Program Management in Developing Countries:

Delivering Large Water Projects in Lesotho

Steve Lowry, P.E.
Senior Program Manager
Denver, CO

October 11, 2015
Topics

- Learning Objectives
- Metolong Dam & Water Supply Program
- Lesotho Highlands Water Supply – Phase II
- Learning Objectives – Revisited

(Questions during presentation are OK)
Learning Objectives
Learning Objectives

1. Understand funding agency perspectives in international development programs

2. Understand management and logistical challenges facing the program team

3. Describe competing stakeholder needs and demands

4. How international approaches are applicable in the U.S.
Governance of International Development Programs
The International Development Market

- Developing countries face a $2.5 trillion annual investment gap – UNCTAD; and by 2030 the OECD estimates that $70 trillion in additional infrastructure will be needed.
- Governments faced with massive infrastructure programs completely overwhelm staff and systems
- Large government projects suffer from schedule delays, funding shortfalls, lack of transparency and quality issues
International Development Programs

- Purpose and structure of programs varies widely, but “typically” there are:
  - Significantly larger budgets than the average project size
  - High political visibility
  - Multiple remote funding organizations
  - Multiple local entities with some governance role
  - Many other stakeholders
  - Many benefits to achieve – parties do not necessarily value all benefits equally
Donor Governance Issues

- Money goes where they earmark -
  - “I’ll pay for this, but not for that”
- Compliance with conditions of aid
  - Social & environmental safeguards, workforce capacity building
- Transparency
  - Anti-corruption measures, audits
Governance Challenges

- Cultural differences among stakeholders
- Multiple currencies and complicated tax structures
- Lack of support infrastructure, including communication
- Project and construction management maturity

Program Management approach, processes, and tools need to satisfy stakeholder objectives while being subject to the many constraints.
LESOTHO – COUNTRY BACKGROUND
Location – Metolong Dam & Water Supply Program

Lesotho
Lesotho – Program Background and Overview

- Health
  - #2 in HIV/AIDS
  - Infant and Child Mortality –
    - Ranks 161 out of 188
- Topography
  - “Highest Low Point of Elevation” – 1300m
  - Highlands >1700 m
  - Lowlands <1700m
Programs Background & Overview

LHP1 - Katse Dam (1996)
LHP1 - Mohale Dam (2002)
LHP2 - Polihali Dam (2025)
Metolong Dam (2015)
Quick Photo Tour
Government Structure

- Constitutional Monarchy – King has limited powers
- Democratic, parliament with two houses, since 1966
- Prime minister selected from major party
- Coalition government since 2013
- 25 Ministries (Cabinet offices) – too many for a small country
- Ministry of Finance and Ministry of Water have lead roles in International Development
Water Resources in Lesotho

- Maluti Mountains (Highlands) catch rain, snow – up to 1m
- Water is a resource, sold to South Africa per 1986 treaty
- Population of 1.9m - 60% coverage of water supply
- Lowlands Master Plan (2008) to provide 100% coverage
- Metolong (Lowlands) identified to serve about 500,000 people in Lesotho
METOLONG DAM & WATER SUPPLY PROGRAMME
Early Project Planning

- Concept developed in late 1960’s
- Provide water to Basotho in Lowlands
- Cost estimate $186M in 2008 from Feasibility Studies
- Environmental, Social complexities recognized
- Millennium Challenge Corporation (MCC) did Due Diligence in 2007-8
- MCC recommended a Program Management (PgM) approach
Project Description – Metolong
Role Of MCC

- Signed Compact with GoL in 2008 for $363M
  - “Poverty Reduction through Economic Development”
- Covered Health, Private Public Partnership, and Metolong
- MCC funding for Metolong was $87M to cover D-B of WTW design of Conveyance System, and PgM.
- Grant for 5 years – cutoff date for funding is firm
- Set up Millennium Challenge Account – Lesotho (MCA-L) to monitor the Compact and MCC contracts, including PgM
Selection of PgM

- MCC procurement - Quality & Cost Based Selection (QCBS)
- CDM Smith brought on in September 2008 as PgMer
  - International experience of team
  - Good local partners
  - Broad coverage
  - Pool of expert personnel
Initial Funding Picture

- PgM refined the Cost Estimate in late 2008
- New estimate was ~$400M
- Gap in funding identified at Funder’s EXPO in early 2009
- European Investment Bank (EIB) provided €140M (~$200M) loan
- South Africa provided $6M grant
Project Partnerships

- Multiple funders (9) – USA, EIB, KBOSA (5), RSA, GoL
- Funds not pooled
Donor Interests

