ECOSYSTEM ACCOUNTING IN SAN MARTÍN, PERU:

ECOSYSTEM SERVICES

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Forum of Experts on SEEA EEA

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CONSERVATION INTERNATIONAL

perú sanmartín regiónverde GOBIERNO REGIONAL

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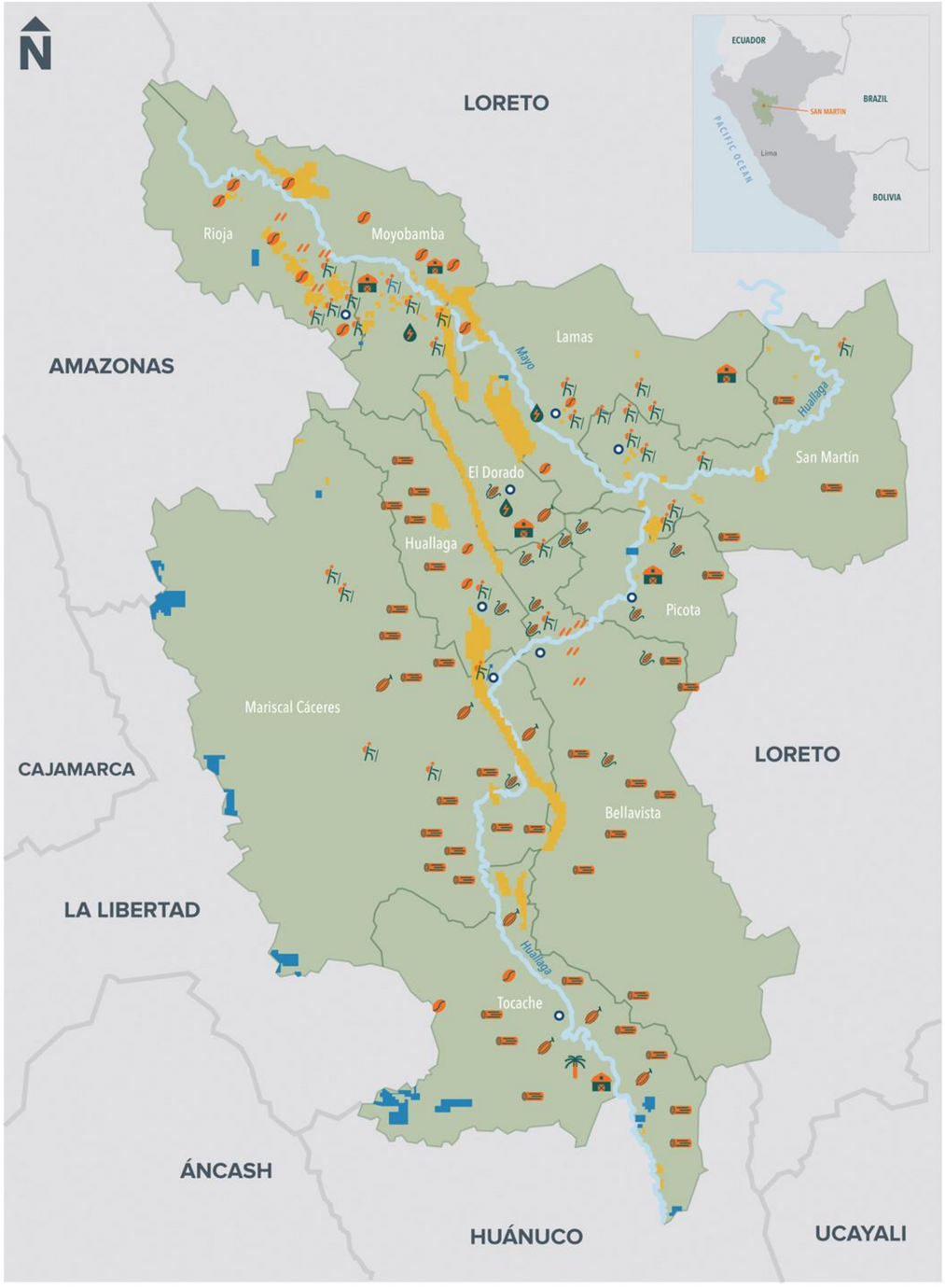
CLARK LABS

Geospatial software for monitoring and modeling the Earth system

OUTLINE

- Quick background to the project and description of San Martín, Peru:
- Overview of Ecosystem Accounts (highlighting services) completed
- Main findings, the way forward
- Lessons learned / Process

SAN MARTÍN, PERU



ACTIVIDADES ECONÓMICAS REGIÓN SAN MARTÍN

- PERÚ -

La Región San Martín tiene una extensión de 51,253 km, repre-^{2} sentando el 6,5% del área total amazónica, con clara política regional de conservación. Por ese motivo la generación de bienes y servicios de manera sostenible tiene prioridad.

Fuente: Estrategia Regional de la diversidad biológica de San Martín - 2006

AGRICULTURA

La base agrícola está sustentada en los cultivos de arroz, maíz, café y cacao.

ARROZ

Provincias: Rioja y Bellavista (14,630 productores)

PRODUCCIÓN	RENDIMIENTO	ÁREA COSECHADA
647 449.1 tn	7.2 t/ha	89 997.4 ha

MAÍZ

Provincias: Tocache, Dorado, Mariscal Cáceres (24,766 productores)

PRODUCCIÓN	RENDIMIENTO	ÁREA COSECHADA
125 266.5 tn	2.2 t/ha	57 233.0 ha

CAFÉ

Provincias: Lamas, Tocache, Moyobamba, Rioja, Huallaga (33,390 productores)

PRODUCCIÓN	RENDIMIENTO	ÁREA COSECHADA
54 691.6 tn	0.7 t/ha	73 498.5 ha

CACAO

Provincias: Tocache, Dorado, Mariscal Cáceres (24,766 prod.)

