Hisaar Foundation

WATER PEOPLE HEALTH
Coping with the Floods

South-South Cooperation for Water, Food, and Development

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Session – Water for People: Advancing South-South Cooperation
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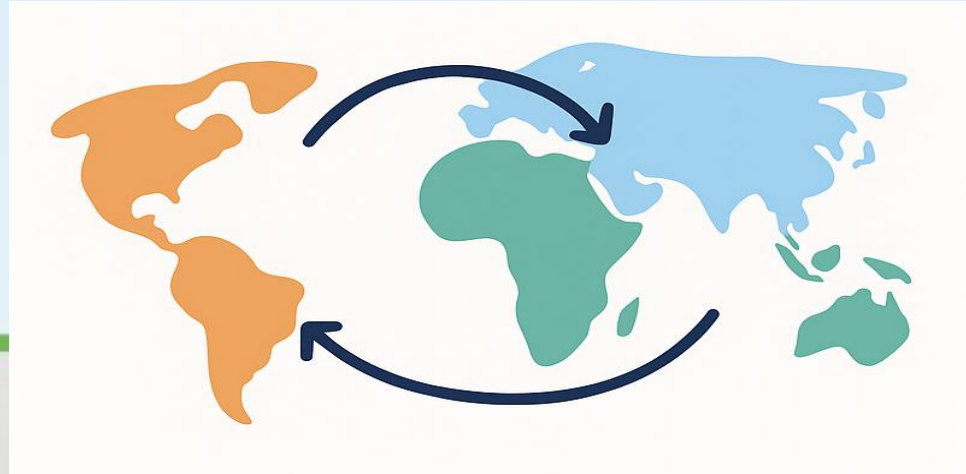

Outline

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- Model 3: Resolving Transboundary Conflict Through Institutionalized Benefit-Sharing And Joint Governance - Senegal River Basin – OMVS - West Africa -> World
- How to Succeed: The 3 Pillars of Effective Cooperation - Trust, Institutions, Benefit-Sharing
- Lessons for the Indus Basin: Direct applications for Pakistan

Why South-South Cooperation Matters ?

- Built on **solidarity, equality, and mutual learning**
- Promotes **context-specific innovation** and **regional self-reliance**
- A powerful tool for **decolonizing development** and **localizing resilience**

Shared Contexts, Shared Opportunities

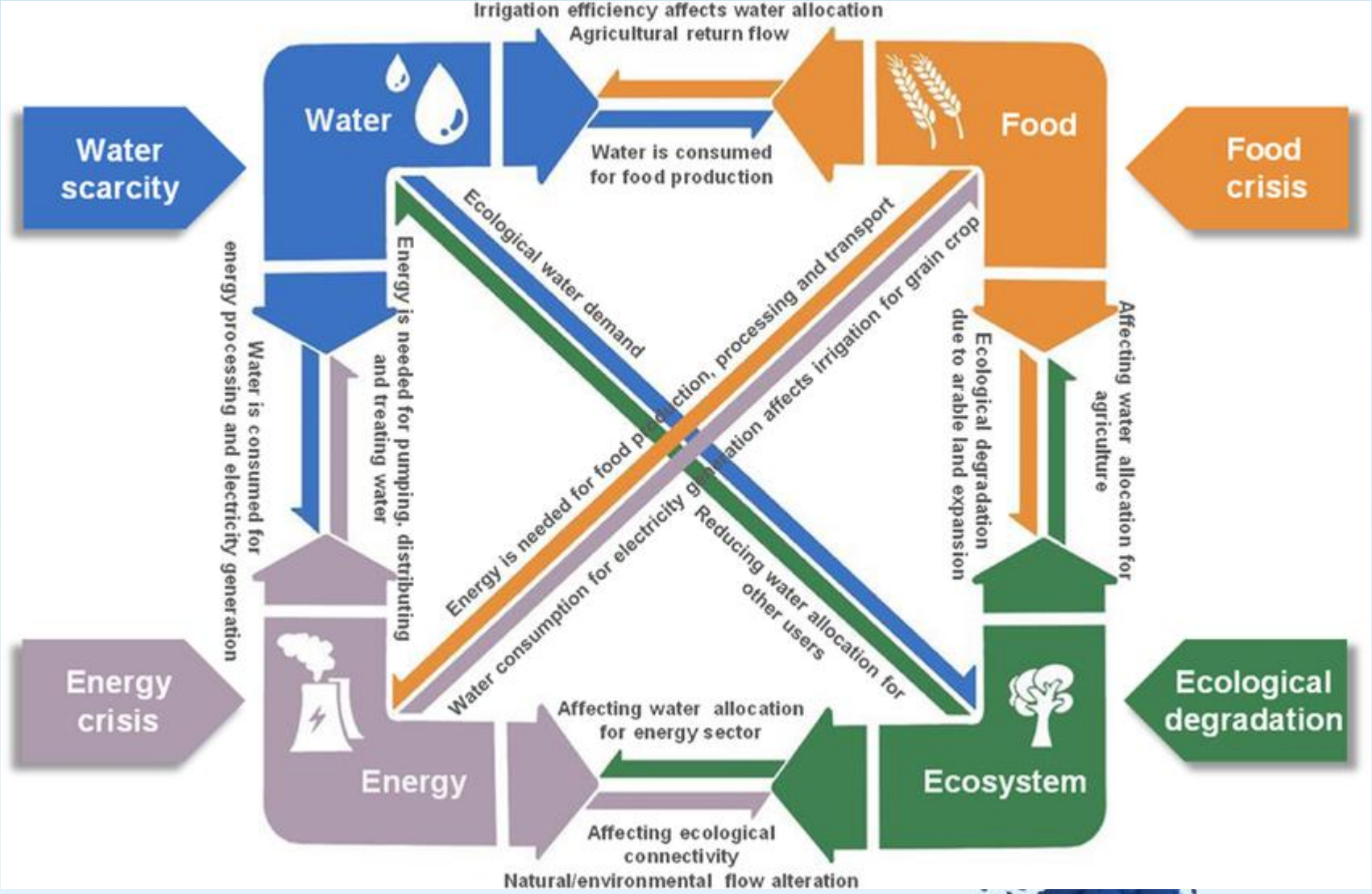
Countries in the Global South often share:

- Similar **climate vulnerabilities** (droughts, floods), **water scarcity, food insecurity**—but also shared opportunities: innovation, youth, ecosystems
- **80% of world's smallholder farmers** live **in the Global South**. Many face the same arid/semi-arid conditions
- **Colonial histories** affecting resource governance
- **Rapid urbanization and water stress**
- **Rich traditions of indigenous knowledge and community-based adaptation**

Our similar contexts make South-South solutions more relevant, sustainable, and effective

Our Shared Reality: The WEFE Nexus & Common Challenges

- Water–Energy–Food–Ecosystem (WEFE) interdependence defines resilience
- Climate shocks intensify linkages across sectors
- Cooperation enables integrated, cross-sectoral solutions



Source: Ma et al., 2024

South-South Links

- **Solar Irrigation** - Technology & Knowledge Transfer (Asia -> Africa)
- **Water Reuse & Salinity Management** (North Africa-Asia)
- **Policy & Basin-Level Cooperation** - Senegal River Basin (West Africa -> World)

Model 1: Solar Irrigation - Decentralizing Water & Energy Access and Preventing Local Conflict India's/Pakistan's experience → East Africa

- **The Cooperation:** IWMI's SoLAR Program – Punjab → East Africa (Ethiopia and Kenya)
- Transfer of **solar pump technology & solar suitability mapping tools** (e.g., IWMI's tool used in Punjab). Tools formally recognized by the Government of Pakistan for their innovative role in advancing solar irrigation planning. The Solar Suitability Mapping integrates the **Groundwater Vulnerability Index** (depth, recharge, salinity, and availability)
- **The WEFE Nexus** addressed by applying interdisciplinary solutions such as agrivoltaics, solar irrigation, small hydro, and integrating water storage with floating solar panels
- **Conflict Prevention:** Provides equitable, decentralized clean energy for irrigation, reducing competition and groundwater overuse at the local level

Model 1 Outcomes: Climate-Resilient Agriculture in South Asia and East Africa

- Contributes to **climate mitigation, food security, and rural livelihoods**
- **Expands access to clean energy for irrigation** in vulnerable regions
- Improves **water-use efficiency and crop yields**
- **Shapes inclusive solar and groundwater policies**
- Promotes **regional collaboration** that accelerates the transition to climate-smart, solar-powered agriculture in both Asia and Africa

Model 2: Adapting to Human-Environment Conflict Through Water Reuse & Salinity Management (North Africa-Asia)

Turning Scarcity & Salinity into Opportunity

- **Initiative:** Sharing knowledge and experience in water reuse & saline agriculture between Tunisia, Pakistan, Jordan and India
- **The Cooperation:** Sharing decentralized systems and salt-tolerant crops
- **Adaptation:** Enhances food and water security, builds resilience in arid regions, mitigating the conflict between human needs and environmental limits

Why saline agriculture?

