

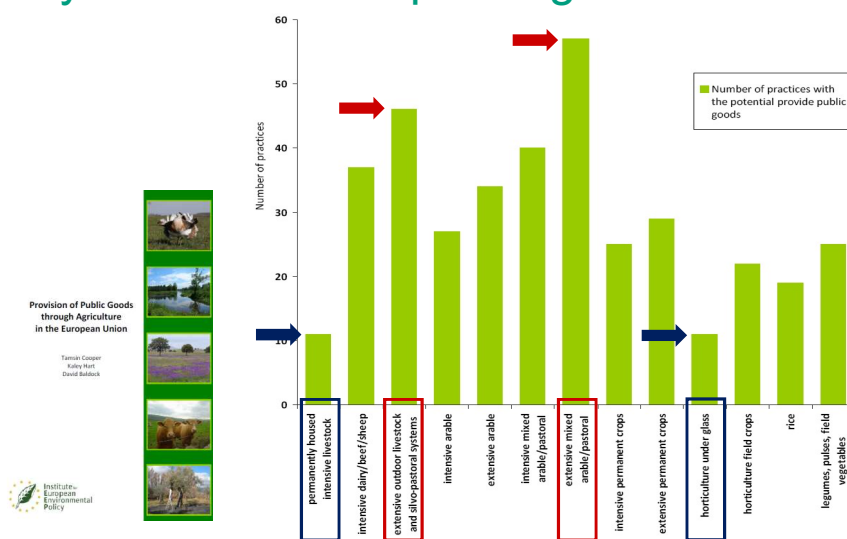


Outline

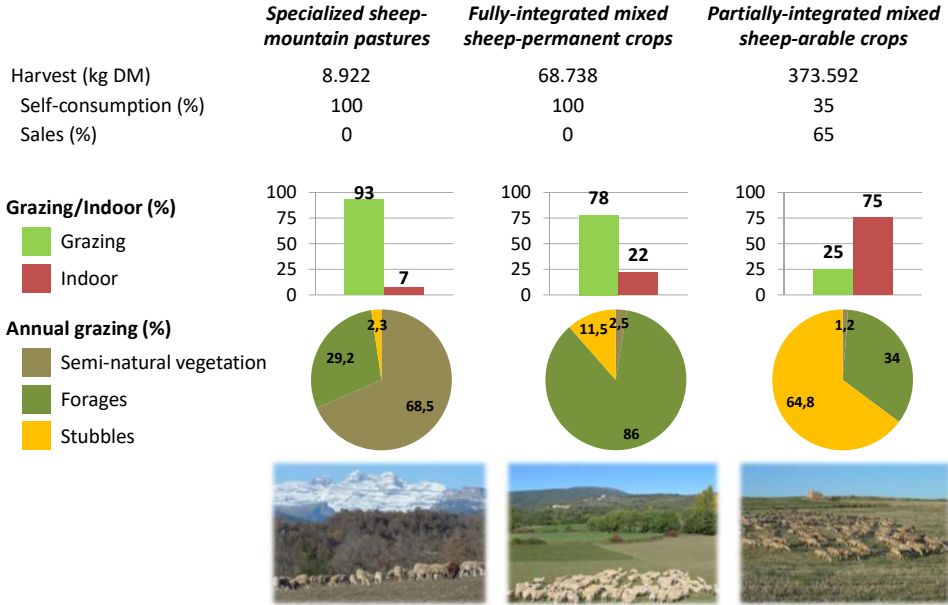
1. Diversity of farming systems
2. Ecosystem services concept
3. Socio-cultural values
4. Economic values
5. Wrap-up



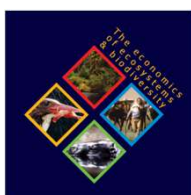
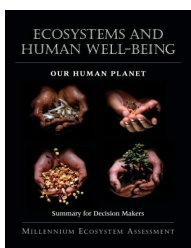
Multifunctionality: different farming systems different public goods



E.g. diversity of sheep farming systems



Ecosystem services



Ecosystem services are the direct and indirect benefits people obtain from ecosystems

1. **Provisioning:** products obtained from the ecosystem, i.e. food, timber, fiber, fresh water, etc.
2. **Regulating:** benefits obtained from the regulation of ecosystem processes, i.e. regulation of climate, erosion prevention, water regulation, etc.
3. **Supporting:** ecosystem services that are necessary for the maintenance of all other ecosystem services, i.e. primary production (photosynthesis), soil formation, nutrient cycling, water cycling, etc.
4. **Cultural:** nonmaterial benefits people obtain from ecosystems, i.e. spiritual enrichment, cognitive development, recreation, aesthetic experience, etc.