PRODUCCIÓN	RENDIMIENTO	ÁREA COSECHADA
38 282.9 tn	0.9 t/ha	49 486 ha

Fuente: Dirección Regional de Agricultura San Martin – Drasam - 2014

PALMA ACEITERA

Provincias: Tocache (1,748 productores)

PRODUCCIÓN	RENDIMIENTO	ÁREA COSECHADA
347 118 tn	22.9 t/ha	15 142 ha

Fuente: Dirección Regional de Agricultura San Martin – Drasam - 2014

RECURSOS ENERGÉTICOS

Se ha identificado un potencial aproximado de 2,285 megavoltios.

- Electro Oriente S.A

Fuente: Ministerio de Energía y Minas

RECURSO SUELO

Según su capacidad de uso mayor se han identificado 14 categorías entre tierras simples y asociadas, las que se pueden agrupar en las siguientes:

465,727 ha - 9.2% Tierras aptas para cultivo en limpio
175,843 ha - 3.5% Tierras aptas para cultivos permanentes
50,629 ha - 1% Tierras aptas para pastos
1'468,949 ha - 29% Tierras aptas para producción forestal
2'866,210 ha - 56.8% Tierras de protección

Fuente: Balance de la lucha contra la pobreza: el rol de la Mesa de Concertación. — San Martín, 2007.

RECURSOS TURÍSTICOS

2 Boulevares
39 Cascadas
9 Rápidos para deportes acuáticos
10 Cuerpos de agua (lagos, lagunas)
10 Manantiales
10 Miradores
9 Cavernas
12 Lugares con restos arqueológicos

*Fuente: Balance de la lucha contra la pobreza: el rol de la Mesa de Concertación.—San Martín

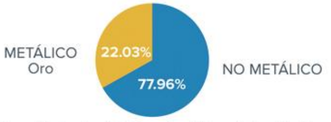
RECURSOS FORESTALES

La producción de madera en la región es 43,588 m^3

Fuente: BCRP(Sede Iquitos) – Síntesis Económica de San Martín, 2011.

RECURSOS MINERALES

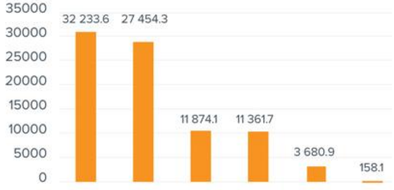
Concesiones y petitorios



Fuente: Dirección Regional de Energía y Minas de San Martín.

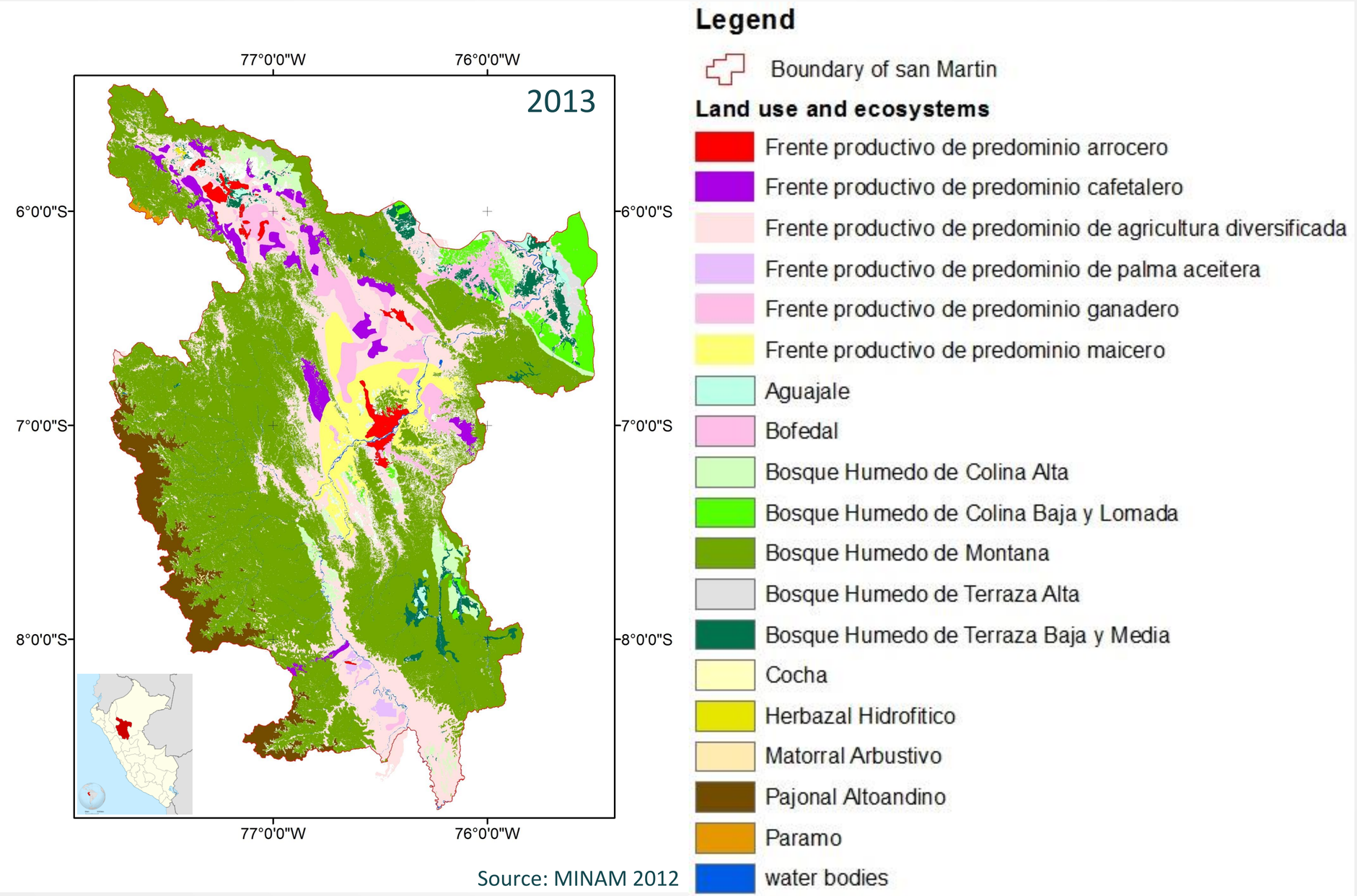
GANADERÍA

Producción Pecuaria y derivados (Tn) año 2014.



