

Payments for Ecosystem Services (PES): a realistic source of income?

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Structure

- I. PES definition, concepts and examples
- II. Pathways to affect welfare
- III. Impacts – systematic reviews
- III. Conclusions

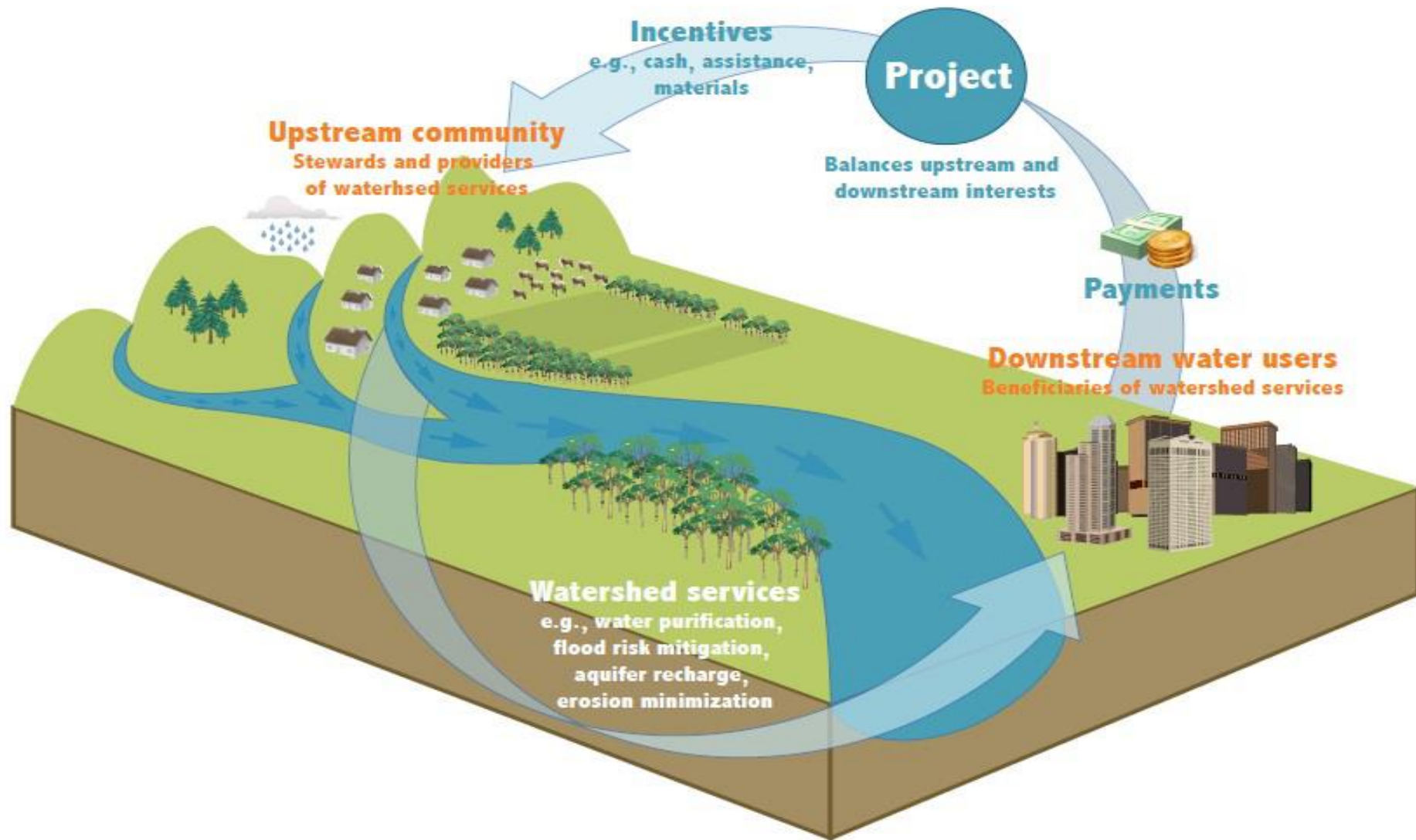
I. PES definition, concepts, and examples

PES definition:

