

Ecosystem Services & applications for agro-environmental research

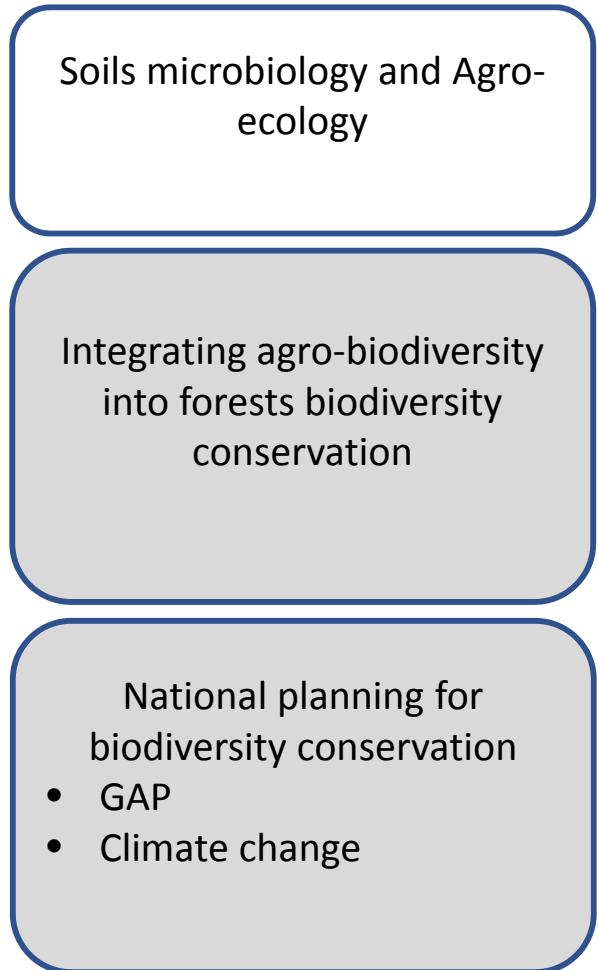
Pablo Imbach PhD / CIAT Scientist

4th of July, Beijing

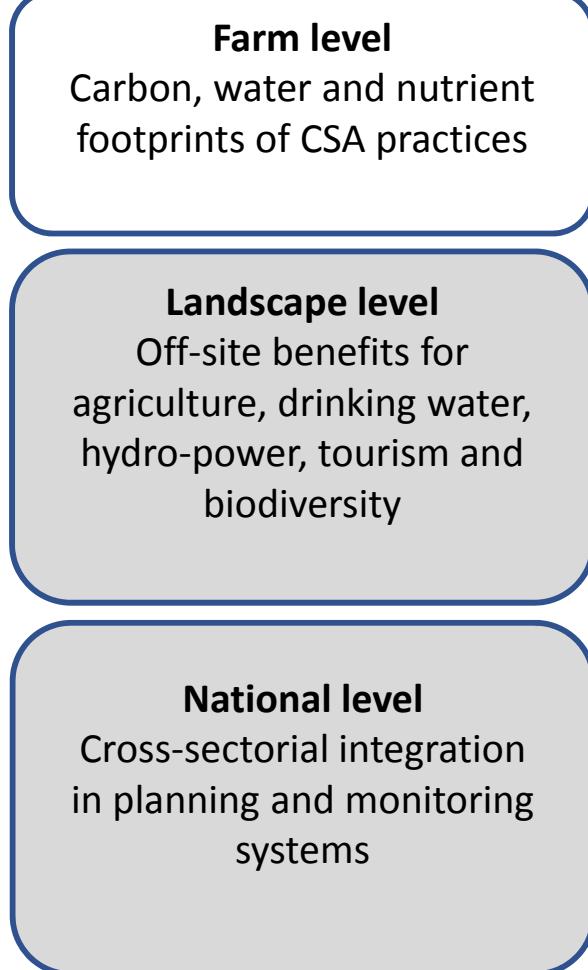
p.imbach@cgiar.org



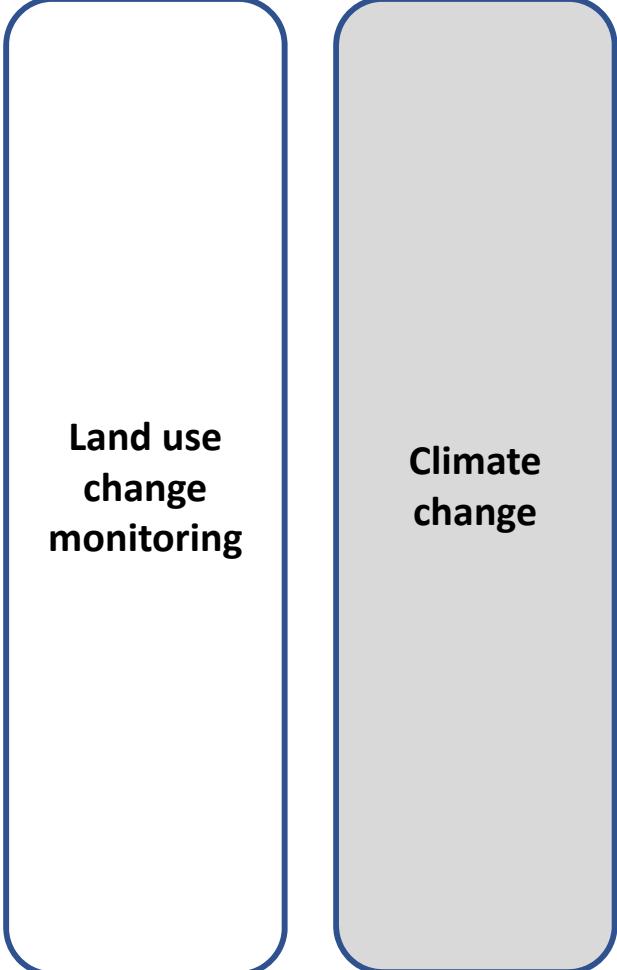
Biodiversity



Ecosystem services

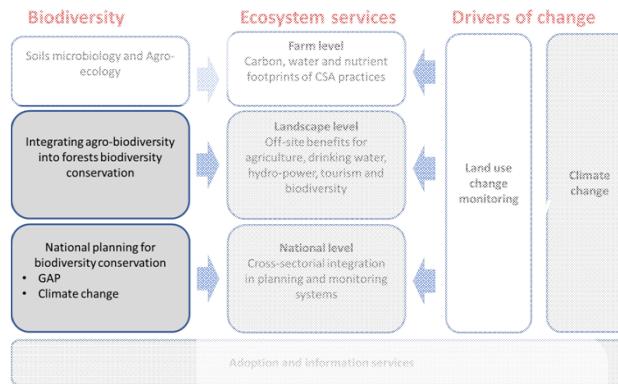


Drivers of change

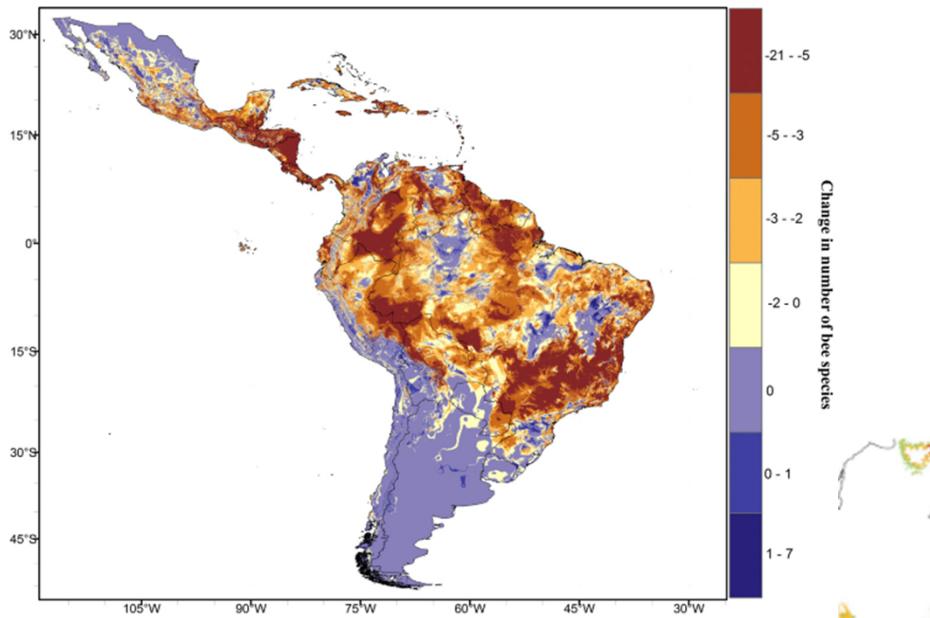


Adoption and information services

Biodiversity conservation



Spatial planning & CC



