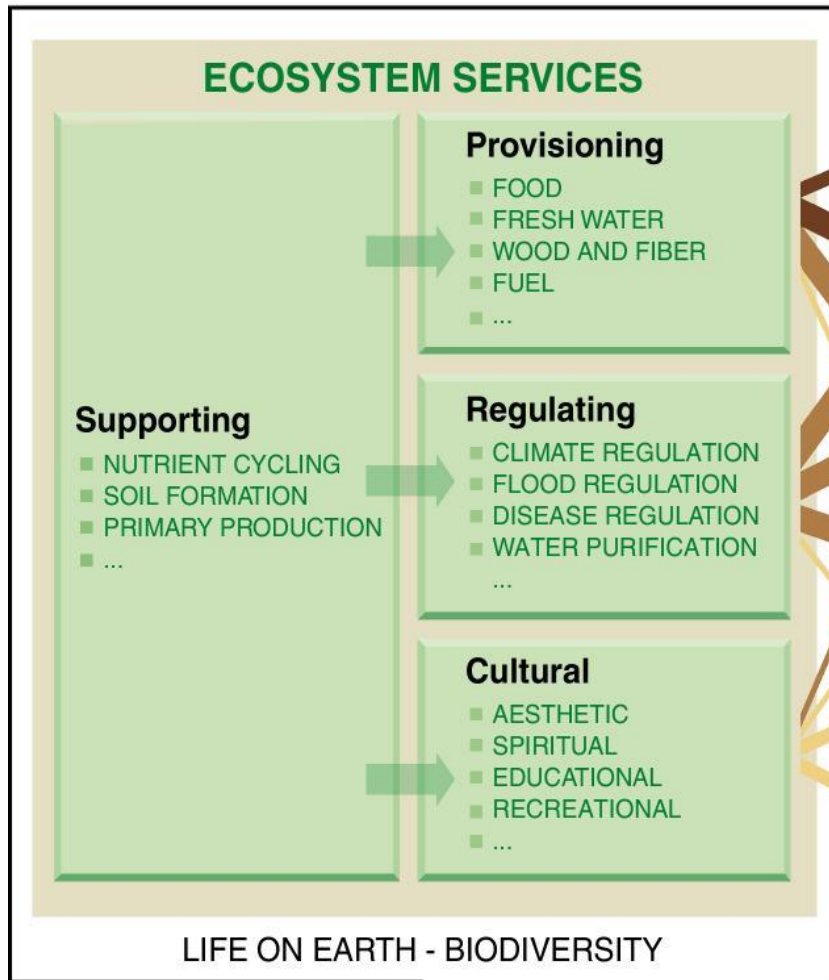


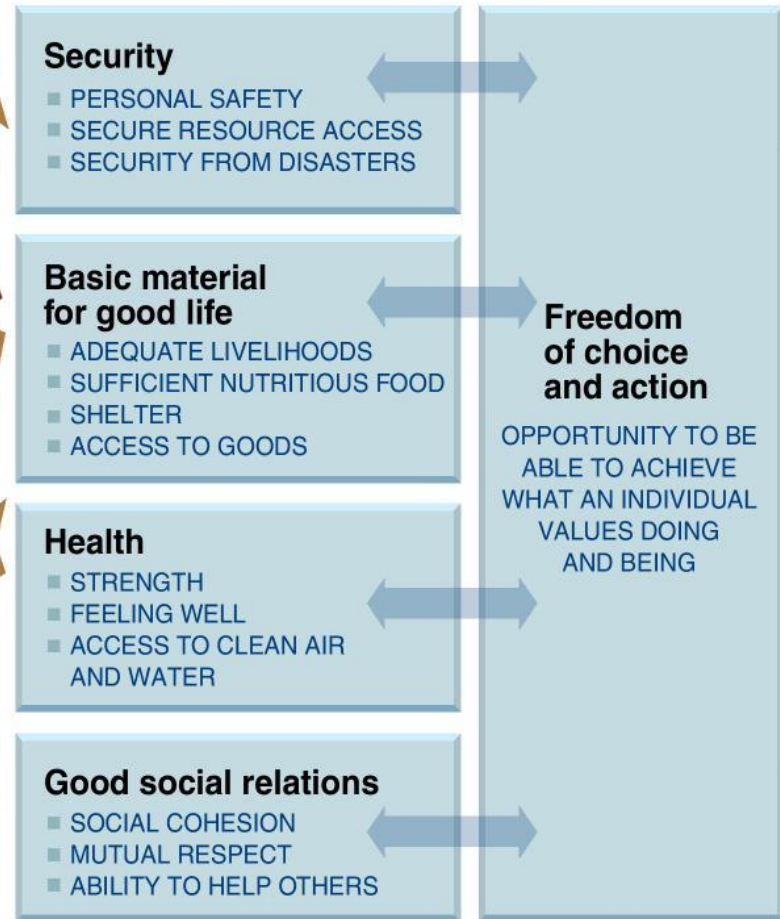
Ecosystem services and landscape management in the Basque Country