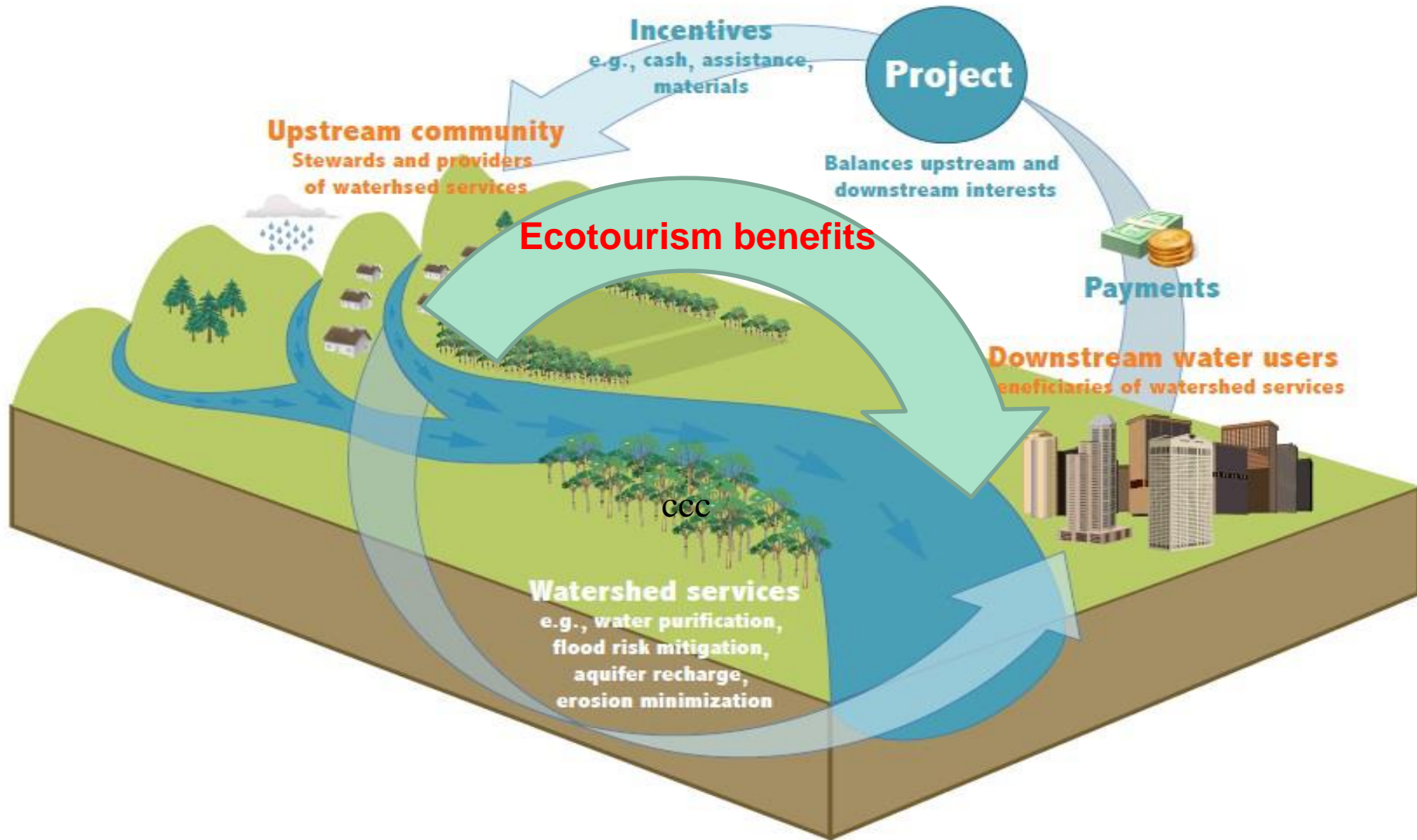
1. **Voluntary** transactions
 2. between service **users**
 3. and service **providers**
 4. that are **conditional** on agreed rules of natural resource management
 5. for generating **offsite** services.
- => A narrow, prototype definition (Weber)