Legend for coupling and species count:

- Positive coupling (Increase in number of bee species and coffee suitability)
- Negative coupling (decrease in number of bee species and coffee suitability)
- Decoupling (increase coffee suitability with decrease in number of bee species)
- Decoupling (decrease coffee suitability with increase in number of bee species)
- >20 Bee species

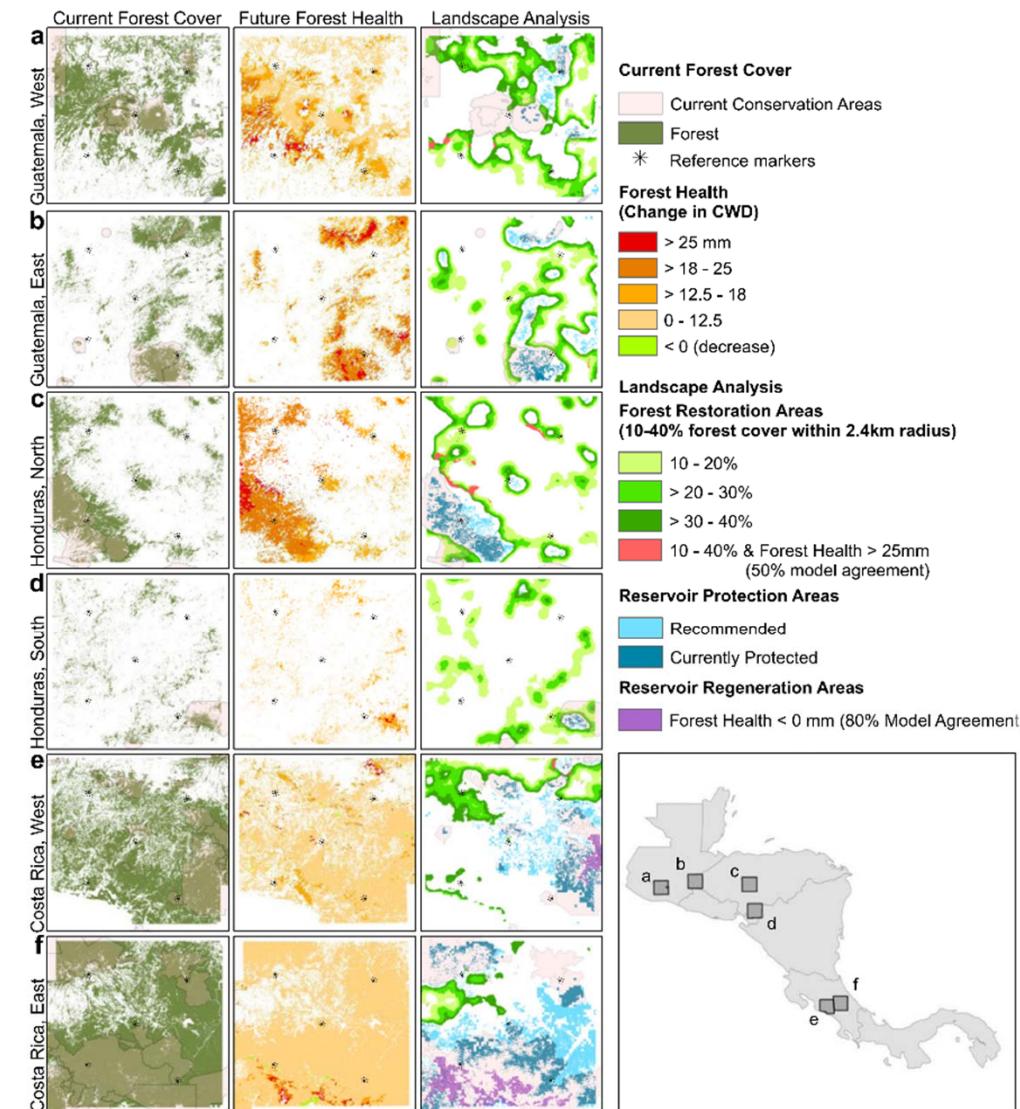
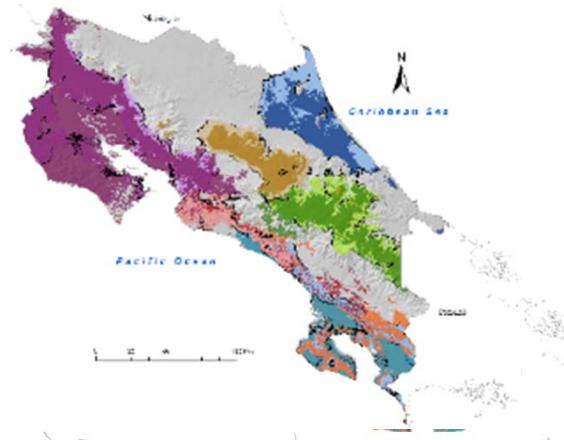
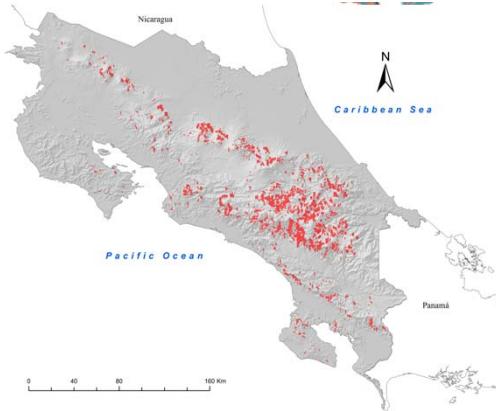


