BANCO DE GUATEMALA

System of Environmental Economic Accounting (SEEA) in Guatemala

Víctor Flores, Macroeconomic Statistics Director
Juan Pablo Castañeda, Advisor

Presentation to the 31st London Group Meeting, Tallinn, Estonia

September 25, 2025

Towards a structured SEEA data system in developing countries: Prospects for SEEA implementation in Guatemala

Juan Pablo Castañeda S.
Advisor of the SEEA implementation in Guatemala
Bank of Guatemala

Relevance of SEEA for Guatemala

The implementation of the SEEA represents a **strategic tool** for integrating the value of natural capital into economic planning and the formulation of public policy.

SEEA will enable to:

- Examine in more detail the links between the economy and the environment
- Understand the contribution of natural capital to the economy
- Produce environmental-economic indicators
- Influence policies to strengthen natural resource management, biodiversity conservation, and climate change adaptation
- Encourage green investments
- Inform about systemic risks and vulnerability due to environmental degradation

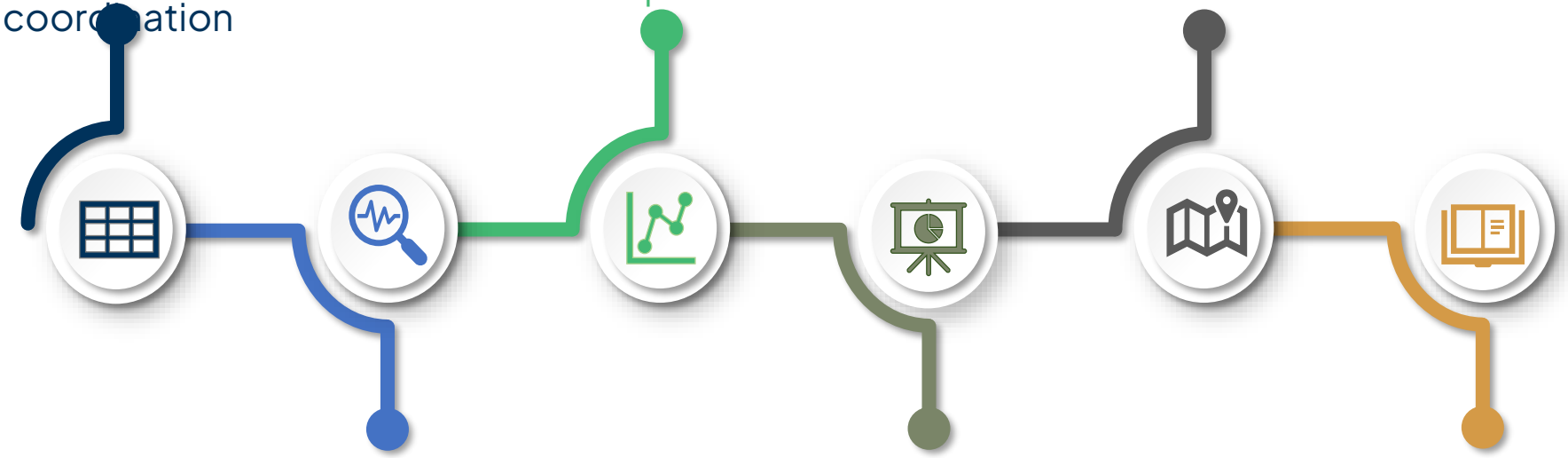
SEEA Institutionalization

Addressing the need and demand to analyze the links between the economy and the environment

The implementation of SEEA is an **institutional priority** for the Central Bank of Guatemala. It is part of our **2022–2026 Institutional Strategic Plan**, within the vision of adopting new standards, aligning with international best practices, and improving macroeconomic statistics.

Self-funded project

Project Life-cycle (Timeline)



Sept. 2023
Collection of basic statistics and coordination

July 2024
Consistency analysis and harmonization process

March 2026
Accounts compilation and review process

June 2026
Presentation of preliminary results

August 2026
Methodology development

September 2026
Results dissemination

Establishment of the Environmental Accounting Section within the Macroeconomic Statistics Department

A multidisciplinary team composed of professionals in economics, biology, ecology, chemistry, aquaculture, environmental sciences, agricultural sciences, and forestry.





