



# Bioeconomy as a Driver for Rural Development?

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## Lessons from analyses of Socio-Ecological Systems and on Public Goods provision through farming and forestry across the EU

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# Focus for assessing bioeconomy opportunities in rural regions

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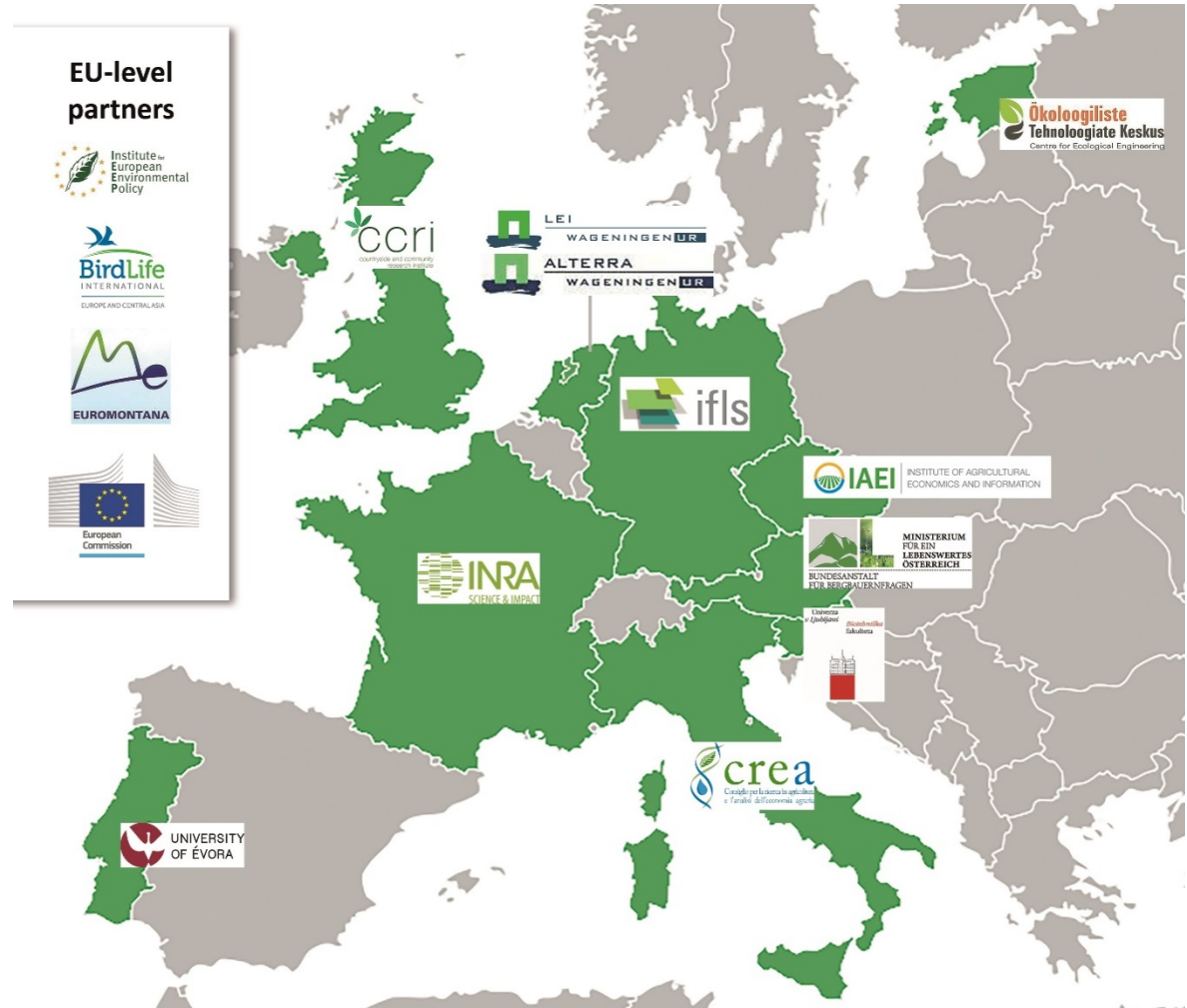
- Assess options for extended use of natural resources
- Contribution to place-based approaches
  - **Effects of local initiatives, through elaborating/intensifying resource-specific value-chains and addressing multiple societal demands**
- Particular interest for opportunities and need of strategic development in Areas of Natural Constraints (mountain and other Less-Favoured Areas) and remote places
- Review of Social-Ecological Systems (SES) and Smart specialization Strategies (S3) to enhance Public Goods provision, led by sustainable development pathways.