Fig. 2 a-f Forest cover, forest health, and landscape adaptation planning. For each of the six study sites, current forest cover (*left*), projected forest health using CWD (*center*), and landscape zonation using the principles described in the text (*right*). Future forest health shows 50% model agreement among the six GCMs in the 2050 timeframe (*center panels* in figure). Forest restoration areas, reservoir protection areas, and reservoir regeneration areas are as defined in the text (*right panels* in figure) Hannah et al. 2016 Climatic Change

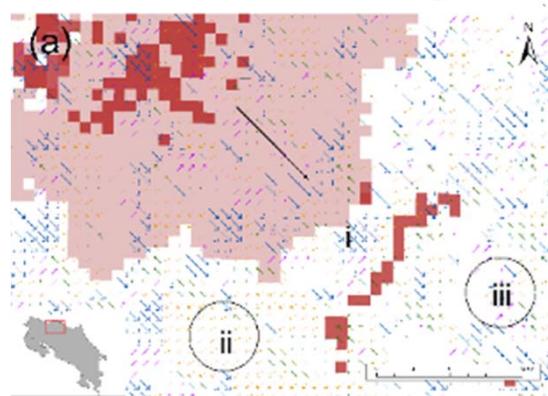
Redistribution



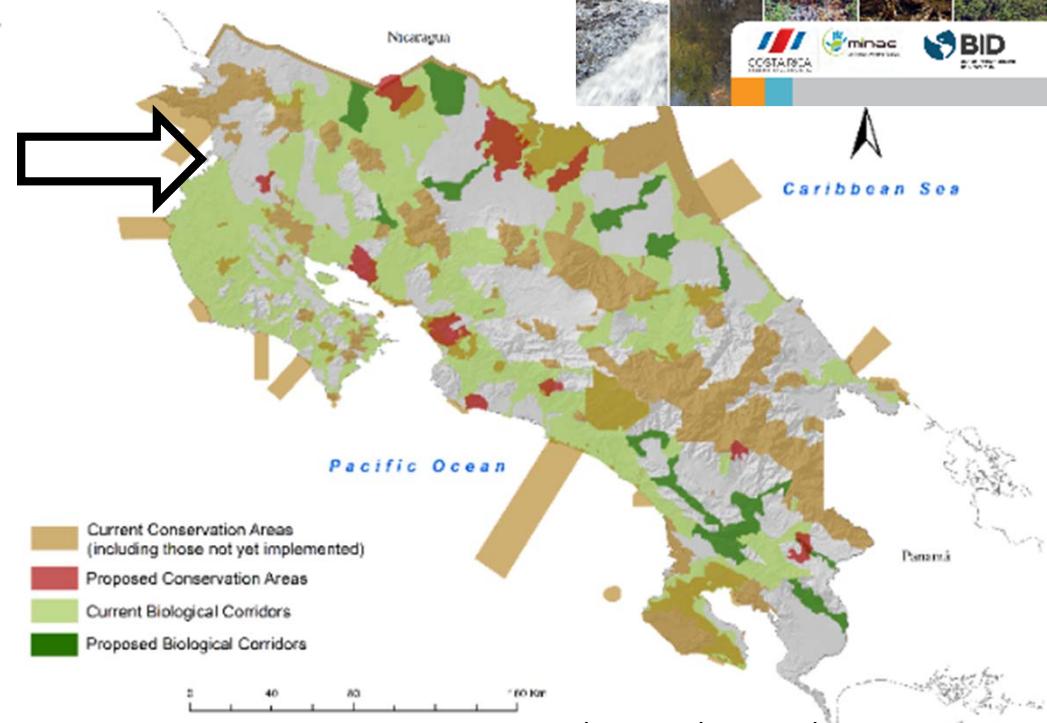
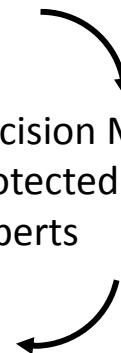
Climate hotspots



Climate pathways



Decision Makers
Protected Area managers
Experts



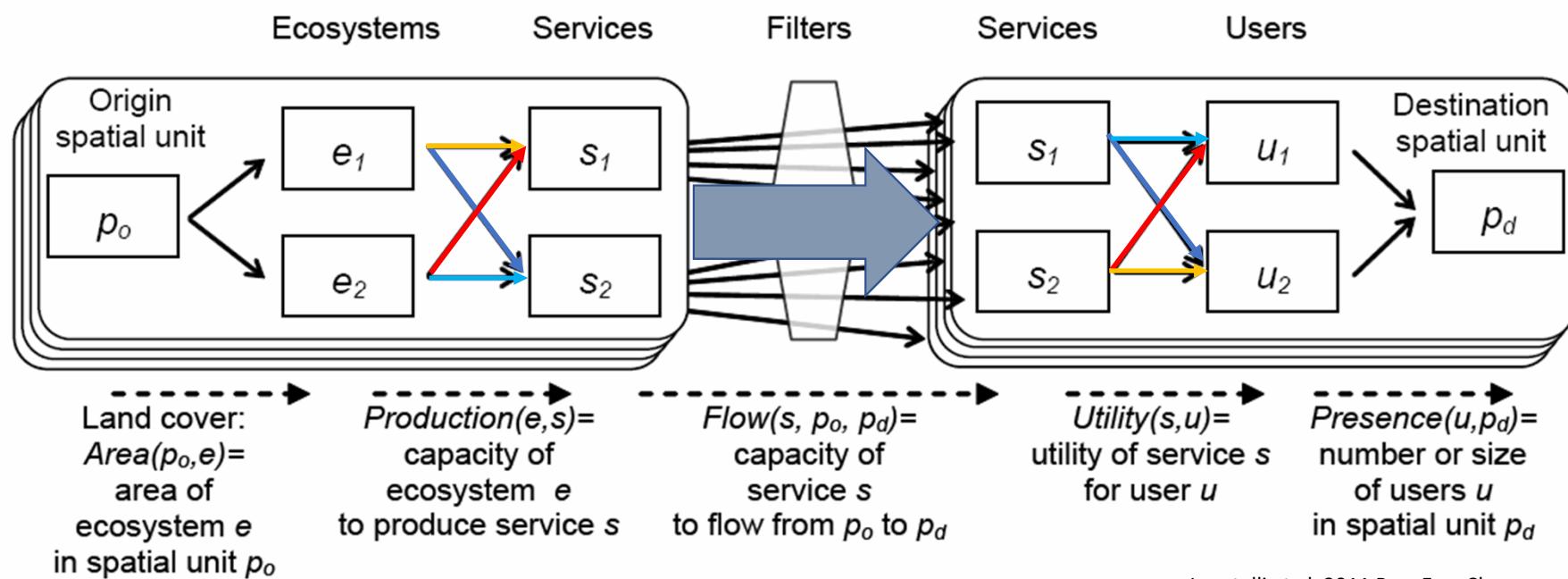
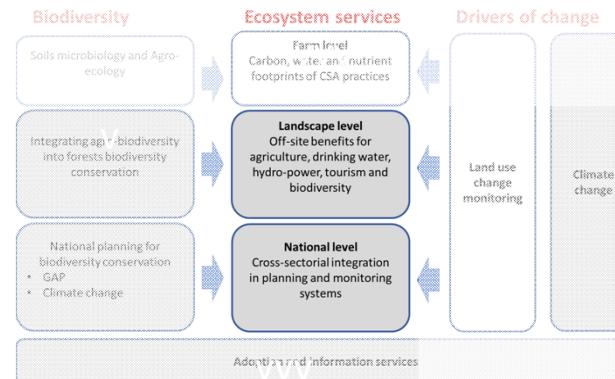
Fung et al. 2016 Climatic Change