Wunder (2015) – Ecological Economics

Spatial externality justifies PES



Not all externalities are offsite



Case 1: Pimampiro (Ecu), “user-financed”



- *Service*: Watershed protection
- *Buyer*: Municipal water company
- *Seller*: Community in upper watershed, 550 ha protected
- *Voluntary*: individual contracts 2000—
- *Conditional*: Previous sanctions

Case 2: PSA Costa Rica, “gov’t financed”



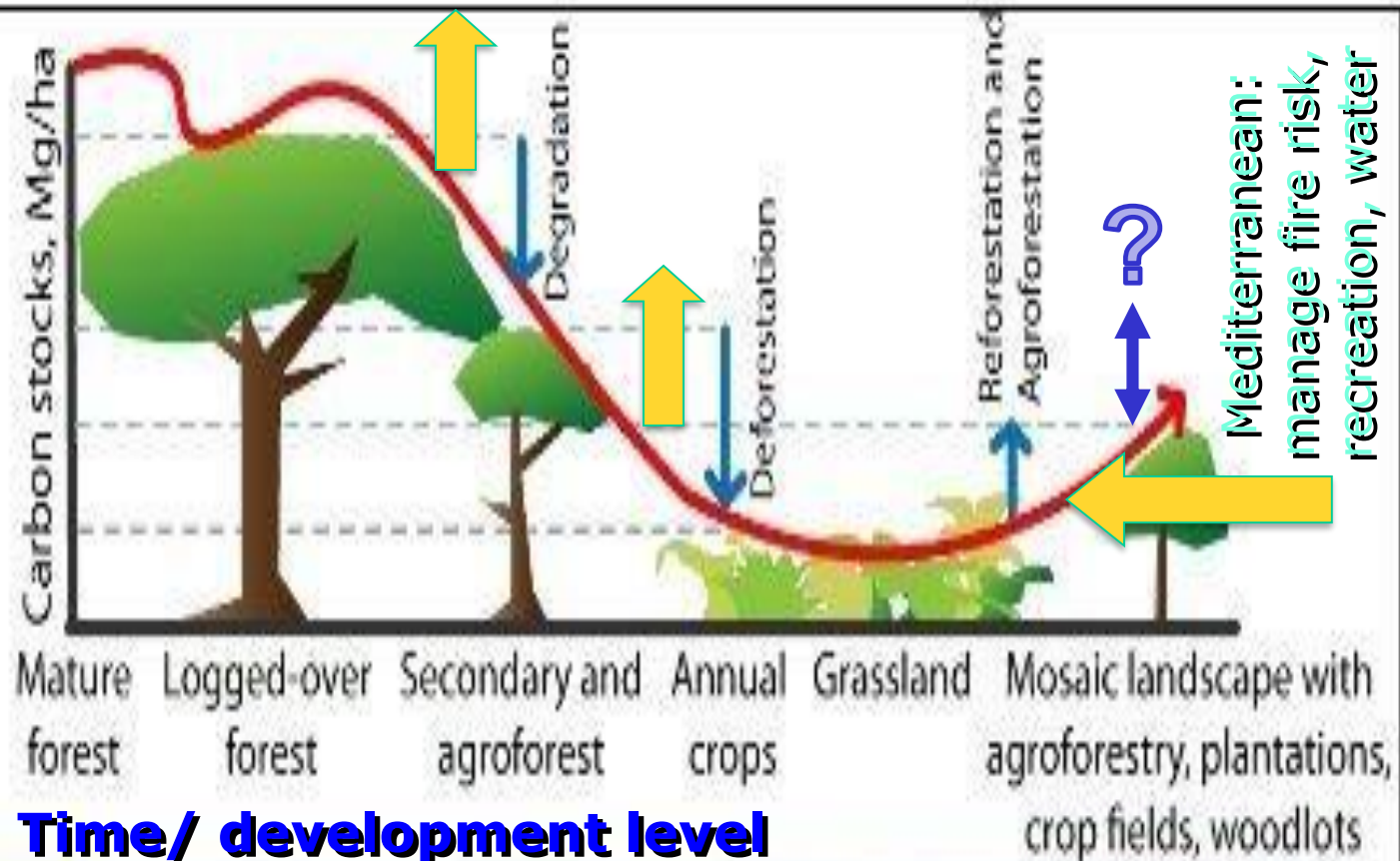
- *Services*: biodiv, C, watershed, landscape
- *Buyer*: State C Rica
- *Seller*: Forest owners, nationally
- *Voluntary*: contracts 5 years, 1996-
- *Conditional*: Monitoring, sanctions
- Uniform rate, politics

Where have PES been used?