*Dr Ibone Ametzaga Arregi,
UNESCO Chair for Sustainable Development and Environmental
Education. University of the Basque Country.*

ENCORE, Bilbao October 30th 2014



CONSTITUENTS OF WELL-BEING



Source: Millennium Ecosystem Assessment

ARROW'S COLOR
Potential for mediation by socioeconomic factors

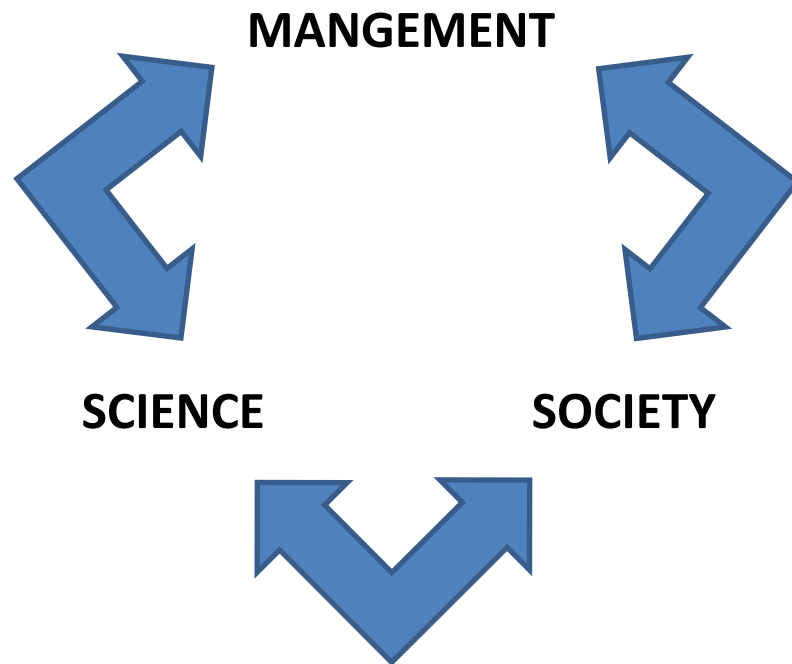
- Low
- Medium
- High

ARROW'S WIDTH
Intensity of linkages between ecosystem services and human well-being

- Weak
- Medium
- Strong

Biodiversity for Human well being

Ecosystem Service Framework provides a space for coordination and dialogue between scientist, managers/politicians and Stakeholders



INTEGRATIVE, ADAPTATIVE AND RESILIENT MANAGEMENT



Milurteko Ekosistemen Ebaluazioa **Bizkaian**
 Evaluación de los Ecosistemas
 del Milenio en **Bizkaia**

The Millennium Ecosystem Assessment in Bizkaia

Project funded by County Council of Bizkaia
 (2008-2014)

Interdisciplinary research team:

Ekosistemak
 Giza ongizatea
 Bienestar humano
 ecosistemas



Universidad del País Vasco Euskal Herriko Unibertsitatea



Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura
 Hezkuntza, Zientzia eta Kulturarako Nazio Batuen Erakundea



Garapen Iraultzailearen Institutua
 Hezkuntzari buruzko UPV/EHUko UNESCO Katedra - Cátedra UNESCO sobre Desarrollo Sostenible y Educación Ambiental de la UPV/EHU



centro unesco euskal herria
 centre unesco pays basque
 unesco centre basque country



Bizkaiko Foru Aldundia
 Diputación Foral de Bizkaia



Nature,
basis
of well-being

Millennium Ecosystem Assessment in the **Basque Country**

The Millennium Ecosystem Assessment in the Basque Country (2011-):

A local/regional integrative approach to
enhance the link between science,
policy-making and society.



