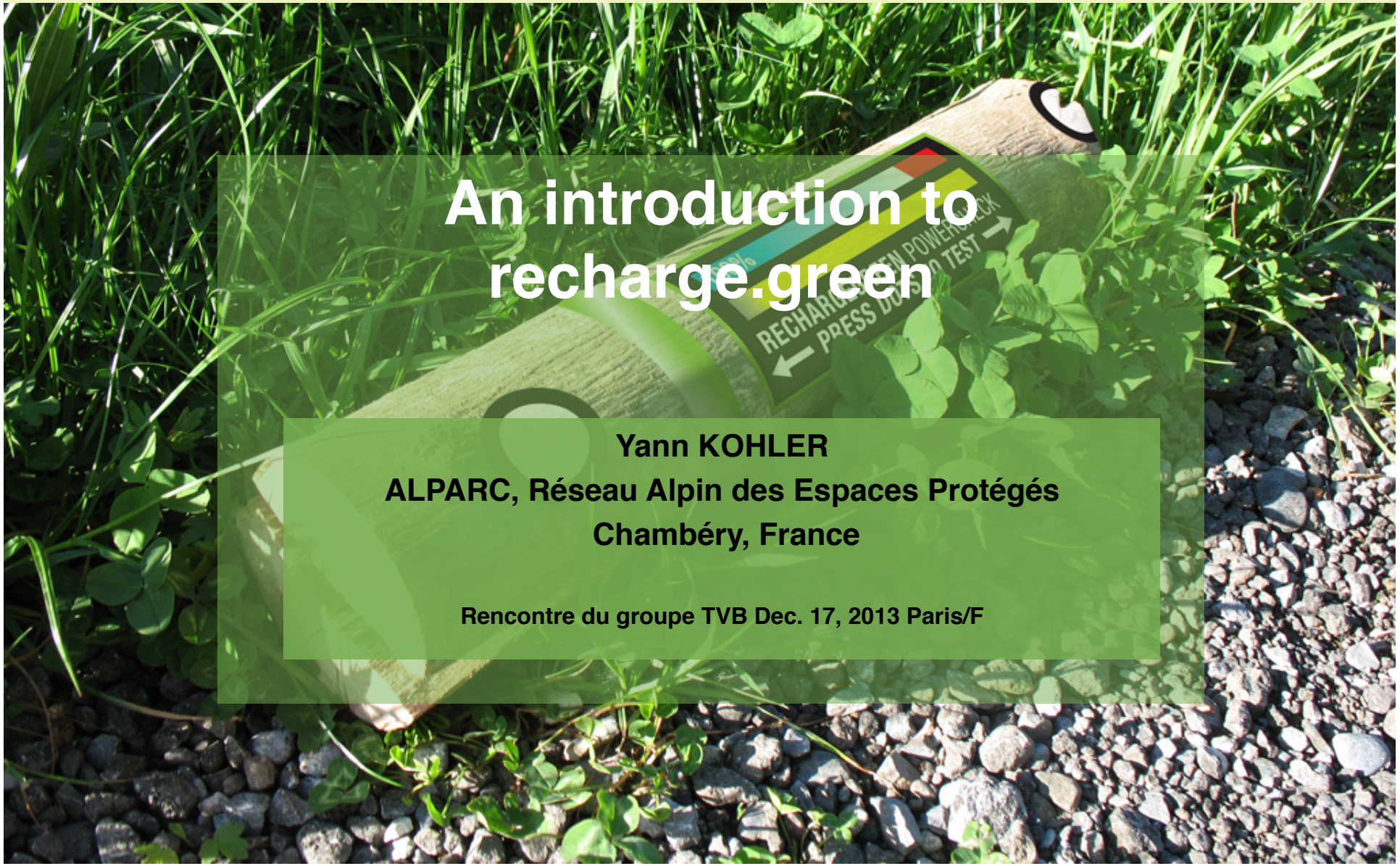
recharge green
BALANCING ALPINE ENERGY AND NATURE