Main ES derived from pasture-based livestock systems

1. **Provisioning:** quality products linked to the territory
2. **Regulating:** prevention of forest fires (Mediterranean), soil fertility (Nordic), water quality (Alpine)
3. **Supporting:** biodiversity conservation
4. **Cultural:** agricultural landscapes



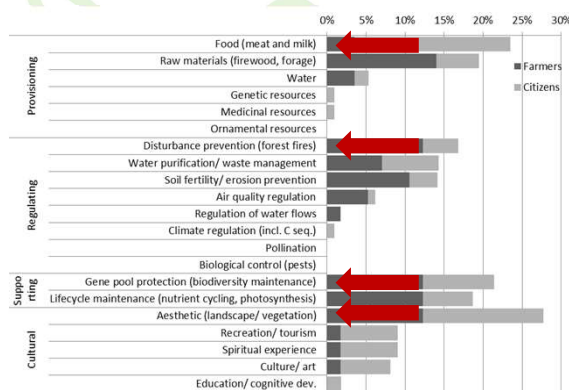
Valuing ecosystem services

- Different functional units
- Different temporal and spatial scales
- Different perceptions by society
- No market price

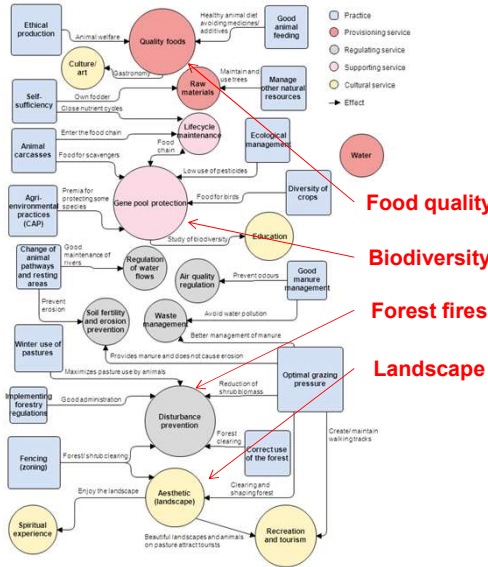
1. BIOPHYSICAL
2. SOCIO-CULTURAL
3. ECONOMIC



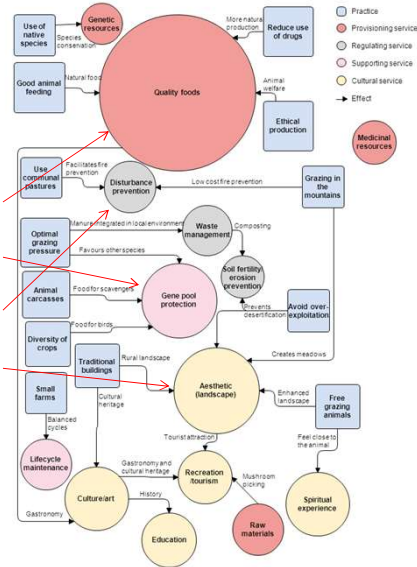
3. Socio-cultural valuation: views of farmers and other citizens



farmers



other citizens

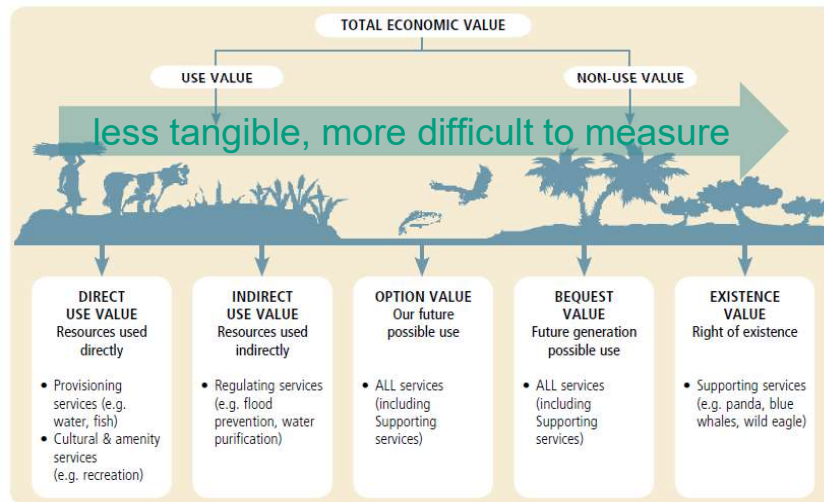


4. Economic valuation: measuring public goods?

Total economic value (TEV): sum of output values (the values generated in the current state of the ecosystem, e.g., food production, climate regulation and recreational value) as well as insurance values, now and in the future.



