Ecosystem Valuation Approach in Mexico

Raúl Figueroa y Luis Miguel Galindo

INEGI-México
UNSD Consultant

Objective:

Monetary valuation of ecosystem services and assets in Mexico. Primary for:

- Priority crops supply (rice, beans, maize, sorghum, soya and wheat.
- Water supply (surface water and groundwater).
- Carbon capture and sequestration (in soil and biomass)
- Regulation of natural disasters in coastal zones (mangroves)

Ecosystem services and assets	Benefits	Method of valuation	Comments and challenges
Supply services			
Supply of priority crops and food: farming and fodder. **Fodder supply.**	Crops (tonnes)	• Resource rent method • Approximate rental method per income per hectare	• Aggregate-regional • Consistent econometric estimation: • Aggregate-regional.
Food supply: cattle raising (optional)	Cattle raising (number of cows, sheep, goats) (Difficult optional). Better trough fodder.	• Resource rent method • Approximate rental method per income per hectare	• Regional aggregate • Consistent econometric estimation: • Regional aggregate
Forest wood production	Wood (tonnes)		• Aggregate-regional.
Regulation services			
Water supply (Surface water and groundwater)	• Drinking-water quality • Crops and cattle raising	• Residential: drinking-water costs • Dose response in health and mortality • Agriculture • Production function approach • Income method: diference between dry land and irrigate land and near to forest.	Identifying ecosystem participation on drinking-water costs and in production.
Carbon capture and sequestration (in soil and biomassa)	Climate change	• Social cost of carbon • Meta- Analysis	Regional.
Regultation of natural disasters in coastal zone (mangroves and reef)	Coastal zonal protection	• Before and after a disaster • Transfer function • Hedonic price method (before and after): data.	Also coral reefs are in tourism.
Air quality	House Price. Trends.	• Hedonig Price method. • Dose response	Regional
Pollinization	Food production	• Resource rent method • Especific estimate	Relevance for public policy and avoid double counting.
Cultural services			
Environmental tourism **Natural reserves (biodiversity)**	Number of visitors	• Resource rent method • Travel cost method. • Expense method	• Problem: identifying the proportion of expenditure • Difficulty to divide amenity.
Potentials			
Biodiversity (broad)			For discussion
Payment for environmental services		Expense method	Public policy.

Ecosystem services: Gross value added (GVA)

Type of service	Ecosystem services
Supply services	Food production (farming)
	Food production (fodder to cattle raising)
	Wood production
Regulation services	Water quality
	Carbon capture and sequestration
	Mangroves and reef (protection)
	Air quality
Cultural services	Tourism
	Natural reserve

Ecosystem services potentially selected

Type of ecosystem services	Description	Benefits
Supply services		
Food production services: farming and cattle raising.	• Biomass accumulation • Water filtration and accumulation • Nutrients absorption by plants • Humidity, pollination, etc. • Leaves of fodder	Crops and cattle raising: consumption
Raw materials (wood and non-timber forest products)	Forest products (fiber, fruits, fungi and pharmaceutical products) and non-timber forest products	Fire, wood produced and non-timber forest products
Regulation services		
Water	• Groundwater filtration and accumulation • Drinking-water	Drinking-water (quality)
Air	Vegetation can filter particles.	Air quality
Forest	• Biomass • Regulation of water quality and air quality • Carbon sequestration	• Water quality • Air quality • Climate change
Mangroves and reef	Coastal protection	
Pollination	Agriculture	Food production
Cultural services		
Provides opportunities of tourism and recreation	Ecosystems provide space for recreational and contemplative activities	Benefits of recreation

Next steps

- Estimation and calibration of the models.
- Discussion of the results with experts.
- Corrections and evaluations.
- Final presentation.

Ecosystem Valuation Approach in Mexico