An introduction to recharge.green

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Rencontre du groupe TVB Dec. 17, 2013 Paris/F

Project framework

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Aim:

To provide the basis for balancing Alpine renewable energy production and nature conservation

- Co-funded by Alpine Space Programme /ERDF
  (Total budget: 2,7 mio €)
- Duration: October 2012 – June 2015

A multi-country collaboration

- 16 partners in 6 Alpine countries

- 5 project pilot areas:
  - Bavaria (Germany),
  - Belluno Province, Veneto (Italy),
  - Northern French Alps (France),
  - Triglav National Park (Slovenia), and
  - Vorarlberg (Austria).

Lac de Moiry, Photo S. Rosset, CC

Partners

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Austria

- Environment Agency Austria
- Institute for Geography, University of Innsbruck
- International Institute for Applied Systems Analysis
- Regional Development Vorarlberg
- Research Institute of Wildlife Ecology, lead partner

France

- Mountain Institute

Germany

- Bavarian electric power company
- blue! advancing european projects (sub-contracted by the lead partner)
- International Commission for the Protection of the Alps

Italy

- European Academy of Bozen/Bolzano
- Maritime Alps nature park
- Veneto Region / Office for Economics and the Development of Mountain Areas

Slovenia

- Agricultural Institute of Slovenia
- Department for forestry and renewable forest resources, University of Ljubljana
- Slovenia Forest Service
- Triglav National Park

Switzerland

- Agroscope – Swiss research into agriculture, nutrition and the environment

For „ground-truthing“: different emphases in pilot areas

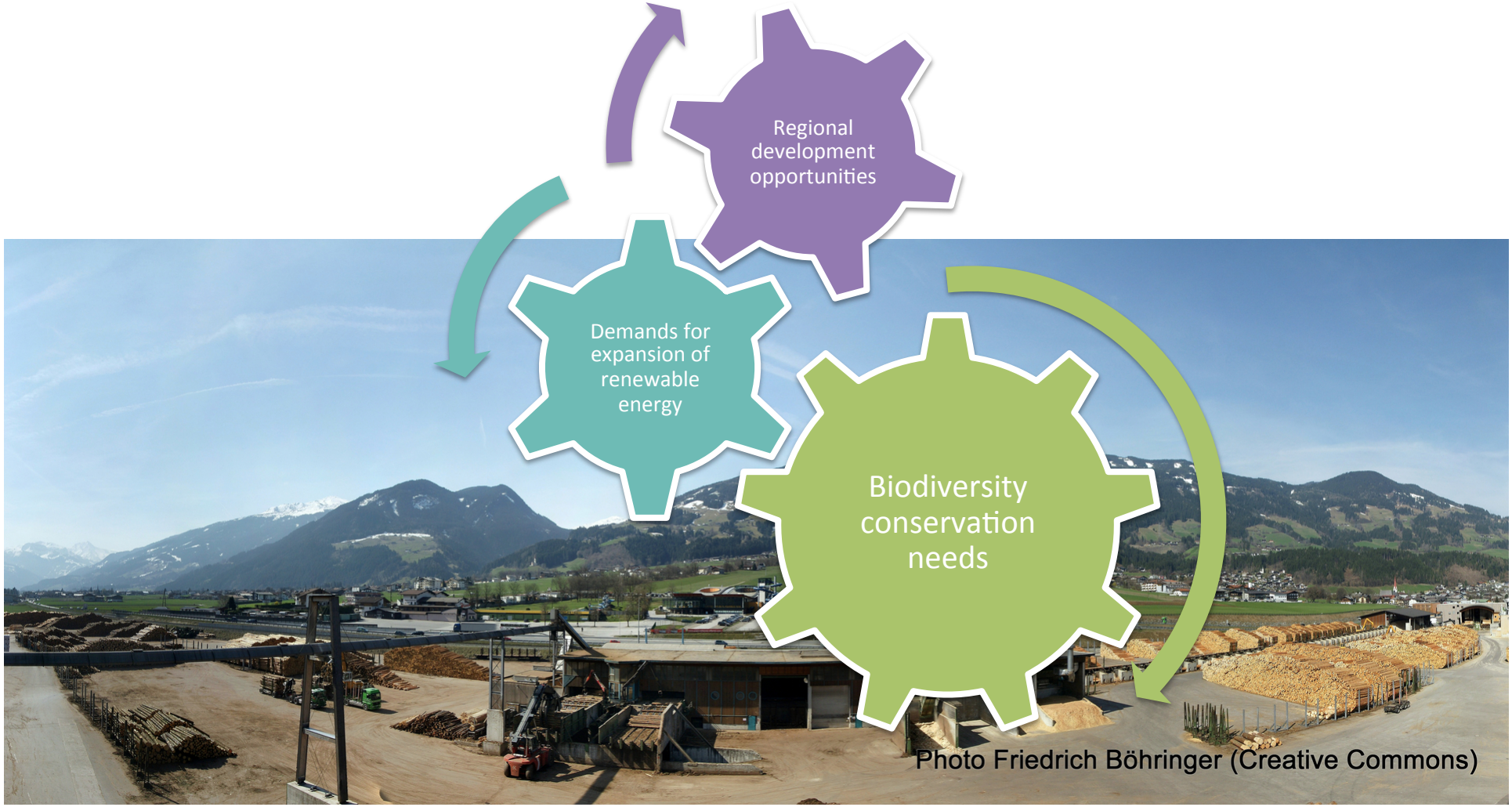
Woodland biomass vs. biodiversity (Triglav)

