UNECE
Team of Specialists
for PPPs

Session II: Case Studies in Green Technology PPP Projects

Water Irrigation in Rural Areas

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PPPs Have Broad Applicability to Food Production

- Moving food from farm to market: transport PPPs, particularly road and rail
- Market availability: PPPs for markets, logistics centers, and trading centers
- Food production: PPPs for irrigated water supply and power
- Food processing: Agroprocessing PPPs
- Efficiency in food production and marketing: information and communications technology

Selected Benefits of Irrigation PPPs

- Reduce development risk
- Obtain project financing
- Reduce public capital investment
- Accelerate service availability
- Optimize value for money
- Access to management expertise
- Access to technology
- Stabilize crop production
- Enable production of new, more lucrative crops
- Indirect economic benefits

Irrigation Challenges

- Inadequate public sector operation and maintenance (O&M) of irrigation systems is common. User fees are unpopular, and political pressures keep the tariffs artificially low, resulting in underinvestment. Where project revenues do not cover the full cost of system O&M, a PPP will be equally unsustainable.
- Institutional and user capacity may limit project outcomes; significant capacity building is required.
- Users may also require financial assistance to make full use of the irrigated water.
- Cooperation among users is essential, and is generally achieved through creation of a Water Users Association.

Attracting the Private Sector

- The private sector chooses which projects to participate in from amongst many investment alternatives. Investors seek investment opportunities where they may reasonably anticipate a fair return on their investments.
- A clearly-defined revenue stream, with quantifiable and limited risks, is essential.
- Transparent and predictable policies attract investors and reduce the need for sovereign guarantees.

Securing the Revenue Stream in Irrigation PPPs

- In some cases it may be possible to have the private party assume the demand risk for a PPP irrigation project; i.e., to be paid solely by user fees.
- In many cases, particularly in rural areas, this may be difficult, due to low population densities, remote locations, and weather-dependent crop production.
- In addition, users may be resistant to paying the full cost of irrigated water.
- Therefore, a subsidy may be necessary to make certain projects viable.

Models of Irrigation PPPs

- Irrigation Management Transfer. These PPPs convey no commercial risk to the private party; water services are paid for by a purchase agreement between the SPV and a government entity.
- O&M-Limited Commercial Risk. In these PPPs, the water service is billed to end-users, but the SPV's exposure is limited to O&M costs. The government provides the capital investment for system construction.
- Full Commercial Risk. In this model, the SPV provides both capital investment for construction and O&M expenditures, and is compensated through user fees.

Megech-Seraba Case Study(Ethiopia)

- Agriculture is the backbone of Ethiopia's economy, contributing about 50% of GDP, and employing 80% of the nation's population.
- The vast majority of Ethiopia's crop production is rainfed, subjecting food availability to uncertainty due to drought and erratic rainfall, and contributing to famine.
- Eight percent of the country's 83 million people rely on food aid each year, a figure that rises to 20 percent in year's when rainfall is scarce.
- In 2004, the government began to explore three potential irrigation projects to improve agricultural production, productivity, and reliability.

Megech-Seraba Case Study (Ethiopia)

- One of these projects was in Megech-Sebaba, in North Gondar, a region in northern Ethiopia.

Megech-Seraba Case Study (Ethiopia)

- The goal of the project was to provide reliable water availability, and the potential for greater production, to approximately 6,000 smallholder subsistence farmers in a 4,040 hectare area, by constructing two pumping stations and open channels, and pumping irrigation water from Lake Tana.
- Challenges included the lack of a PPP enabling environment in Ethiopia, lack of institutional and civil capacity, and the limited ability of subsistence farmers to pay the full cost of the irrigation system.
- In 2006, Ethiopia asked the World Bank for assistance with this project.

Megech-Seraba Case Study (Ethiopia)

- The technical assistance provided:
  - policy, institutional, and legal reforms needed for private participation; including establishment of regulatory capacity
  - an estimate of investments necessary to attract private capital; and
  - the identification of measures to reduce project-related risks.
- The solution included two contracts, a construction contract and a PPP operation & maintenance contract. The O&M contractor was given responsibility for overseeing the construction contractor, with any savings shared between the two firms.