Total Economic Value (TEV)



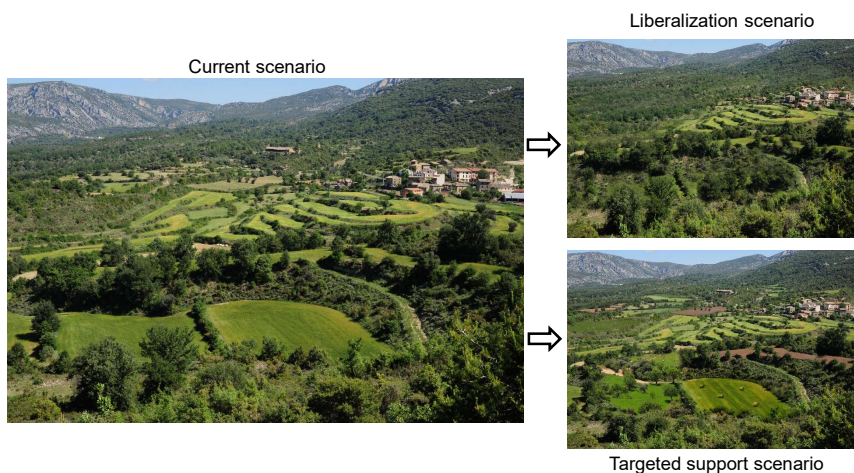
Non-use value

- do not involve direct or indirect use of the ecosystem service, but reflect the satisfaction that individuals derive from the knowledge they exist (e.g. enjoyment of a beautiful landscape)
- related to moral, religious or aesthetic properties of individuals
- **markets do not exist**

Stated preference methods

- **Choice modelling** Individuals are asked to choose their preferred alternative among several hypothetical land uses. Each **scenario** of land use is described by a number of attributes (e.g. vegetation cover, landscape fragmentation, biodiversity index, human activities, etc.). Individuals make trade-offs between the levels of the attributes describing the different alternatives in a choice set.
- **Underlying rational decision process**

Scenarios in Guara N.P.