Estrategia y plan de acción
para la adaptación del sector
biodiversidad de Costa Rica al
cambio climático

(2015-2025)



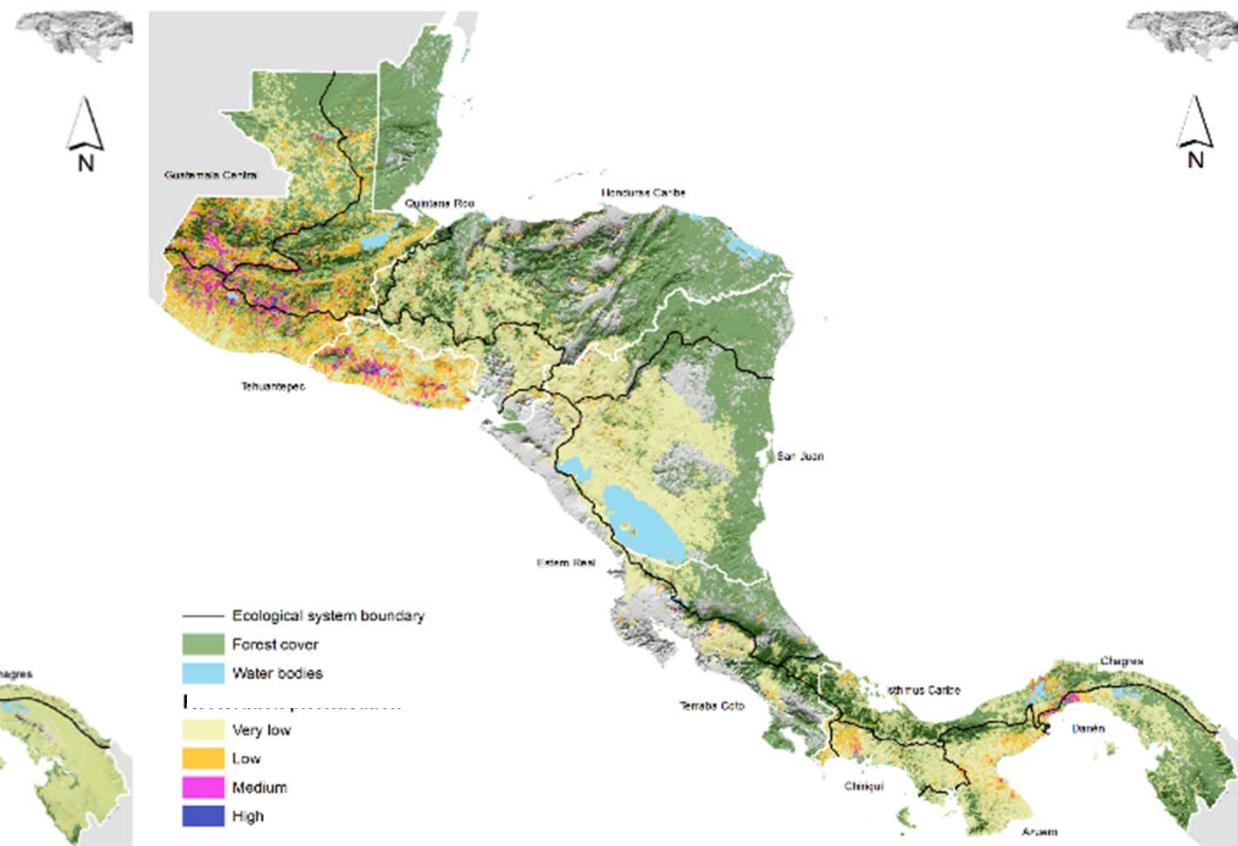
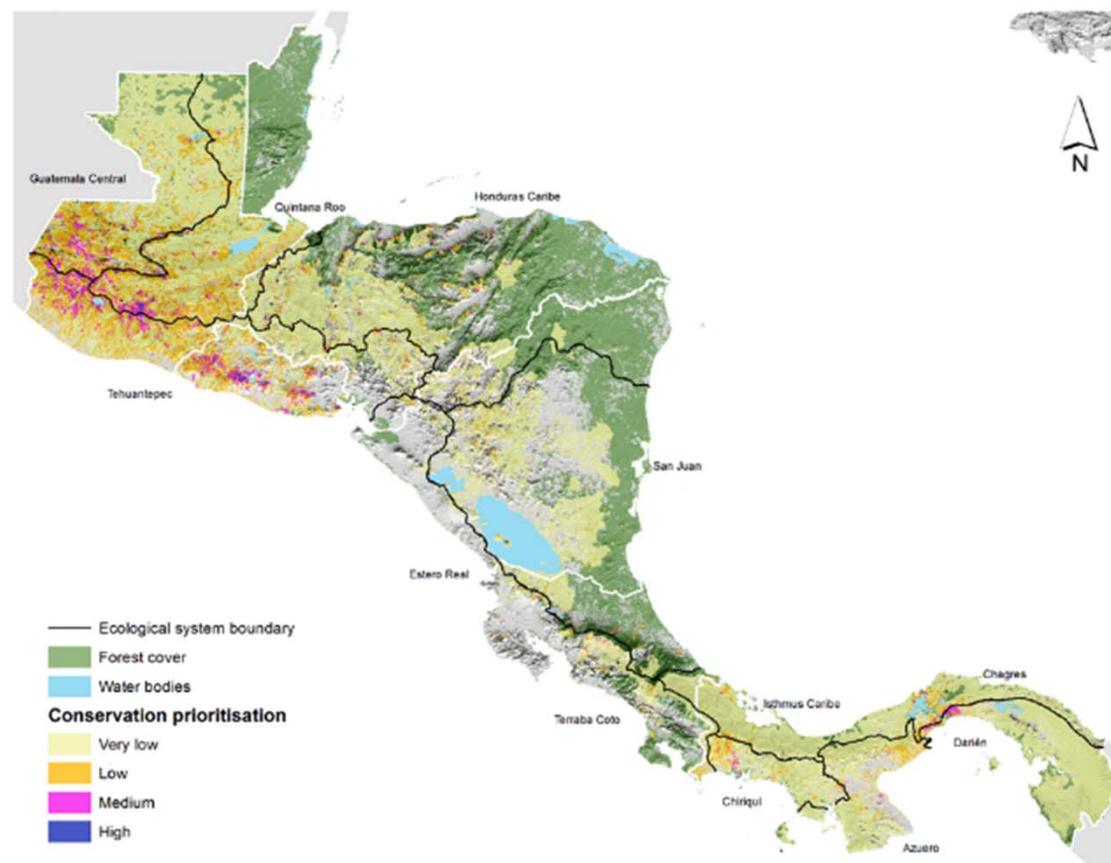
Ecosystem services