Fuente: Dirección Regional de Agricultura San Martín – Drasam - 2014

ECOSYSTEMS TYPES AND LAND USE



Source: MINAM 2012

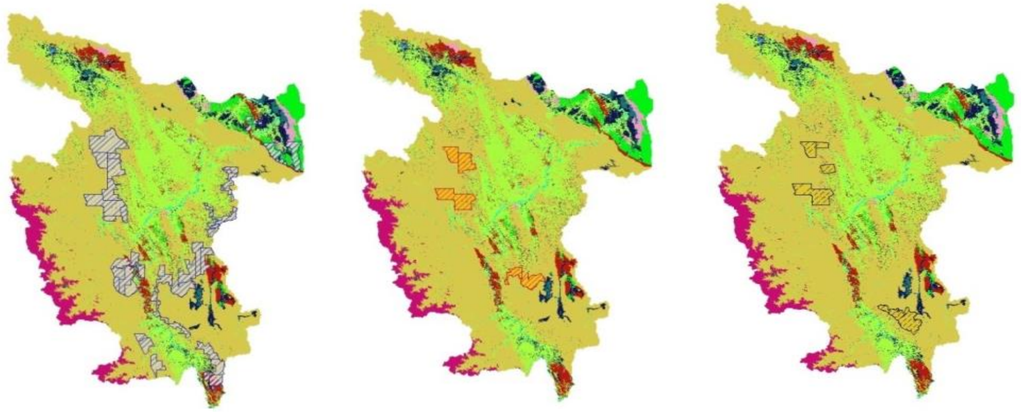
ECOSYSTEM ACCOUNTS COMPLETED

Ecosystem Accounts	Description	Type of Account
Ecosystem Extent	Statistics on the area of ecosystem distributions over an accounting period	Primary
Ecosystem Condition	Statistics on the characteristics that reflect the condition of an ecosystem.	Primary
Ecosystem Services Supply and Use	Ecosystem services flows from the ecosystems (i.e., supply) and to beneficiaries (i.e., use)	Primary
Extended Supply and Use Table	Ecosystem service flows into the SNA Supply Use Table	Primary
Biodiversity	Statistics independent of different ecosystem types on biodiversity values	Thematic
Carbon	Stocks and flows of carbon within ecosystems	Thematic
Water	Stocks and flows of water including inter-ecosystem flows	Thematic

BIOPHYSICAL APPROACHES

Ecosystem service	Analytical approach	Data
Timber	*Spatial analysis:* ecosystems-timber concession overlap analysis *Biophysical analysis:* end-use-specific timber supply from ecosystems	Spatial data layers of concession areas; Govt. data on reported timber harvest
Firewood	*Spatial analysis:* modeling accessibility *Firewood supply:* contribution of ecosystems	Spatial data: DEM, population centers; Firewood data: Govt. statistics
Bush meat	*Spatial analysis:* modeling hunting pressure *Bushmeat hunting:* contribution of ecosystems	Spatial data: DEM, population centers; Bushmeat hunting data: Literature
Water provisioning and avoided sediment	*Spatial analysis:* water flow and sediment model *Direct water use:* water uptake by beneficiaries *Inter-ecosystem flows*	Ecosystem maps; HydroSHEDS and WaterWorld datasets; Govt. data on water permits
Ecotourism	*Spatial analysis:* Mapping tourist destinations *Biophysical analysis:* analysis of tourist visits and length of stays	Tourist destination coordinates; # of visitors; # of hotel beds
Carbon	Carbon stocks in different ecosystems Changes in C stock due to land cover change	Ecosystem maps (MINAM) Carbon density (Carnegie) LiDAR data

TIMBER



(a) (b) (c)

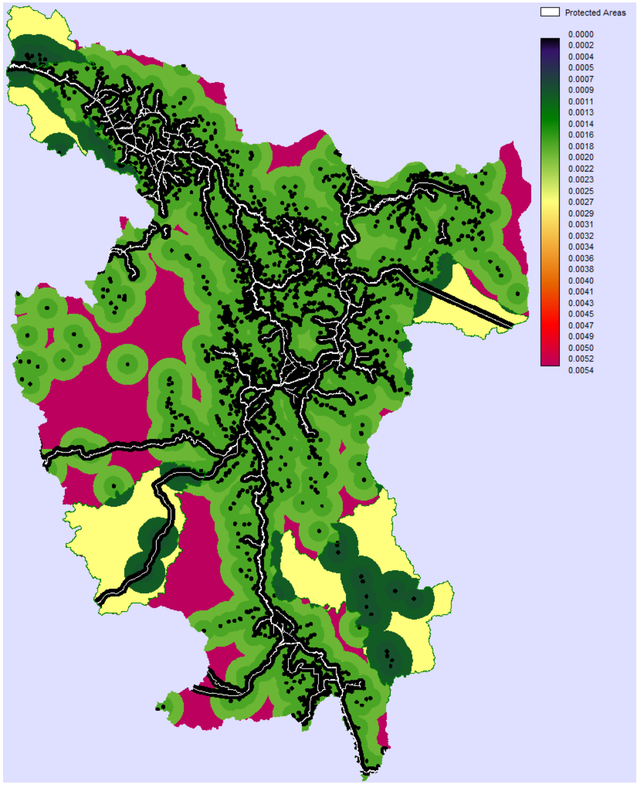
Figure: Timber concession areas spread across ecosystems ((ecosystem types shown in the background) including general concession areas (a), active 2012 (b) and active 2013 (c)