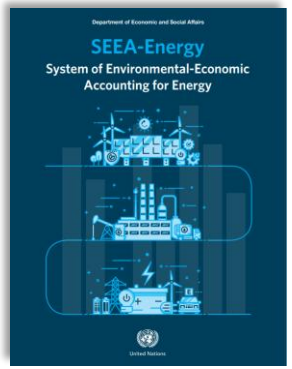
Methodological framework and best practice (SEEA Family)

System of Environmental Economic Accounting

SEEA key handbooks

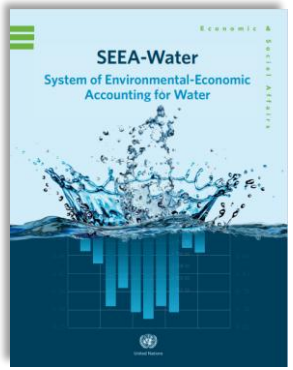
Complementary handbooks
(Thematic accounts)

Material Flow

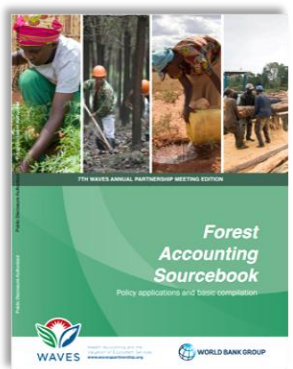


Energy and Emissions

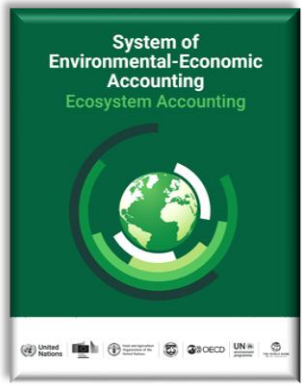
Solid Waste



Water



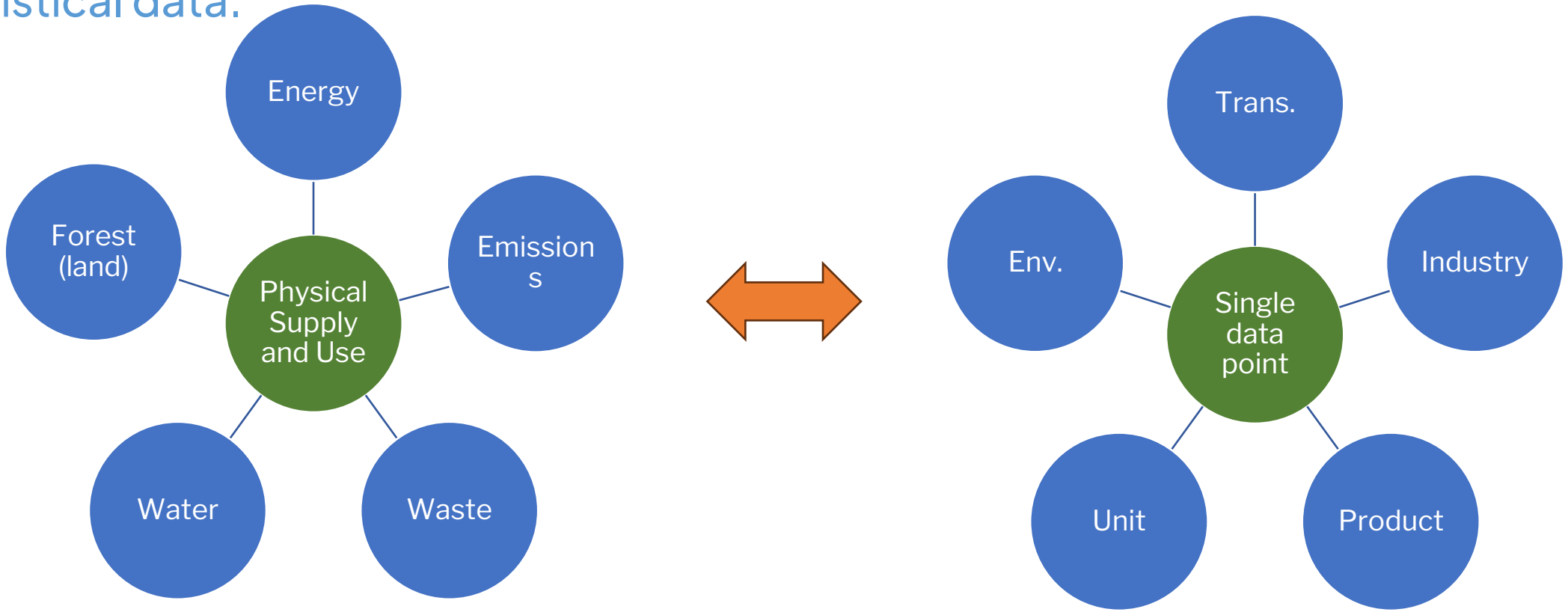
Forest



Ecosystem

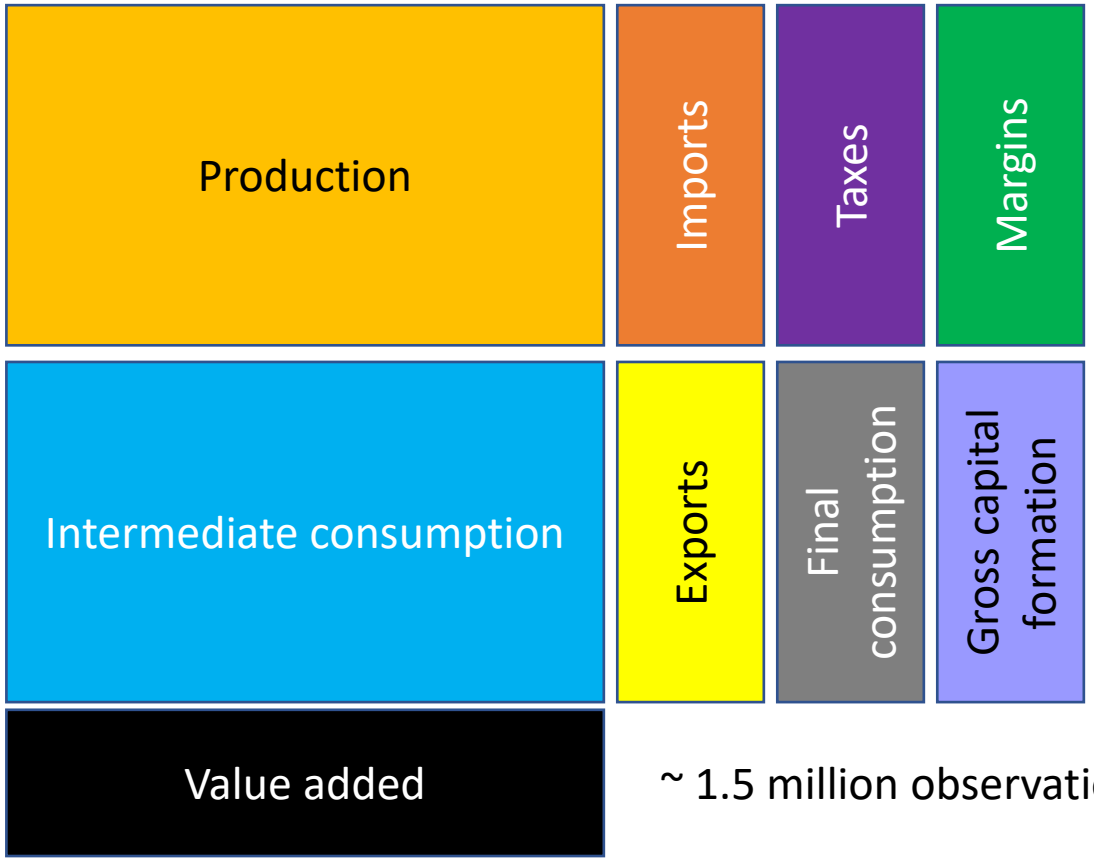
Key features of SEEA implementation in Guatemala (1)

CURRENTLY UNDERWAY: Focusing on a structured and systematic data framework, emphasizing harmonization and the comprehensive management of statistical data.



Key features of SEEA implementation in Guatemala (2)

CURRENTLY UNDERWAY: Developing a stable/robust database without reducing flexibility.



~ 1.5 million observations

long

i	*j*	*stub*
1	1	4.1
1	2	4.5
2	1	3.3
2	2	3.0

reshape ⟷

wide

i	*stub1*	*stub2*
1	4.1	4.5
2	3.3	3.0

To go from long to wide:

```
                                  j existing variable
                                 /
reshape wide stub, i(i) j(j)
```

To go from wide to long:

```
reshape long stub, i(i) j(j)
                           \
                            j new variable
```

Key features of SEEA implementation in Guatemala (3)

EXPERIMENTAL: Making SNA data spatially explicit, taking advantage of recent regionalization work.