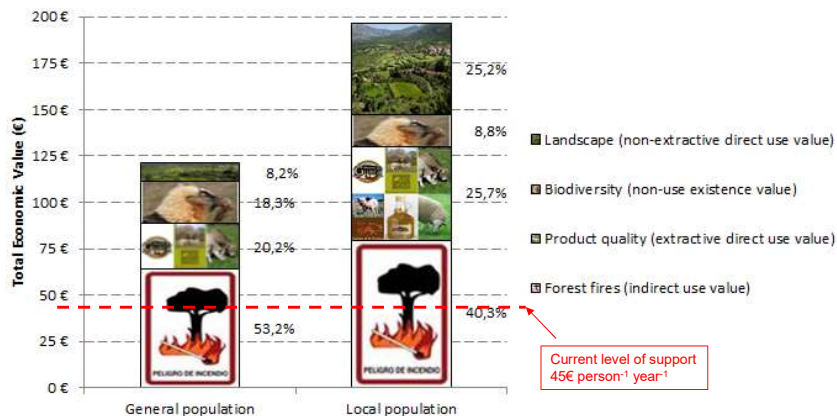


Choice model for ES in Guara

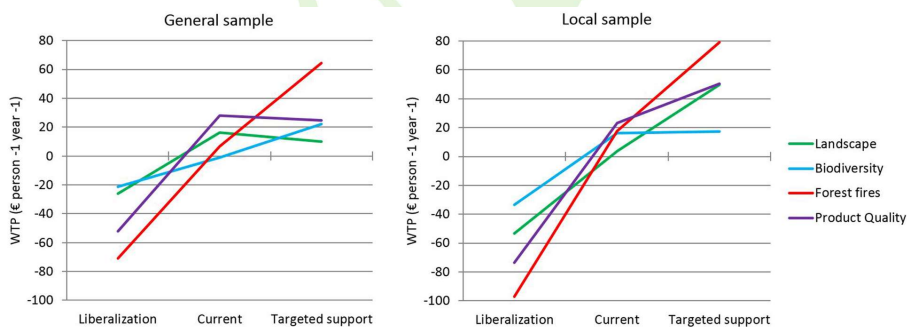
	Policy A	Policy B	CURRENT policy
Landscape	 strong increment of bushes reduction of meadows and crops	 light decrement of bushes light increment of meadows and crops	 light increment of bushes meadows and crops are maintained
Bearded vulture	 7 pairs	 15 pairs	 11 pairs
Forest fires	 6 forest fires per year	 2 forest fires per year	 4 forest fires per year
Product quality linked to territory	 2 quality products available sheep cheese and lamb meat	 6 quality products available sheep cheese, lamb meat, pasture pork meat and olive oil, pasture beef and organic lamb	 4 quality products available sheep cheese, lamb meat, pasture pork meat and olive oil
Annual cost	 15 €	 75 €	 45 €
CHOICE	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C

Economic value of agro-ecosystems in Guara

Willingness to Pay (WTP) (€ person⁻¹ year⁻¹) and composition of the Total Economic Value

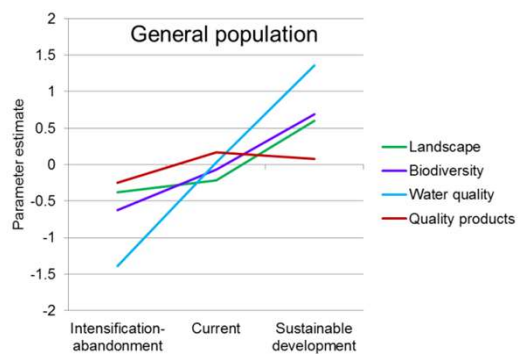
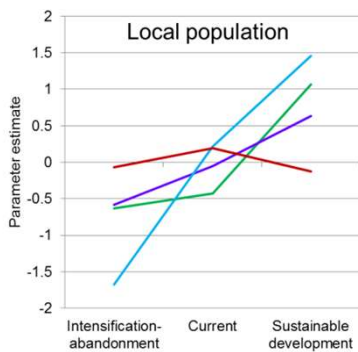


Willingness to Pay (WTP) (€ person⁻¹ year⁻¹) for ecosystem services in different policy scenarios



Blocco 1
Scheda 2

	Politica A	Politica B	Politica ATTUALE
Paesaggio <small>Cliccare sopra l'immagine per ingrandire</small>	Mantenimento dei pascoli alti e possibile incremento delle malghe. Aumento dei prati sfalcianti nel fondovalle. 	Abbandono delle malghe e rimboscimento dei pascoli alti. Concentrazione delle aziende zootecniche e/o agricole nel fondovalle (conversione a seminativi dei prati sfalcianti). 	Aumento di arbusti e erbe infestanti nei pascoli e riduzione nell'uso delle malghe. Diminuzione dei prati sfalcianti e tendenza alla concentrazione delle aziende zootecniche e/o agricole nel fondovalle.
Biodiversità <small>Diversità di fiori e farfalle in pascoli e prati</small>	 Aumento del numero di specie	 Leggera diminuzione e del numero di specie	 Leggera diminuzione e del numero di specie
Qualità dell'acqua	 Fiumi e laghi leggermente inquinati	 Fiumi e laghi non inquinati	 Fiumi e laghi leggermente inquinati
Prodotti di qualità	 9 formaggi <small>(5 di valle, 3 di malga, 1 DOP)</small>	 13 formaggi <small>(7 di valle, 4 di malga, 2 DOP)</small>	 13 formaggi <small>(7 di valle, 4 di malga, 2 DOP)</small>
Costo annuale	 30 euro	 40 euro	 30 euro
OPZIONE SCELTA	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C



5. Wrapping up!

- Socio-cultural and monetary valuation highly dependent on context.
- Increasing the provision of biodiversity and regulating ES always produced welfare gains.
- People perceived trade-offs for agricultural landscapes and quality products.
- Further abandonment and intensification of agriculture clearly rejected.
- The WTP for the provision of ES exceeded the current level of public support.