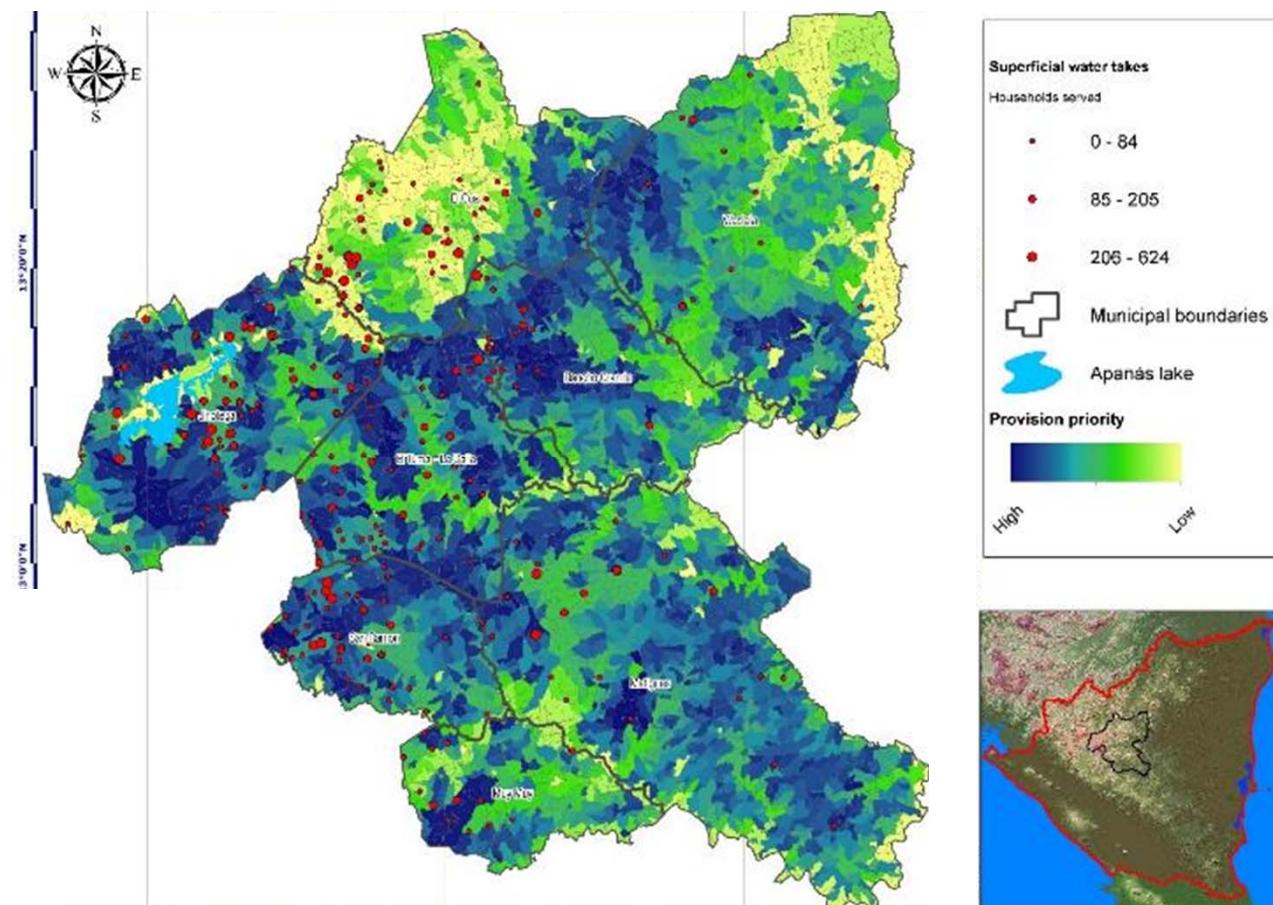
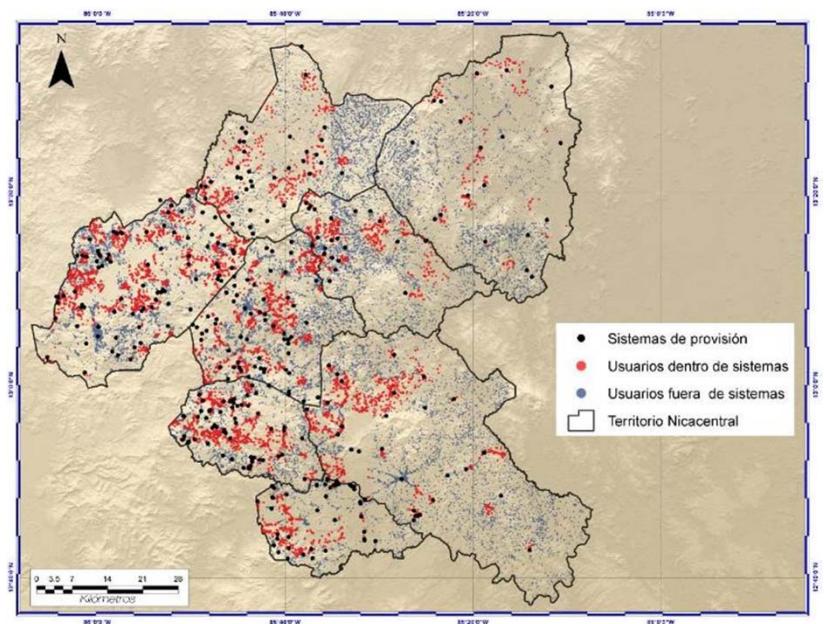
Locatelli et al. 2011 Reg. Env. Change