Contribute to food security, reduce poverty, migration, malnutrition, unemployment

🌍 **Global challenge: A major constraint for agricultural development**

- 1.4 billion ha already salt-affected (11% of land)
- +1 billion ha at risk | +2,000 ha lost daily
- $27 million crop losses daily

Tunisia:

- 51% of water resources > 1.5 g/L (salt-affected)
- 20% of irrigated areas affected by salinization

Pakistan:

- 5.7 million hectares of arable land lost due to soil salinization
- 40 000 hectares each year (NIAB, 2024)

💡 **The Opportunity:**

- Adapt farming systems to higher salt levels
- Promote salt-tolerant crops + soil salinity management

WATER AND SOIL SALINITY PROBLEMS

20% of irrigated areas affected by salinization in Tunisia

Wastewater Treatment & Reuse - Untapped Potential

🌎 Global picture:

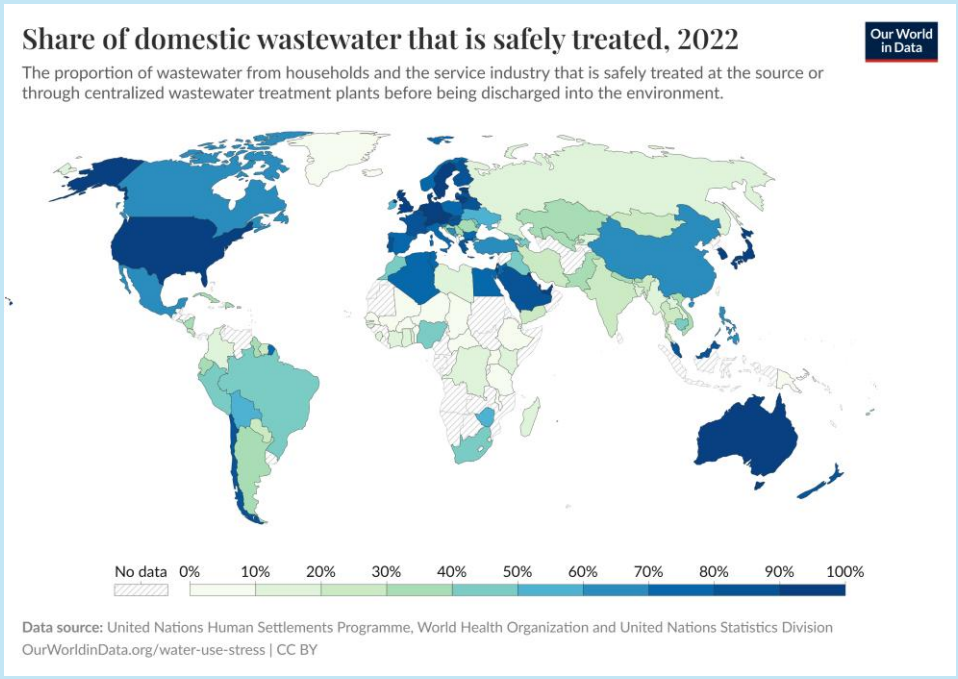
- **359–380 billion m³** wastewater produced annually
- **267 billion m³** domestic wastewater (2025)
- **58% safely treated** (155 billion m³) of which only **11% reused**

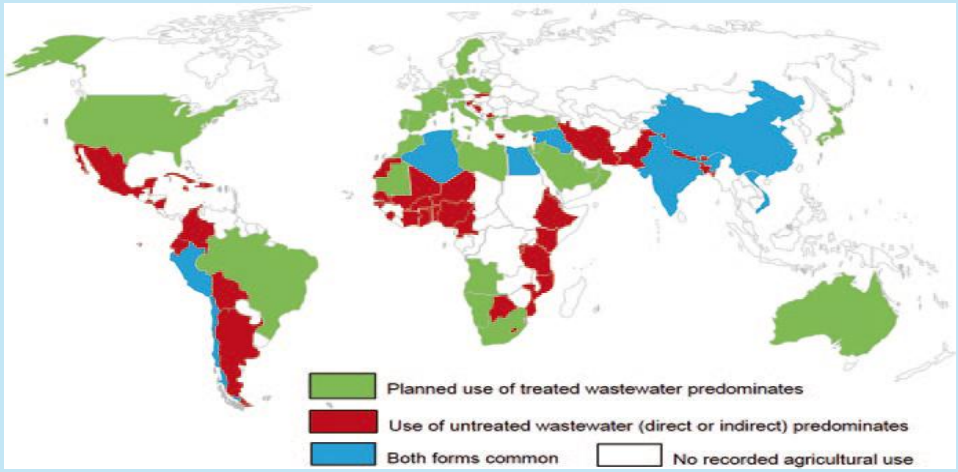
💡 Potential if reused (267 billion m³/year):