Hydropower vs. biodiversity (Bavaria, Belluno)

All forms of RE vs. ecosystem services (Vorarlberg)

Hydropower & integrated spatial decision support systems on water resource management (Northern French Alps)

Why this project?



Context

Environmental, social & economic issues

Demand for:

- sustainable sources of energy (climate change mitigation)
- economic development in the region

vs.

Conservation of:

- Ecological connectivity
- Biodiversity (species, ecosystems)
- Ecosystem services

Questions

- impact of development of renewable energy on the habitats of animals and plants?
- How does it affect land use and soil quality?
- How much renewable energy can reasonably be produced / used?

What ecosystem services?

Source: Richard Hastik, Uni Innsbruck

Why care about biodiversity?

During the 1980s it was shown that organisms can influence:

- formation of habitats – ecosystem engineering
- fluxes in biogeochemical cycles
- productivity of ecosystems

Cardinale et al. Nature 2012

Present-day consensus

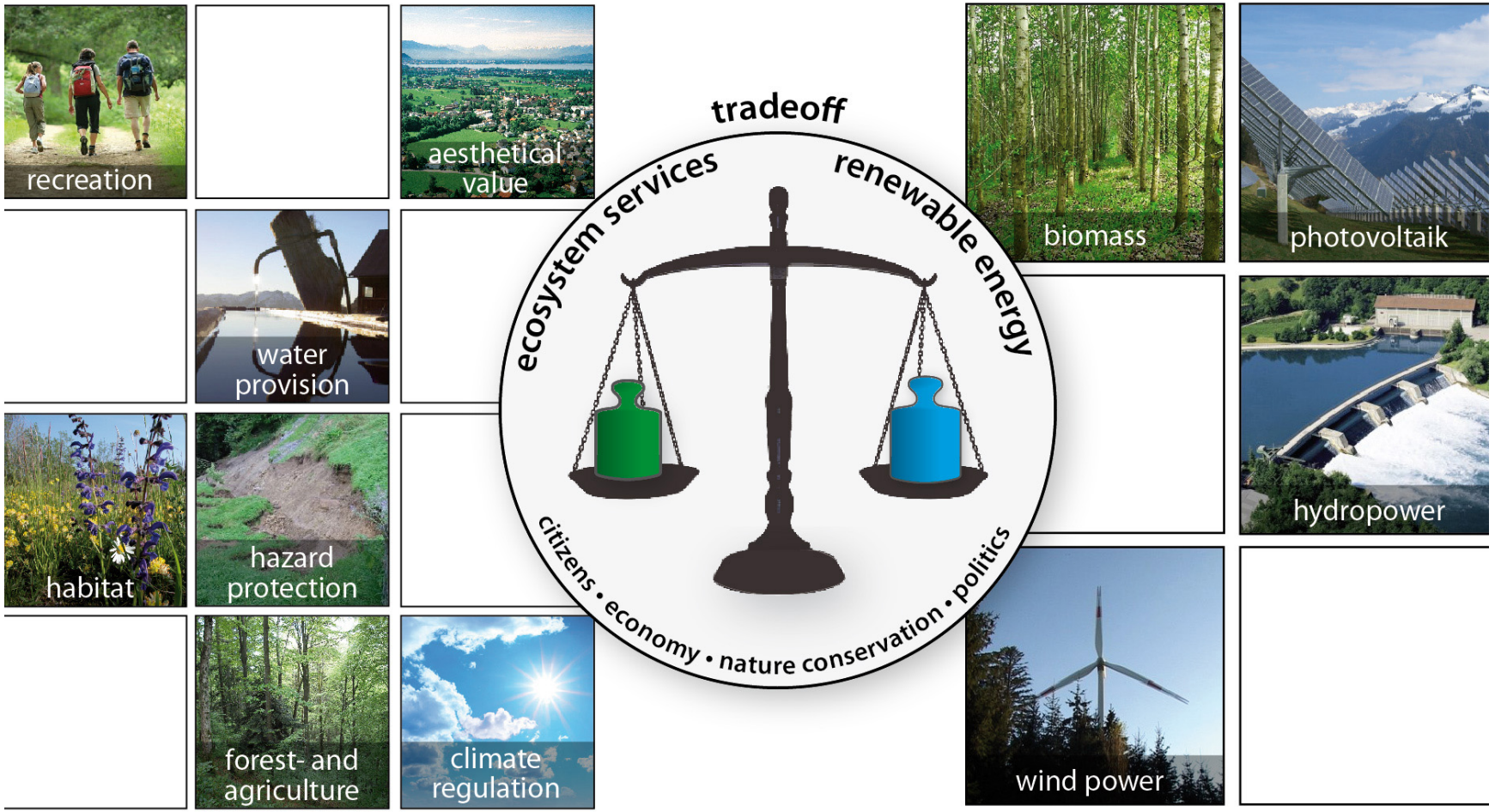
Biodiversity loss reduces:

- efficiency by which ecological communities capture biologically essential resources
- produce biomass
- decompose and recycle essential nutrients

Mounting evidence that biodiversity increases stability of ES functions over time