- *Env. services:* 1) carbon 2) watersheds
3) biodiversity 4) landscape beauty
- *Types:* a) User- vs. b) gov't-financed PES
many more # of a), but \$/ people in b)
- *Continents:*
1) Americas 2) Asia, Europe 3) Africa
- **Europe:** PES embedded into agro-environmental (public) schemes; few corporate pilots (Vittel)
- Other ways to "receive" for ES exist: certification, ecotourism, entrance fees, tax reductions...

PES and the forest transition

Tree cover



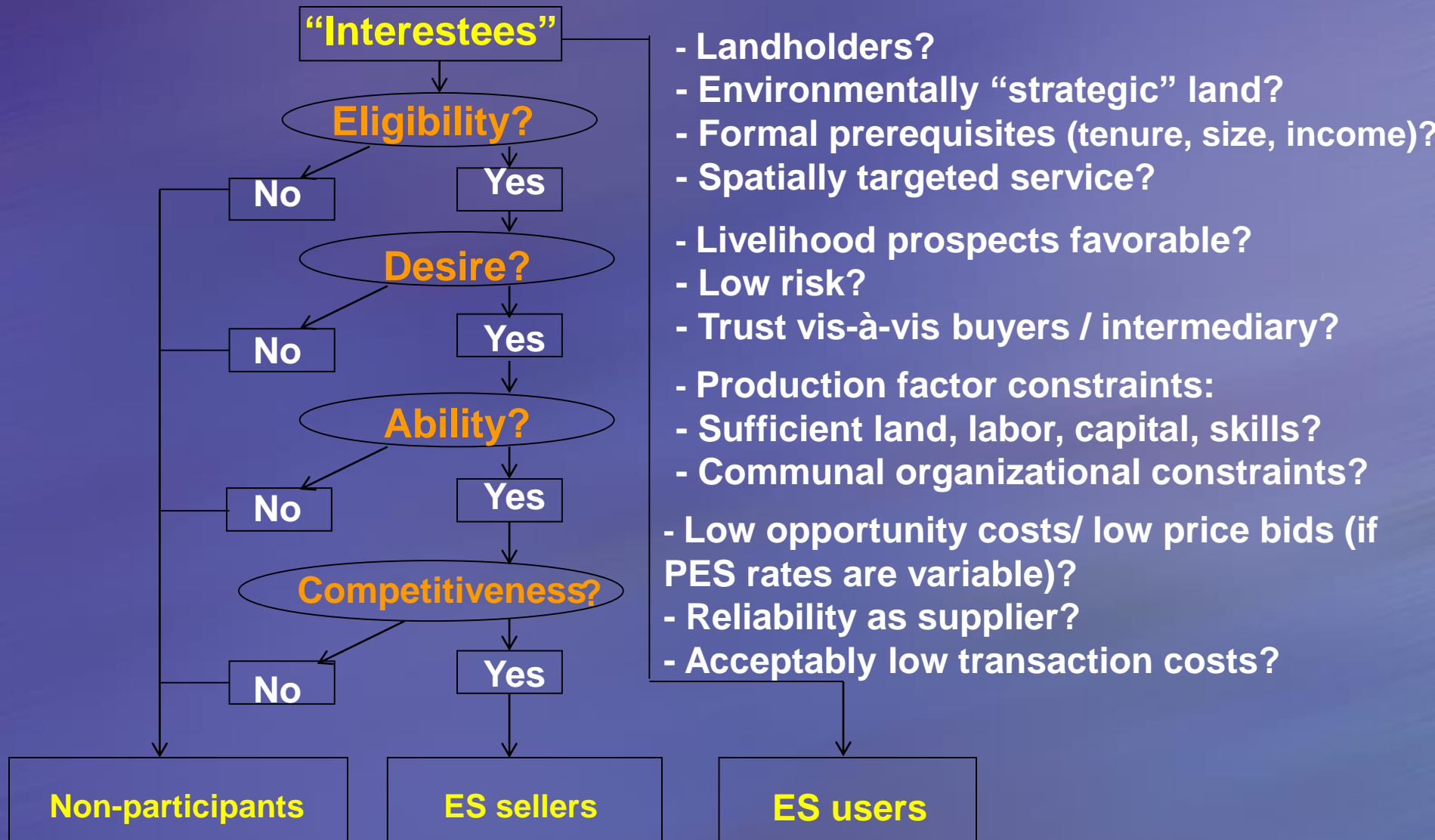
What forest PES in Europe?