- Irrigate **33 million ha** (10% of irrigated land)
- Provide **320 kg N & 64 kg P/ha/yr** → **≈10%** of global fertilizer needs
- Generate **power for 47 million households**

🚰 Current use:

- **~17.7 billion m³/year reused** for irrigation
- **7–9% of global irrigated land** (~30 million ha) uses untreated/diluted WW
- **≈10% of irrigated food** grown with raw wastewater





Wastewater is not waste – it is water, nutrients, and energy. But only 11% is reused safely

Source: www.fao.org/nr/water/aquastat/wastewater/index.stm; and IWMI, unpublished

Promote safe and productive use of wastewater through the *multiple barrier approach*

Wastewater treatment

Health risk reduction at farm level
Safe irrigation practices

Health risk reduction at market and consumer level
Hygienic handling practices, Safe food washing and preparation, Awareness creation

WASTEWATER TREATMENT AND REUSE

Model 2: Water Reuse & Salinity Management (Africa-Asia)

Addresses the *human-environment conflict* by adapting to scarcity and poor water quality, reducing pressure on communities

- Water reuse and salinity management lessons can be exchanged between Tunisia, Jordan, Pakistan and India
- Wastewater as a Resource:
  - Only 11% of safely reclaimed water is safely reused
  - Potential to irrigate 33 million ha and recover nutrients
  - Health protection via multiple-barrier approaches
- Low-cost, decentralized systems for arid areas

Model 3: The Senegal River Basin - Resolving Transboundary Conflict Through Institutionalized Benefit-Sharing And Joint Governance

The Cooperation:

- **River considered a multinational asset -** Joint ownership and management of dams
- **Benefit-sharing** based on equitable cost distribution adjusted periodically: Mali – 35.3%, Mauritania – 22.6%, Senegal – 42.1%; hydropower for upstream, irrigation for downstream
- Dependency of the downstream population acknowledged, and any upstream development is done in the **mutual interest of all Member States**

Development Goals:

- Irrigation, hydropower and navigation

Development projects:

- Manatali (1988), Diama (1986)

Regional institution:

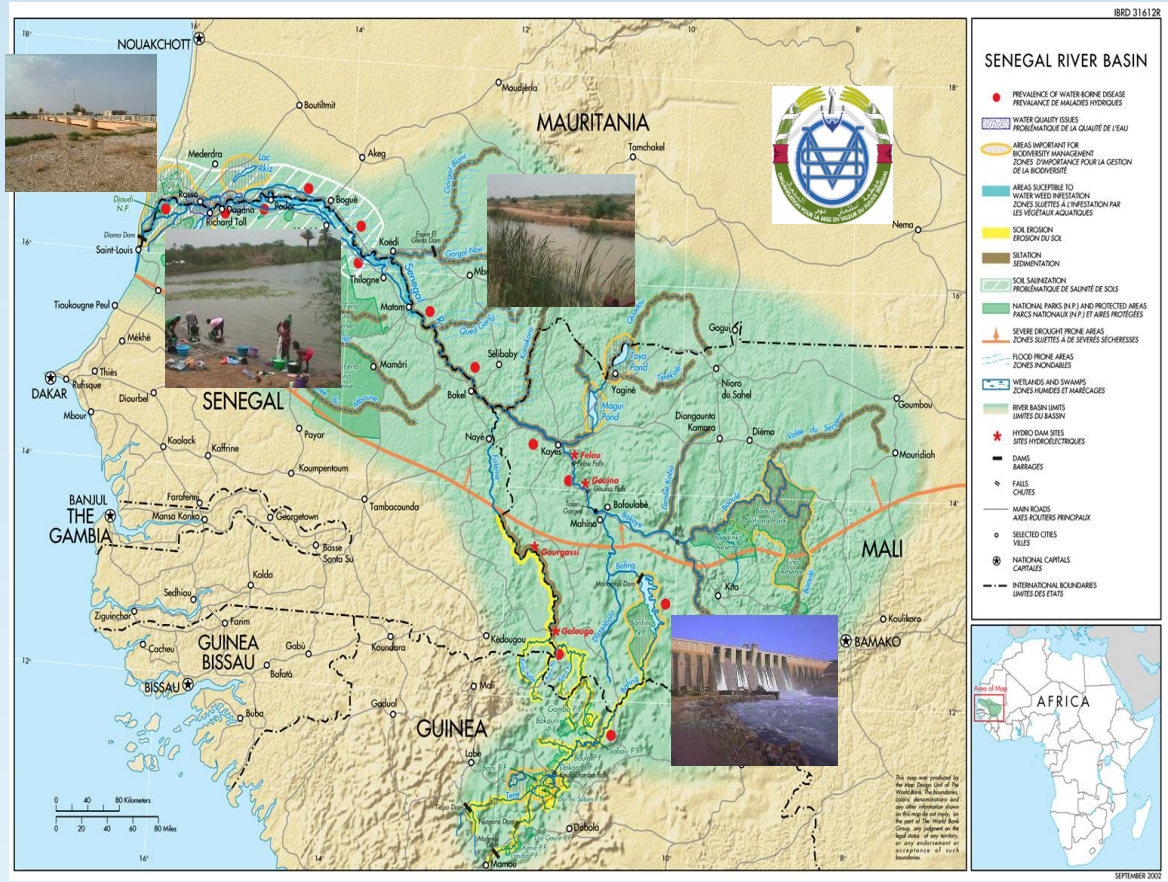
- Organization for the Development of the Senegal River Basin (OMVS)

