Wealth Accounting and Valuation of Ecosystem Services
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Montes income and capital accounting in Andalucía (Spain) RECAMAN

Pablo Campos and Alejandro Caparrós

Institute for Public Goods and Policies (IPP)
Spanish National Council for Scientific Research (CSIC)

Department of Environment,
Autonomous Government of *Andalucía*, Spain

CSIC

JUNTA DE ANDALUCIA

Highlights

- Funded by the Andalusian regional government and intended for practical use
- Integrates commercial and environmental outputs and costs
- Spatially explicit results
- Macro (regional) and micro (estates) scales
- Covers 4.7 million hectares
- Results available end of 2012 (annual update expected)
- Main methodological features:
  - Agroforestry Accounting System (AAS)
  - Simulated Exchange Values (SEV)

Andalusian *montes*

Andalusian montes cover 4.7 million ha, 54% of total surface

Montes include: forests (61%), shrublands (21%), natural grassland (10%) and other forestlands (8%).

Ownership: 28% public and 72% private (typically >300ha).

Andalusian *montes have* high environmental values (biodiversity hotspot).

Commercial and environmental values

Accounting for

- Flows: price x quantity
- Capital: market prices or future discounted capital income flows

Commercial values:

- Timber growth and felling (age structure)
- Cork growth and stripping
- Natural grass and acorn fodder
- Game (age structure)
- Mushrooms
- Livestock (at micro scale)
- Others

Environmental values:

- Public recreation
- Private owner's amenities
- Forest landscape
- Threatened biodiversity
- Carbon sequestration
- Others

AAS: Production account

- **Total output**
  - SNA outputs
  - Non-SNA forest outputs (acorn, natural fodder, natural growth, game and scarce environmental values)

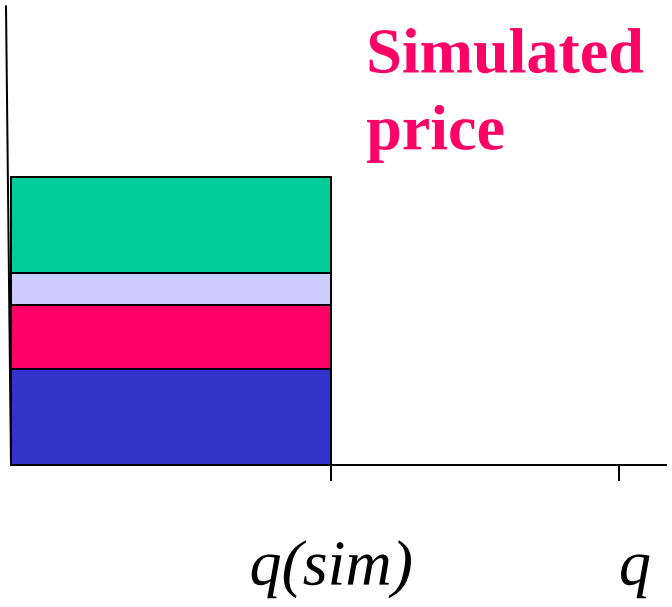
- **Total cost**
  - SNA costs
  - Non-SNA costs (intermediate output, works in progress used, carbon, government expenditures)