Study area

Different
working scales



The Basque Country

7.229 km²

2.18 M Inhabitants

(302 Inhab/km²)

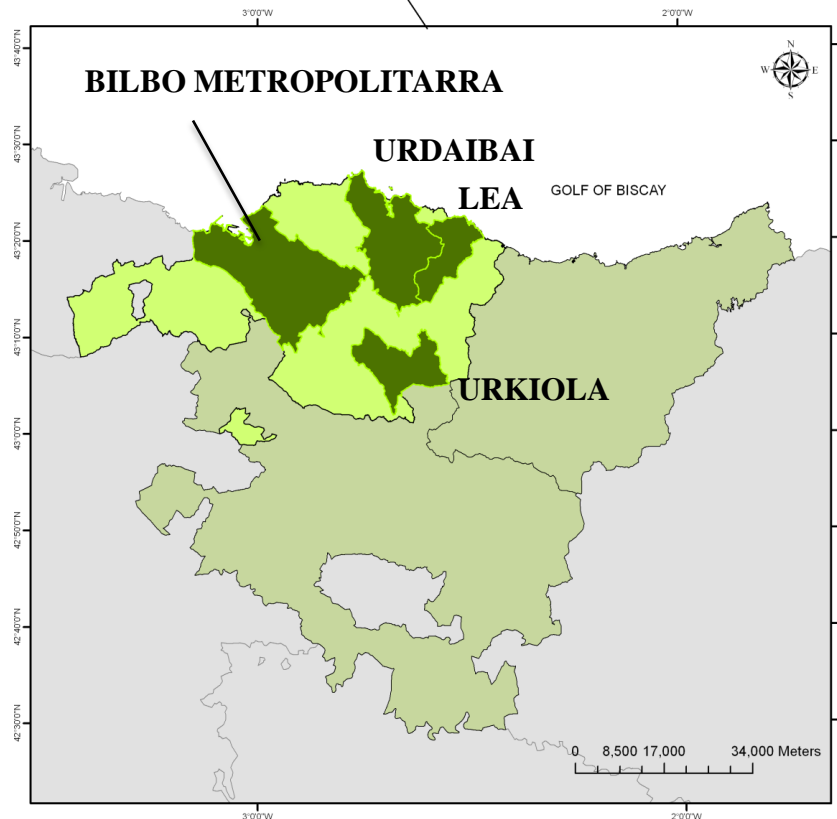
Bizkaia

2.216 Km²

1.151.113 Inhab.

(520 Inhab/km²)

111 towns



Urdaibai

252 Km² (11,38%)

44.557 Inhab

(177 Inhab/Km²)

17 towns

Transversal: international inputs from different scales

- Data credibility (Peer review)
- Make it more relevant for local / regional policy-makers
- Engagement with the wider community and scaling of results



ESP



Research lines for Biodiversity and Ecosystem Services sustainable management policies:

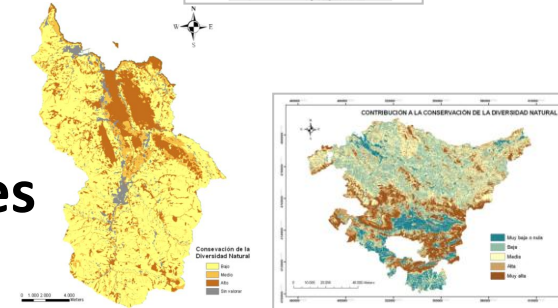
1. Ecosystem services evaluation using indicators

| SERVICIOS | | Indicador | Importancia |
|----------------|--|-----------|-------------|
| Abastecimiento | Abastecimiento | ✓ | ✓ |
| | Agua dulce | ✓ | ✓ |
| | Mantenimiento de suelos fértiles | ✓ | ✓ |
| | Mantenimiento de suelos fértiles ganados | ✓ | ✓ |
| | Carbón | ✓ | ✓ |
| Regulación | Aire limpio | ✓ | ✓ |
| | Regulación climática | ✓ | ✓ |
| | Regulación hídrica | ✓ | ✓ |
| | Control de inundaciones | ✓ | ✓ |
| | Previsión de riesgos | ✓ | ✓ |
| | Amortiguación de perturbaciones | ✓ | ✓ |
| | Control biológico | ✓ | ✓ |
| Culturales | Amortiguación de perturbaciones | ✓ | ✓ |
| | Control biológico | ✓ | ✓ |
| | Amortiguación de perturbaciones | ✓ | ✓ |
| | Control biológico | ✓ | ✓ |
| | Amortiguación de perturbaciones | ✓ | ✓ |

Estado de conservación: Excelente, Buena, Mala, Pobre

Indicadores: Responsabilidad política, Transparencia y equidad, Participación ciudadana, Responsabilidad económica, Responsabilidad ambiental, Responsabilidad social

