

Program Management in Developing Countries:

Delivering Large Water Projects in Lesotho

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The logo for CDM Smith, featuring the text "CDM" stacked above "Smith" in a bold, white, sans-serif font. The logo is positioned on a dark blue background that also contains a close-up photograph of water droplets.

WATER + ENVIRONMENT + TRANSPORTATION + ENERGY + FACILITIES

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

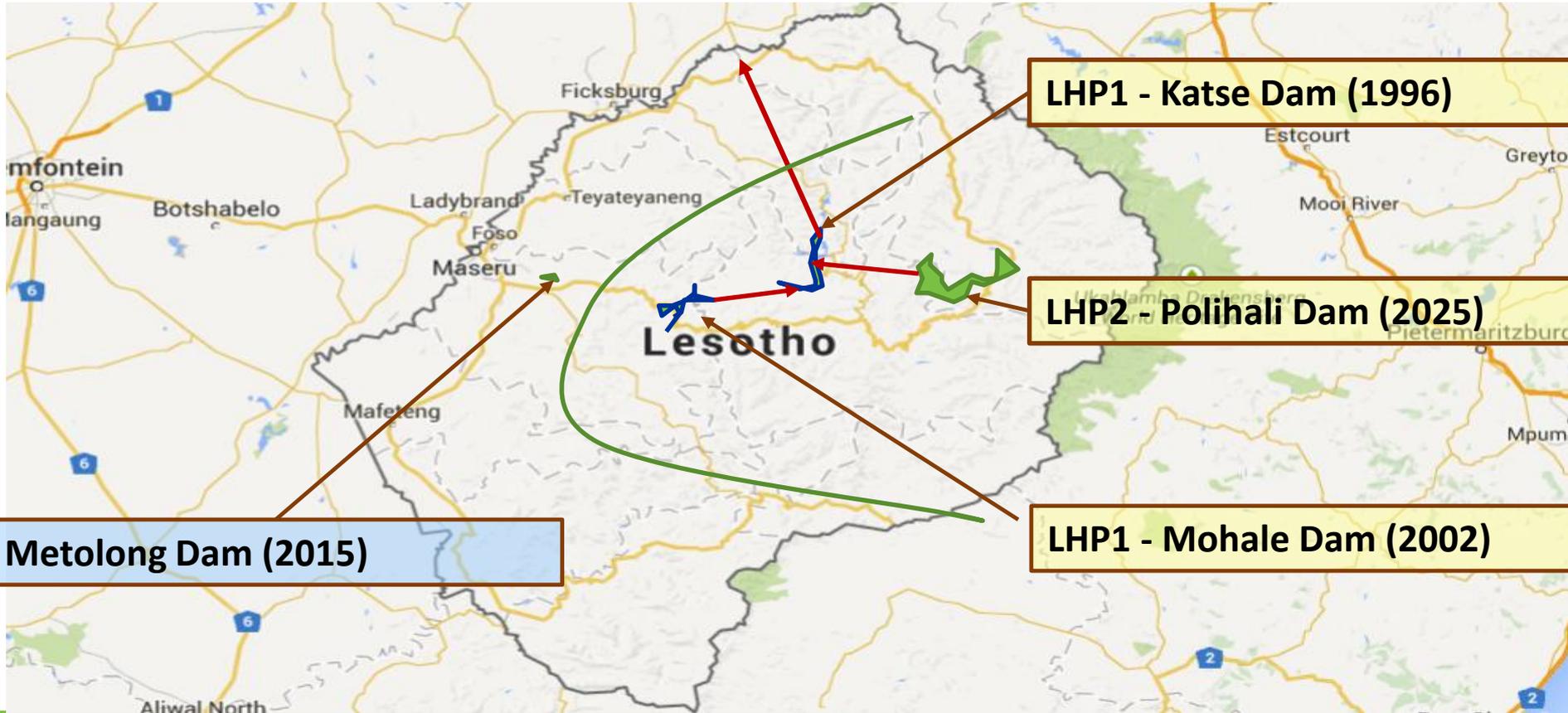


Lesotho – Program Background and Overview

- 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



Quick Photo Tour



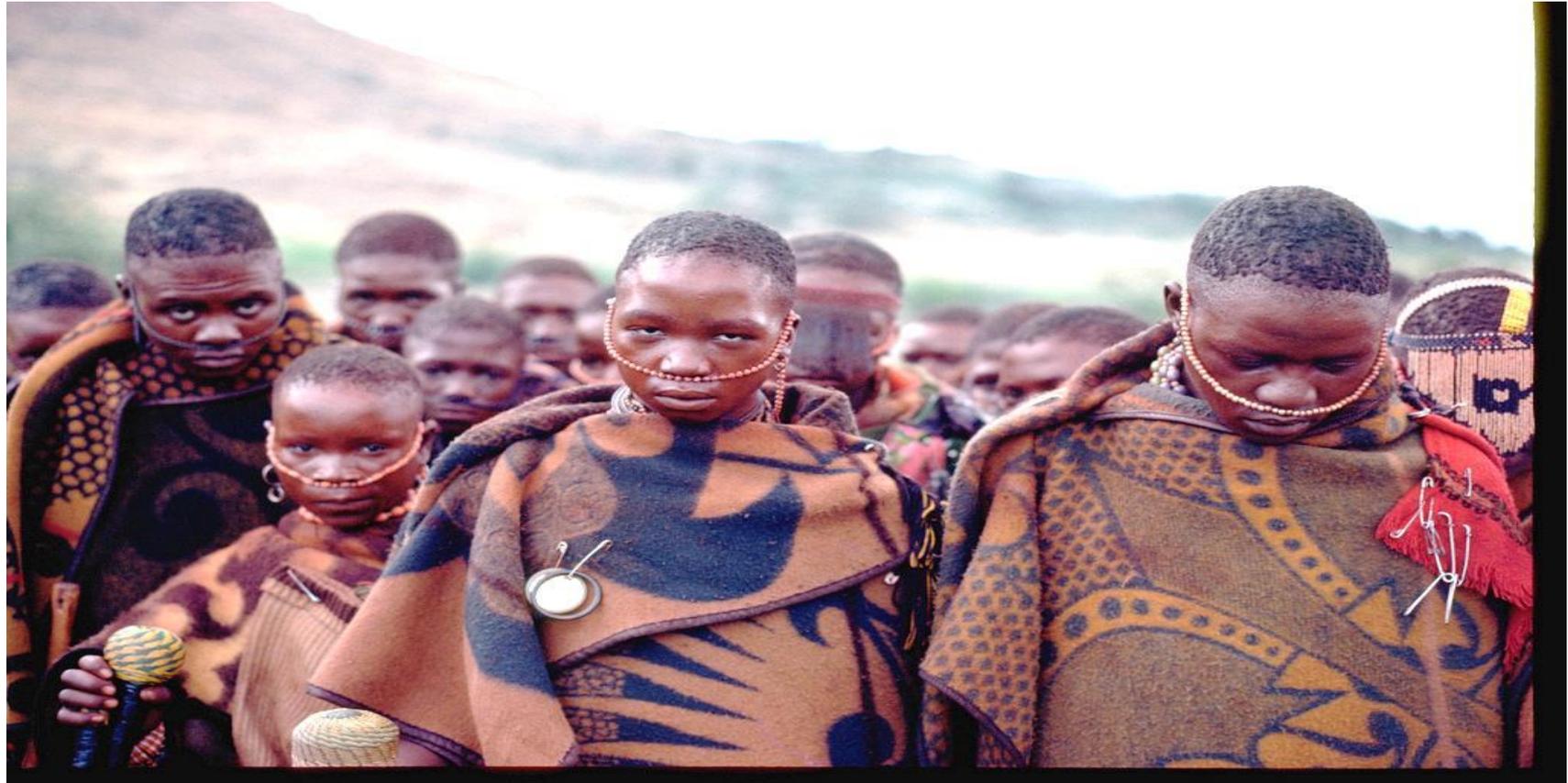
