Indicators	**Ecosystem Assets**								
	Humid Montane Forest	Humid Forest with High Hills	Humid Forest with Low Hills	Lowland Terra Firme Forest	Floodplain Forest	Water bodies	Palm Swamps	Water bodies	Non-forest areas
Total area active concession (ha)	99,002	0	0	0	2,397	0	0	0	7,042
Area share of active concession (%)	91	0	0	0	2.21	0	0	0	6.49
Timber volume harvested (m^3)	25,357	0	0	0	613	0	0	0	1,802

BUSHMEAT (NTFP)

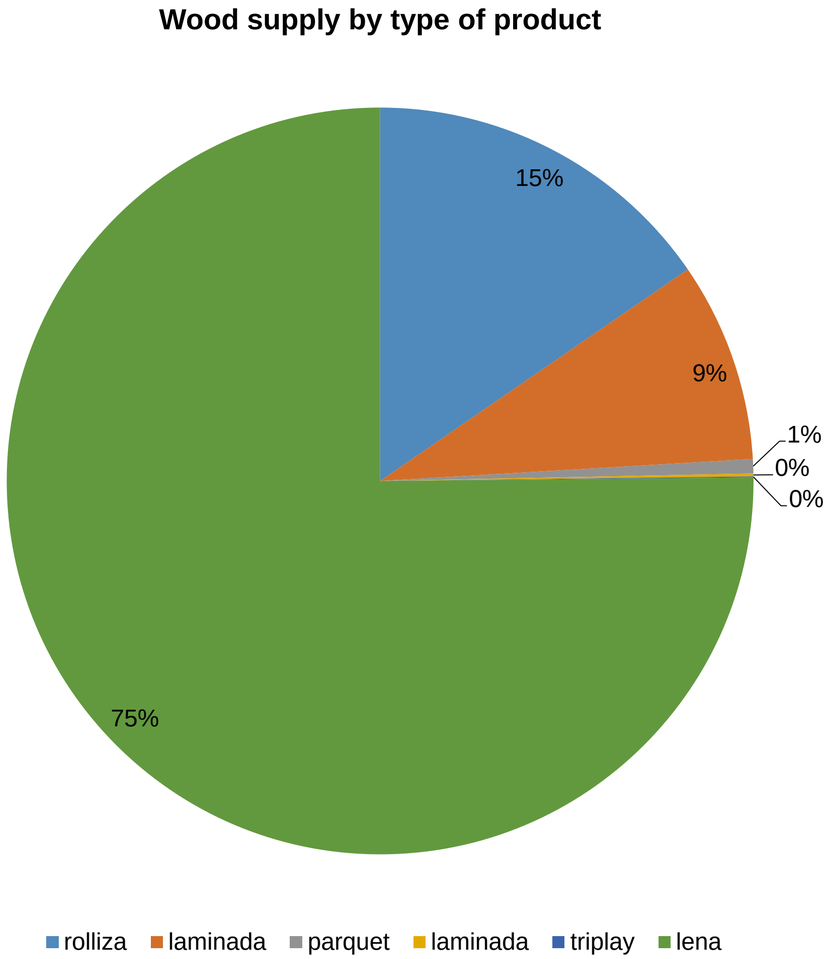
- Subsistence hunting and for market (11%). Meat, skin and pets.
- Extraction by rural households can represent 0-44% of their family income.
- A study in Peru estimated their annual value at USD $250,000.
- Market price at USD $1.09/kg for intermediary, USD $3.29 per kg for final consumers.
- 90% of extraction for commercialization is exported out of San Martin.
- Location of towns; decreasing hunting pressure (PA); slope and access; annual extraction rate per km2.
- Economic valuation based on RR

