

# THE IEEM PLATFORM AND GREEN GROWTH

## Evaluating the economic and ecosystem service impacts of Green Growth strategies in Rwanda



Some ecosystem services like food and fiber have a market price but many other ecosystem services like soil erosion or flood mitigation are not valued in the market or in the national accounts, nevertheless they are critical to human well-being

### 4 IEEM+ESM delivers spatially explicit, evidence-based policy advice on the optimal portfolio of Green Growth investment strategies

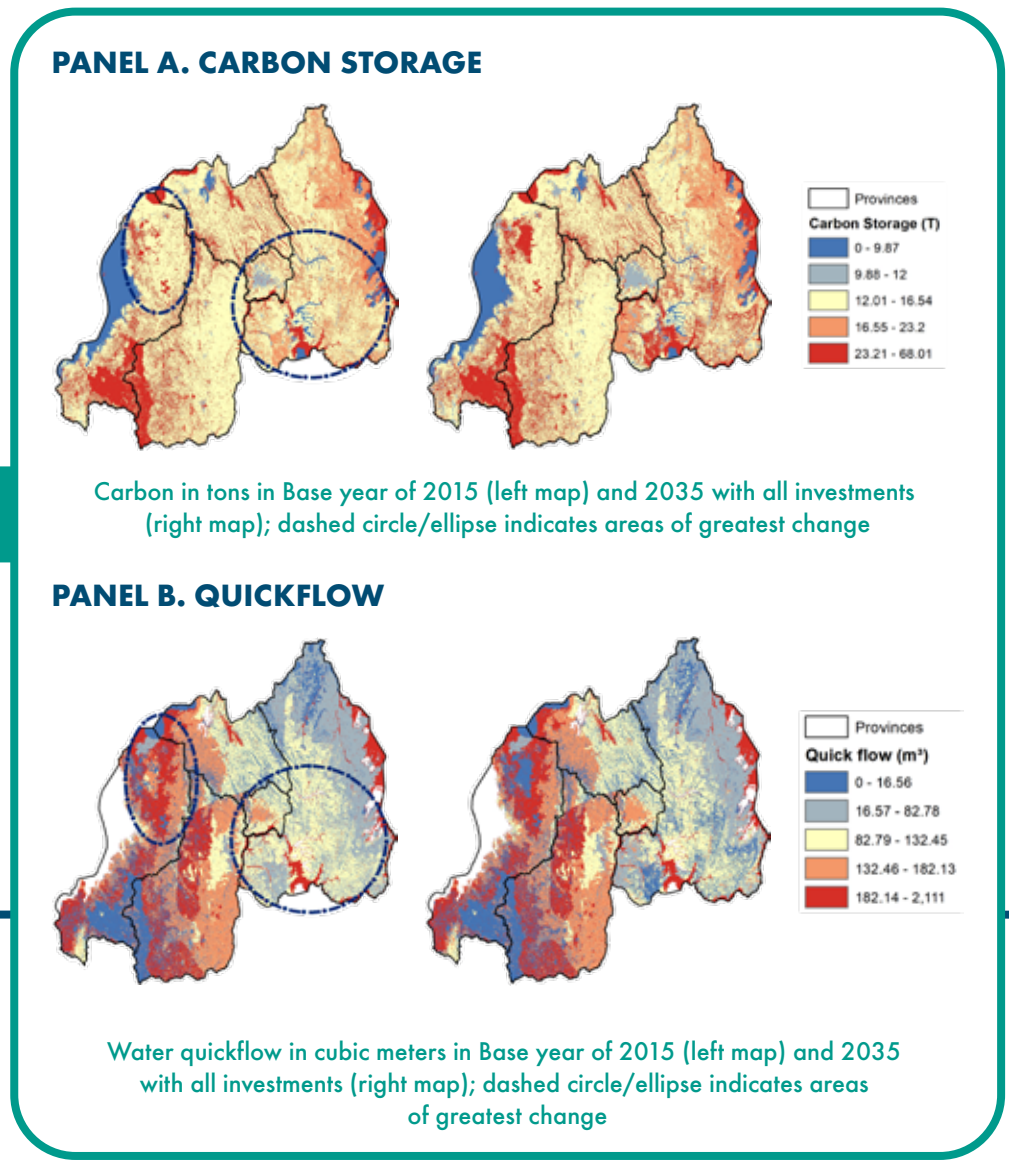
- Impacts on ecosystem services are not homogenous across the landscape and knowing the location, magnitude and timing of change is critical for policy makers to target action
- Investment in fertilization, irrigation and efficient fuelwood cookstoves delivers important economic benefits to households
- At the same time, expanding forest cover provides fuelwood and other raw materials, reduces nutrient and sediment exports, and enhances water recharge
- Increased forest cover also increases carbon storage, helping to mitigate climate change

### 3 IEEM+ESM revealed that:

- Expanding forest cover generated faster economic growth, greater carbon storage and local water recharge, and reduced nutrient and fertilizer run-off
- Expanding irrigated agriculture had a positive impact on economic growth with little impact on ecosystem service supply when compared with the baseline
- Increasing fertilization, given the very low baseline rates of fertilizer application, resulted in the greatest economic gains, increasing both GDP and genuine savings by US\$2,781 million and US\$713 million, respectively
- Fertilization also resulted in increased nutrient run-off which has implications on water quality and water purification costs

### 1 The Integrated Economic-Environmental Modeling (IEEM) Platform linked with Ecosystem Services Modeling (IEEM+ESM) shows how investment in Green Growth affects economic development, natural capital and ecosystem services

Green growth operationalizes the concept of sustainable development and is defined as growth that is efficient, clean and resilient



### 2 We applied IEEM+ESM to evaluate the economic, natural capital and ecosystem service impacts of Green Growth Strategies in Rwanda:

- We consider investments in increasing agricultural output and income through fertilization and irrigation, increasing forest plantations, and installing more efficient fuelwood cookstoves in households
- Our analysis is spatially explicit, providing estimated economic impacts at the national and provincial level, and; ecosystem service impacts at 30 meter spatial resolution



**Authors:** Onil Banerjee, Kenneth J. Bagstad, Martin Cicowiez and Sebastian Dudek.  
**Editor:** Darrel Perez  
**For more information on the IEEM Platform, contact:** Onil Banerjee, onilb@iadb.org

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