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Government Structure

- 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





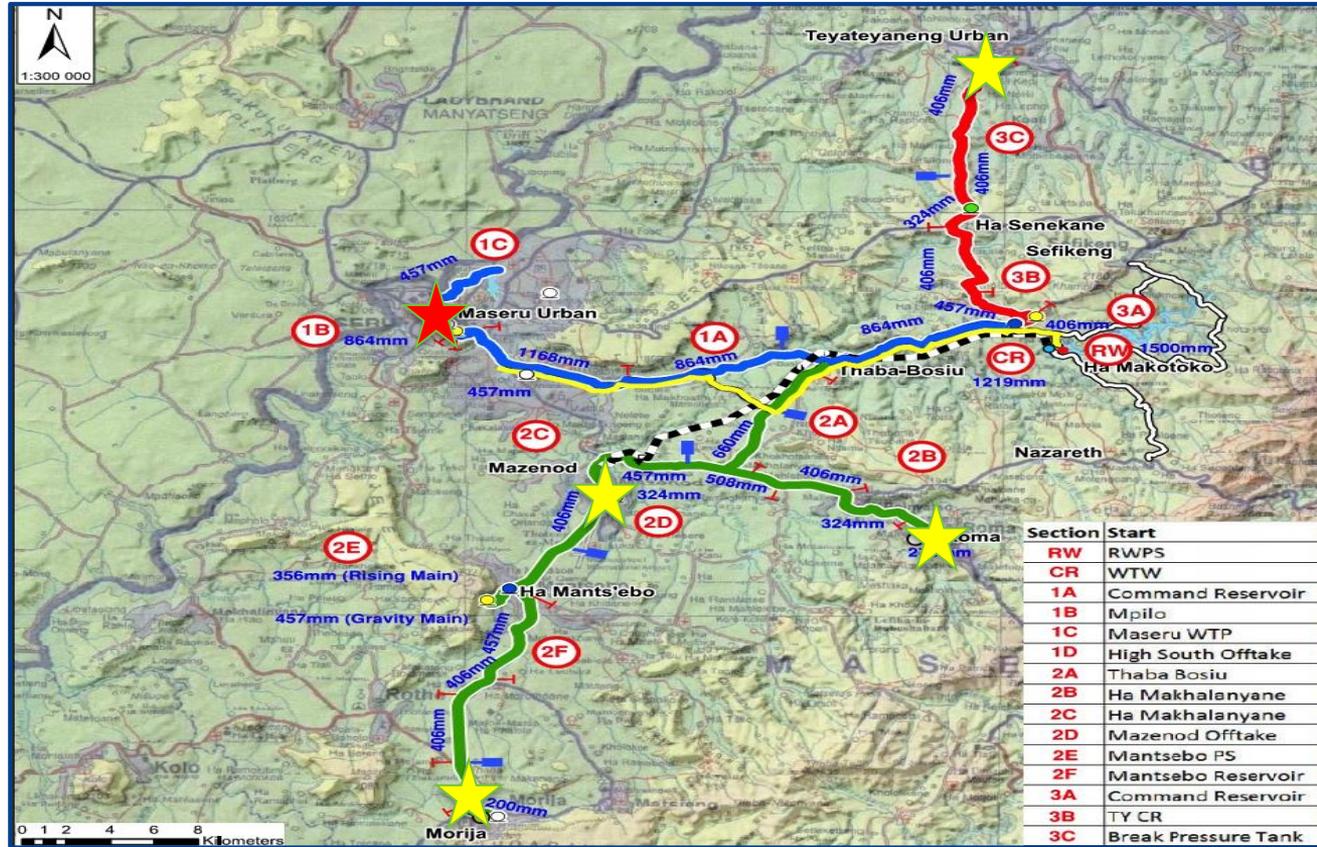
METOLONG DAM & WATER SUPPLY PROGRAMME

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



MILLENNIUM
CHALLENGE CORPORATION
UNITED STATES OF AMERICA