Hunting pressure model

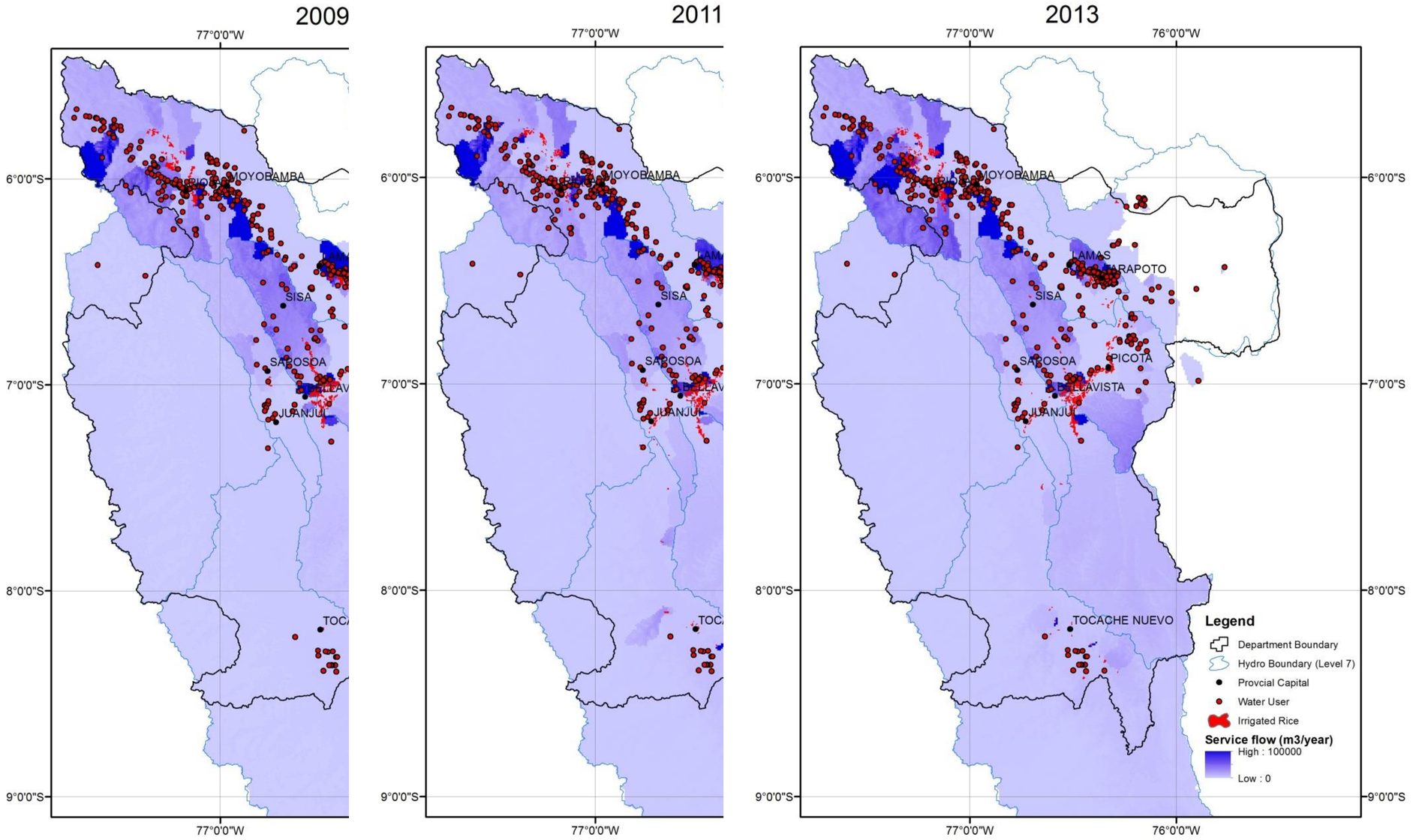


FIREWOOD

- Households: cooking, heating, manufacture, charcoal (60% of rural households)
- Industrial use for brick production and restaurants is unknown.
- Energy usage in San Martin has not changed (1973-2004, 57% firewood)
- Model uses similar parameters for bushmeat.
- Economic valuation based on RR



WATER SERVICE PROVISION (FLOWS)

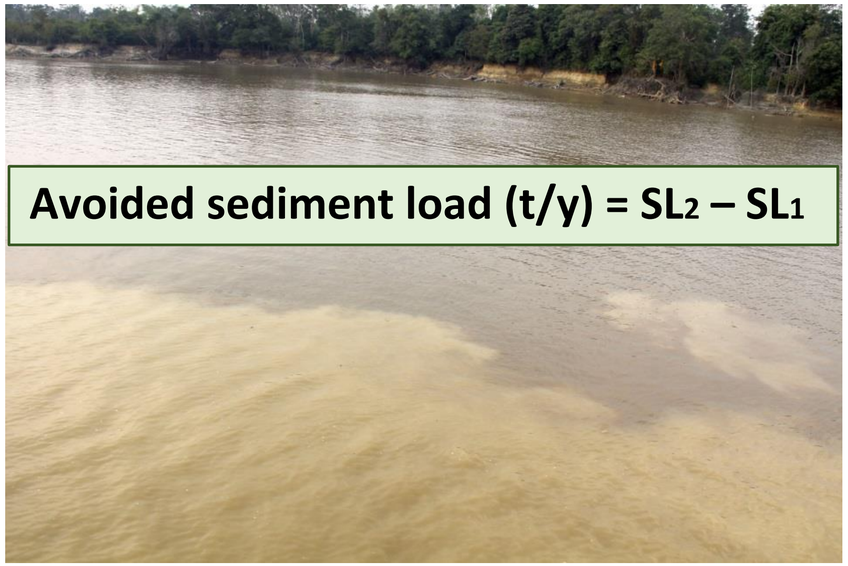


SEDIMENT REGULATION (FLOWS)

Natural terrestrial ecosystems

Conversion to agriculture

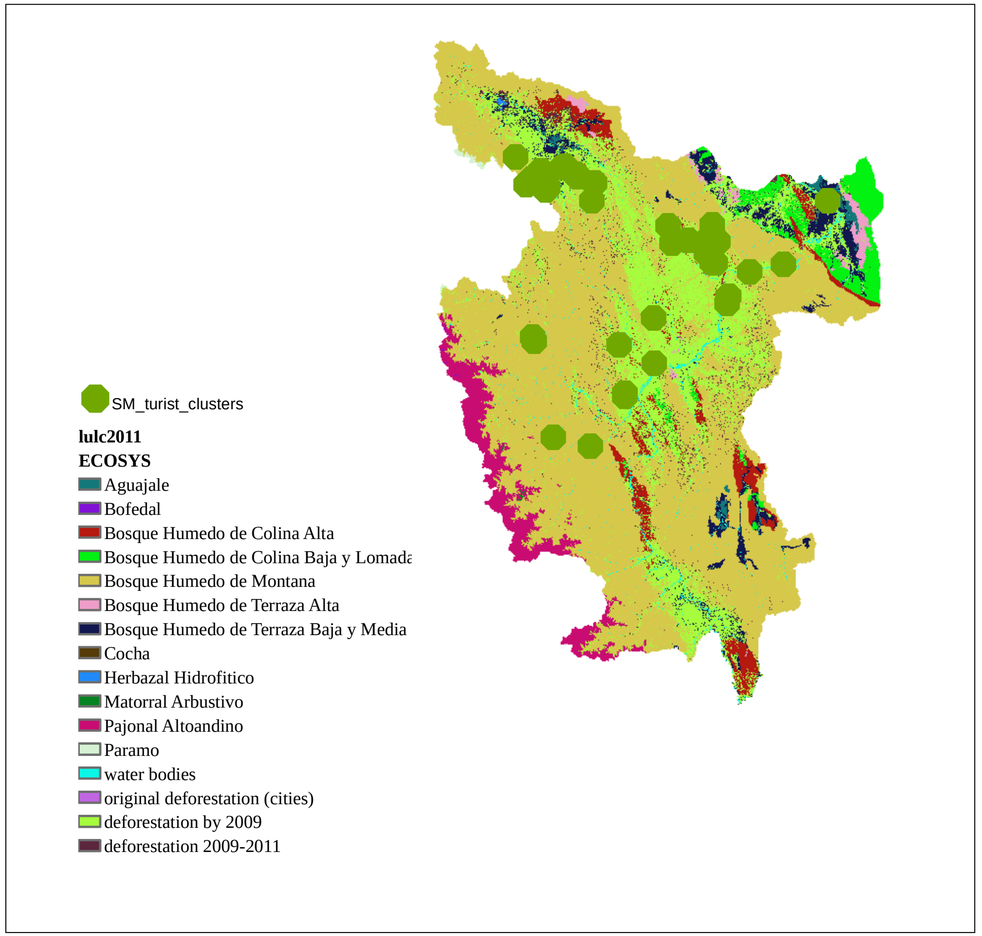
Sediment load (SL_1)