Landscape level Conservation

Restoration

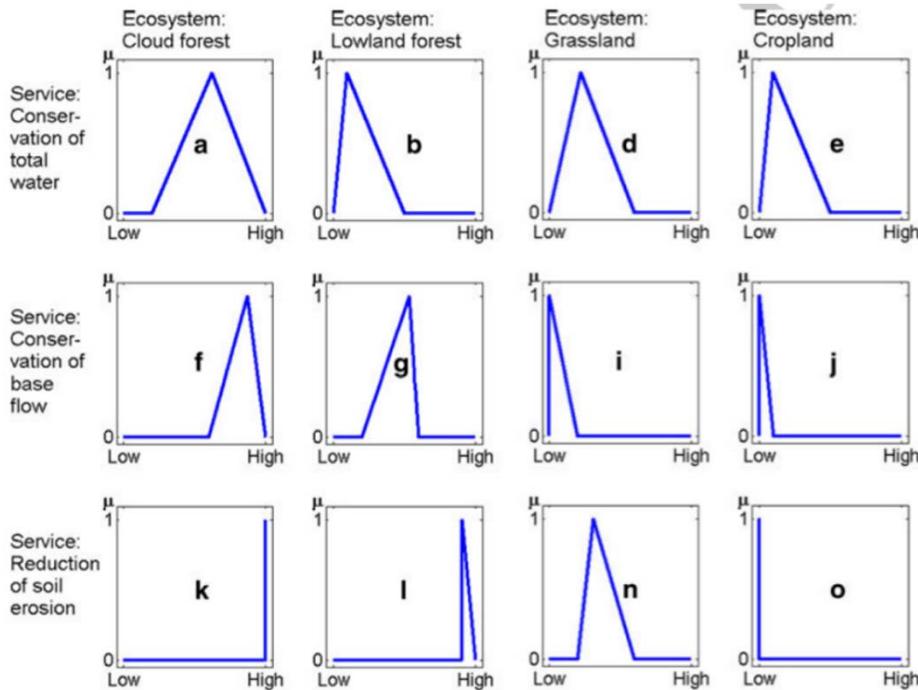


Landscape level

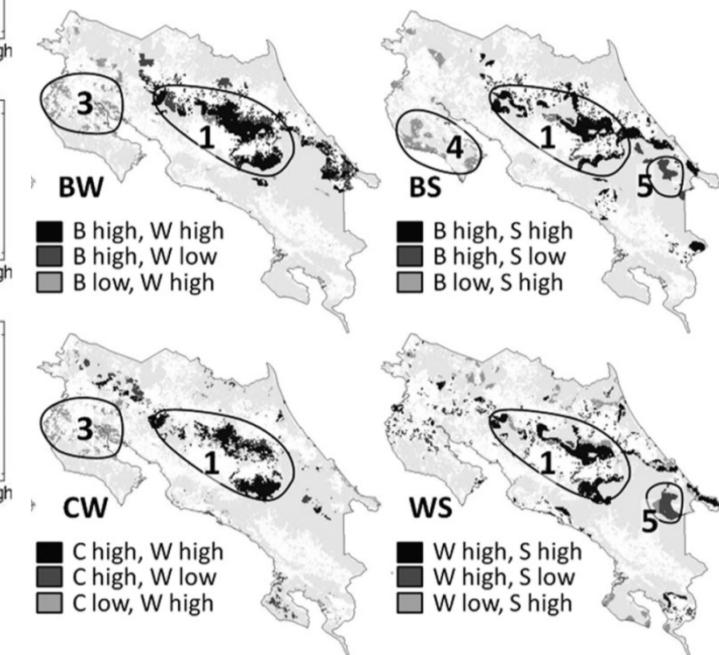
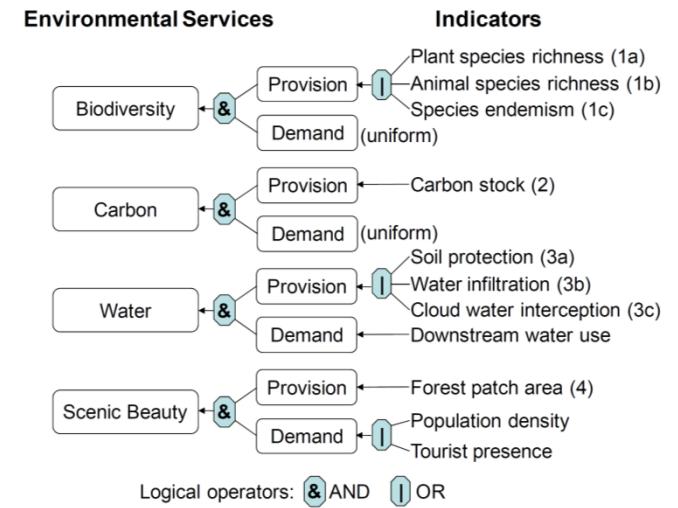
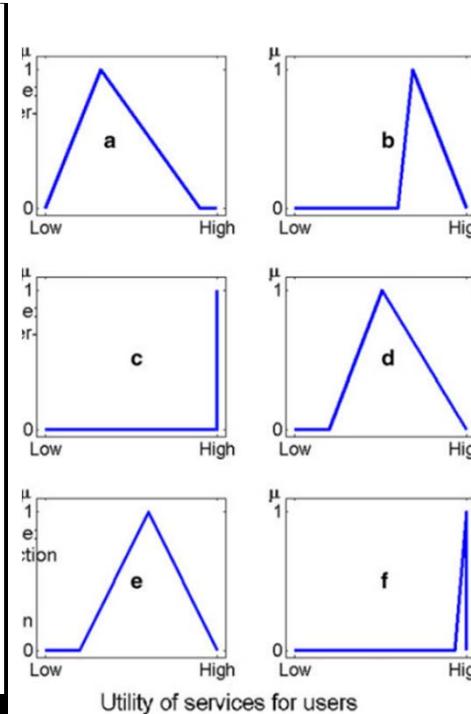


