Water and Energy: Some Key Pointers

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Introduction: Rapid transformations
Challenges: *Energy disparities*

Cheaper energy and rural electrification could transform small-scale agriculture, making more use of dry season cropping through groundwater development.

Pressures and stresses result from biomass energy consumption contributing to soil loss.
Consequences?
Implications: Energy-water securities

- Water insecurity costs global economy about $500 billion annually; drag on the world economy of c.1% GDP (conservative estimate)

- Challenge of ‘difficult hydrologies’:
  - management through blending natural and built infrastructure

- Employment dependency:
  - WWDR three out of four jobs water-dependent
  - > 1.4 billion jobs, or 42% of the world’s total active workforce, heavily water-dependent
Future: Energy options

- Solar irrigation for dry season cropping
  - Horticulture for local markets
  - Including urban demand
  - Regulating abstraction
• Energy (ies) across the ‘water-smart agriculture’ mix

- Market engagement / demand

- Supply side

- Irrigation management

- Rainfed systems

- Selection of farming techniques and technologies, crop choice

- Required Inputs

- FORMS of ENERGY

- Anticipated Outputs

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Risks: Managing abstraction
Securities: Energy options
Interrelatedness

• More than 280 transboundary basins
  • Include 45% world’s surface
  • 40% global population
  • Provide 60% annual renewable water

• Complex political economies
• Collective action problem
Conclusions

• Climate-energy-water mix
  • High-level uncertainties
• No/low regrets solutions
  • Affordable energy solutions
  • Energy blends
  • Carbon-energy relationships (soils)
• **Codifying benefits across the water-ag-energy spectrum**
  • Systematizing links and relationships
  • Establishing trade-offs
  • Offering policy options (and connections)