Actividad económica agropecuaria (Q1,000)

Q100	Q0	Q50
Q150	Q0	Q200
Q0	Q100	Q400

+

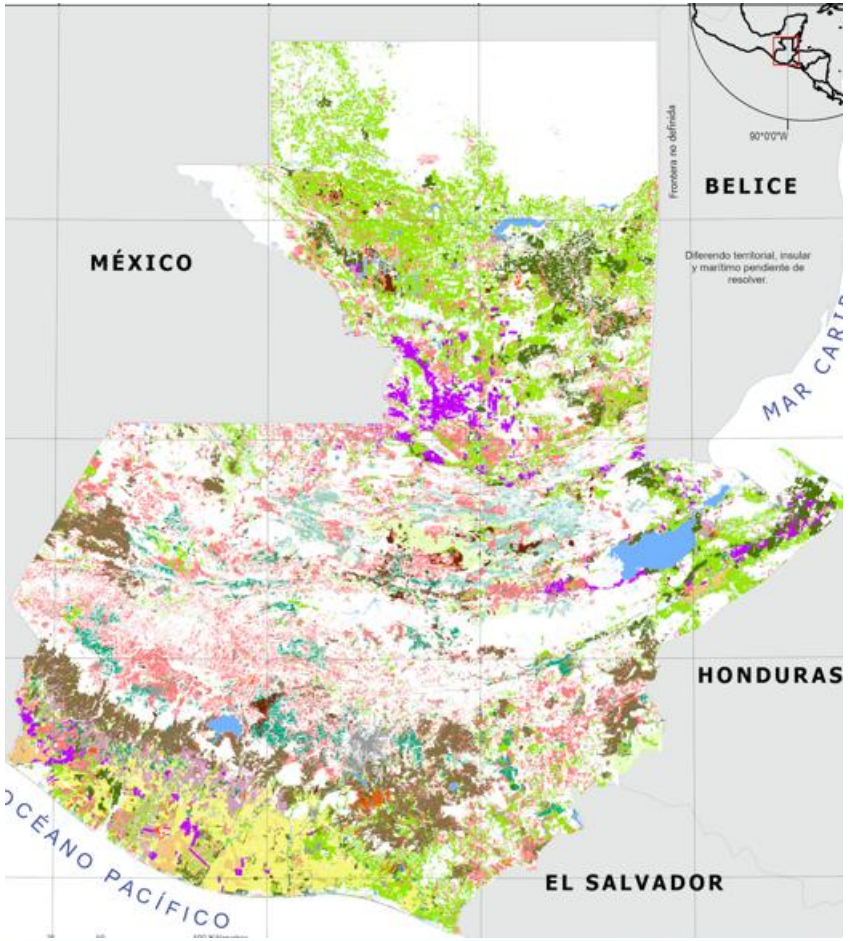
Actividad económica no agropecuaria (Q1,600)