2. Mapping ecosystem services at different scales



3. Social perception and demand: participatory processes

4. Participatory scenarios development

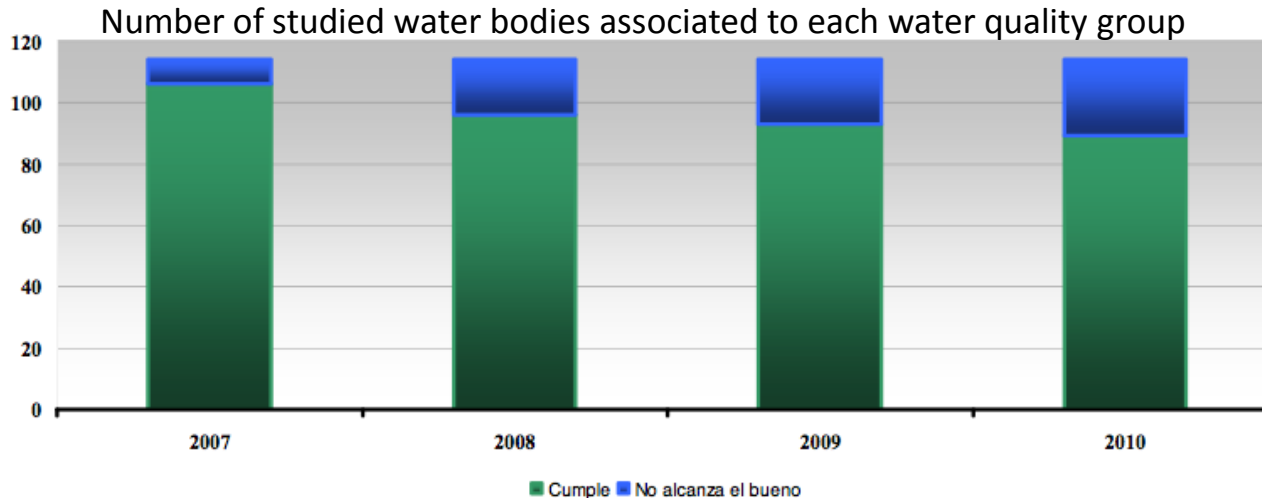
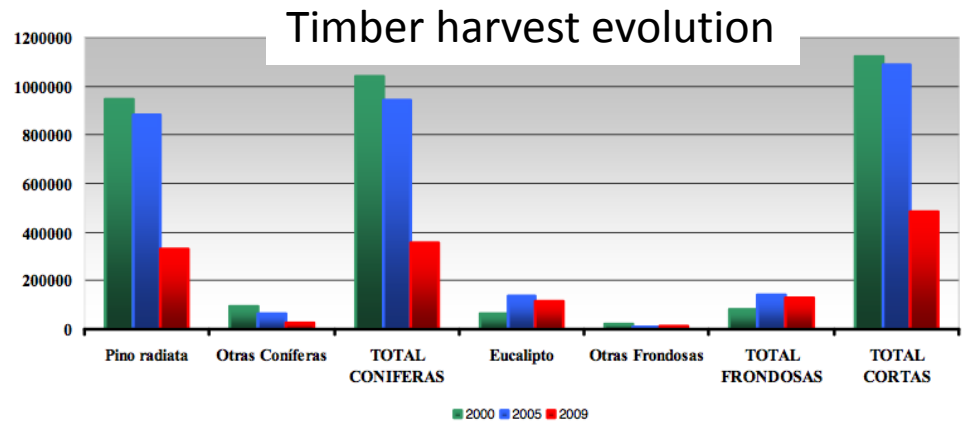
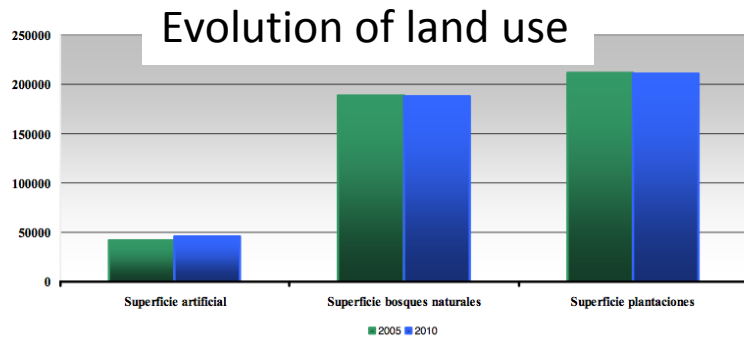