- 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



Uniting against Poverty



Arab Bank for Economic Development in Africa



Kuwait Fund for Arab Economic Development



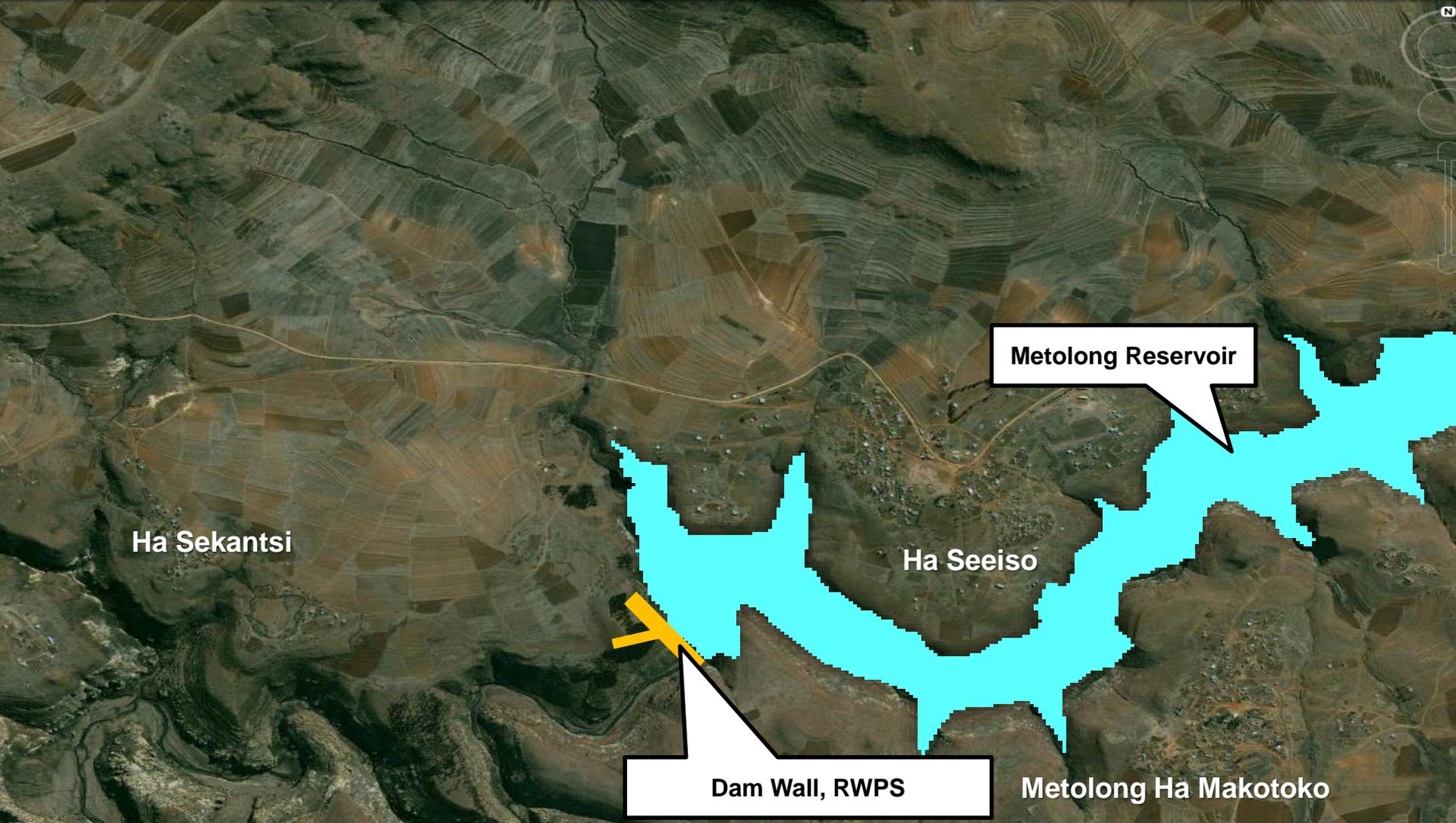
The Saudi Fund for Development



Republic of South Africa

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