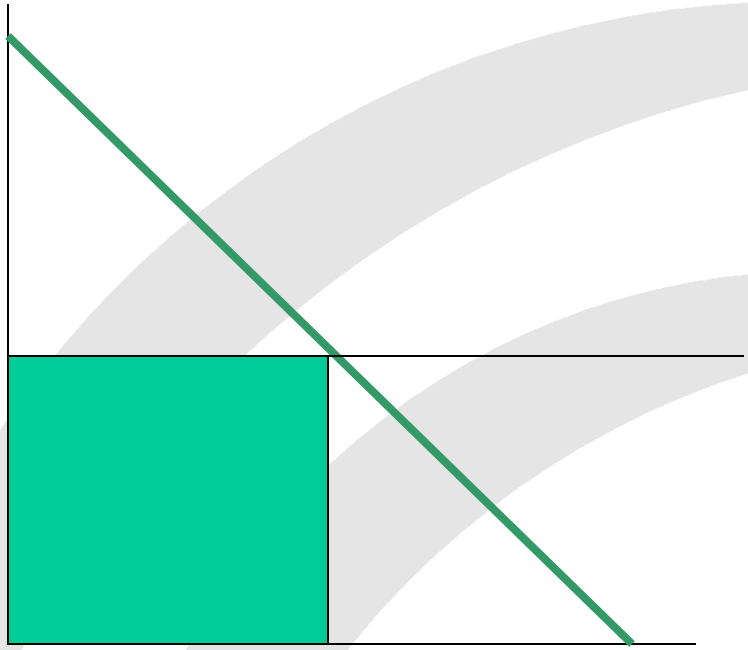
AAS: Capital balance

- **Work in progress (inventories)**
  - Standing timber, cork and fuelwood
  - Game inventories.
- **Fixed capital**
  - Land (timber, cork, grass, acorn, commercial recreation, owner amenity self-consumption, carbon sequestration, landscape, threatened biodiversity, free public environmental recreation, mushroom)
  - Biological resources (standing trees yielding repeat outputs and big game reproductive females, others)
  - Others.

Simulated Exchange Value (SEV)

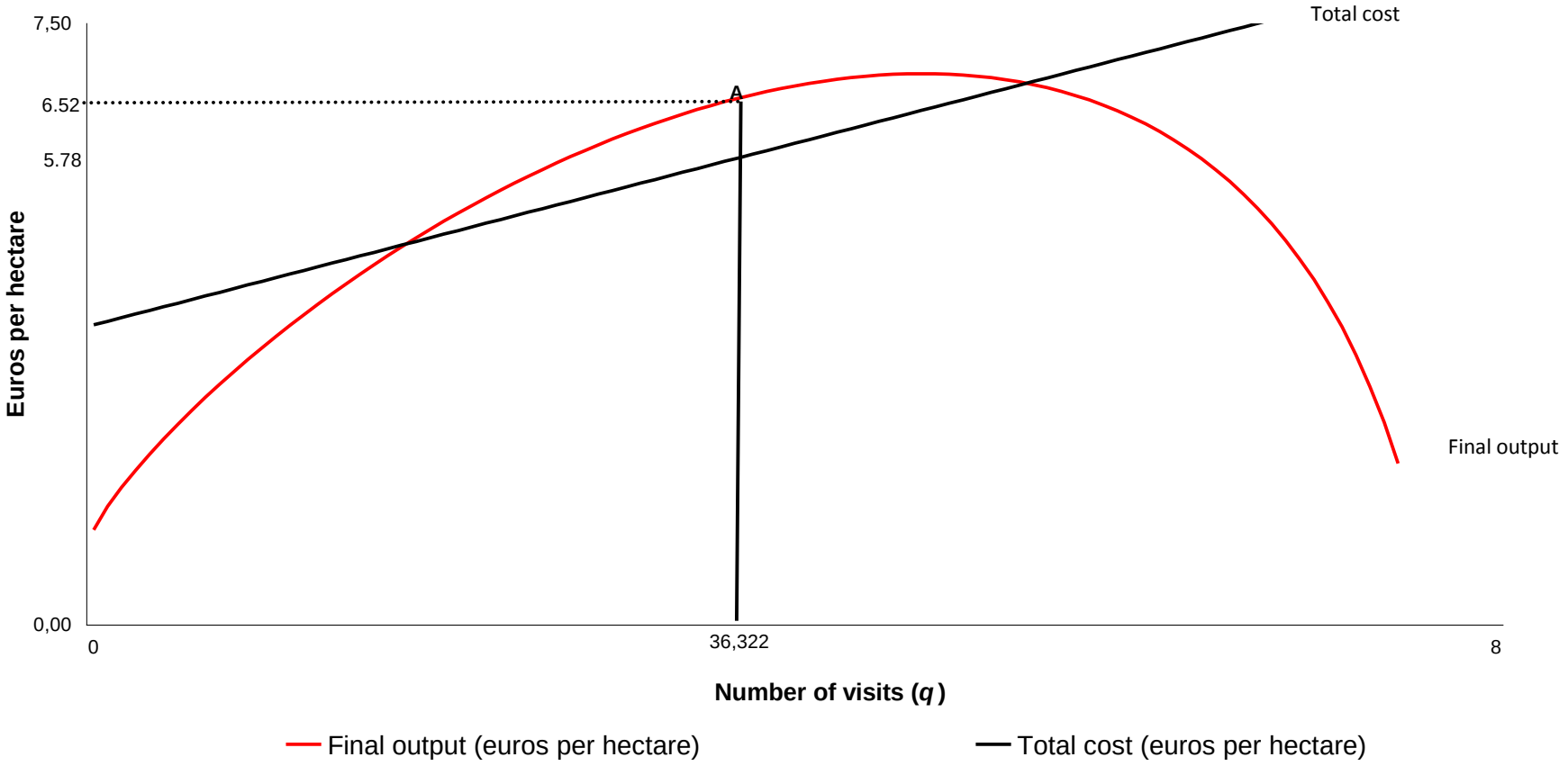
- *Free public recreation*
- *Landscape conservation*
- *Threatened biodiversity*
- *Private amenities*





