Revealing the hidden economic role of non-wood forest products using an extended Social Accounting Matrix

The case study of Italy

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Background and justification

Let me start from the beginning...

The forest-based bioeconomy (Robert et al., 2020) :

- wood-based sector
- **forest-based services**

State of Knowledge

Ecosystem Service Accounting

System of Environmental-Economic Accounting - Experimental Ecosystem Accounting **(SEEA EEA)** (United Nations et al., 2014)

Knowledge Innovation Project on an integrated system for Natural Capital and ecosystem services Accounting **(KIP INCA)** (Vallecillo et al., 2019)

Economic sectors → Processing, delivering, wholesale and retailing → **Indirect and induced effects** ?

Households
Government

Material and methods (1/4)

NWFPs – the non-market component: primary data collection

- Online
- Sample size of 1000 respondents
- Representative sample according to gender, age, and geographical distribution
- Data collected between June and July 2021
- Discrete Choice Experiment (DCE) to determine the value people place on (non)-market goods

Material and methods (1/3)

Social Accounting Matrix

	Commodities	Margins	Activities	Factors	Households	Enterprises / Corporations	Government	Savings-Investment	Rest of the World	*Total*
Commodities (C)		$T_{C,M}$ Transaction costs (trade / transport)	$T_{C,A}$ Intermediate (inputs) consumption		$T_{C,H}$ Household consumption		$T_{C,G}$ Government expenditure	$T_{C,S-I}$ Investment and stock changes	$T_{C,RoW}$ Exports	*Demand*
Margins (M)	$T_{M,C}$ Transaction costs (trade / transport)									*Margins*
Activities (A)	$T_{A,C}$ Domestic production									*Gross output / Production (activity income)*
Factors (F)			$T_{F,A}$ Remuneration of factors / Factor income						$T_{F,RoW}$ Factor income from RoW	*Factor income*
Households (H)				$T_{H,F}$ Factor income distribution to households	$(T_{H,H})$ *(Inter Households transfers)*	$T_{H,E}$ Distribution of corporations income to households	$T_{H,G}$ Government transfers to households		$T_{H,RoW}$ Transfers to Households from RoW	*Household income*
Enterprises / Corporations (E)				$T_{E,F}$ Factor income distribution to enterprises			$T_{E,G}$ Government transfers to enterprises		$T_{E,RoW}$ Transfers to Enterprises from RoW	*Enterprise income*
Government (G)	$T_{G,C}$ Net taxes on products		$T_{G,A}$ Net taxes on production	$T_{G,F}$ Factor income to Government / Factor taxes	$T_{G,H}$ Direct Household taxes / Transfers to Government	$T_{G,E}$ Direct Enterprise taxes / Transfers to Government			$T_{G,RoW}$ Transfers to Government from RoW	*Government income*
Savings-Investment (S-I)				$(T_{S-I,F})$ *(Depreciation)*	$T_{S-I,H}$ Household savings	$T_{S-I,E}$ Enterprise savings	$T_{S-I,G}$ Government savings	$(T_{S-I,S-I})$ *(Capital accounts transfers)*	$T_{S-I,RoW}$ Capital transfers from RoW (Balance of Payments)	*Savings*
Rest of the World (RoW)	$T_{RoW,C}$ Imports			$T_{RoW,F}$ Factor income distribution to RoW	$T_{RoW,H}$ Household transfers to RoW	$T_{RoW,E}$ Corporations income to Row	$T_{RoW,G}$ Government transfers to RoW			*Payments to RoW*
Total	*Supply*	*Margins*	*Costs of production activities*	*Expenditure on factors*	*Household expenditure*	*Enterprise expenditure*	*Government expenditure*	*Investment*	*Incomes from RoW*	

AgroSAM
(Müller et al., 2009)

BioSAM 2015
(Mainar-Causapé and Philippidis, 2021)

EcosySAM
(Di Cori et al., 2022)

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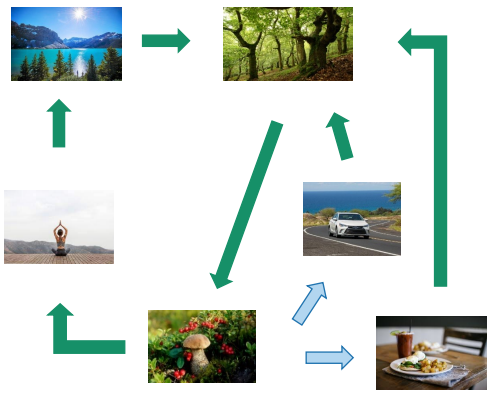
Material and methods (2/3)

