Assessing the land resource–food price nexus of the Sustainable Development Goals

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The fundamental question:

How do we **manage trade-offs** among 17 goals to make progress on the complete agenda?
Tradeoffs

Sustainability is not pursued in a vacuum:

Ambitious conservation policies will lead to food price increases.

The question is how to manage tradeoffs to live within resource budgets.

Ex: 1st generation biofuels
Analysis framework:

- Looking at land system-related SDGs
- Based on the policy process
- Not trying to identify the “best” policy directly
- Can we see tradeoffs using a model like GLOBIOM?
- Can these be independent of scenario construction?
Goals

- Identify thematic clusters of goals
Goals into Policy

- Identify thematic clusters of goals
- Pair each cluster with a range of policy options (global implementation)
Goals into Policy into GLOBIOM

- Identify thematic clusters of goals
- Pair each cluster with a range of policy options

• Construct scenarios from unique combinations of policies
GLOBIOM into indicators

- Planetary boundaries define the solution space for environmental SDGs.

- Fertile soil, stable growing conditions, clean water for drinking and agriculture are foundational to other goals.

- Indicators & benchmarks for many targets.

- Good place to start looking for co-benefits and tradeoffs.
Each scenario is assessed on food prices & environmental outcomes decadally through 2050.
X-axis: environmental “score”
LULUCF emissions, agricultural water use, deforestation, biodiversity loss, fertilizer use

Y-axis: GLOBIOM food price index
Tradeoffs

More ambitious conservation agendas lead generally to higher food prices.
Tradeoffs

• We can use GLOBIOM to see tradeoffs

• Conservation policies included here can increase food prices by up to 20% in 2030

• There is a tradeoff efficiency frontier that limits joint food price—environmental outcomes.

• So the questions become:
  
  • What are we willing to pay or give up?
  
  • Can we move the tradeoff frontier?
Co-Benefits

Delayed or ill-considered action can increase the costs of essential conservation measures.

Sustainable Consumption & Production (goal 12) can achieve conservation & reduce food prices.
Co-Benefits

Sustainable Consumption & Production radiate co-benefits and create opportunities to achieve multiple goals.

- Energy storage
- Fertilizer & water efficiency
- Climate-resilient agricultural infrastructure
- Waste & overconsumption reduction
Silos vs. Systems

• Healthy ecosystems are essential to development, but entail trade-offs.

• Conservation measures affect food prices, but delayed action on climate will lead to even deeper food insecurity.

• Sustainable Consumption & Production are key to achieving both environmental and food security targets simultaneously

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Alternative Slides
Trade-offs

Sustainability, equity, and inclusivity cannot be pursued independently:

New IIASA research shows that conservation policies lead to food price increases.