Governance Structure: multinational agreements

- Convention (1972a,b); Convention (1978);
- Convention (1982); Water Charter (2002)

Conflict Resolution:

- Transforms a potential source of conflict into a catalyst for mutual development through institutionalized trust and shared gains



Participating countries: Senegal, Mali, Mauritania

"WATER AT THE SERVICE OF SOLIDARITY-BASED DEVELOPMENT"

MANANTALI DAM

- **Storage** of 11.3 billion m^3
- **Regulation of river flows** to 300 m^3/s
- Contribution to the **development of irrigated crops** on at least 255,000 ha and the guarantee of an annual flood
- **Sustainable navigability**
- **Production of 800 GWh/year**

Model 3 Outcomes: Institutional Trust and Equity

- Mali, Mauritania, and Senegal manage resources jointly
- Shared gains in hydropower, irrigation, and navigation
- A model for multi-country benefit-sharing governance

Enablers of Success

- **Shift from Aid to Partnership:** It's about co-development of solutions, not transfer
- **Build Strong Institutions:** Trust, equity, reciprocity built through entities like OMVS
- **Focus on Benefits, Not Just Volumes:** The key to resolving conflict is sharing benefits, not just dividing water
- **Create Knowledge hubs:** Support long-term learning
- **Invest in Triangular cooperation:** With strategic and supportive Northern partners for finance and scaling

Key Success Factors for Effective South-South Cooperation

1. **Context-Relevant Knowledge:** Solutions are designed for similar climates and economies
2. **Focus on Capacity Building:** It's about teaching to fish, not giving a fish
3. **Local ownership** and **inclusion of youth and women**
4. **Mutual Benefit & Solidarity:** Partnerships are built on shared goals, not donor-recipient dynamics
5. **Recognition and integration of indigenous and community-based practices:** Building on existing local knowledge
6. Sustained **political commitment and financing**
7. Success depends on **institutions, trust, and sustained partnerships**

Applying These Models in Pakistan and the Indus Basin

- **From Solar Irrigation:** Use **solar suitability mapping** to guide Punjab's solar policy, preventing groundwater depletion
- **From Salinity Management and Water Reuse:** Pilot **decentralized water reuse systems** in Sindh to combat water scarcity and salinity, turning a problem into a solution
- **From the Senegal Basin:** Explore **benefit-sharing models** within the Indus River System Authority—not just water allocation. Could Sindh's water and Punjab's solar energy be part of a broader exchange? Could water, energy, and food benefits be jointly optimized?
- Foster **multi-sector cooperation** across water, food, and energy

The Way Forward

- “We share not what we have in excess, but what we have learned through struggle”
- Institutionalize SSC through water platforms and triangular partnerships
- Invest in Track II diplomacy, in South–South learning hubs and in youth inclusion

From shared challenges to shared solutions — the future of development runs South to South

By learning from each other's successes in food and development, we can co-create a water-secure future

Thank you!