Overview of irrigation PPPs worldwide: Issues and Challenges

22 October 2014

Cledan Mandri-Perrott, PhD
Why irrigation?

- Increasing emphasis on rural and agricultural development
  - Irrigation can be a catalyst for economic development

- Climate change and its impact on potable water
  - Irrigation is a big part of water resource management
  - Addressing water allocation challenges and increased competition for water usage
  - Stimulate Green Growth

- Increasing awareness on Food Security
  - Greater dependence on food produced on irrigated land
  - Reducing food price volatility
However, investment in irrigation has gone down

- Governments, Donors and IFIs have tended to focus their support to urban development

- Scarcity of local budgets

- High and increasing construction costs and poor production performance

- Low water charge and poor recovery rates
So what is needed?
What is needed?

- Develop a better understanding of private sector involvement in irrigation

- How can the system be designed in a sustainable manner?
  - Engineering & environmental perspective but also O&M
  - Linking production to capital investment

- Develop a framework which would transcend from one implementation arrangement to the next
  - Institute appropriate contractual and institutional arrangements
  - Incentive and results-based instead of input-based

- How to ensure “market” is prepared to invest in long term assets for irrigation and agriculture
Need to combine public and private resources more effectively

- Government support is needed
  - But in what aspect? How?

- Make the project ‘Bankable’?
  - For farmers and other users
  - For public sector
  - For private sector

- Need to view Irrigation as a “commercial and sustainable venture”
Mechanisms to support project bankability

- Project Design
- Procurement
- Risk Management
- Project Financing
How much risk transfer?

Maximum risk transfer to achieve just enough bankability
The future? Hybrid contracts

- Hybrid contracts ‘evolving’ into greater risk transfer

- Governments may cover revenue shortfalls to compensate for the risk of lower demand or higher finance costs
  - Direct payments to support project revenue streams, or
  - Specified subsidies payable under predefined conditions.

- Results or output-based subsidies
  - Efficient mechanism for delivering subsidies

- Contract form must allow for other potential sources of income
  - Eg land values, special crops (ethanol etc) etc…
But need to go back to the basics

- Justify underlying investment (options, technical solution, …) before considering how to finance it

- Focus on value for money and long-term affordability

- Use competitive and transparent procurement process

- Innovation needed in structuring projects and applying mechanisms (contract design, financing, procurement…. ) in sustainable way
You are very welcome to use any of this material so long as you acknowledge the author.

Thank you!

Cledan Mandri-Perrott
Head of Infrastructure and Finance, Singapore Hub
Cmandriperrrott@worldbank.org
☎ +65 8722 1925
## Some Project’s Statistics

<table>
<thead>
<tr>
<th>Underlying features</th>
<th>Guerdane Morocco</th>
<th>Chanyana Zambia</th>
<th>West Delta Egypt</th>
<th>Megech-Seraba Ethiopia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Costs</strong></td>
<td>$85 million</td>
<td>$2.5 million (pilot) + $32 million</td>
<td>$450 million</td>
<td>$47 million</td>
</tr>
<tr>
<td><strong>Farmer experience</strong></td>
<td>Established</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td><strong>Farming activity</strong></td>
<td>Cash-crops</td>
<td>Subsistence</td>
<td>Mixed</td>
<td>Subsistence</td>
</tr>
<tr>
<td><strong>Size and scope</strong></td>
<td>Up to 10,000 ha</td>
<td>300-2,600 ha</td>
<td>80,000 ha</td>
<td>4,040 ha</td>
</tr>
<tr>
<td><strong>Design feature</strong></td>
<td>Design Build Operate</td>
<td>BOT w/ SPV (20% coop &amp; 80% InfraCo)</td>
<td>Design Build Operate</td>
<td>Public finance w/ private OMM</td>
</tr>
<tr>
<td><strong>Project preparation and sponsorship</strong></td>
<td>None</td>
<td>Professional farm management</td>
<td>None</td>
<td>Set up of Water Users Associations</td>
</tr>
<tr>
<td><strong>Farming model/plan</strong></td>
<td>Off taker</td>
<td>Asset manager and off taker</td>
<td>Off taker</td>
<td>Via WUAs &amp; KPIs</td>
</tr>
<tr>
<td><strong>Farmer participation</strong></td>
<td>Public private</td>
<td>Donor/commercial</td>
<td>Public private</td>
<td>Public via IDA credit</td>
</tr>
<tr>
<td>Risk Category</td>
<td>Guerdane Morocco</td>
<td>Chanyana Zambia</td>
<td>West Delta Egypt</td>
<td>Megech-Seraba Ethiopia</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Demand</td>
<td>Developer</td>
<td>Developer</td>
<td>Developer</td>
<td>Public</td>
</tr>
<tr>
<td>Financing</td>
<td>- Developer Share</td>
<td>- Developer Share</td>
<td>- Developer Share</td>
<td>- Public Share</td>
</tr>
<tr>
<td>Commercial</td>
<td>- Developer</td>
<td>- Developer</td>
<td>- Developer</td>
<td>Operator (KPIs)</td>
</tr>
<tr>
<td>Force Majeure</td>
<td>Shared</td>
<td>Shared</td>
<td>Shared</td>
<td>Public</td>
</tr>
<tr>
<td>Public obligations</td>
<td>- Yes Developer</td>
<td>- Yes from donors to SPV</td>
<td>- Yes Developer (bidding criteria)</td>
<td>- Yes Public</td>
</tr>
</tbody>
</table>
Key risks in irrigation

- Demand and collection risks
  - Off take

- Financing risk
  - Debt service, F/X as revenues are in local currency

- Construction risk
  - On time completion: take or pay can be structured?

- Operational risk
  - Inefficiencies in service standards
  - For design and construction
  - For Operation and Maintenance
  - For handover after one contract has ended
  - Linkage to agri-business?
  - Agri-business to also act as developer/operator?
Key risks in irrigation contd.

- **Commercial risk**
  - Unsustainable service coverage requirements
  - Land usage/allocation
  - Encroaching suburban development
  - Power supply

- **Force Majeure risk (natural)**
  - Floods and droughts
  - Water resource upstream issues such as water sharing and development
  - If Hydro power plant, then bigger safeguards issues
  - Open canal system
  - Repatriation risk
  - Trans-boundary issues e.g. Nile Basin, Volta river etc.

- **Government payments/ Regulatory risk**
  - Government payments
  - Tariff adjustments
Off taker risk has several aspects

- **Who?**
  - Agribusiness
  - Mid tier farmers
  - Subsistence farmers

- **From where?**
  - New demand
  - Shift in demand
  - Change in technology and production

- **How to manage off-taker risk?**
  - Different approaches required for major agri-businesses vs. subsistence farming
Key concern: government payments

- Subsidy
  - For upfront Capital
  - For lifetime O&M
  - Use of availability payment
  - OBA linked to crop yield

- How to backstop government obligations?
  - Letter of credit
  - Guarantee
  - Etc.

- Policy implications e.g. dropping/reduction in subsidies
Agenda item 3

Bringing sustainability into the equation.