Hipotetical market

Simulated Exchange Value (SEV)

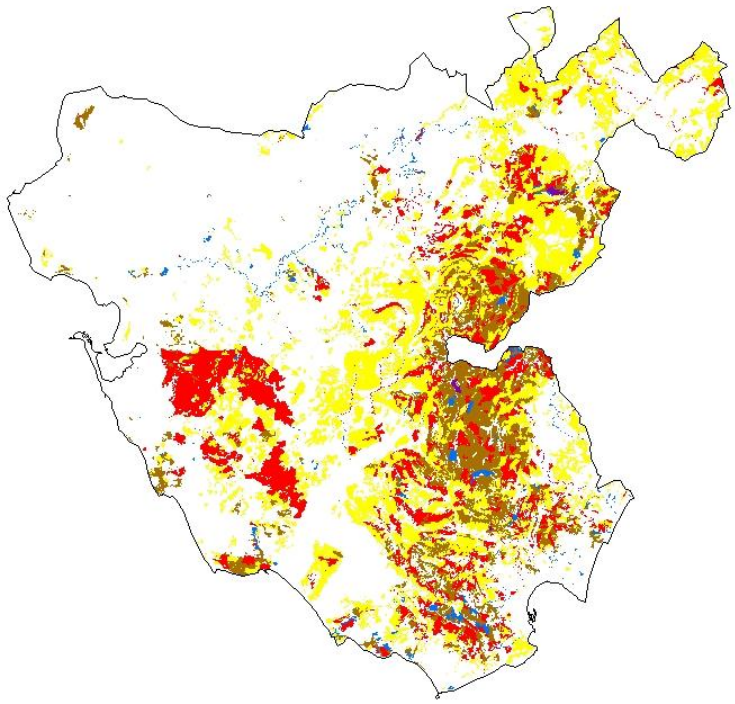


- **Simulated MARKET: demand and cost functions**
  - Monopolistic competition (short term)

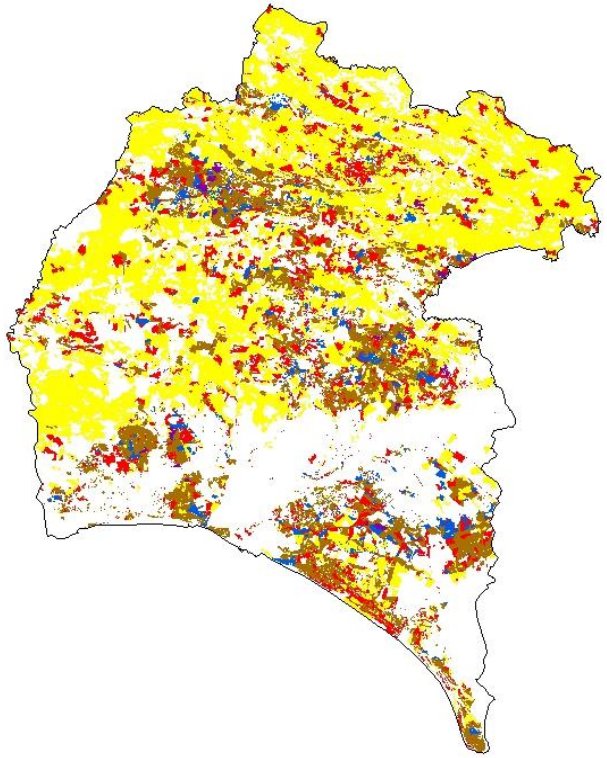
Primary Data

- Forest National Inventory for forests and woodlands (age structure)
- Land cover and land use data GIS
- Prices of over 4,000 transactions per year on forest products
- 58 revenues and costs in depth analysis of *montes* estates (including crops and livestock)
- 800 interviews to *montes* non-industrial landowners
- 4,000 interviews to free access visitors (CV and choice exp)
- 5,600 interviews to households (CV and choice exp)
- 800 interviews to hunters
- 800 interviews to *montes* hunting estates
- 4,000 interviews to mushroom gatherers
- Public expenditures on *montes* disaggregated by montes activities
- Threatened biodiversity index by vegetation type
- Green water consumption by vegetation type