- EU: Natura 2000/ Water Framework Directive/ LIFE+ / Rural Dev, Program – paying for good forest mgt.
- Finland, Sweden: METSO, KOMET–change forest mgt.
- Germany, Switzerland: watershed payments
- Italy: Romagna Acque, Acqua Panna -- cleaner water
- Catalonia: protecting 'singular' (old) forests
- Portugal: cork oak mgt. for aquifers (Coca Cola)
- Greece: fire prevention (SylvaMED & Newforex pilots)
- Albania, Moldova, Georgia: CDM-like A/R degraded l.

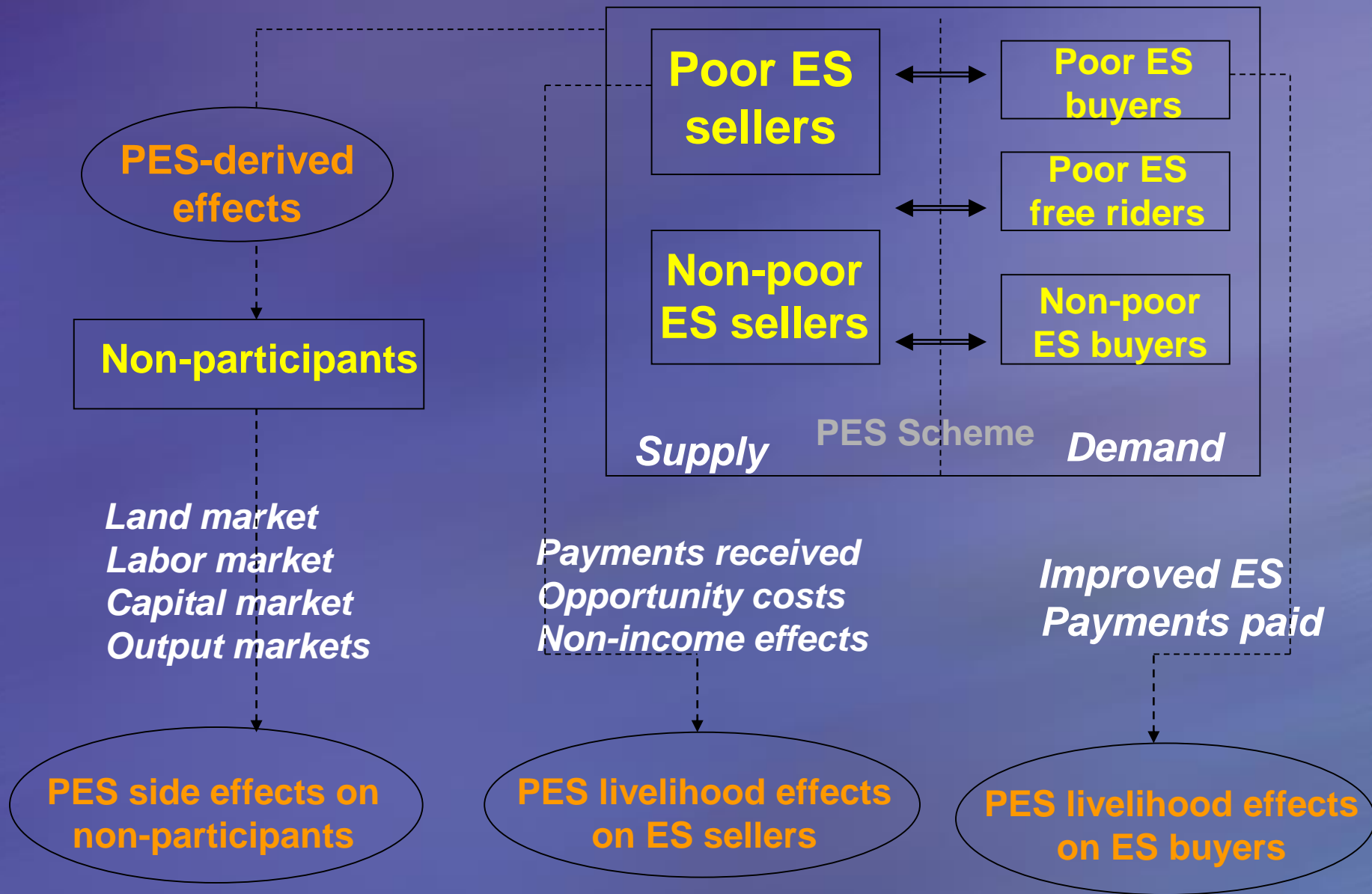
=> often unclear where payments have really come to change hand, for how long, and with what impacts?