Megech-Seraba Case Study (Ethiopia)

- The PPP O&M contract was signed in April 2012, after an international competitive bidding process. The winning contractor was a French firm, BRL Ingeniere.
- The contract's main objective is to ensure high-quality O&M services, and long-term sustainability of the investment, which remains entirely funded by the government, through a World Bank International Development Association (IDA) credit of $30 million.
- The operator will be in charge of construction supervision, and establishing and building capacity of water users associations, as well as the project O&M.

Megech-Seraba Case Study (Ethiopia)

- Key performance indicators are built into the O&M contract and linked to the performance remuneration. There are 5 areas of performance including:
  - Staffing and labor
  - Administrative and finance (User and WUA registration; Billing and fee collection)
  - Capacity building and customer services (demonstration plot , establishment of IWUAs, long term O&M entity)
  - Operation (irrigation service delivery, efficiency)
  - Maintenance (irrigation and drainage service disruptions, access roads)

Megech-Seraba Case Study (Ethiopia)

- A regulation was passed in 2010 to recognize Water User Associations (WUA). The WUA will coordinate among the users, and assume responsibility for maintenance of tertiary water channels.
- The users will pay the actual cost of water, including the energy costs of pumping from Lake Tana to the users. The government will collect the user fees.
- The contract duration is eight years, after which the O&M responsibilities will be turned over to a new local public entity, trained by the PPP contractor.

Megech-Seraba Case Study (Ethiopia)

Nile West Delta Case Study (Egypt)

- Since the late 1960s, the Government of Egypt has supported the conversion of desert lands to commercial farmland.
- This policy led to the rapid agricultural development of a large area (100,000 hectares) of reclaimed desert 60 km north of Cairo.
- However, this development relied on groundwater for crop production, and the levels required were unsustainable. By the 1990s, the aquifers in the area were becoming depleted.
- The government began to consider an irrigation-based PPP solution.

Nile West Delta Case Study (Egypt)

