Integrated Food Production System
The Challenges

- More food
- Higher quality
- Safer

Demand

Less land
Less water
Climate changes

Conversion
Degradation

Human activities

Population growth
Economic development

Constraint
Today’s resource scarcity is not only an acute problem in isolated locations; it is also a global threat.

Schneider et al. (2011)
The global dimension of the threat:

- Total use of resources for food production over all countries has reached substantial proportions.
- Today’s societies are increasingly connected.
- Cumulative impacts of local land use decisions may cause significant global environmental feedback, foremost through climate change.
Use of resources has reached substantial proportions

- In 2005, agriculture occupied about 38% of the global land area (FAOSTAT, 2007)
- Agriculture would need an area equivalent to one half and two-thirds of the current terrestrial land area by 2030 and 2070, respectively

*Schneider et al. (2011)*
Global societies are increasingly connected

- More international trade
- National land use related policies are increasingly embedded in international policies
- Many different international treaties have been adopted

*Schneider et al. (2011)*
Impacts of local land use on global climate change

- Impacts on availability and fertility of land, the length of the growing season, fresh water endowments, pest occurrences, CO2 fertilization, and the frequency of extreme events related to draughts, flooding, fire, and frost

*Schneider et al. (2011)*
The Solution

INTEGRATED FOOD PRODUCTION SYSTEM

- Natural Resources
- Human Resources
- Technology
- Institutions
- Capital
- Policy & Regulation
Integrated assessments are only valuable if their results can be adequately understood, interpreted, and compared to other studies.

Schneider et al. (2011)
From the application of this model to four alternative development scenarios*, Schneider et al. (2011) gained several insights:

**First**
total global food production, consumption, and price levels are relatively stable until 2030.

**Second**
restricted arable land expansion into unmanaged forests has little impact on food prices.

**Third**
per capita income changes have the highest positive impact on per capita food consumption levels and exceed the individual impacts of technical change.

*Four scenarios Global Orchestration, Order from Strength, and Adaptation Mosaic of the Millennium Ecosystem Assessment and a revised B1 baseline emission scenario of the Special Report on Emissions Scenarios*
Required Technology

- On-Farm Technology
  - Seed
  - Fertilizer
  - Pesticide
  - AGRIC. Machinery

- Distribution Technology
  - Packaging
  - Storage
  - Transport
  - Marketing

- Processing Technology
  - Traditional
  - Modern

- Technology

1

Food Situation Analysis

http://benyaminlakitan.com