Q0	Q800	Q0
Q0	Q500	Q0
Q300	Q0	Q0

=

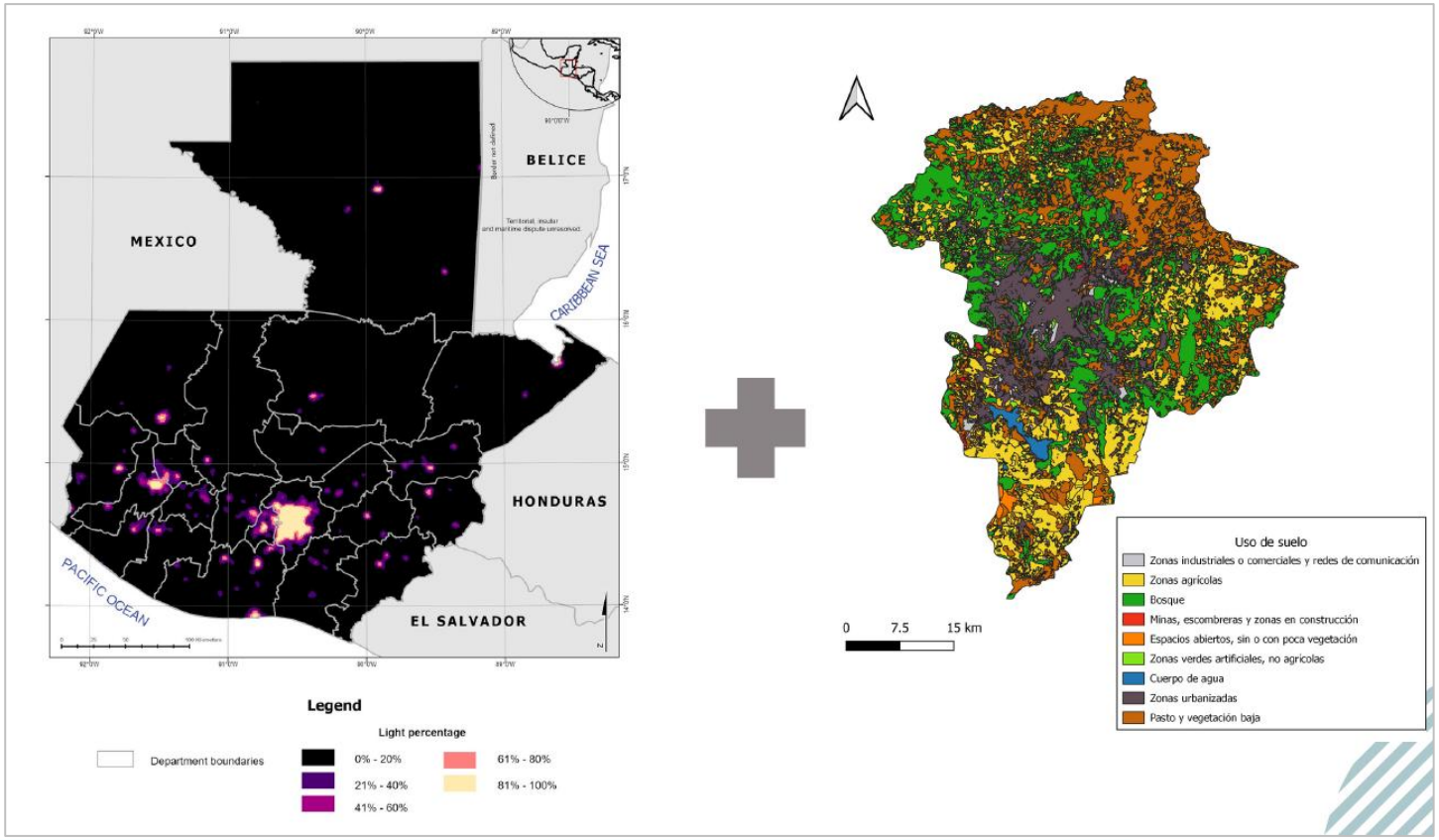
Actividad económica total (Q2,600)

Q100	Q800	Q50
Q150	Q500	Q200
Q300	Q100	Q400



Key features of SEEA implementation in Guatemala (4)

EXPERIMENTAL: Reasonable and efficient ways to regularly update the SNA/SEEA



Comparación de resultados de distintos ejercicios de regionalización del PIB en Guatemala

Con ciertas excepciones, los ejercicios Iarna 2 e Icesh muestran resultados bastante compatibles entre sí

Departamento	Fundesa	Iarna 1	Iarna 2	Icesh
ALTA VERAPAZ	54%	14%	30%	40%
BAJA VERAPAZ	64%	15%	27%	52%
CHIMALTENANGO	87%	79%	39%	65%
CHIQUIMULA	89%	56%	51%	59%
EL PROGRESO	105%	84%	64%	130%
ESCUINTLA	90%	161%	122%	257%
GUATEMALA	217%	212%	279%	201%
HUEHUETENANGO	60%	33%	44%	44%
IZABAL	92%	74%	118%	73%
JALAPA	71%	50%	34%	48%
JUTIAPA	75%	56%	32%	60%
PETÉN	58%	69%	109%	55%
QUETZALTENANGO	95%	158%	80%	77%
QUICHÉ	50%	15%	25%	39%
RETALHULEU	82%	76%	49%	68%
SACATEPÉQUEZ	117%	343%	98%	251%
SAN MARCOS	71%	44%	38%	42%
SANTA ROSA	76%	37%	40%	67%
SOLOLÁ	69%	54%	32%	56%
SUCHITEPÉQUEZ	86%	35%	38%	66%
TOTONICAPÁN	67%	138%	23%	43%
ZACAPA	105%	138%	71%	113%