Sediment load (SL_2)

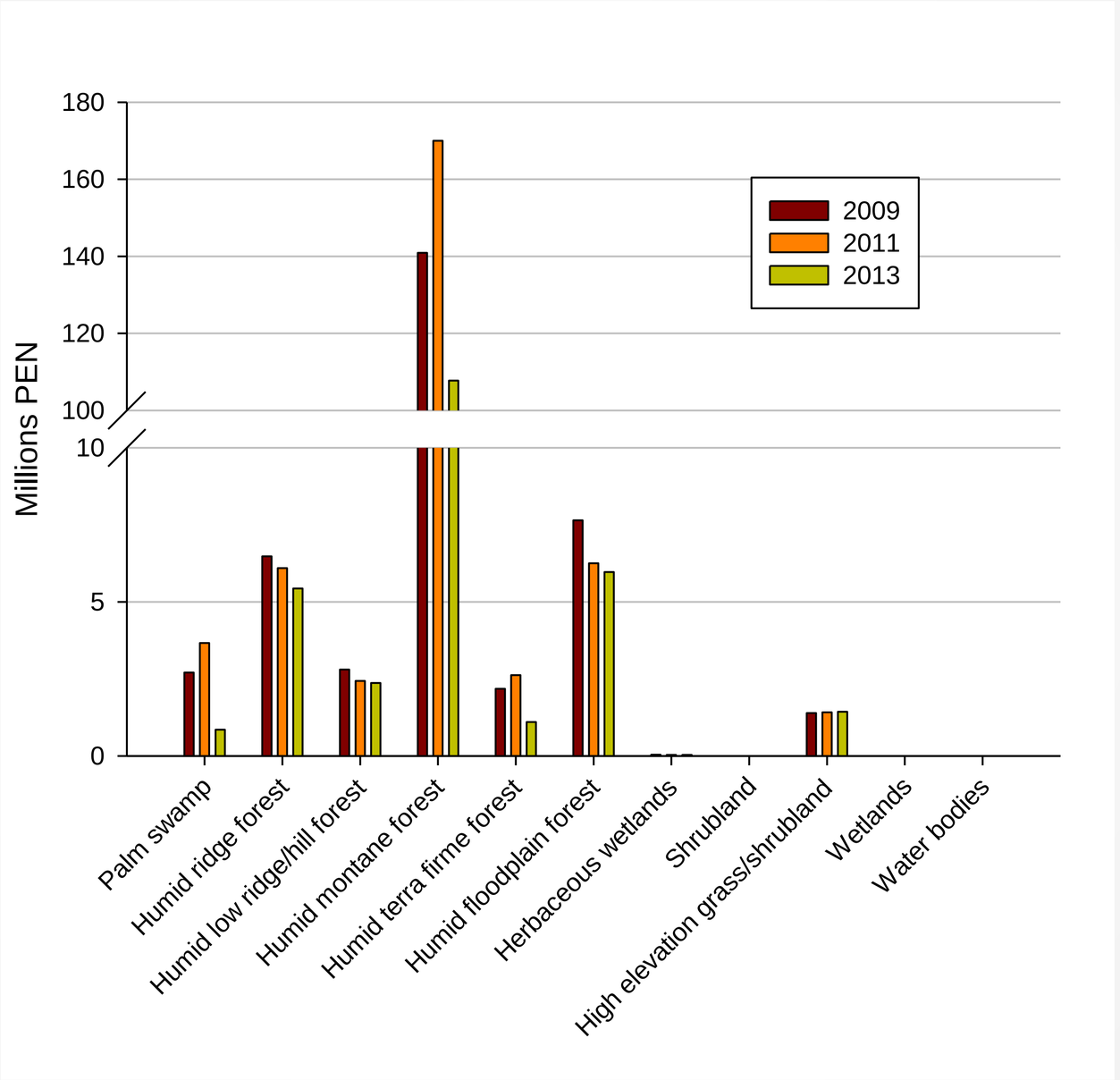
ECOTOURISM

Analyses	Methods	Data
Mapping	Mapping tourist spots in San Martin	Ecosystem maps National park layers Bird watching layer
Biophysical analysis	Survey existing databases for tourist information	Number of visitors Number of tourist-support businesses
Valuation	Per capita expenditure by tourists	Expenses for travel, food costs, overnight stay costs etc.
Reporting	Summarize results, create reporting tables.	Tables and figures produced from the results

