Integrated Economic-Environmental Modeling (IEEM) for Evidence-Based Public Policy and Investment Design.

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MOVING FORWARD

MOVING FORWARD: KEY RESEARCH CHALLENGES

Methods and rules of thumb for linking changes in **regulating** ES and environmental quality back to the economy. Two main approaches:

1. **IEEM and spatial ES modeling.**

Almost (always?) implies LULC change (or changes in practices within an LULC class).

- Erosion mitigation and water purification ES: agricultural productivity; hydropower potential; water purification costs; human health; tourism; fisheries. Environmental investments in Uruguay- water purification costs and tourism.
- Coastal vulnerability: human settlement; lives/labor; infrastructure; land availability. Ecological tipping point in Thailand (various pathways).
- Crop pollination: agricultural productivity; human nutrition; food security. Various applications.
- Cultural and recreational ES as affected by natural capital stocks and condition: tourism demand.
- Climate change mitigation ES and carbon: incentives for maintaining forest cover (commercial sustainable forest management, protected areas).

MOVING FORWARD: KEY RESEARCH CHALLENGES

2. IEEM and standardized integration of damage functions.

Where single country policy may not change outcomes (e.g. stopping deforestation in country x will marginally reduce emissions, but not enough to individually affect sea-level rise). Consider scenarios with/without global cooperation.

- Climate change impact on coastal zones via sea level rise, storm surge, coastal flooding: human lives; settlements and infrastructure;
- Climate change impact on temperature and precipitation: health/lives; labor productivity; agricultural productivity; land availability.
- Climate change and natural disasters: human settlement/lives; infrastructure.
- Greenhouse gas emissions: air quality and health.

MOVING FORWARD

- Improving access and usability of IEEM+ESM tools (LULC change model and integration with IEEM+ESM). ES and LULC datapackets. IEEM models.
- Expanding IEEM coverage around the world.
- Collaboration and generating demand for integrated analysis mainstreaming.

SOME OF YOUR IDEAS

- Spatial targeting of land uses (NDCs) according to value/quantity of ES at a given pixel.
- Cost effectiveness of conservation (NDCs); minimum size, opportunity cost of land.
- Chile's NDCs and endogenous land use; what would be the policy levers?
- Time series analysis of ecosystem service supply in Chile.
- Projecting GDP with and without ES decline. Generic baseline vs. baseline deforestation and land degradation effects on ES provision (tipping point approach).
- Consider ecosystem asset condition; degraded vs. not degraded forest and how its condition affects ES provision.

WHERE TO LEARN MORE ABOUT IEEM+ESM

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- Check out the OPEN IEEM Platform: https://openieem.iadb.org/

-tutorials, user guides, online training, models/data for Latin America and the Caribbean.

- Have you been to our library yet?
- For other regions of the world, resources will be made available here soon! https://www.rmgeo.org/
- Where interests align, we collaborate with motivated individuals to develop novel applications and push frontiers.
- **Thank you for your participation and interest!**

Developing IEEM Modeling Infrastructure and Capacity Around the World.

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