Tailored methods and bundling services

Ecosystems



Users

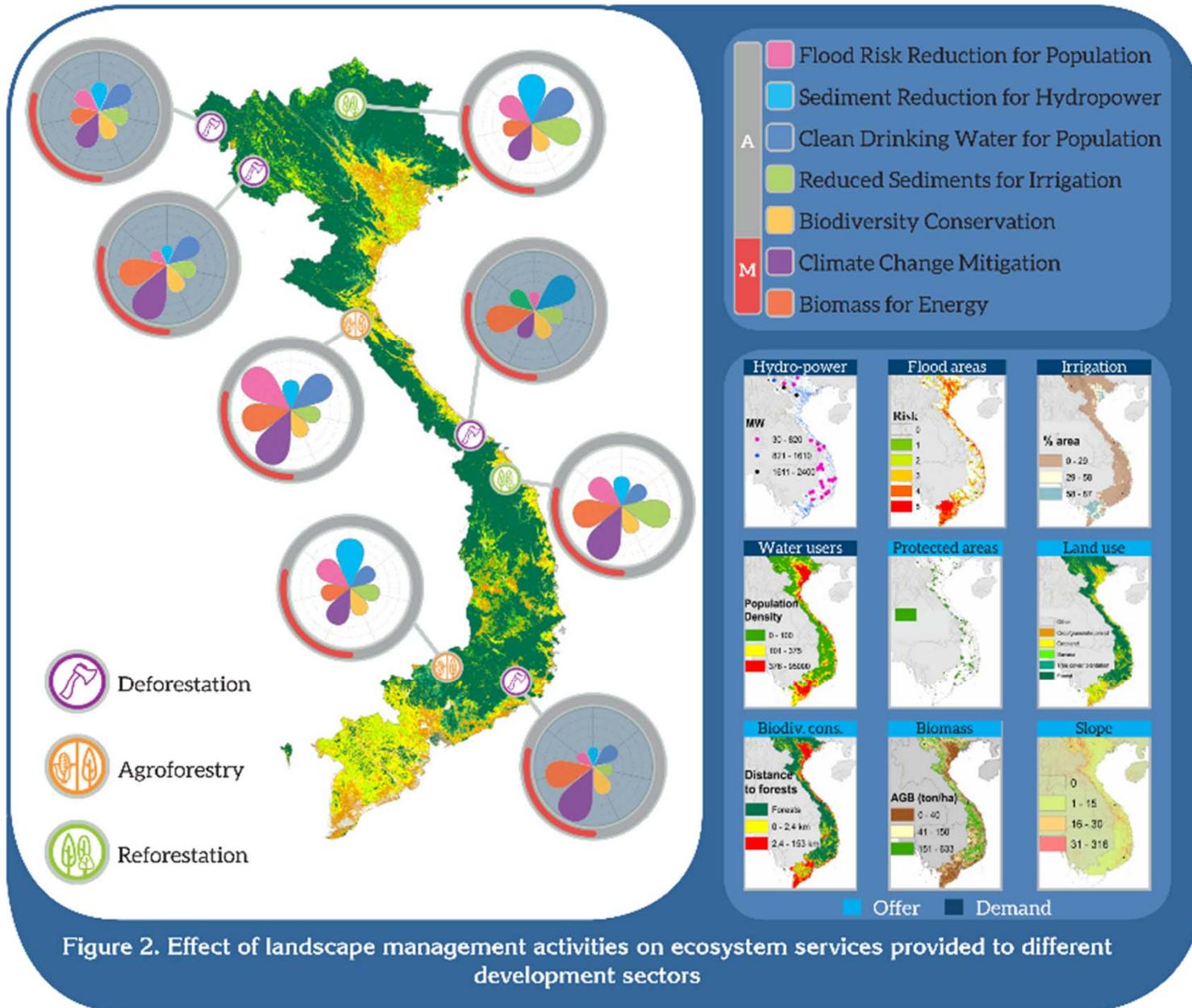


Locatelli et al. 2011 Reg. Env. Change

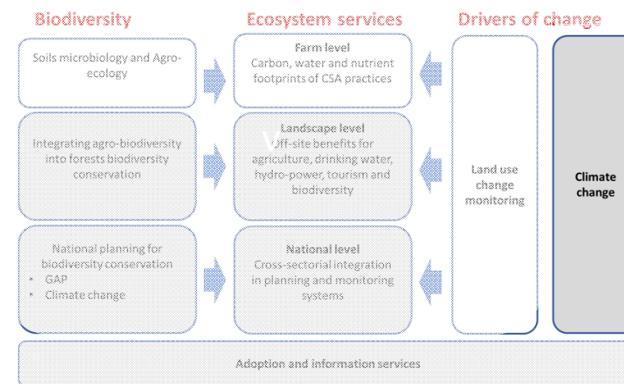
Locatelli et al. 2014 Env. Cons.

Out-scaling

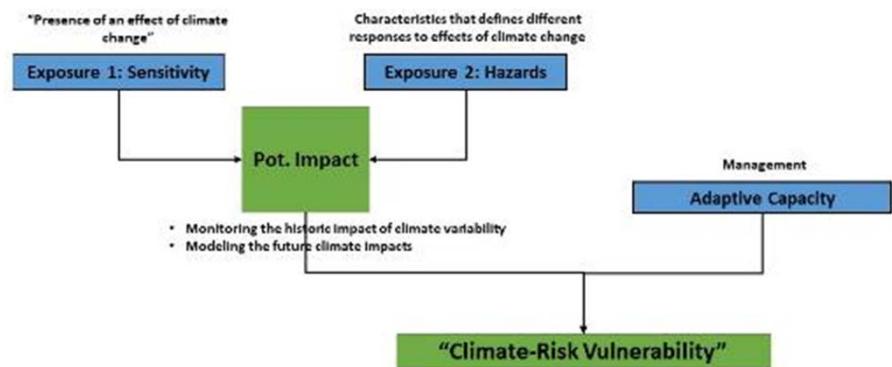
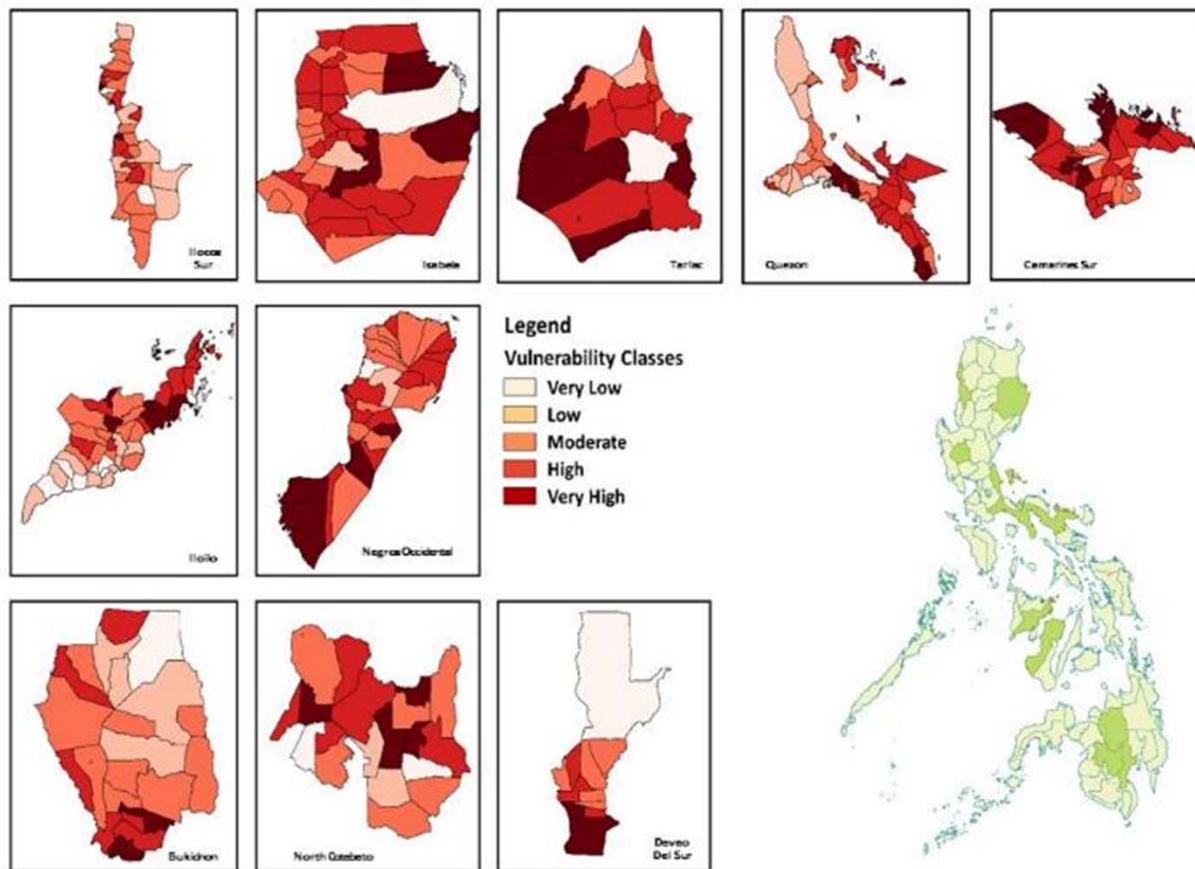
- **Out-scaling** farming systems for agricultural landscapes that provide ecosystem services to support a cross-sectorial development agenda for agriculture, water, energy, tourism, and biodiversity conservation
 - Spatial planning
 - Monitoring systems
 - Cross-sectorial planning