# PEGASUS – background and partners



- 34 case studies in 10 European Countries
- Territorial & sectoral
- 12 value chains
- 24 with agricultural focus
  - 7 intensive
  - 13 extensive
  - 4 mixed
- 3 permanent crops
- 4 forestry
- 6 agro-forestry
- 9 mountain areas



- Relevance of PEGASUS analysis –  
Assessment for bioeconomy as a leading strategy  
in various types of *rural regions* and  
for different *land management systems*
- *Step-change* in CAP framework and implementation *needed*

# Main components of PEGASUS research concept



| PEGASUS terminology                     | PEGASUS concept                                                                                                                                                                                                                                    |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Land use and land management            | The combination of land uses and land management practices (intensity) determines the <b>level of "environmental and socially beneficial outcomes" (ESBOs)</b> provision                                                                           |
| Initiatives (collective action)         | Different <b>types of collective actions</b> are affecting particular land use and management practices; with <b>explicit or implicit</b> objective to maintain or increase provision of ESBOs, by addressing land management systems / bioeconomy |
| ESBOs                                   | ESBOs are defined and target levels are determined by <b>societal and political actors</b>                                                                                                                                                         |
| Drivers / factors for collective action | <b>Exogenous and endogenous</b> factors are driving collective actions; in particular <b>awareness</b> and appreciation, in addition to factors affecting land use and <b>management intensity</b>                                                 |



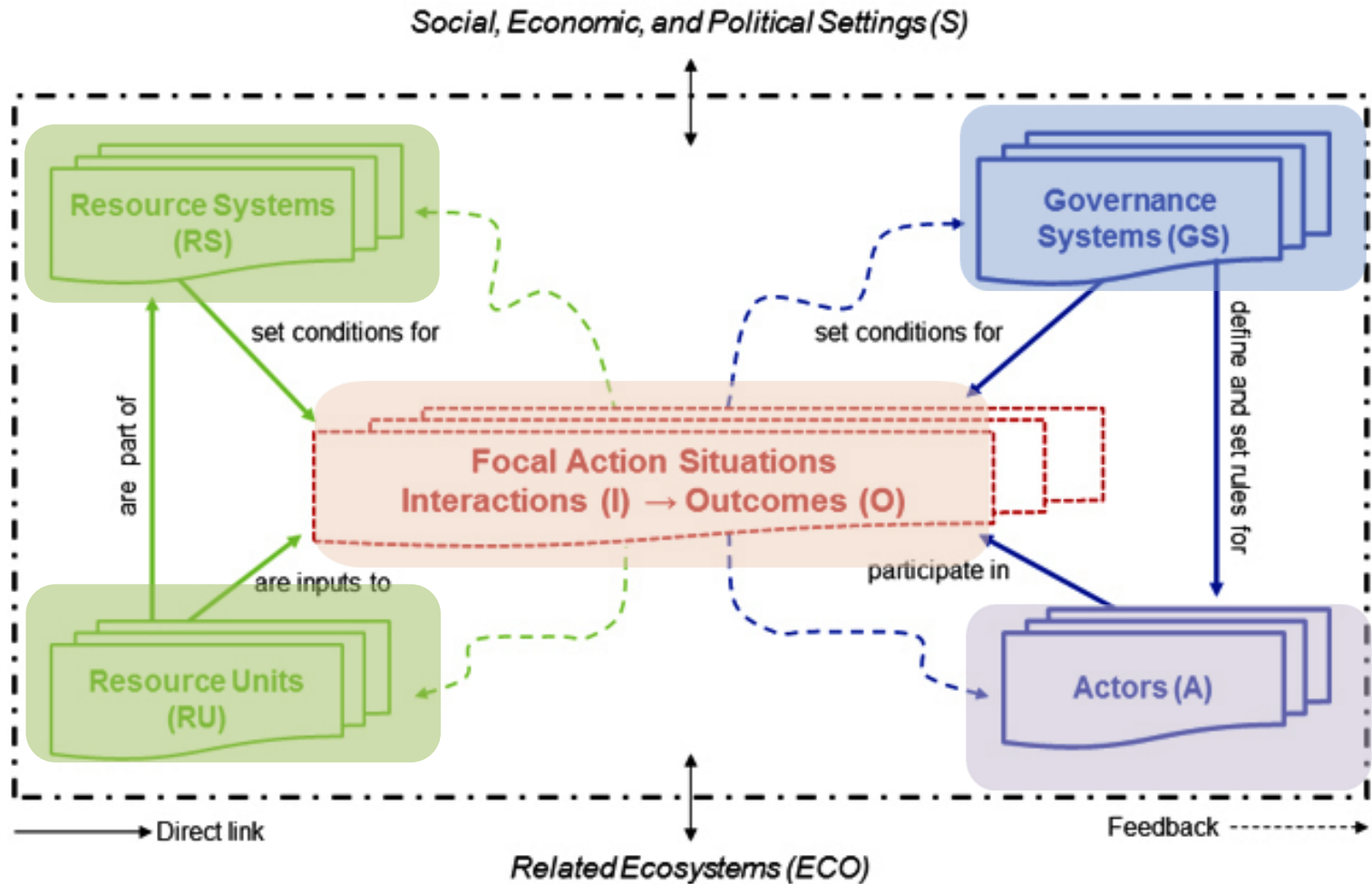
# Analysing the Social-Ecological Systems (SES) framework

