TEEB for Agriculture and Food:

Expert workshop on SDGs/chemicals & waste
Geneva, April 2016

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The ‘eco-agri-food’ system complex

HUMAN (economic & social) SYSTEMS
- Irrigation
- Fertilizer
- Pesticides
- Bio-Technology
- Labor
- Breeding
- Machinery
- Energy Appropriation
- Health Impacts

AGRICULTURAL & FOOD SYSTEMS
- Pollution (air, land & water)
- GHG / Climate
- Climate Air

SEED
- Nutrients
- Soil substrate
- Soil creation
- Nutrient recycling

PLANT
- Genetic variability
- Moderation of extreme events
- Erosion prevention
- Pollination

YIELD
- Water purification
- Pest control
- Decomposition
- Carbon fixation
- Habitat encroachment
- Loss of ecosystem complexity
- Species reduction
- Soil erosion
- Other (e.g., unknown impacts)

BIODIVERSITY & ECOSYSTEMS

Employment
- Food
- Fuels
- Fibers
- Agrotourism
- Cultural Heritage

invisible costs
invisible benefits
visible benefits
GOAL 2
END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

GOAL 15
PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal
Why is TEEBAgriFood focusing on health externalities?

- **Annually, the world uses about 3 million tons of pesticides**
  - an estimated 0.1% reach the target pests
  - Environmental impacts can include widespread decline of birds, amphibians, and beneficial insect populations

- **Pesticides can also enter human bodies directly and through food chains**
  - traces of DDT, lindane and dieldrin in fish, eggs and vegetables still exceed the safe range in India

- **As many as 25 million agricultural workers worldwide experience unintentional pesticide poisonings each year**
How can TEEBAgriFood Provide Evidence at the health-ecosystem interface?

1. **Individual sector studies to compare health impacts**
   - Production processes *versus* production systems

2. **Food chain analysis: what policies can change dietary patterns and health outcomes?**
   - Strategic behavior: asymmetric and incomplete information and links to **food labelling**
   - **Trade** agreements
   - **Behavioral** economics – ‘nudging’ behavioral change *versus* regulatory and pricing/market interventions

3. **The economic metric**
   - **how to value changes** in health outcomes?

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### Increasing rice yields vs Reducing water consumption

<table>
<thead>
<tr>
<th>Country</th>
<th>Water consumption costs ($/ha)</th>
<th>Revenue ($/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senegal (IL)</td>
<td>801 (SRI) 626 (Conventional)</td>
<td>2302 (SRI) 2422 (Conventional)</td>
</tr>
<tr>
<td>Philippines (IL)</td>
<td>1124 (SRI) 1692 (Conventional)</td>
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</tr>
<tr>
<td>Cambodia (RL)</td>
<td>1099 (SRI) 1422 (Conventional)</td>
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Thank You!

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