NCA AND IEEM: AN INTRODUCTION

IEEM VIDEO
1. WHAT'S NEW?
Publication of the first environmental-economic statistical standard (SEEA- System of Environmental Economic Accounting), and advances in economic modelling.

2. WHY IS THIS CRITICAL FOR IEEM?
The SEEA is compatible with a country’s National Accounts. This enables the modelling of entire economies and the evaluation of public policy and investment impacts on economic and environmental (green and brown) indicators.

3. WHY IS THIS IMPORTANT?
The integration of natural capital in IEEM makes it possible to analyze impacts not only on economic flows (gross domestic product), but also on the wealth of a nation which is fundamental for the economic growth and development of future generations.

4. WHAT IS THE BENEFIT?
IEEM’s language is very much economic which helps create openings for dialogue with Ministries of Economics and Finance. IEEM supports countries in prioritizing actions relevant to achieving the SDGs and NDCs.

For further information on IEEM platform, please contact Om Banderje at cniki@iadb.org
1. IEEM GENERIC, Generic version that can be applied to any country with strong national accounts and environmental accounts under United Nations Systems. IEEM-GEN is programmed in GAMS and in GEMPACK software and is available in a single country or multi-regional version. The model comes complete with model code, user manual and mathematical model statement.

2. IEEM-GUA. The first IEEM developed, this IEEM for Guatemala is available in single country and multi-regional (20 regions) versions, and is calibrated with the most recent National and Environmental Accounts.

3. IEEM-CRI. This version of IEEM for Costa Rica is calibrated with the most recent National and Environmental Accounts.

4. IEEM-COL. This version of IEEM for Colombia is calibrated with the most recent National and Environmental Accounts.

5. IEEM-RWA. Developed through participation in a Science for Nature and People Partnership, IEEM-RWA is the first IEEM developed outside the LAC region.

6. IEEM-GUA + ESM. This version of IEEM is linked to a land use land cover and ecosystem service modelling and accounting framework.

7. IEEM-COL + ESM. This version of IEEM is linked to a land use land cover and ecosystem service modelling and accounting framework.

8. IEEM-WEB. This is an IEEM web interface hosted on an external server enabling one to ‘test-drive’ policy simulations with IEEM, run scenarios, generate results and present them on an interactive geographic information system.
IEEM Outputs: Training + Materials


2. National Planning Department of Colombia. Delivering one week of IEEM training (May 8 to 11, 2017) including a half day event open to Government Ministries, think tanks and academia to present IEEM and its application to public policy. Pursuing joint application of IEEM to various theme of interest for the DNP with one peer reviewed publication and policy brief to follow.

3. Guatemala’s Secretariat for Planning and various other institutions in Guatemala including the Universidad Rafael Landívar and IARNA. One week training course and half day event open to Ministries, think tanks and Academia presenting IEEM; delivered August 29 to September 2 2016.

4. United Nations ECLAC. Providing model and training materials in on-demand basis.
IEEM Integrated Economic-Environmental Modeling

IEEM OUTPUTS: COMMUNICATIONS
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1. Seminars and Brown Bag Lunches (BBL).
   - IEEM seminar: organized by Montclair University, Montclair, April 28, 2015.
   - IEEM seminar: organized by IEEM: speakers Onil Banerjee (IDB), Carl Obst (IDEEA), and Juan Pablo Catañeda (World Bank), IDB Headquarters, Washington DC, June 14 2016.
   - IEEM organized session at the Global Trade Analysis Project (GTAP) Annual Conference, organized by IEEM with speakers: Onil Banerjee (IDB), Carl Obst (IDEEA) and Glyn Wittwer (Monash University), World Bank, Washington DC, June 15, 2016.
1. Seminars and BBLs continued.
   - IEEM seminar at the Global Trade Analysis Project (GTAP) Annual Conference, Purdue University, West Lafayette, June 7, 2016.

2. IEEM Video. Seven minute video demonstrating origins of IEEM and applications to evidence-based policy design (graphic design with voice-over).

3. Other communications materials include one IEEM infographic and 4 policy briefs.
IEEM Outputs: Chapters/Journal Publications


IEEM APPLICATIONS

IEEM + ESM
RWANDA
IEEM Integrated Economic-Environmental Modeling

IEEM + ESM

Environment
- Mineral and Energy Resources
- Land
- Soil Resources
- Timber Resources
- Aquatic Resources
- Water Resources

Economy
- Production
  - Firms

- Employment
  - Households

Provisioning ecosystem services (raw materials for production)
Non-provisioning ecosystem services
Effluents and Emissions
Environmental investments

Consumption
PRODUCTS
IEEM Integrated Economic-Environmental Modeling

RWANDA GREEN GROWTH

- Achieve middle income country status.
- Transform economy from subsistence-based to knowledge-based.
- Important aspects of Strategy are to increase agricultural productivity and forest cover.
## SCENARIOS

### FOR

Increase forest cover to 30%, planting 103,504 ha.

Cost: **US$285.6 million** over 12 years.

### FUEL

Fuelwood provides 86% of energy. More efficient cookstoves/charcoal kilns improve efficiency by 25%.

Cost: **US$4.5 million** over 5 years.

### IRRIG

Increase irrigated area by 85,473 ha for 25% increase in productivity.

Cost: **US$972.5 million** over 12 years.
FOR expansion is in competition with agriculture.

FUEL allows reallocation of factors to other sectors (knowledge/services economy).

FOR RESULTS: GDP, DIFFERENCE FROM BAU
LAND USE LAND COVER MODEL

Inputs Raster
- Slope
- LULC Map
- Road Network
- Land Use Master Plan agricultural and forestry areas
- Political boundaries

Inputs Feature Layers

Model Variables
- Starting year
- Time increment
- Hectares
- Scenario Name
- Land use name

If previous criteria is met, the layer is available for polygon assignment (conversion to agriculture/forestry)

Within 2000 meters from road
Within MP areas designated for agricultural and forestry
Politically identifiable

Python script that for each polygon:
Calculate area, assign polygon to scenario and land use; choose largest first, with minimum 1 hectare in size

FINAL LULC LAYER