R = natural,  
cultural &  
human  
resources  
(capitals)

FAS =  
activities  
(farming &  
forestry)

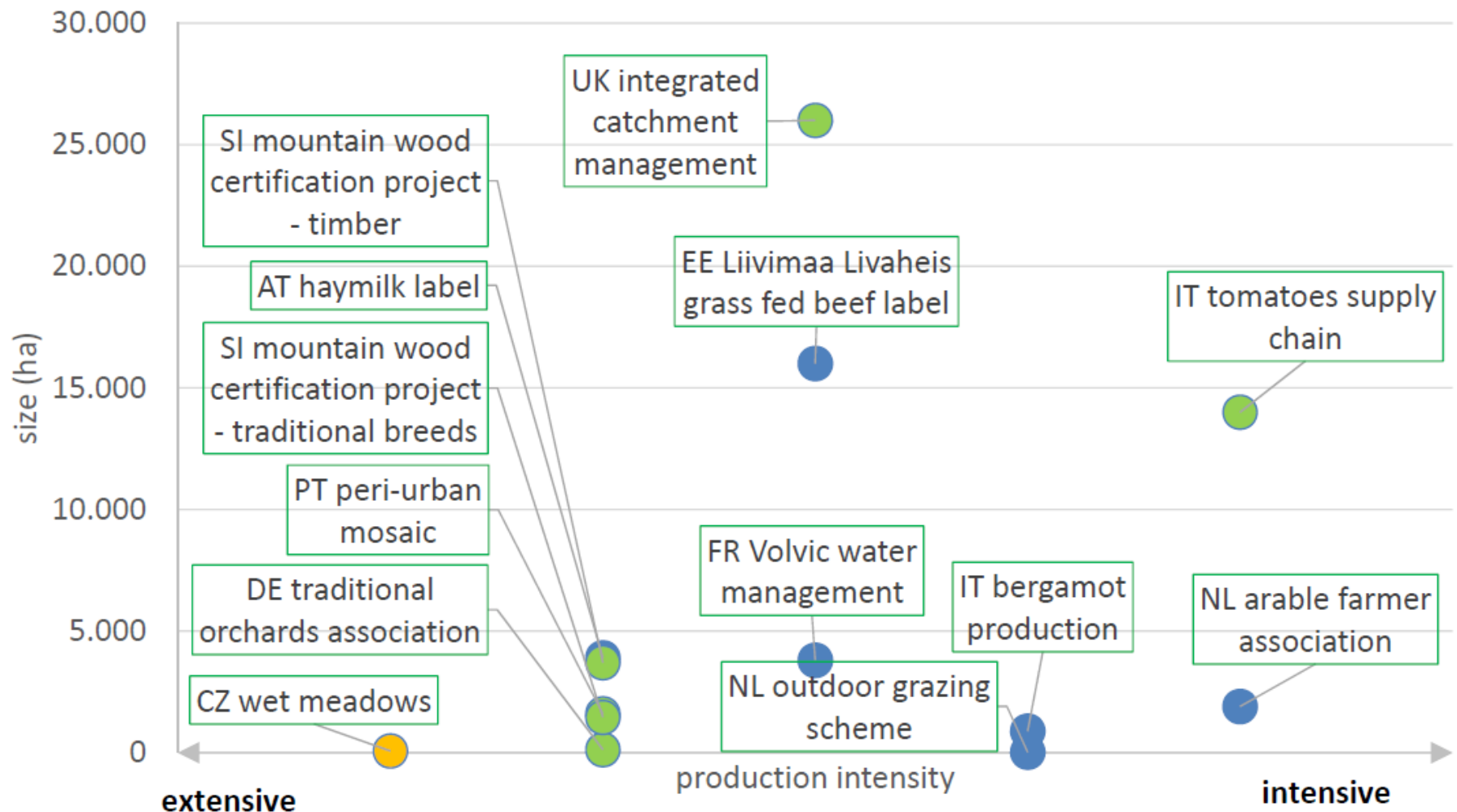
GS = policies  
& markets,  
regulations,  
behavioural  
norms

A = all those  
who take part  
in FAS (direct  
or indirect)



McGinnis, M. D., and E. Ostrom. (2014). *Ecology and Society* 19(2): 30

# 12 in-depth case studies: types of initiatives, scales, production intensities



# Intensive agricultural management



Land use e.g. arable/cereals, tomatoes, bergamot

Initiatives to *reduce negative pressures on the environment*, meet regulatory and market requirements and *increase sustainability* of the production system