Cardinale et al. Nature 2012

But – there are tradeoffs



Source: Richard Hastik, Uni Innsbruck

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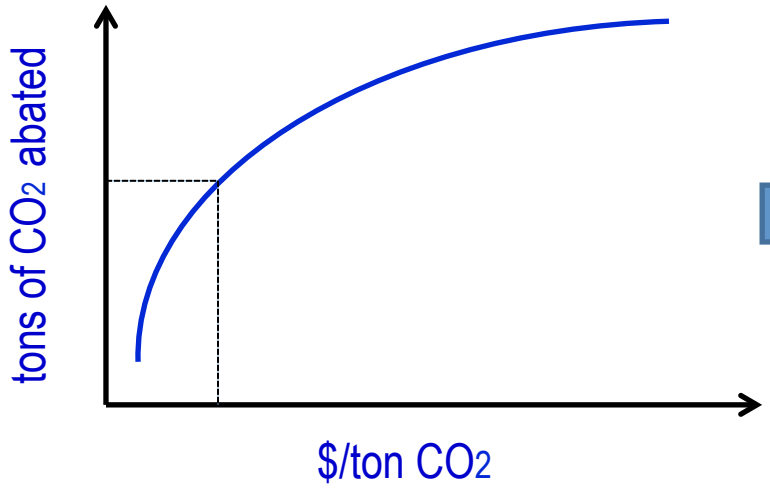
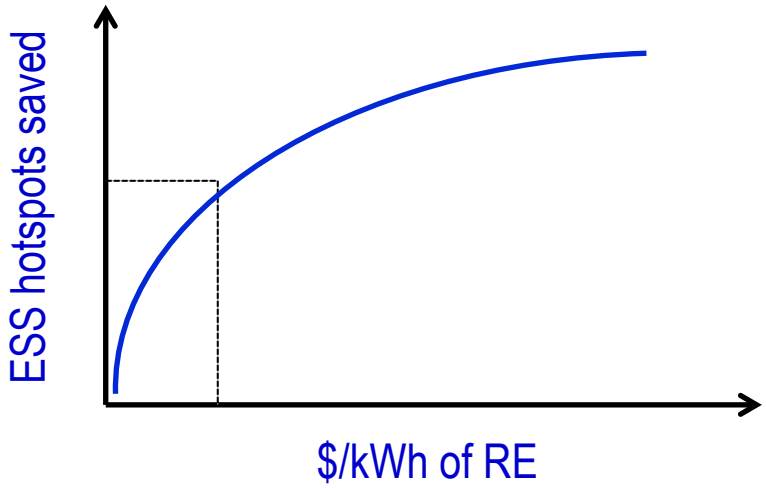


Each additional ton of CO2 abated will increase the cost of abating the next one, as low-cost opportunities are exploited and more expensive abatement options have to be employed.

MPC



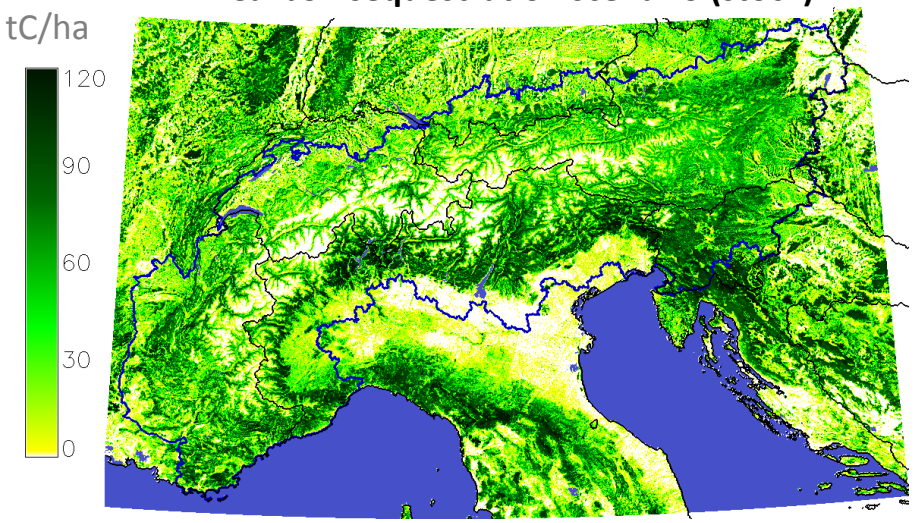
Each additional area with important ESS excluded from RE deployment/protected will increase the cost of delivering another kWh of RE, as we have to resort to less productive areas.