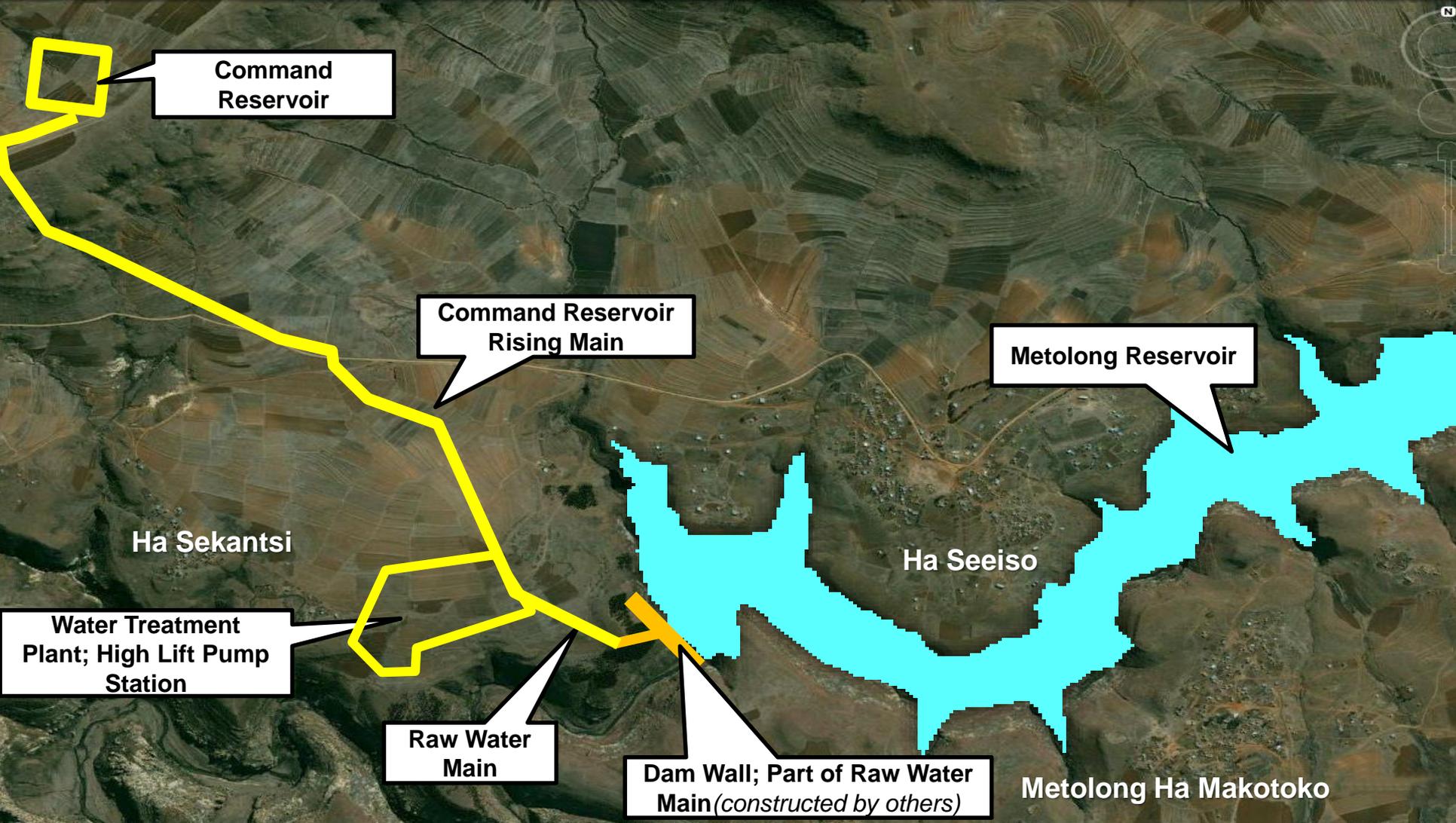
Ha Sekantsi

Metolong Reservoir

Ha Seeiso

Dam Wall, RWPS

Metolong Ha Makotoko



Command Reservoir

Command Reservoir Rising Main

Metolong Reservoir

Ha Sekantsi

Ha Seeiso

Water Treatment Plant; High Lift Pump Station

Raw Water Main

Dam Wall; Part of Raw Water Main
(constructed by others)