II. Pathways to affect welfare

Participation in PES



Income effects of PES



Effects on service providers

- Grieg-Gran et al. (2005): 4 countries (Bolivia, Brazil, C. Rica, Ecuador), 6 carbon + 2 watershed projects.
- PES household **income/spending share**: 16% (Virilla, CR), [C.Rica: for 25%, PES>10% of hh income. *Poorer* areas: Osa Peninsula: PES=primary inc. source for 44% of hh; Pimampiro: PES/Y=30%]
- **Asset generation** from carbon plantations (Huetar Norte, PROFAFOR: exp. return IRR=12-27% 30 yr)
- Positive **side effects**: +tenure security, +community organization, +visibility vis-à-vis donors

=> Small **positive extra income** – ..opportunity cost?

What about poor service users?

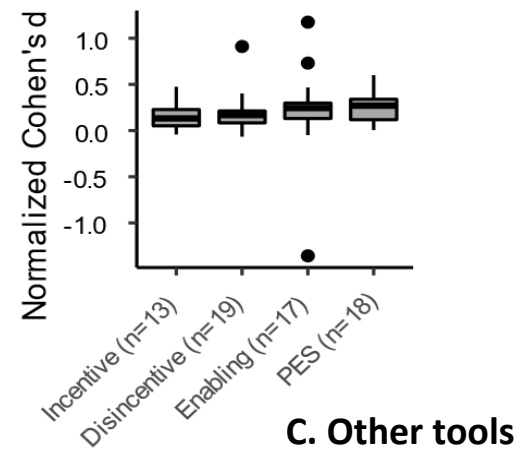
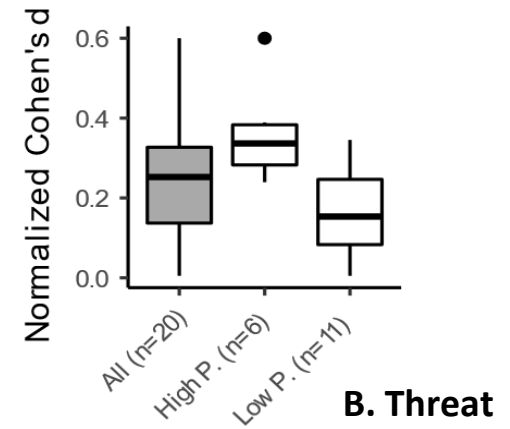
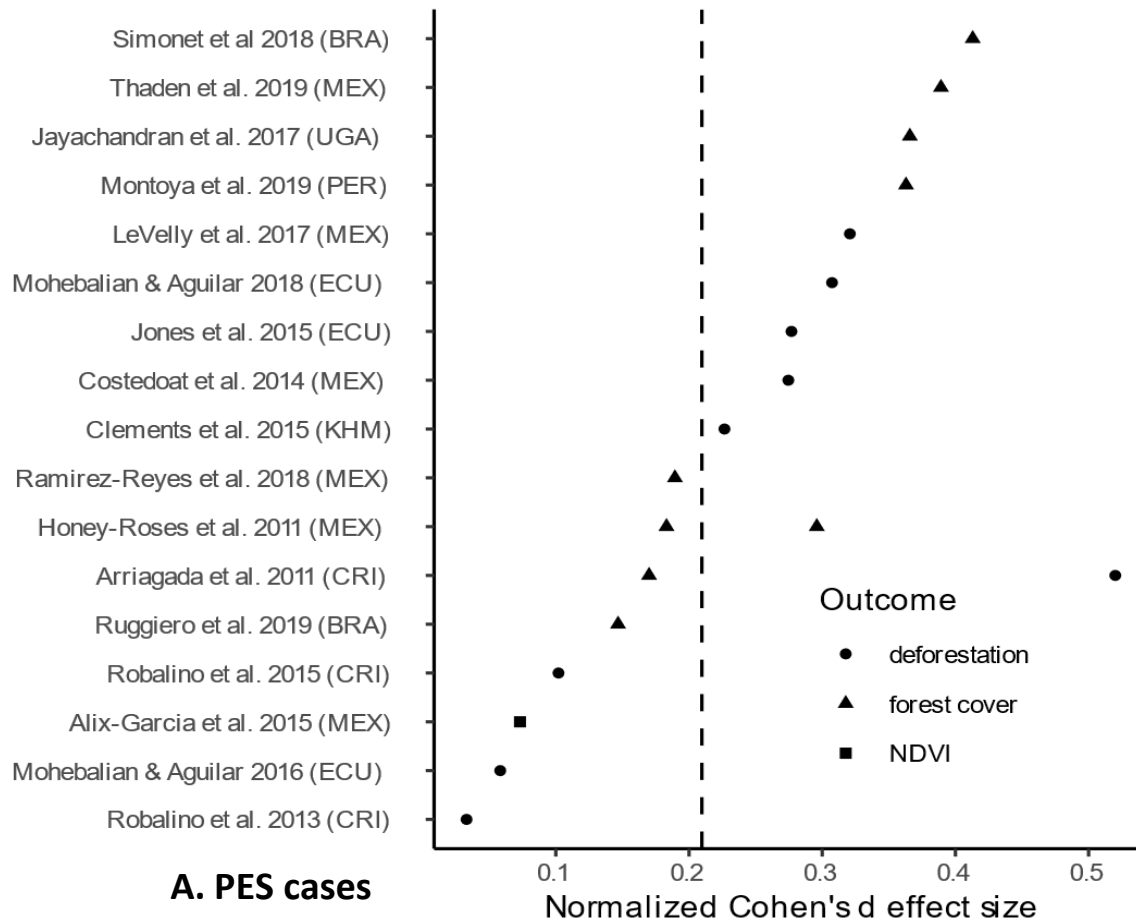
- Villa de Leyva, Colombia: ~15 upstream farmers decide the fate ~2,500 downstream water consumers – often neglected
 - Most ES users do not become ES buyers because they lack organization (e.g. irrigation) – and most PES are buyer-led!
- => Service users may stand to gain most from PES – though often more as free riders than as ES buyers