Results will be GIS based



Leyenda
Provincia de Cádiz
Volumen con corteza total m3/ha
0.0
0.1 - 25.0
25.1 - 50.0
50.1 - 100.0
100.1 - 200.0
200.1 - 466.0



Leyenda
Provincia de Huelva
Flujo total de carbono (IAVC) t/ha
0.0
0.1 - 0.7
0.8 - 1.5
1.6 - 3.0
3.1 - 4.5
4.6 - 7.5

RECAMAN Project

Project coordinator: Pablo Campos (IPP-CCHS-CSIC).

Project manager: J. Ramón Guzman-Alvarez (Andalusian Government).

Responsible of aggregated methodology: Alejandro Caparrós (IPP-CCHS-CSIC).

Government institution responsible: Environment Department of the Andalusian Government (Spain).

Scientific institution responsible: Spanish National Council for Scientific Research (CSIC).

Other researchers an collaborators (42) and institutions participanting (12):

- Instituto de Políticas y Bienes Públicos (IPP-CCHS-CSIC): Begoña Álvarez-Farizo, Alejandro Álvarez, José Luis Oviedo , Bruno Mesa, Paola Ovando, Nuria Ruiz, Cristina Fernández and Soledad Letón (10).
- Museo Nacional de Ciencias Naturales (MNCN-CSIC)**:** Cesar Luis Alonso, Mario Díaz and Elena Daniela Concepción (3).
- Estación Experimental de Aula Dei (EEAD-CSIC): Santiago Beguería and Roberto Serrano (2)
- Instituto de Estudios Sociales Avanzados de Andalucía (IESA-CSIC): Eduardo Moyano, Sara Pasadas and Carlos Priego (3).
- Centro de Investigación Forestal (CIFOR-INIA): María Martínez, Gregorio Montero, María Pasalodos and Mario Soliño (4).
- Escuela Técnica Superior de Ingenieros de Monte de Madrid (ETSIM-UPM): Luis Díaz-Balteiro, Casimiro Herruzo, Carlos Romero, Ana Torres and Eloy Almansa (5).
- Facultad de veterinaria de la Universidad de Extremadura (FV-UEX): Juan Carranza, Pedro Fernández, José Manuel Seoane and Jerónimo Torres (5).
- Centro de Servicios Forestales de Castilla y León (CESEFOR): Fernando Martínez and Jorge Aldea (2).
- Escuela Universitaria de Estudios Empresariales de Soria /Universidad de Valladolid (EA-Emp-Soria-UVA): Pablo de Frutos (1).
- Université Montesquieu-Bordeaux IV: Marc Leandri (1).
- Agencia Andaluza de Medio Ambiente y Agua of *Junta de Andalucía)*/División de Actuaciones en el Medio Natural: Isabel Martín, Luis Guzmán, María García and Samuel Gómez (4).
- Consejería de Medio Ambiente de la Junta de Andalucía/Dirección General de Gestión del Medio Natural: Francisca de la Hoz and José Ramón Guzmán (2).

PERIOD: 2008-2014; TOTAL BUDGET FROM ANDALUCÍA GOVERNMENT: 8.888.453,69€

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References

- Caparrós, A., Campos, P. and Montero, G. (2003). An operative framework for total Hicksian income measurement: application to a multiple use forest. *Environmental & Resource Economics* 26, pp. 173-198.

- Campos, P. and Caparrós, A. (2006). Social and private total Hicksian incomes of multiple use forests in Spain. *Ecological Economics* 57, pp. 545-557.

- Campos, P., Daly, H., Oviedo, J.L., Ovando, P. and Chebil, A. (2008). Accounting for single and aggregated forest incomes: Application to public cork oak forests of Jerez in Spain and Iteimia in Tunisia. *Ecological Economics* 65, pp. 76-86.

- Campos, P., Oviedo, J.L. Caparrós, A., Huntsinger, L. and Coelho, I. (2009). Contingent Valuation of Private Amenities from Oak Woodlands in Spain, Portugal, and California. *Rangeland Ecology & Mangement* 62, pp. 240-252.

- Campos, P. and Caparrós, A. (2009). Can we use non-market valuation techniques in green national accounting applied to forests? *Austrian Journal of Forest Science* 126: 53-76.

Thank you for your attention

pablo.campos@cchs.csic.es
alejandro.caparros@cchs.csic.es