ESBOs: Water quality, soil functionality, and strong links to rural vitality (employment)

Mechanisms: introducing sustainable practices and technologies, collaboration with environmental actors, advice

Governance :

- Inter-branch organisation including all relevant actors of supply chain
- Network of farmers
- Certification (e.g. IPM, organic)



# Extensive agricultural management



PEGASUS  
Public Ecosystem Goods and Services from  
land management – Unlocking the Synergies

Land use e.g. pastures, hay making, traditional orchards

Initiatives to maintain traditional practices, to *foster ESBOs and economic viability of production on marginal lands*

ESBOs: Species and habitats (biodiversity), Landscape character and cultural heritage, and strong links to Rural Vitality (recreation, tourism)

Mechanisms: price premia related to sustainable management practices (organic), standard setting, extension services, quality assurance and traceability system, marketing activities

Governance:

- joint quality certification scheme and joint marketing and sales strategy (AT hay milk)
- Regional supply chain networks (DE traditional orchards ass.)
- radical change in property rights through NGO purchases (CZ wet meadows)



# Forest management

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Management: varied – managed, natural succession, hunting

Initiatives to maintain or *re-establish more natural forests*, create value for timber, maintain recreation infrastructure

ESBOs: Soil protection, Landscape character, diverse

Mechanisms:

Public management of infrastructure

Governance:

- Management under forest acts, legislation
- Private initiatives connecting producers and consumer
- Spatial and regional planning



# Territorial & catchment approaches



Land use: forestry and agriculture (extensive and intensive)

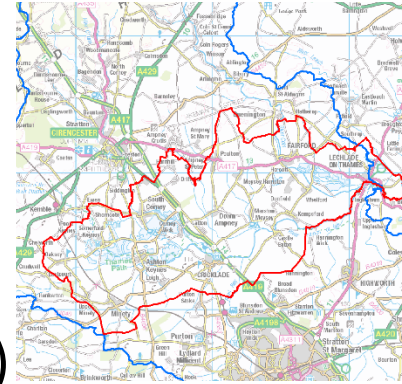
Initiatives to maintain good water quality / status, prevent flooding

ESBOs: water quality and availability, flood protection, strong link to rural vitality (employment, local engagement)

Mechanisms: facilitation and engagement through extension service, community engagement and biodiversity;

Governance:

- public/private and private/private partnerships
- Pilot programme with co-creation, collective planning and action (UK-WILD project; FR-Volvic)



# Smart specialization approaches – a means to overcoming marginalization

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- **Traditional view:**  
land management in these regions (mountains) linked to preservation of ecosystem services (public goods);  
prevailing narratives / stereotypes
- **Challenges:**  
localized structures  
fragmentation of actors – ‘lack of critical mass’  
interrelations to other spaces and global change –  
‘lack of knowledge exchange’  
technological gaps – even if views of ‘spaceless’ digital world
- Rising awareness of **opportunities:**  
local assets  
networking (within and beyond regional actors)  
social innovation features



# Smart specialization approaches – options for mountain regions

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- **Rising societal demand for ‘mountain’ amenities:**  
land management in these regions (mountains) linked to *preservation* of ecosystem services (public goods);  
prevailing narratives / *stereotypes*
- **Caveats:**  
*procedural* aspect of making use of renewed regional approaches;  
long-term commitment  
persisting obstacles for effective processes (avoid shortcomings and simplified use of “institutional thickness”)  
‘*uniqueness*’ of local assets requires substantial contents and cultural and political framing  
*value chain* elaboration (horizontal and vertical inclusion of actors)



# Conclusions

- A host of private-public partnership initiatives to make use of **local** opportunities, applying adapted **social relations**, built on **trust**, and delivering **multiple benefits**
- SES enables to sketch **complex interrelations** between actors, governance and actions (in a qualitative way), and S3 concept application in mountain regions underlines **institutional and social change and need for experimentation**
- Need to explore more in-depth contributions by **different scales** and time **dynamics**, dependence on **cultural** understandings of SES framework and (so far) limited effects on **‘rural vitality’**



# Conclusions – understanding SES

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- SES and ESBO concept useful: to sketch out the **complex interrelations** between actors, resources, governance and actions (in a qualitative way)
- Data quantifying linkages and status of ESBO is mostly lacking
- **Rural vitality** is a key secondary outcome of other primary environmental and economic outcomes; but the broad concept can mean different things to different people
- adjustments to the SES framework are needed to capture different scales and time **dynamics**, to better locate ESBOs (iterative process)



# Thank you for your attention

[www.pegasus.ieep.eu](http://www.pegasus.ieep.eu)

*- thanks also to contributions from all the PEGASUS partners*



# References

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