5. Implementation of ES for landscape management



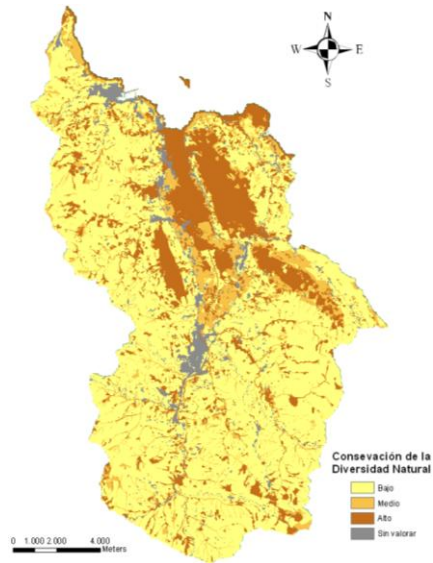
1. Ecosystem services evaluation using indicators

The joint work with the Basque Statistic Institute has resulted in the introduction of 13 new indicators in relation to ES evaluation

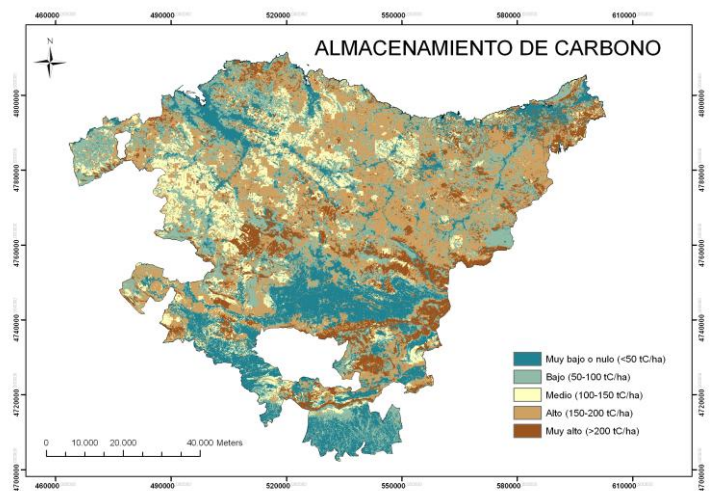


2. Mapping ecosystem services at different scales

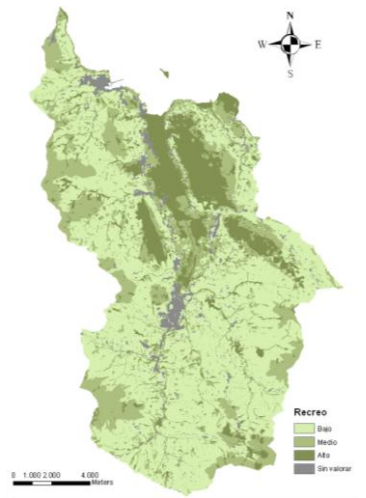
Contribution to biodiversity conservation