Se muestra el PIB per cápita de cada departamento como porcentaje del nivel nacional

Tabla: IARNA/URL • Fuente: IARNA/URL, ICESH/URL y FUNDESA • Creado con Datawrapper

Key features of SEEA implementation in Guatemala (5)

EXPERIMENTAL: Building the connection with ecosystem accounts –

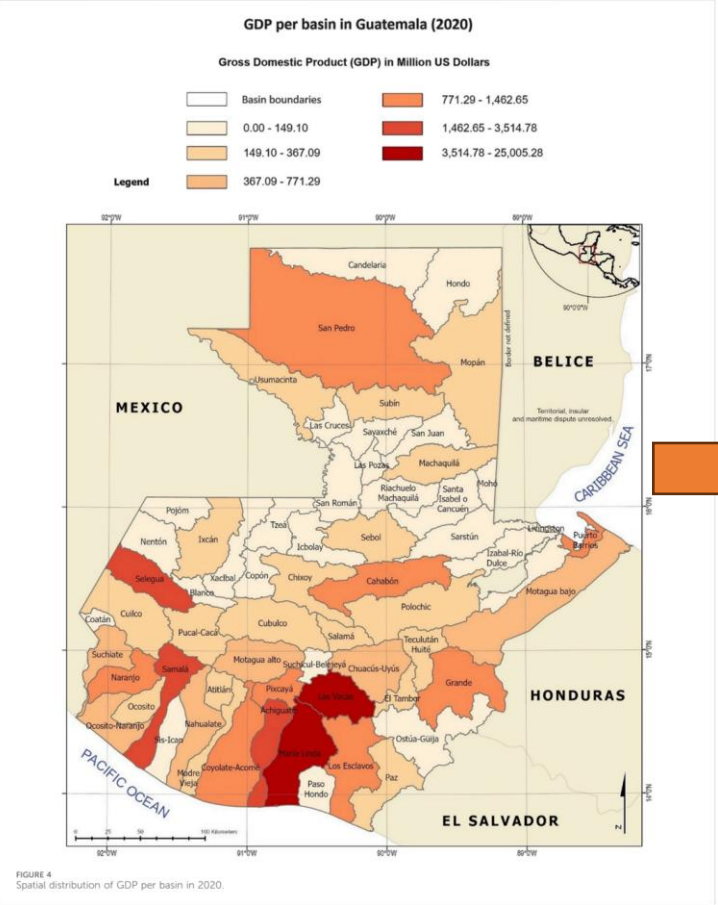


FIGURE 4
Spatial distribution of GDP per basin in 2020.

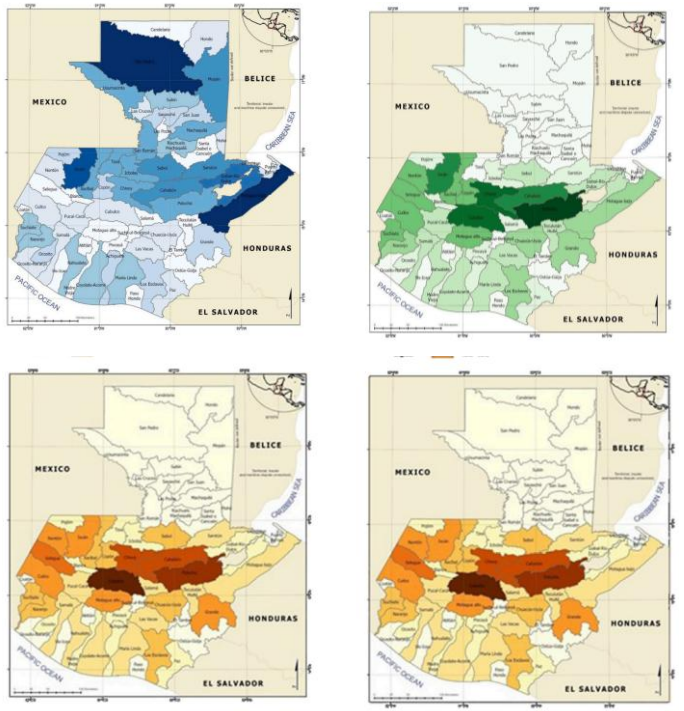


FIGURE 3
Landscape disservices: exported and deposited sediment per basin in 2020 at the national scale.

