Water for Agriculture: A Case of South Asia

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Outline

1. Water challenges in South Asia
2. Policy drivers of water challenges
3. Consequences
4. Policy options for managing challenges
Water a common challenge

• With 3% of land, SA has to feed 20% population
• Food-energy deficiency- 51%
• Food production needs to be doubled in next 25 years
• Water demand for irrigation will increase about 70%
• 20% lack access to safe drinking water
• 90% water is use in agriculture
• Groundwater: 70-80% of the agricultural production depends on groundwater irrigation
• Growing water stress
Irrigation Trend in South Asia

- Canal irrigated area
- Tank irrigated area
- Groundwater irrigated area
Water Demand for Hydropower & Bioenergy is growing

- **Hydropower**
  - Govt. of India aims to build **292 hydropower in IHR by 2030**
  - Pakistan govt. aims to utilize 60,000 MW hydropower potential

- **Bioenergy**
  - India: targeted 20% biodiesel blending to produce 13 million tons of biodiesel annually from 11 million hectares of land.
  - Pakistan: 10% ethanol blending by 2020. Increase ethanol production from 0.2 million tons in 2006 to 4.3 million tons in 2020-
Factors Driving Unsustainable Practices

- **Input subsidies** - Irrigation, energy & agro-chemicals
- **India**: Annual subsidy on irrigation in South India was USD **579 million**
- **Nepal**: operation & maintenance costs are charged at US$ **4–5 against cost of 42 per ha**
- **Pakistan**: maintenance cost charged US$ **5.5**, against **23 per ha**
- **Price support** for Rice & Wheat
Energy subsidy for irrigation

- **Electricity free of cost or highly subsidized**
- **India:** Electricity tariffs for farmers $10\%$ of the cost
  - In Andhra Pradesh farmers are paying INR 0.04 per kWh against supply cost of 3.40.

- **Pakistan:** the subsidy is **PKR 3.50 per unit electricity**
- **Bangladesh:** subsidy of **Taka 400 per acre for diesel pumps.**
- **In India** the share of agriculture in electricity consumption increased **from 3.9\% in 1960 to 32.2\% in 1998**
Consequences

- **Environmental costs**
  - Overexploitation of groundwater
  - Waterlogging & salinization

- **Economic costs**
  - Subsidies tied farmers to *Rice-Wheat system*

- **Poor quality & rationing of power**
  - Madhya Pradesh farmers receive 2–4 hours electricity a day, Rajasthan 6–8 hours
  - Farmers have shifted towards diesel pumping

- **Social costs**
  - Water Pollution-*Arsenic* contamination of groundwater
  - Waterborne diseases
Meeting the Challenges:

- **Technological options** –
  - Improving irrigation efficiency
  - Micro-irrigation
  - System of rice intensification

- **Institutional options**
  - Farmers managed irrigation

- **Policy support**
  - Correct policy distortion
  - Rationalize water fees
  - Rationalize energy price
  - Positive incentive for water saving technologies, practices
Figure 1: Dynamic relationship among food, water, and energy security

Food and Agriculture

Water

Energy

Food, Water, Energy Nexus Security

Agri. policy influences water demand

Energy policy influences water demand and vice versa

Water need for energy, energy for water
Policy framework for managing water challenges

**Harmonize public policies**
- Shared policy goals
- Integrated policy solution
- Horizontal & vertical consistency
- Resolve policy conflicts & inconsistencies

**Align Strategies**
- Screen strategies
- Mutually reinforcing strategies
- Identify & quantify trade-offs
- Manage trade-offs
- Exploit synergies across the sectors

**Converge incentive structures**
- Screen instruments
- Align incentives towards shared goals & remove inconsistencies
- Target incentives towards nexus smart investment & technologies

**Regulate/promote nexus smart investment**
- Regulate unsustainable use of resources
- Mobilize public awareness, engage multiple stakeholders
- Encourage investment to exploit win-win opportunities
- Remove barriers

Strengthening cross-sectoral coordination
Strengthening institutional capacity
Mainstreaming of the water challenges in development planning processes
Thank you