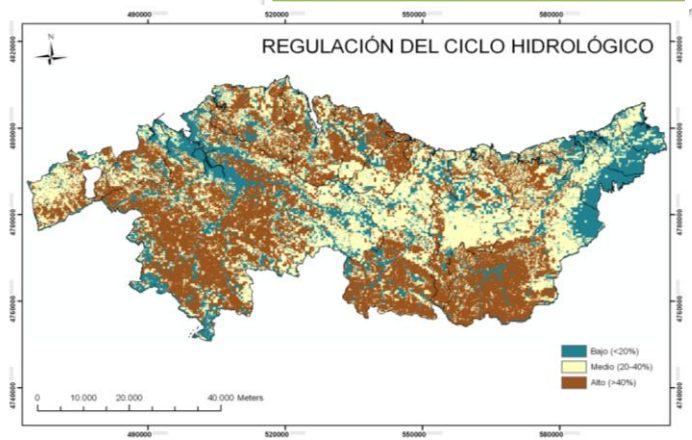
Carbon stock



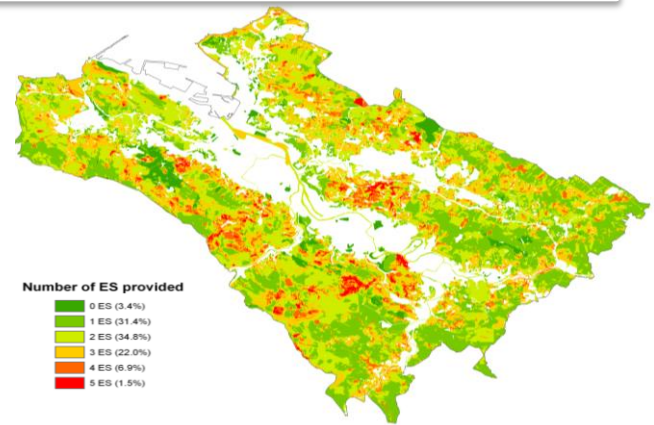
Recreation



Water flow Control



Multiple ecosystems services



3. Social perception and demand: participatory process

Participatory workshop

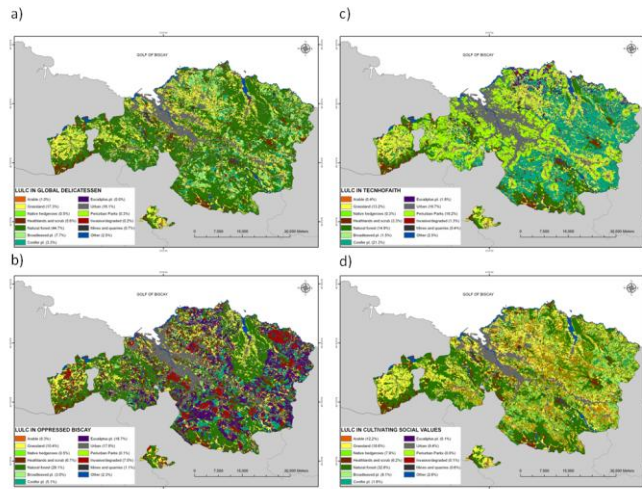
Direct in-person questionnaires and visual survey by e-mail

Feedback seminars with the research results



4. Participatory scenarios development

- Participatory workshop to develop future scenarios
- Mapping future scenarios
- Feedback seminars with the research results



Example:

1. Perception, demand and mapping in Bilbao Metropolitan

- **Mapping of services:** recreation and aesthetic services
- **Social perception:** direct in-person questionnaires (545)

Randomly selected population at different sites in the BMG

Specific groups of interest: e.g. teachers, university researchers and students, public-administration technicians and people from environmental associations

- **Innovative methodology:**

Socio-cultural, monetary and biophysical value



- Results for management:

Differences were found between the **perception** of the ES provided by the BMG and the **real distribution of services**.

Perception of ES varied depending on: Socio-cultural and attitudinal factors and type of ecosystem.

The interviewees were in favour of improvements to peri-urban rural areas, and the results suggested that the **authorities should highlight the role of the BMG ecosystems with respect to regulating services and historic and cultural values to improve people's awareness of the ecosystems' capacity to provide benefits to society.**

Example:

2. Updated of the Urdaibai Master Plan for Use and Management (MPUM) using ES framework

- **Mapping of services:** co-benefits and trade-offs between biodiversity and ecosystem services

- **Participatory process:**

 - 4 participatory workshops

 - 120 participants -> 63 in each workshop

 - 143 specific management proposals

 - Participatory survey to prioritize actions



- **Seminar on applicability of ES in Biosphere Reserves**

- Results for management:

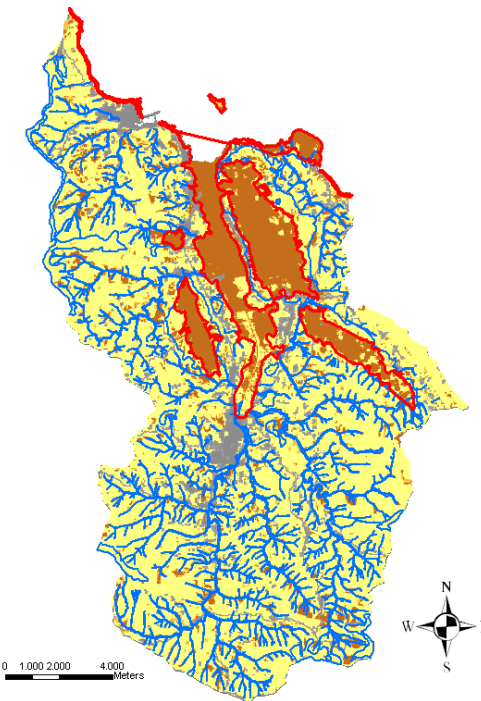
Natural forests are the ecosystems that most contribute to biodiversity, carbon storage and water flow regulation.

Conservation and restoration of biodiversity would ensure the provision of some important portions of other ecosystem services.