PES impacts on non-participants

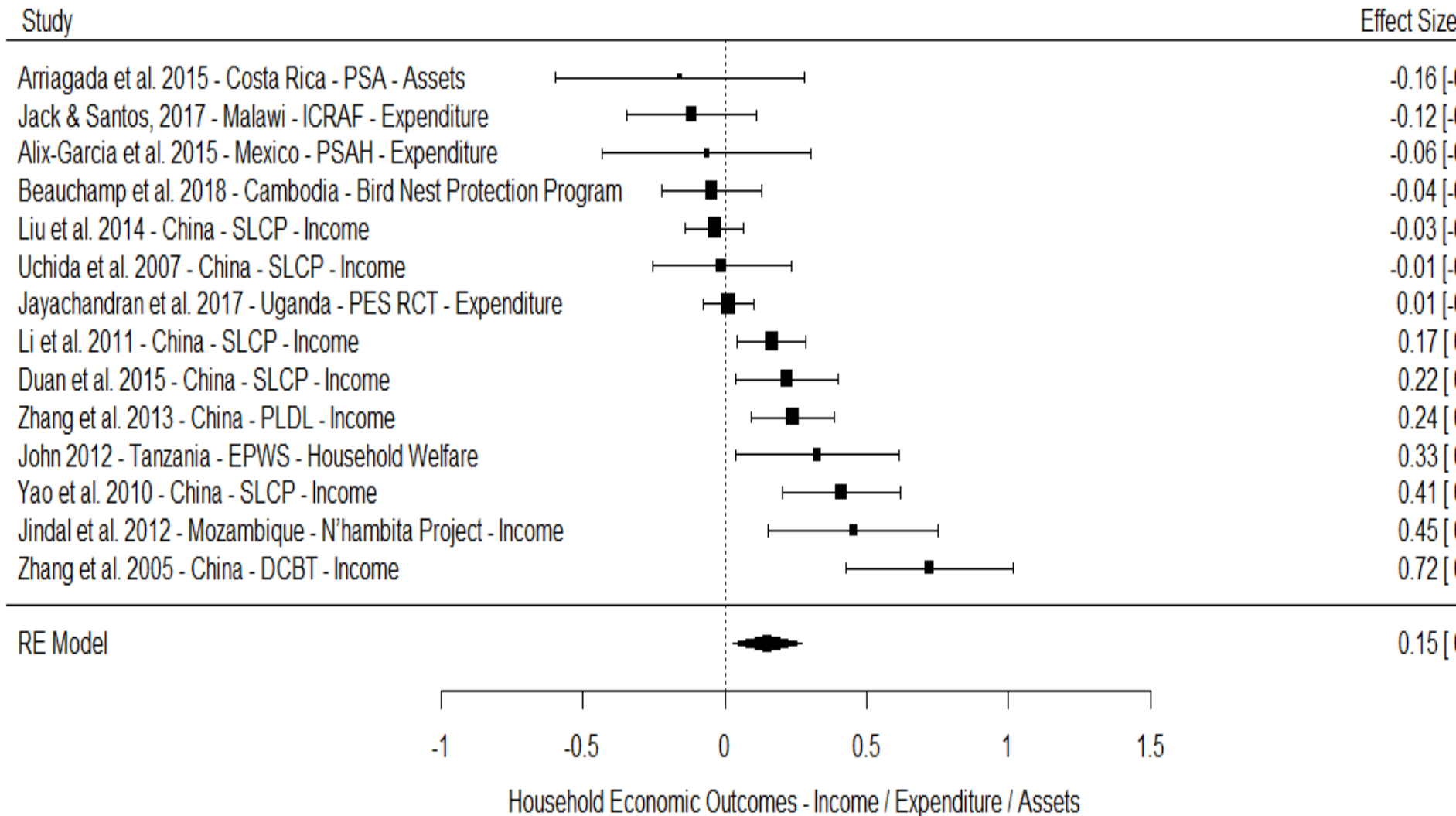
- Depends on derived effects from labour, capital, land, output markets.
 - “Activity-restricting” PES (e.g. set-aside forest conservation) can cost jobs in agriculture and timber sectors
 - Conversely, “asset-building” PES (e.g. tree-planting for CO₂ sequestration) can stimulate local employment and incomes
- => These indirect impacts depend on what activities PES promotes or reduces.

III. Evaluated PES impacts in systematic reviews

PES forest impacts compared



PES socioeconomic effects



$t(12) = 0.4020, p = 0.0106, d = 0.15, 95\% \text{ CI } [0.05, 0.25]$

Snilsveit et al. (2019)

IV. Conclusions

Income gains from PES, but small:

1. **Very few** (esp. user-financed) PES in Europe; ES users look to the state for action instead
2. ES seller **gains are limited** by ES buyers being in driver's seat – limited willingness to pay

But...

3. Many PES born **double-purpose** (env.+welfare)
4. Many PES placed in **low-threat**, low-cost zones
5. Impacts vary much **across scenarios**.
6. **Non-income gains** from PES participation can also be significant