TWI2050: Agriculture Systems in Africa

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SDGC/A

• SDG Planning, M & R
  – Different target space / Africa
  – Future to present, back casting
  – Domestication of the indicators
  – SDG costing and business plan
  – Real time data system
  – Index & Citizen Report

• Important Factors
  – Synergies and trade-offs
  – Gaps and overlaps
  – Spillovers, adverse and advance
  – Defining feasible nexuses
  – Polycentric governance

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From Goals to Development Pathways

- SDGs and COP21 set targets on activities
- Goals and targets are technically feasible
- Potentially multiple development pathways within planetary boundaries
- Need clear narrative on each activity and how businesses, technology, and the market can be aligned—Produce, protect and prosper (PPP).
- Need regional perspective and multi-disciplinary perspective
- TWI2050 aims to define and answer these questions
Agriculture in Africa

• Africa- predominantly agrarian economy
• >600 million small holder farmers
• Small holder farmers
  – >85% of agriculture in Africa
  – Low input – low output (low investment)
  – Inputs: land + labor + capital are all low risk
• 80% of agriculture depends on rain
• Net importer of food - $37 billion/year
• 600 million ha of uncultivated arable land

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Biodiversity in Africa

• Recent study by UNEP – World Conservation Monitoring Center on African’s progress towards Aichi targets:
  – > 3 million ha of natural habitat are converted for other uses each year in Africa.
  – In 2014, 6,419 animals and 3,148 plants in Africa were recorded as threatened with extinction on the IUCN Red List.
  – Of all freshwater species in Africa, 21% recorded as threatened
  – 45% of freshwater fish and 58% of freshwater plant species are over-harvested (IUCN 2014).
  – The IUCN Red List index for African birds shows a decline over the past 25 years.
Major Agro-EcoSystems Found in Africa

- Arid: ~0 mm
- Semi-arid: <50 mm
- Dryland: 100 – 500 mm
- Rain Fed: >800 mm
Major Farming Systems Found in Africa

• Crop-based livestock farming systems (crops = dominant)
  – Crop residues as feed
  – farm-yard manure for crops
  – livestock providing power for farming and haulage

• Livestock-based farming systems (livestock = dominant)
  – Crop farming playing complementary role
  – Livestock more valued

• Transhumance/pastoralism (no/hardly any crop farming)
  – Regular movement of people and livestock in search of pastures + water
  – Movement across national boundaries (e.g. Maasai (East Africa), Fulani/Tuaregs (West Africa/ Sahel)

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Perception of agricultural activities

**Household**
- Livelihood
  - Food supply
  - Animal feed
  - Inputs
  - Earnings
  - Energy
- Asset
  - Maintain fertility
  - Feasible size
  - Low resource capacity
  - Inherited

**Macro**
- Food security for country
- Foreign currency to finance other projects
- Revenue (taxes)
- Jobs in economies that often experience high unemployment
Mismatch of objectives at households and macro levels

**Household**
- Averse to risk
- Employ family labor
- Spare time for off farm activities

**Macro**
- Want to impact what to grow and how to grow
- Want to increase productivity to increase food security
- Increase nutrition of food produced
- Ensure food is affordable
Adding Contextual Issues

**Household**
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  - Maintain fertility
  - Feasible size
  - Low resource capacity
  - Inherited
- Livelihood
  - Food supply
  - Animal feed
  - Inputs
  - Earnings
  - Energy
  - Spare time for off-farm activities
  - Averse to risk
  - Employ family labor
  - Earnings

**Contextual**
- Land Tenure
- Demographic situation
- Gender
- Governance

**Macro**
- Food security
- Foreign currency
- Revenue
- Jobs
- Increase productivity
- Improve nutrition
- Affordable food
We must consider the macro, micro and contextual consequences of interventions to create a resilient pathway within planetary boundaries.

- **Household**
  - Skills for farmers
  - Develop e-commerce
  - Business plan

- **Contextual**
  - Energy saving stoves
  - High yielding and high stock varieties
  - Mobile education for pastoralists

- **Macro**
  - Soil and pest management system
  - Solar-based irrigation
  - Multi-genetic food source

Together create resilient pathway