Climate Change & Vulnerability Assessments

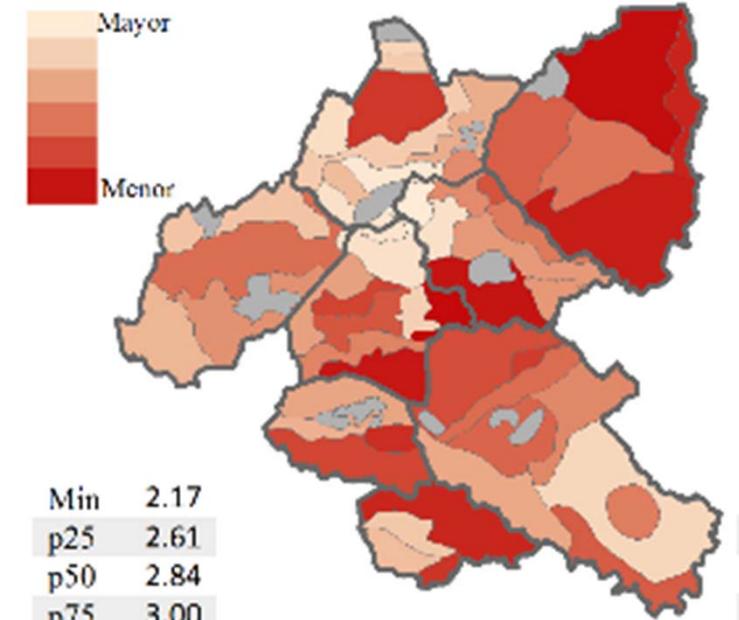


Climate-Risk Vulnerability Assessment (CRVA) Maps



Participatory mapping

- Identification of mapping units
- Expert assessment on indicators

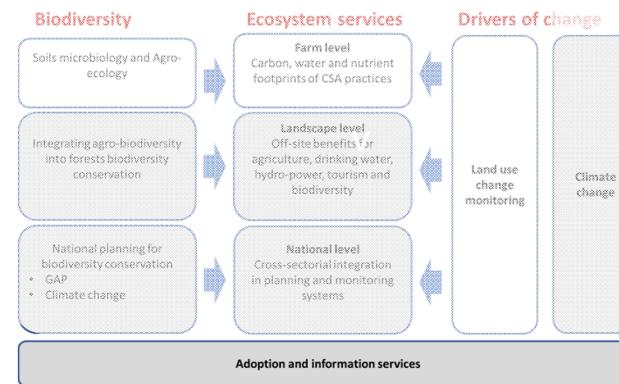


Min 2.17
p25 2.61
p50 2.84
p75 3.00
Max 3.26



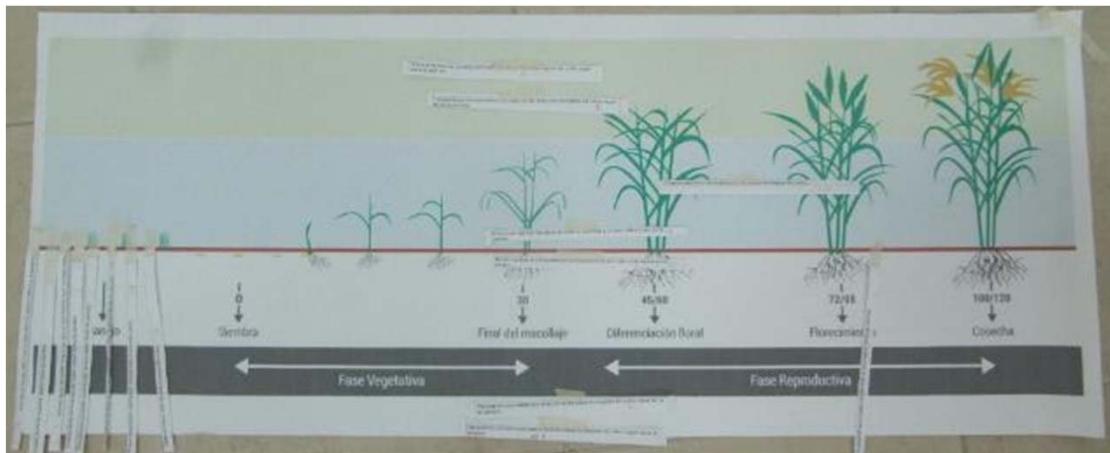
Medellín et al. *in preparation*
Bouroncle et al. 2016 *Climatic Change*

Information services



Climate Services for agriculture

- Developing weather information systems
 - Historical
 - Forecasts: sub-seasonal, seasonal
- Climate Services
 - From weather data to agricultural advisories
 - Institutional networks
 - Information products
 - Business models and agri-business integration





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