- KBOSA – each participant covered a different aspect or percentage of the Dam, long approval process
- World Bank had overall “umbrella” interest, but only about 10% of the funding
- Local currency (1 ZAR = 1 Maluti) fluctuated from 6.5 to 12.0/$
- Sustainability - limited funding for training
- Procurement procedures trump schedule
Project Description – Advance Infrastructure

- Pre-2008 GoL built North Access Road and 10 MVa substation
- PgM managed other components needed for implementation
  - Land acquisition for sites & contractor camps
  - South Access Road for heavy Dam traffic
  - Water & Sanitation in surrounding villages
  - Operator housing for Dam, WTP
  - Police stations – security
  - Social, Environmental, Compensation programs
Project Description – Advance Infrastructure

- Pedestrian bridge needed for people/stock to cross reservoir
- Road bridge needed for vehicles to cross reservoir
Project Description – 2008 to 2015

- Dam: 75m high Roller Compacted Concrete  $90M

24/7 operations
Project Description – 2008 to 2015

- Water Treatment Plant: 100 Ml/d (25 mgd), $65M
- Pump Stations: 4 MW (VFDs)

Continues on next slide
Project Description – 2008 to 2015

- Pipelines: welded steel, 160 km (100 miles), $85M
- Concrete Tanks: up to 40 Ml (10 MG), 8 total
Challenges: Organizational & Structure

- Pleasing two lead agencies
  - Metolong Authority and Millennium Challenge Account
- Turnover at the top
  - 4 CEOs at MA
- 9 Major funding sources
  - multiple procurement practices
- Manage ~120 contracts
  - 5 major construction; 5 major design
  - D-B-B, D-B, SSS

Continues
Challenges: Organizational & Structural

- Land acquisition / permitting
- Mix of international and local contractors
- Use of FIDIC (Red and Yellow Books)
- Work and Residence Permits
- Taxes

Continues
Challenges (continued)

- Cultural issues
- Labor issues
- Health: HIV/AIDS impact from/on workforce
- Safety
LESOTHO HIGHLANDS PHASE II
Location – Lesotho Highlands Phase II
Phase 2 Project Description – 2013 to 2025+

- $1B total cost (2014)
- 165m Concrete Faced Rockfill Dam
- 5.2m (10 ft) diameter tunnel
  38km (20 mile) long
- Advance infrastructure – roads, bridges, camps, communications, power
Phase 2 Project Description – 2013 to 2025+

- 40+ major contracts
- Environmental, Social & Public Health actions
- Relocation of many households: flooding over 5,000 hectares
- Potential 1,200 MW Kobong pumped storage (additional $1B)
Phase I Legacy

- Social and Environment issues not coordinated w/ Design
- Land compensation inadequate, led to 50-year monetary compensation
- Corruption during procurement
  - senior managers went to jail
  - international design and construction companies were blacklisted
Challenges

- All of Metolong, plus
- Overcome Phase I’s negative procurement, social and environmental issues
- Public consultation
- Funding from South Africa, but project in Lesotho
- Shared design and construction $ between RSA and GoL
- Competing political interests
Governance – Organization of Client

- Lesotho Highlands Water Commission (LHWC)
- Lesotho Highlands Development Authority (LHDA)
- LHDA Board of Directors
- LHDA Technical Committees
- Trans Caledon Tunnel Authority (TCTA)
- Independent Oversight Committees
- Independent Panels of Experts (POEs)
Solutions

- Greater complexity justified strong PgM control
- Project Management Unit set up in 2013
- Engineering and Social & Environmental tasks integrated with each other from the outset
- Standardization and policies developed (procurement, design, compensation, communications, quality, SHE&Q)
Solutions (continued)

- Anti-corruption policy established
- Procurement-balanced competitiveness, transparency, cost, quality and local preference (Lesotho, RSA, SADC, international)
- Hiring practice followed procurement balancing
- Set up Young Professional Program to train locals
Solutions (continued)

- Centralized Project Controls System

PROGRAM CONTROLS

- Funding Management
- Budget Management
- Contracts & Procurements
- Financial Monitoring & Control
- Financial Analysis
- Schedule Planning
- Schedule Monitoring & Control
- Schedule Analysis
- Communication & Correspondence
- Workflow Tracking
- Issues & Action Item Management
- Risk Management
- Document Control
- Metrics
- GIS

Enables Processes & Operations
Provides a Collaborative Environment
Forward-Looking Analysis & Decision Support

Continues on next slide
LEARNING OBJECTIVES - Revisited

- Understand funding agency perspectives
  - “Silos;” want separate reporting
- Understand management and logistical challenges
  - Allow for time and cost to cover these
- Competing needs of stakeholders
  - Landholders vs. water users
  - Employment: RSA vs GoL
- International approaches applicable to U.S.
  - Respect, communicate, plan, report, be patient
Questions