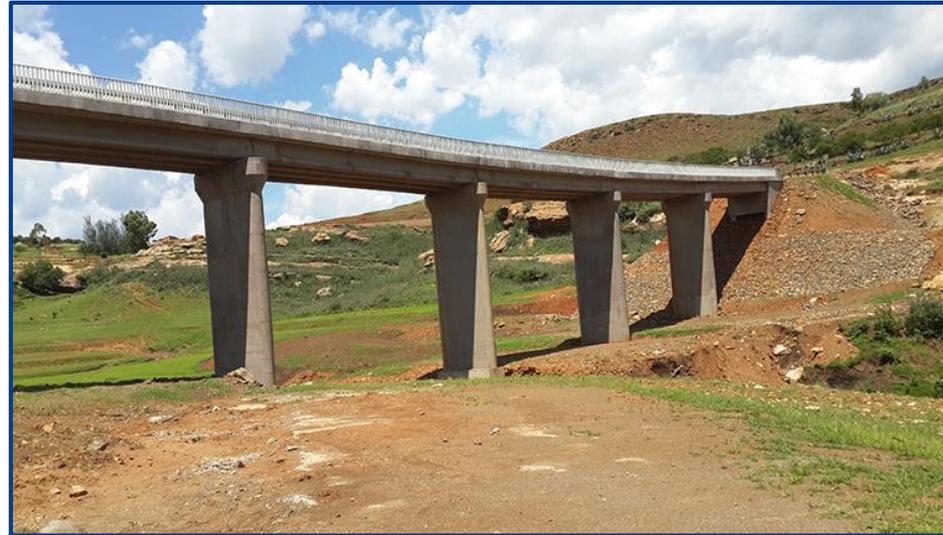
Metolong Ha Makotoko

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



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Project Description – 2008 to 2015

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



24/7 operations

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Project Description – 2008 to 2015

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



Project Description – 2008 to 2015

- Pipelines: welded steel, 160 km (100 miles), \$85M
- Concrete Tanks: up to 40 MI (10 MG), 8 total

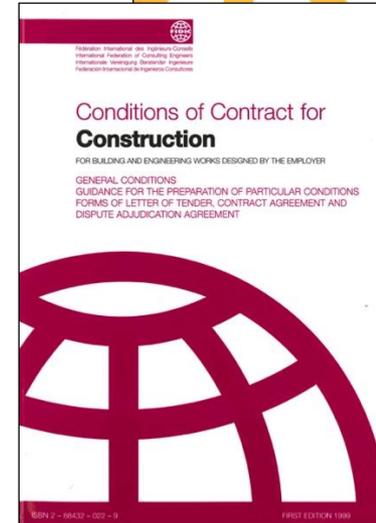
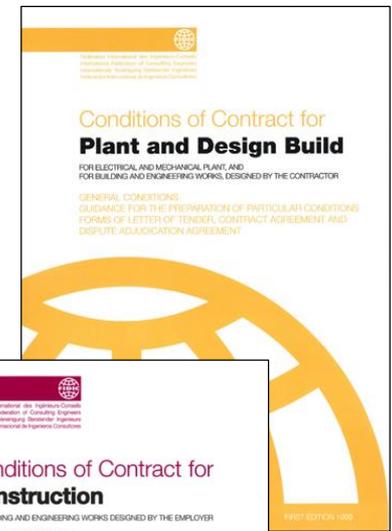


Challenges: Organizational & Structure

- 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

Challenges: Organizational & Structural

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



Challenges *(continued)*

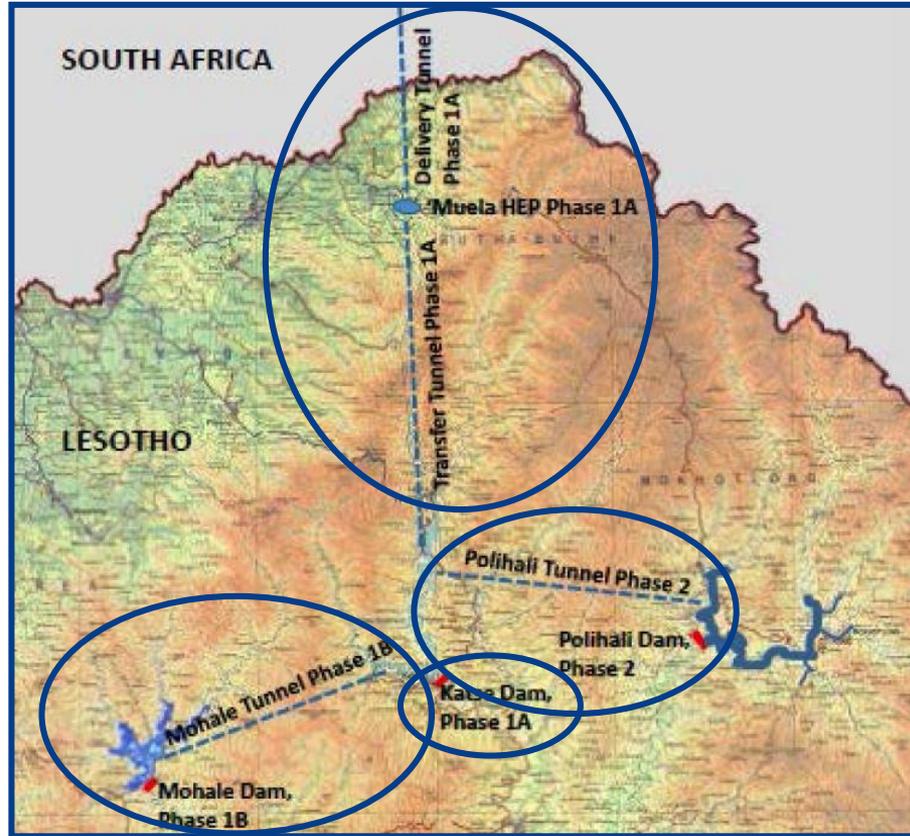
- Cultural issues
- Labor issues
- Health: HIV/AIDS impact from/on workforce
- **Safety**





