NOBEL - Novel business models and mechanisms for the sustainable supply of and payment for forest ecosystem services

Incentives for forest ecosystem services in Europe:
Connecting science, practice and policy

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ERA-NET Cofund – Innovating the forest-based bioeconomy

Project NOBEL is supported under the umbrella of ERA-NET Cofund ForestValue by BMLFUW (AT), ANR (FR), FNR (DE), Vinnova (SE), MINECO-AEI (ES), RCN (NO) and FCT (PT).

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Project duration: 2019 - 2022
Project objectives of NOBEL

- Design methodologies for assessing the economic, social and environmental values of forest products and services at regional and national scale
- Evaluate business models, mechanisms and public policies to internalise the socio-economic value of non-market forest ecosystem services (FES)
- Combine business models with public policy instruments for supporting the implementation of Payments for Ecosystem Services (PES) and deduct trade-offs among ecosystem services in pilot demonstrations
- Compare alternative PES schemes including web-based auction platform
Pilot demonstrations

Design innovative forest management plans

Predict effects of forest management with ecosystem models

Identify business relations

quantification of FES with indicators

assess economic value of FES

quantify acceptable value trade-offs with optimization tools

methods and mechanisms for web-based auctioning

implement business models

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# Pilot demonstrations

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<th>Nr.</th>
<th>Region</th>
<th>Short characterisation</th>
<th>FES considered</th>
<th>Business Model</th>
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<td>PD1</td>
<td>ZIF_VS Northwest Portugal</td>
<td>Pure and mixed mediterranean forests of eucalypt (<em>E. globulus</em>) and maritime pine (<em>P. pinaster</em>), land owned by communities, private and non-industrial owners</td>
<td>TB, CB, BD, RC, NHR</td>
<td>BM 1, BM 2, BM 3, BM 4</td>
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<td>PD2</td>
<td>Käringberget, Västerbotten, Boreal zone, Sweden</td>
<td>Boreal forest dominated by Scots pine (<em>Pinus sylvestris</em>) and Norway spruce (<em>Picea abies</em>), forest land owned by state owned company</td>
<td>TB, NTFP, CB, BM</td>
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<td>PD3</td>
<td>Cerdanya, Pyrenees, Catalonia in northeast Spain</td>
<td>Mixed mediterranean forests of Pine (<em>Pinus sylvestris</em>, <em>Pinus uncinata</em>) and fir (<em>Abies alba</em>) forests owned by municipalities</td>
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<td>PD4</td>
<td>Ausseerland Austria</td>
<td>Montane to subalpine mixed forests of N. Spruce, (<em>Picea abies</em>), E. Beech (<em>Fagus sylvatica</em>), Silver Fir (<em>Abies alba</em>) and E. Larch (<em>Larix decidua</em>) private and state owned</td>
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<td>PD5</td>
<td>Lorraine, Northeast France,</td>
<td>Forests are dominated by sessile oak (<em>Quercus petraea</em>), and E. beech (<em>Fagus silvatica</em>), forests are mainly privately owned, a third is owned by municipalities</td>
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**Forest ecosystem services:**
- **TP:** timber production
- **NTFP:** non-timber forest products
- **CB:** carbon sequestration
- **RC:** recreation (sports, hunting)
- **BD:** biodiversity conservation
- **WSR:** water, soil and nutrient regulation
- **NHR:** natural hazard regulation

**Business Models:**
- **BM 1 Value-Added Goods and Services:** private households or companies directly pay for goods and services that have embedded (e.g. ecotourism, certified wood products) costs.
- **BM 2 Voluntary PES:** voluntary payments of private households or companies, companies may pass the costs to their clients.
- **BM 3 Selling ES to Government Agencies:** Local / national government pays FES providers for the service and pass the costs to consumers via taxes or fees.
- **BM 4 Business as usual:** FES providers are selling timber and non timber forest products on the market.
Analysis of PES schemes

joint effort between Sincere and NOBEL partners

success was defined for 161 case studies as combination of:
(a) extent to which the goals of the PES scheme were met,
(b) overall improvement of the ecological, economic and social conditions of the region

(Bottaro et al 2019)
(Nazari 2020)
(Lira et al. 2021)
Development of a set of FES indicators according to Common International Classification of Ecosystem Services (CICES)

14 divisions, subdivided into 53 classes with 71 indicators

(Lira et al. 2021)
Identification and mapping of FES indicators

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(Gobakken & Jutras-Perreault, 2000)
Forest Ecosystem Models
predicting treatment effects on forest ecosystem services
SESSION 2: Practitioners’ views on forest ecosystem services mechanisms

(Tóth et al. 2010, 2013)
NOBEL Partners

- Forest Sciences and Technology Centre of Catalonia, Spain
- French National Institute for Agricultural Research, France
- Norwegian University of Life Sciences, Norway
- School of Agriculture / Instituto Superior de Agronomia, Portugal
- Swedish University of Agricultural Sciences, Sweden
- Technische Universität München, Germany
- University of Natural Resources and Life Sciences Vienna, Austria

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