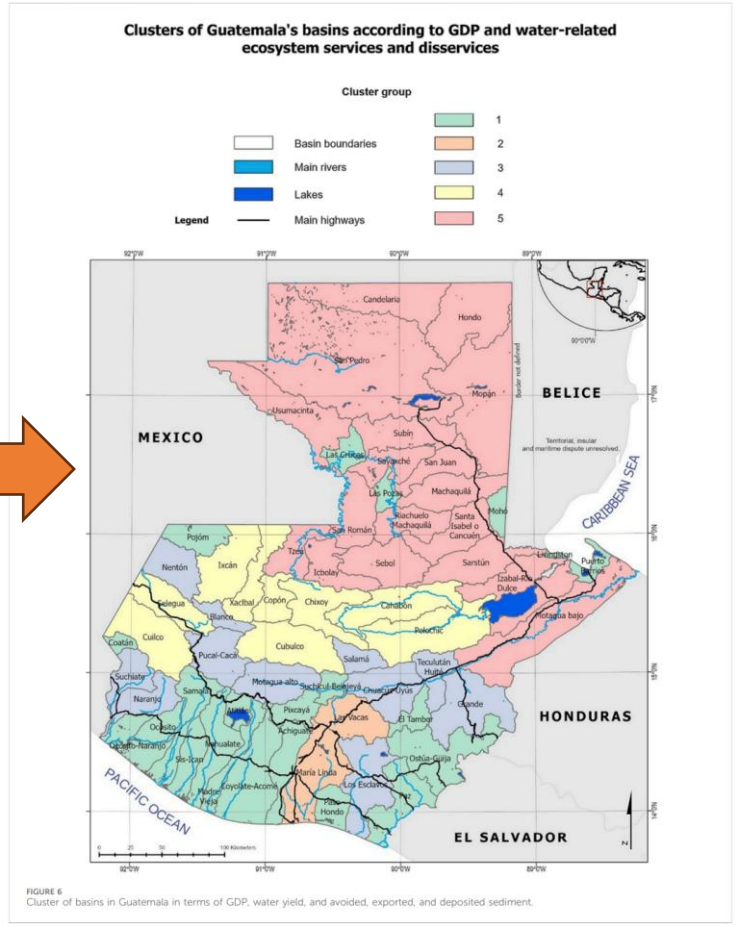


FIGURE 6
Cluster of basins in Guatemala in terms of GDP, water yield, and avoided, exported, and deposited sediment.

Pinillos D, Reyes P, Barrera V, Pineda P, Goyzueta JM, Schulte R and Castaneda JP (2025) Economic system impacts and dependencies on water-related ecosystem services: defining analytical spatial units from an ecosystem accounting perspective in Guatemala. Front. Environ. Sci. 13:1459828. doi: 10.3389/fenvs.2025.1459828

Key features of SEEA implementation in Guatemala (6)