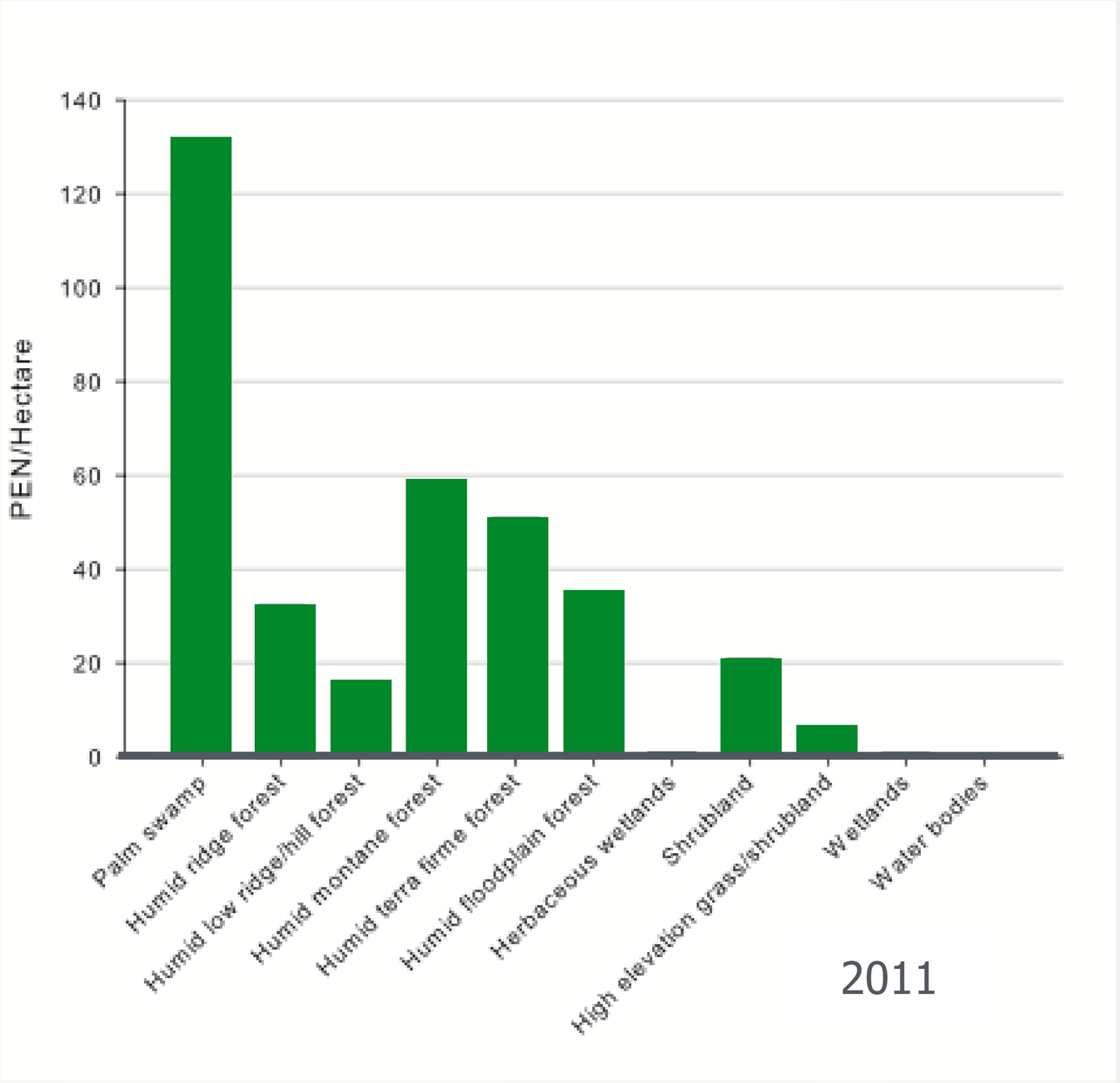


RESULTS SUMMARY

SERVICE FLOWS RESULTS



HIGH VALUE ECOSYSTEMS (VALUE PER HA)



VALUE TO THE ECONOMY

CONTRIBUTION OF ECOSYSTEMS TO THE REGIONAL ECONOMY WAS ESTIMATED AS 191 MILLION PERUVIAN SOL (ABOUT US$58 MILLION)

WHICH WOULD REPRESENT THE EIGHTH BIGGEST SECTOR IN SAN MARTÍN (OUT OF 32 SECTORS)