Pine and eucalyptus plantations contribute to ecosystem services but have very low biodiversity (some negative effects)

Conservation based only in one ecosystem service might be detrimental to biodiversity. Integrative management is needed.

| Areas with high value for biodiversity conservation and at less two services | |
|--|---------------------------|
| Especial protection zones | 53% |
| Protection zones | 12% |
| Without protection | 35% (mixed oak forest) |



Example:

3. Participatory scenarios in Bizkaia

- Mapping of services in future scenarios

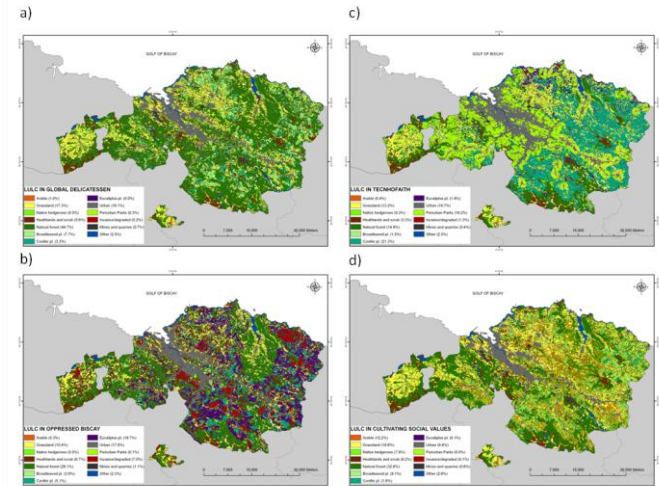
- Participatory process:

Survey previous to the workshops

2 participatory workshops: 66 stakeholders

Development of local-regional scenarios and characterization of scenarios in terms of the provision of ES and human well-being

Description of the sustainable target scenario and definition of management strategies for Biscay



- Results for management

A core aspect of the sustainable target scenario chosen by participants is that a real change in social values is proposed

Landscape multi-functionality was considered key in the sustainable target scenario for what other ES apart from timber production should be promoted

To achieve this scenario, participants identified the need for a strategic landscape planning and management

Participants also highlighted the necessity for coherent and coordinated policies.

5. Implementation of ES for landscape management

Relevant implementations in the Basque Country

- A. Environmental Framework Programme of the Basque Country (2015-2019)
- B. Regional Planning Guidelines for the Basque Country
- C. The Urdaibai Biosphere Reserve Master Plan for Use and Management (MPUM)

Other working fields:

- A. Primary sector
- B. Rural-Urban interactions
- C. Water policies



A multiple ecosystem services landscape index (MESLI Index)

The contribution of the rural municipalities to the provision of ecosystem services is not considered, even though they are fundamental for human well-being

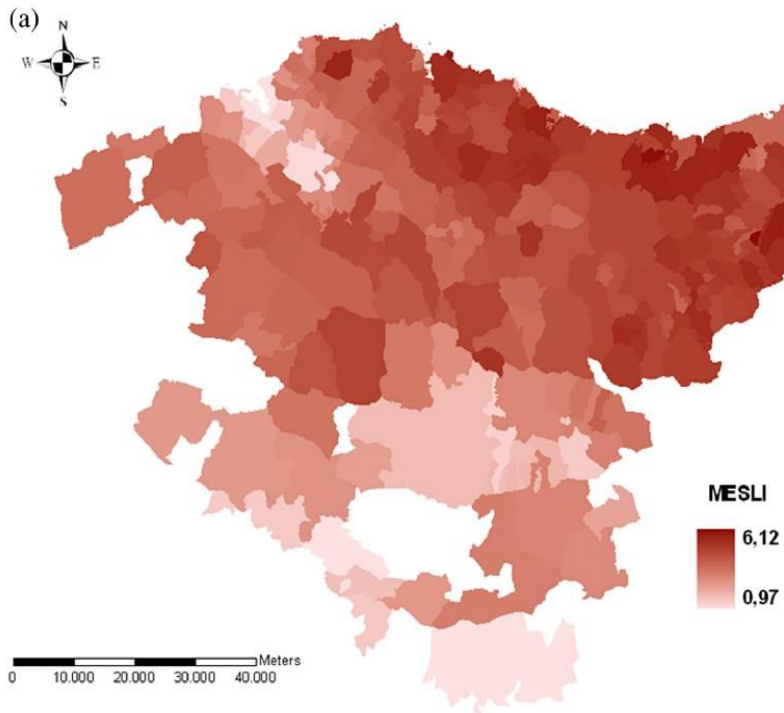
Aims:

- Define an integrative environmental index of landscape multifunctionality based on the ES provided by the landscape
- Consider the provision of ecosystem services



