Great Expectations
Managing the Challenges of Irrigation Rehabilitation

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- Background
- Local Livelihoods
- Design, Quality and Appropriateness of Infrastructure
- Institutional Environment
- Management Arrangements
- Subsistence or commercial agriculture
- Future trends
- Critical considerations
Yellow River In Qinghai

Longyangxia
29 bn m³,
1250MW. 1992

Lijiaxia
1.65 bn m³,
2000MW. 1997

Gongboxia
650 Mm³,
2000MW. 2006

Irrigation Area

Lijiaxia
Gongboxia
Irrigation Area
Irrigation Area

70km
Irrigation systems

- **Gongboxia/Lijiaxia**
  - Ample water in Yellow River, much hydropower
  - 12,000 ha, mostly wheat, mostly pumped (up to 100m lift)
  - Old pumped systems built 1960s – 2010s

- **Agriculture**
  - Marginal – high altitude, cold, low yields
  - Scope for diversification

- **Social**
  - High poverty incidence
  - Minority groups – Salar, Tibetan, Hui

- **Irrigation**
  - High capital cost
  - Need to increase area and diversify to justify investment
  - Avoid pumping cost and maintenance, but other challenges
  - Objective to reduce poverty
Livelihoods

- Few can survive on cereal crop cultivation. Most households rely on remittances, rural-urban migration, and off farm employment.
- Very small land holdings, but lots of abandoned land – can’t afford to pump water.
- Can high value agriculture be developed by smallholders?
- Some consolidation and commercial development (esp for chillies and vegetables) – but risk that landholders will just be employed as casual labourers.
- *But* - is agriculture sustainable if smallholders do not remain dominant population?
Diversified cropping
Diversification, intensification and commercialisation

- Vegetables, chillies, livestock, walnuts – for sale in Xining and Lanzhou – roads now good
- Investment costs, subsidies but only relatively rich can access
- Poor need off-farm employment so don’t have time for intensive agriculture
- Most crops marginal, but remember food security (and quality) considerations
Infrastructure

- Infrastructure should be
  - Planned jointly with management arrangements
  - Simple but appropriate
  - Flexible and adaptable to changing requirements
  - Manageable by users
Complex Institutional Framework
– need clearly defined relations and responsibilities
Local Management Arrangements – must be responsive and supportive

**Representative Assembly**
- 1 member per 10-20 water user HH
- 30% women
- Prop. minority group representation
- Sub-assembly for women, minority GPS

**Executive Committee**
- Chair, vice-chair, treasurer +2 or more
- At least 2 women
- At least one from each village

**Main tasks**
- Annual meeting
- Elect executive committee
- Approve rules and regulations
- Approve annual plans
- Approve finances

**Coordination and support**
- Coordination with WMS/annual planning
- Routine O&M to improve water use
- Fee collection and financial management
- Dispute management
- Request assistance for major repairs
- Coordination with Agric. Dept & others
- Support & protect interests of members

**Village Committee**

**Production Groups**

**Water Users**

**Water Users' Groups**

**County Government**
- County technical bureaus
- Civil Affairs Bureau

**County Water Resources Bureau**
- Water Management Station

**Federation of WUAs for each main canal**

**Technical support**

**Registration**

**Coordination & support**
Future trends

- Livelihoods will become more diverse
- Decreasing importance for subsistence agriculture – but it will remain on a small-scale
- Economic opportunities for the rich likely to be in other sectors (industry, tourism)
- Middle ground - diversified agriculture – yet to be developed
  - Value chain development
  - Targeted subsidies
  - Technical support
Critical considerations - 1

- Understand what is wanted and solve these problems, not meet a preconceived idea of rehabilitation needs
- Strengthen communications between county water resource bureaus (WRBs), management stations and users;
- Plan design and management arrangements together
- Build up local management organisations in a way that does not overburden them administratively or financially;
- Remember that irrigation is a means to an end – plan for sufficient agricultural support
Critical considerations - 2

- Small problems can easily become critical, but can be resolved if there is sufficient timely consultation and understanding.
- Pressures to seek simple technical solutions to complex problems should be resisted, and solutions should match management capacity.
- Ensure a complete solution before starting construction, otherwise the incentives for compromise may be lost.
- Participatory development is time-consuming: a patient approach is needed to understand and accommodate farmers’ views.
- Reliable information should be provided at all stages so that farmers can understand what is proposed - social mapping is a good tool.
- Flexibility, with review and modification throughout implementation is important.
• Provide training on agricultural value chains which fit in with local livelihood strategies (which are dominated by migration and off-farm employment);

• Balance quasi-commercial agriculture, creating local employment and investment opportunities, with smallholder agriculture in support of multiple livelihoods;

• Recognize constraints of smallholders who are not homogeneous group and may not be traditional decision-makers (poor, elderly, disabled, or female household heads);

• Resettlement is critical – if land needs to be taken there must be compensation.
Conclusions

• Identify and solve the real problems, (don’t simply rehabilitate what exists), and understand the diversity of livelihoods
• Need clear understanding and agreement of project scope as well as the details – even terminology is important. Manage expectations
• Involve farmers in designs from the outset – participation in management is not possible without participation in design
• Irrigation in marginal environments is valuable – but only if there is commitment to manage it, and to support smallholders, as well as commercial farmers
Alternatives

• Energy-intensive industry, eg aluminium
• Other high tech, location-insensitive industry (silicon chips in Hualong)
• Tourism potential – but be realistic