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



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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)

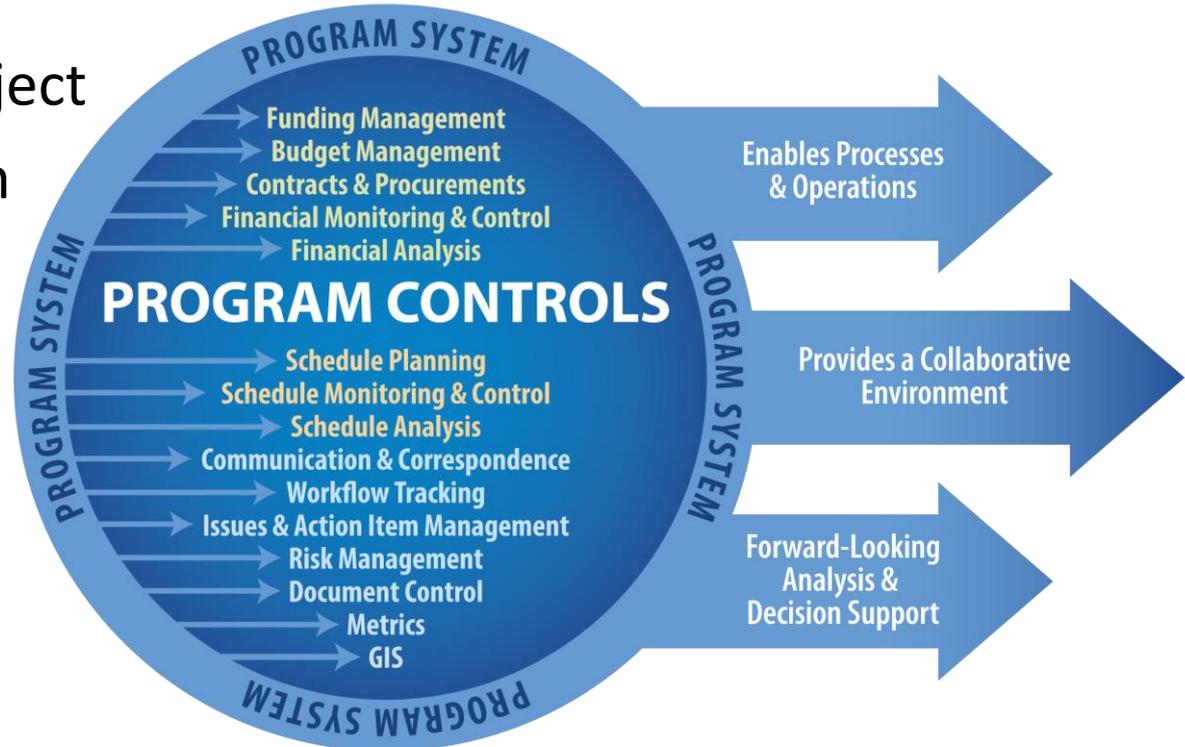
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Solutions *(continued)*

- 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



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SOLUTIONS *(continued)*



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