Ecosystem trade-offs of forest areas

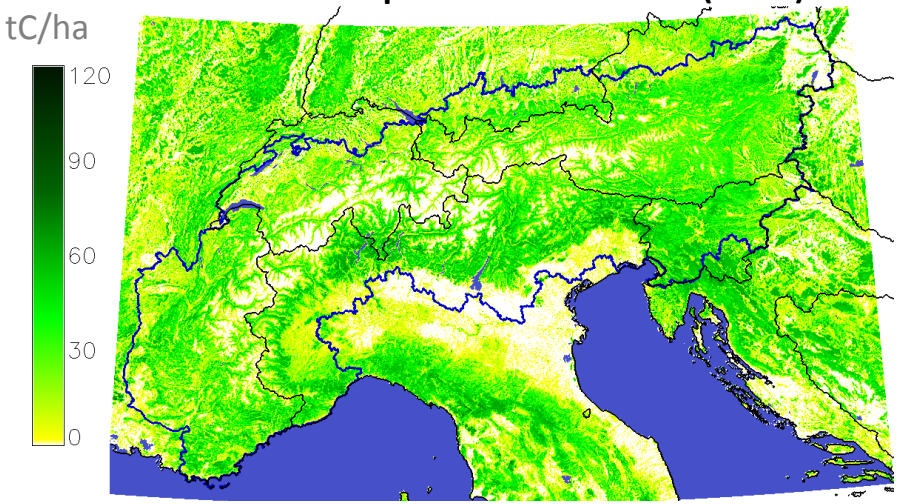
- **G4M** estimates the impact of forestry activities on carbon sequestration and supply of biomass in the Alps (258,000 km^2 total area, 115,000 km^2 forest).
- Forests managed to maximize two ecosystem values through changing the rotation period:
  - S1: Maximization of carbon stock in forests.
  - S2: Maximization of biomass production.

	S1: Carbon sequestration	S2: Biomass production
Harvest potential (Mt C /year):	11	23
Carbon stock (Mt C):	1,057	577

1: Carbon sequestration scenario (stock)

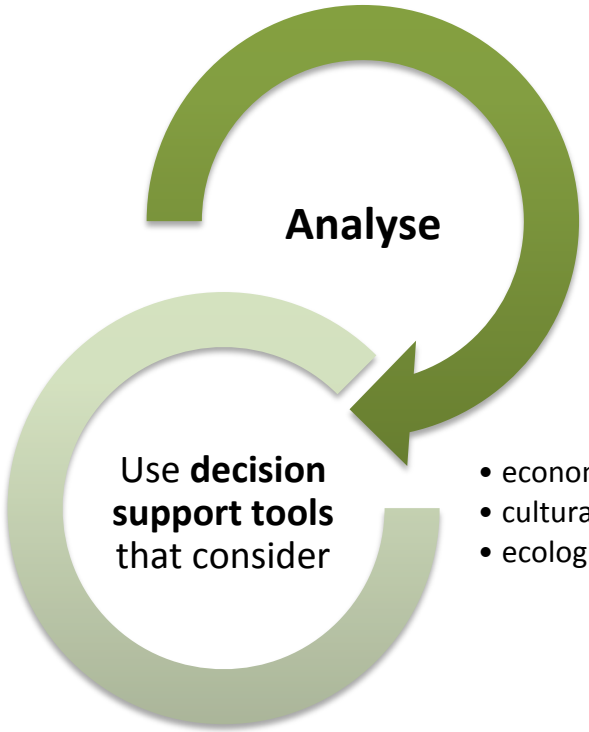


2: Biomass production scenario (stock)



Source: G4M www.iiasa.ac.at/g4m

So – how to find the right balance?



- Stakeholder needs
- Ecological processes
- Economic aspects
- Energy potential and market drivers
- Legal and policy environment

- economic,
- cultural, and
- ecological tradeoffs


Photo: yogaguide.at

Expected project results

Assessment of the **status quo of Alpine renewable energy production** and of potential (with maps)

A set of **qualitative indicators** to compare legal frameworks, stakeholders, processes, energy market drivers, avenues of cooperation

A **trade-off analysis** (renewable energy production vs. biodiversity conservation/ecosystem services)

A **decision-support system** for renewable energy development considering ecological trade-offs and economic dimensions


Photo Leo Setä (CC)

Thank you!

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