EXPERIMENTAL: Ecological Integrity and Ecosystem Areas

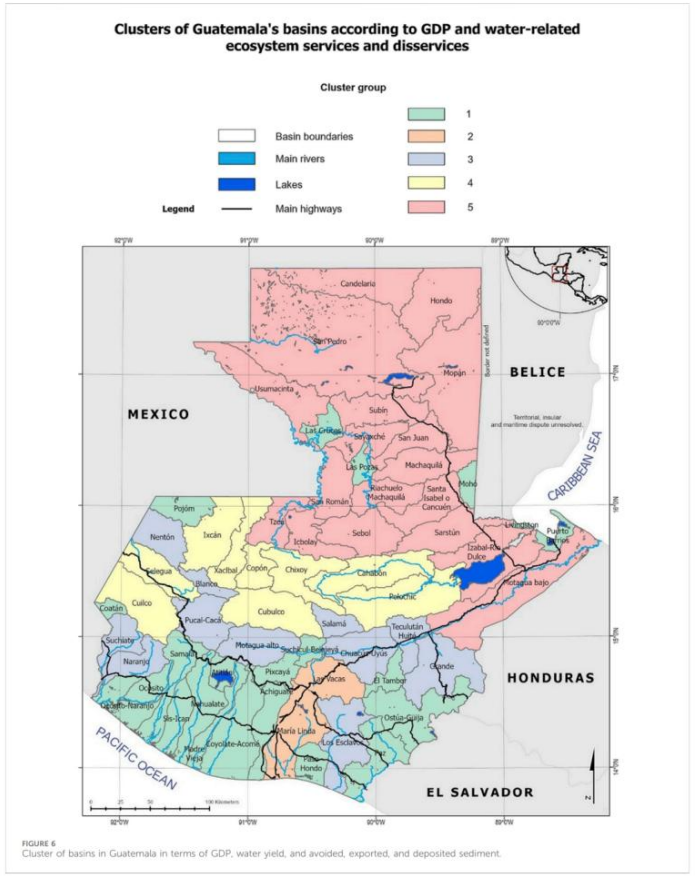
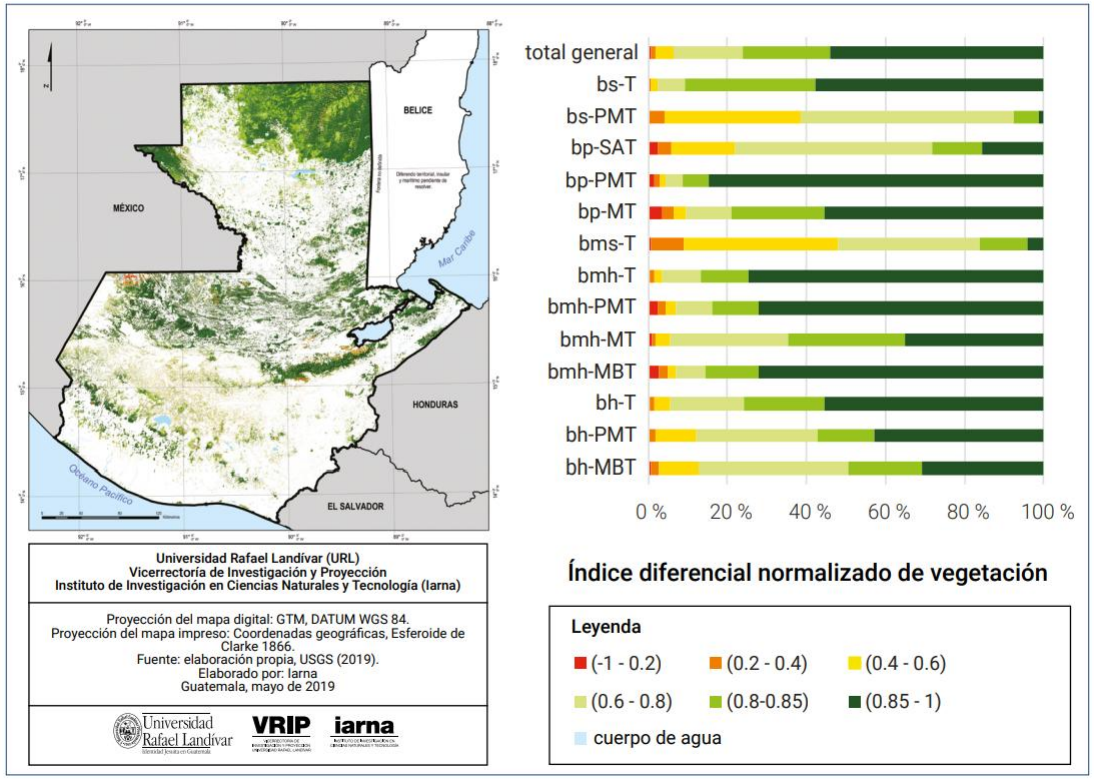


FIGURE 6
Cluster of basins in Guatemala in terms of GDP, water yield, and avoided, exported, and deposited sediment.

Figura 9

Integridad ecológica de las áreas forestales con base en el índice diferencial normalizado de vegetación (NDVI) para Guatemala (año 2019)



Sara Ortiz, Daniela Herrera, Ottoniel Monterroso (2025) Servicios ecosistémicos en Guatemala: conceptos, contabilidad y perspectivas. Clavius 3:3-32,DOI: 10.36631/CLV.2024.02.03.01

Outlook of the next London Group meeting

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The Central Bank of Guatemala

Welcome!
London Group on Environmental Accounting

32nd Annual Meeting
Antigua Guatemala, Guatemala

7-10 September 2026

BANCO DE GUATEMALA

Preservando el valor de nuestro país