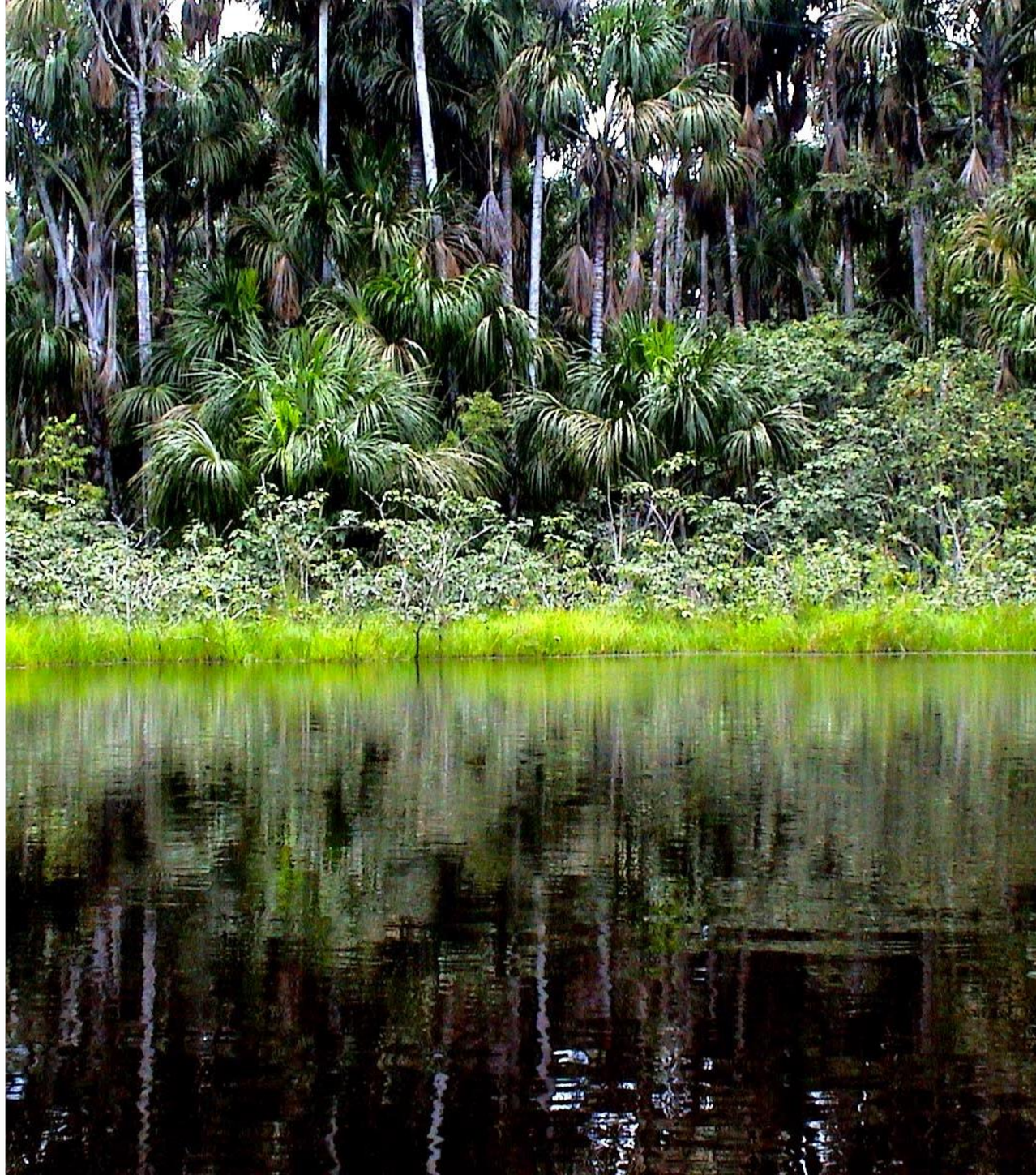
A NOTE ON POST ACCOUNT POLICY APPLICATIONS

Index and indicators to make decisions

- Ecosystem Benefits Index (EBI)
- Environmental Performance Index (EPI)

Indicators and analyses for specific sectors

- Ecotourism sector
- Rice and Palm Swamp
- Hydropower energy sector



A PARTNERSHIP OF MANY

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- Eliana Quispe

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- Richard Bartra

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ALA Administración Local del Agua
AAA Autoridad Administrativa del Agua
ANA Autoridad Nacional del Agua

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- Rosimeiry Portela (co-PI)
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Geospatial software for monitoring and modeling the Earth system

BROAD LESSONS LEARNED

- Ensure accounts are developed to inform key policies and decisions (particularly around SDG, Paris, etc/.)
- Important to formalize institutional arrangements, leverage strong partnerships and build awareness and capacities
- Data gathering and quality control is a major effort
- Utilize multi-disciplinary teams and expertise, maintain a research component and follow the SEEA guidelines
- Ensure there is time and resources for post-account applications/policy

WHAT WENT WELL AND WHAT DIDN'T?

- Value of the full suite of integrated ecosystem accounts widely recognized
- INEI (NSO of Peru) took this accounting all the way to ESUT level
- Amazing support from the regional government agencies
- Data: we had some good quality data on many benefits and beneficiaries (e.g. ecotourism)

What didn't go well?

- SEEA accounts continue, but could not be replicated in other areas
- Data: in some instances we didn't have enough data which are spatially explicit
- Dependence on modeling has drifted results away from SEEA accounting principles

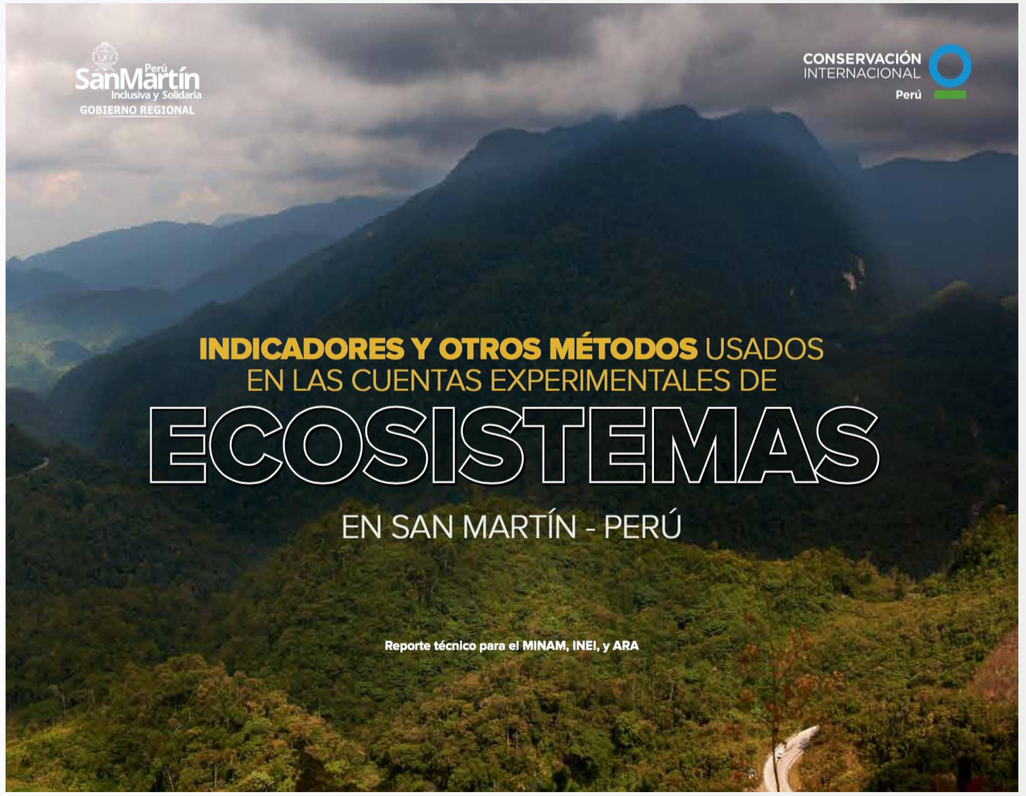
HOW ARE THE RESULTS USED?

- The results influenced infrastructure development plans, i.e, modified road construction projects to avoid impact on ecosystems and fauna (ARA)
- Reconsideration of policy for palm swamps. Some testing undergoing.
- EBI used for foresty/landuse zoning efforts currently underway
- Results used in a range of other programs (some CI) demonstrating extended applications (carbon, sustainable landscape planning, IEEM pilot)

FOR MORE INFORMATION

Technical Report and Results

https://tinyurl.com/EcosistemasSanMartin



Indicators and Methods

https://tinyurl.com/EcosistemasSanMartin2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