Construction of the new EcosySAM for Italy

- **Natural Capital:** independent from the already present "capital" account
- **Forest ecosystem:** acts as an economic agent
- **NWFPs (commodity):** social component
- **Household wellbeing:** willingness to pay (WTP)
- **Travel expenses:** fuel, car services, land transport
- **Non-travel expenses:** food and beverage service activities, accommodation services



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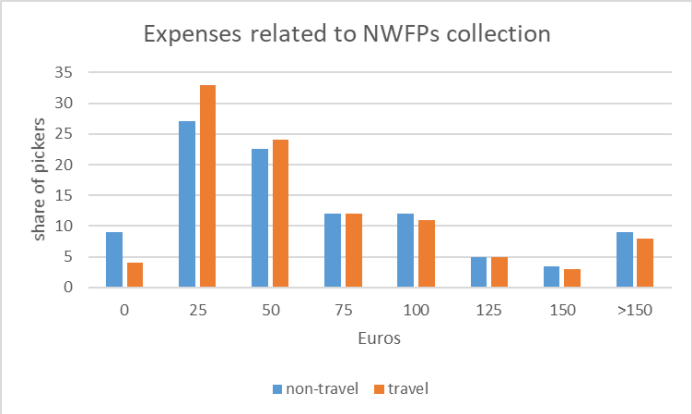
Material and methods (3/3)

Multiplier analysis

- **Backward linkages (BL):** If > 1, every euro of intermediate input demand generates more than one euro of economic activity to the upstream input suppliers
- **Forward linkages (FL):** If > 1, every euro of intermediate output supply generates more than one euro of economic activity to the downstream end users
- **Key sector:** BL and FL greater than unity
- **Weak sector:** neither BL nor FL greater than unity

Results (1/2)

Induced effects on the economy



- total expenses on travel to collect NWFPs: **470 million euros**
- Other expenses related to this activity: **502 million euros**
- Households' environmental services without payment: **94 million euros** (choice experiment - WTP)

Results (2/2)

Multiplier analysis (preliminary results)

Travel expenses	NWFPs
2.81	1.59

Non-travel expenses	NWFPs
2.61	1.85

Conclusions

- ✓ The social component of NWFPs has an effect on transport and restaurant/accommodation services, as well as on households' wellbeing
- ✓ In the forestry sector, NWFPs have a significant economic weight (which is, however, not accounted for by the statistics)
- ✓ Is of fundamental importance for society's welfare to reflect the full value of forest ecosystem services in socio-economic policies and choices
- **Limitations of the study:**
  - There is the need to include more forest ecosystem services into the matrix
  - Only one country was considered

Keep in touch

EU Science Hub: https://forest.jrc.ec.europa.eu/en/people/

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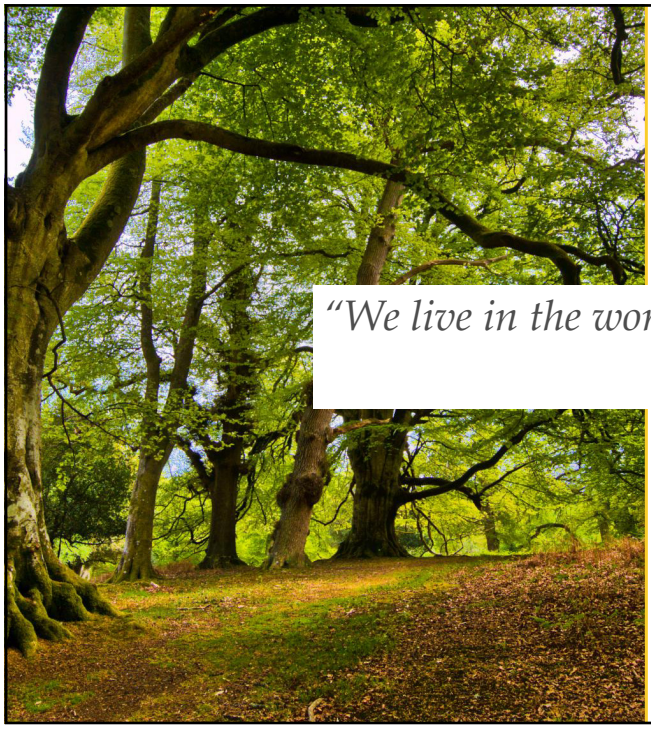

"We live in the world our questions create"

David Cooperrider

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