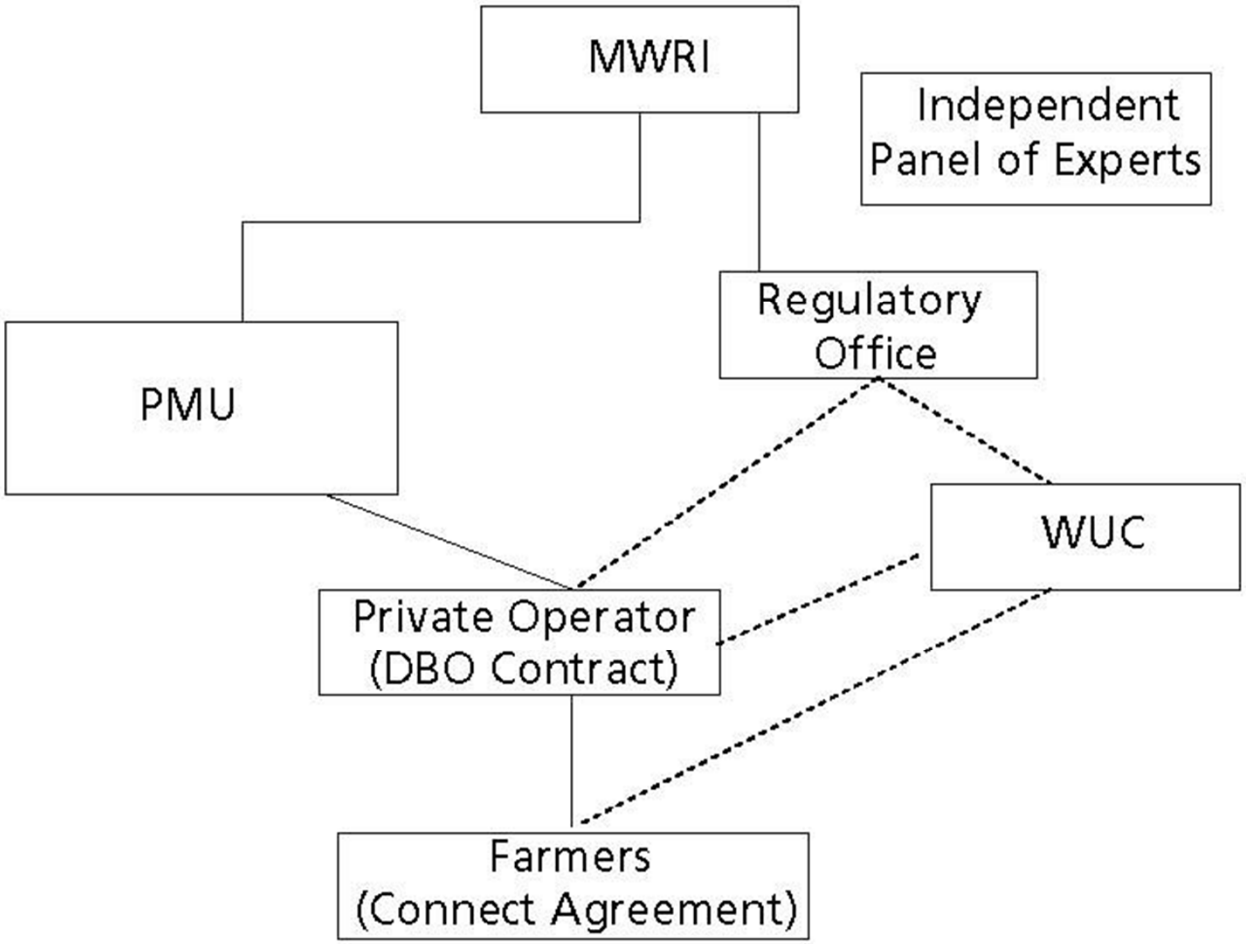
- The concept included piping Nile River water to the site. A piped system, though more expensive than an open channel, would be more efficient (less evaporation), and have fewer environmental and social impacts.
- The Government of Egypt would guarantee a fixed allocation of water to the PPP, based on an annual amount per hectare.

Nile River, Egypt

Nile West Delta Case Study (Egypt)

- The SPV selected for the contract would design, construct, and then operate and maintain the system for 20 years. The estimated financing cost of the 25,200 - 37,000 ha system was US$205 million.
- The Government of Egypt was to provide the bulk of the financing, anchored by a US$145 million loan from the World Bank.
- The SPV would contribute approximately eight percent of the total project costs as equity.
- Farmers would contribute three to four percent of project costs as security deposits.

Organization Structure, Nile West Delta



Nile West Delta Case Study (Egypt)

- The economic rationale for the project was that the reliable availability of water would allow the growth of more lucrative, export-oriented crops in the West Delta. The high returns on these crops, in turn, would allow farmers to pay for the full cost of the irrigated water.
- Tariffs would have two components, consisting of a fixed fee based on the land area, and a volumetric fee based on water use.
- Ancillary economic benefits were expected from packaging and marketing of crops, job creation, and input industries, such as locally-produced fertilizer.
- The World Bank loan was approved in June 2007.

Nile West Delta Case Study (Egypt)

- Social objections delayed the implementation of the project. Concerns included:
  - The project would benefit investors and large-scale farmers, not small, subsistence-level farmers
  - The project might not benefit local area residents sufficiently to compensate for the project's social impacts
  - The taking of water from the Nile might reduce water availability for other citizens
  - NGOs believed the planned route for the pipe was not optimal from an environmental perspective
  - There was a long tradition of public control of the waters of the Nile.

Nile West Delta Case Study (Egypt)

- The Government of Egypt began the international competitive bidding process with prequalifications.
- Five consortia were initially prequalified, but one dropped out of the bidding process.
- After the January 25, 2011 political turmoil, two of the remaining four consortia withdrew.
- Of the two remaining prequalified bidders, only one submitted a tender in April 2011.
- On June 30, 2011, the date originally scheduled for project completion, the World Bank closed the project, and rated it as “unsatisfactory”.