Results:

MESLI index value for each municipality



MESLI index trend value

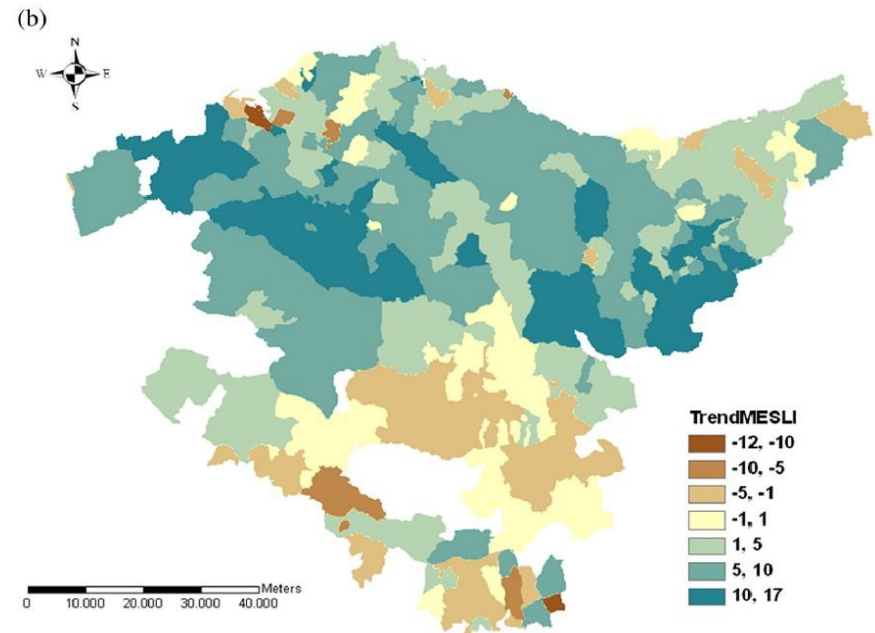
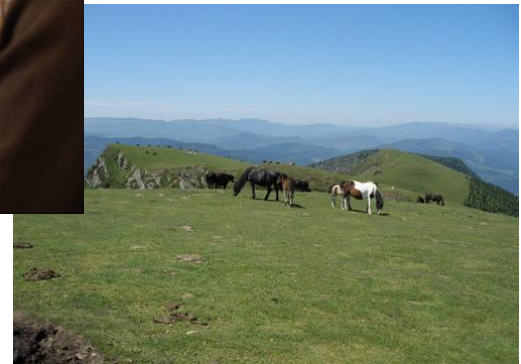


Fig. 2. Maps of the multiple ecosystem services landscape index (MESLI) (a) and TrendMESLI (b) by municipality.

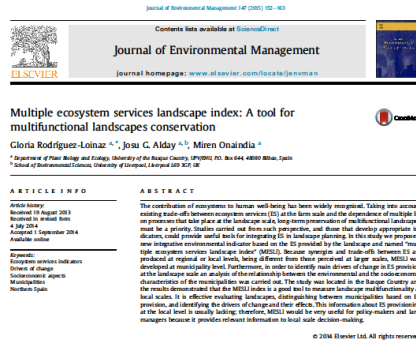
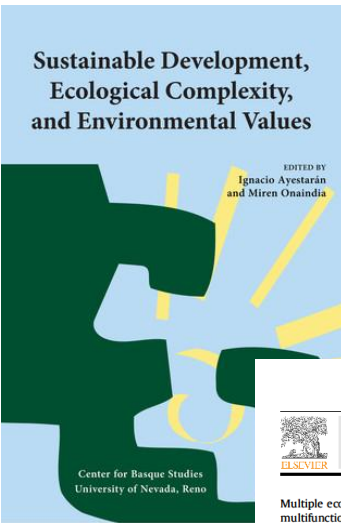
- Results for management:

- The indicator evaluates the state of the ecosystem services provided by the landscape and their dynamic
- The indicator is a tool to develop a system of economic compensation or other positive social measures for the provision of ecosystem services at municipality level
- Pilot study



Outreach materials

Publications



Internet and Audio-visual media

Radio, videos, facebook, websites..

The team:

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¹ *University of the Basque Country*

² *County Council of Biscay*

³ *Basque Government*

⁴ *Urdaibai Biosphere Reserve*

⁵ *UNESCO Etxea*

And many active stakeholders

Thank you very much
Merci beaucoup
Eskerrik asko

*A sustainable future is possible
working from local to global and vice-versa*

Further information:

www.ehu.es/cdsea