Water Security for the Mining Industry

2013 Mining Expo and Conference
Safari Hotel Conference Centre
Windhoek, Namibia
23 – 24 May 2013

Kuiri F Tjipangandjara
General Manager: Engineering and Scientific Services
Namibia Water Corporation, Windhoek, Namibia

What is the State of Water Security in the Namibian Mining Industry?

What Is being done to Improve Water Security in the Mining Industry?

NAMWATER
Namibia Water Corporation Ltd

Presentation

Outline:

1. Water Security: Definition
2. Assess the State of Water Security at the Mines Supplied by NamWater
3. Discuss Causes for the Observed Trends
4. Elaborate on Measures Initiated / Proposed to Improve on Water Security: Short- and Long-term Solutions
5. Conclusion
6. Questions and Comments

NAMWATER
Namibia Water Corporation Ltd

Water Security

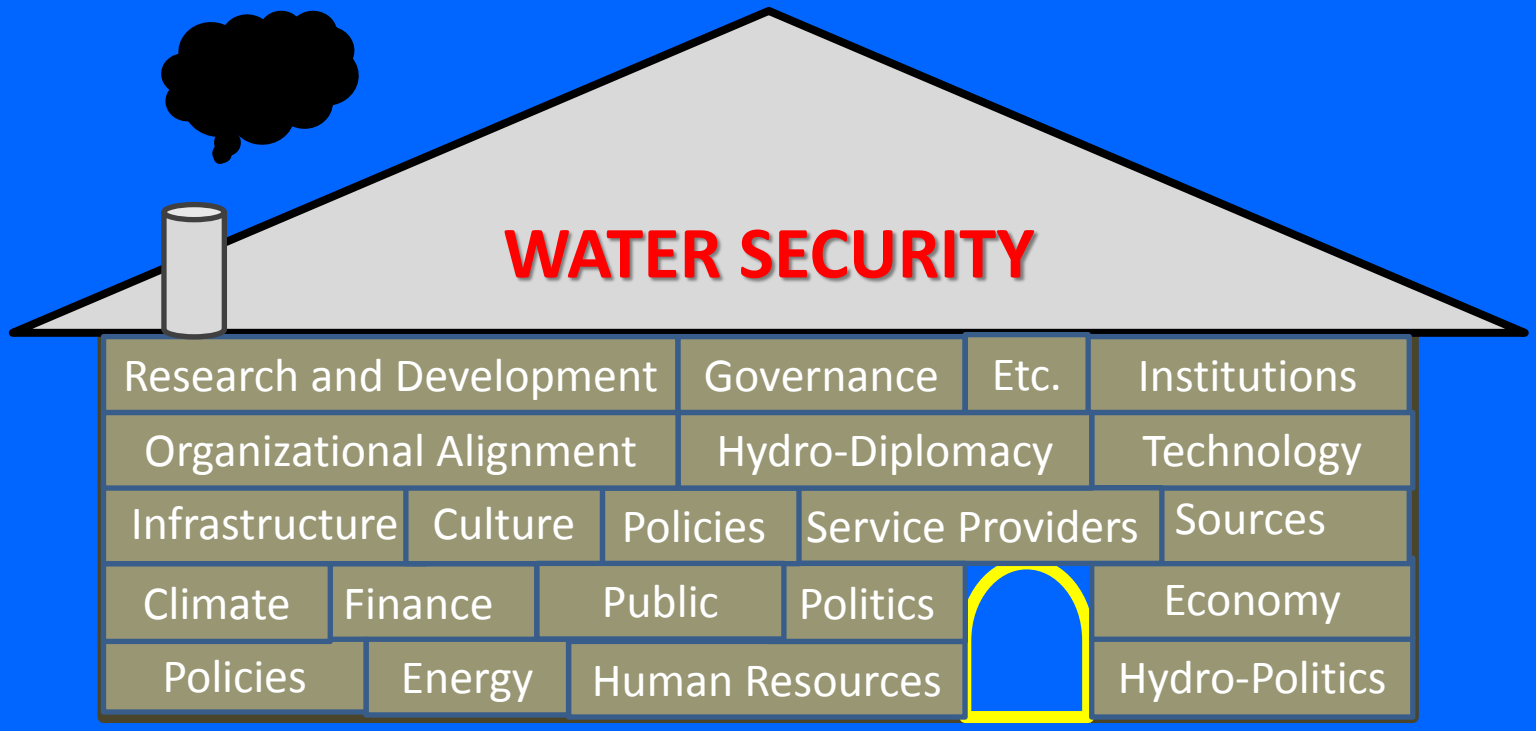
Definition:

- ***"sustainable access, on a watershed basis, to adequate quantities of water of acceptable quality, to ensure human and ecosystem health."*** Water Security: A Primer – Canadian Water Network (2010)

- ***"the reliable availability of an acceptable quantity and quality of water for health, livelihoods and production, coupled with an acceptable level of water-related risks"*** Grey & Sadoff, 2007); DBSA (2009).

NAMWATER
Namibia Water Corporation Ltd

Water Security: Building Blocks



Water Security: Assessment (1)

Mining Operations

No	Name of Mine	Water Demand (Mm^3/a)
1	Skorpion Zinc	2.76
2	Rosh Pinah	1.00
3	Otjihase	0.20
4	Okorusu* (projection)	0.13
5	Navachab	1.09
6	Rossing	3.14
7	Langer Heinrich	1.12
8	Husab (Under Construction)	

NAMWATER
Namibia Water Corporation Ltd

Water Security: Assessment (2)

Criteria

No	Criteria	Percentage Weight
1	Water Quantity	20
2	Water Quality	15
3	Infrastructure : Condition and Maintenance - Shared	15
4	Infrastructure : Condition and Maintenance – Dedicated	15
5	Power Supply: Availability; Quality; Quantity	15
6	Scheme Insensitivity to Climate and Weather Changes	10
7	NamWater - Customer Relations	10

Water Supply Index: 1 - 5

NAMWATER
Namibia Water Corporation Ltd

Water Security: Assessment (3)

Summary of Results: Water Security Index

No	Name of Mine	Score (1 - 5)
1	Skorpion Zinc	3.8
2	Rosh Pinah	3.7
3	Otjihase	3.4
4	Okorusu	3.6
5	Navachab	3.3
6	Rossing	2.6
7	Langer Heinrich	2.8
8	Husab (Under Construction)	

- Water Quantity
- Infrastructure
- Power Supply
- Climate/Weather

NAMWATER
Namibia Water Corporation Ltd

What Is being done to Improve Water Security to the Mining Industry - Central Namibia Area?

Water Security: Risks and Solution (1)

Situation at the Coast: Implications

- **Mining:**
  - Disruptive to the Operations
- **Investors**
  - Low Confidence Level
- **Supplier – Customer Relation**
  - Strained
- **Supplier**
  - Operational Nightmare
    - "Supply Water in Drops"

NAMWATER
Namibia Water Corporation Ltd

Water Security: Risks and Solution (1)

Situation at the Coast: Some Facts

- **Size of Operation**
  - Rössing + LHM : 45% of Water Demand (2013)
  - Rössing + LHM + Husab: 68% of Water Demand (2016)
- **Impact on the Economy**
  - Massive

NAMWATER
Namibia Water Corporation Ltd

Water Security: Risks and Solution (2)

<u>Situation at the Coast:</u> Serious

- **Causes:**
  - Source (Quantity & Quality)
  - Storage
  - Conveyance System
  - Non-integration Water Supply Systems
  - Power Supply

NAMWATER
Namibia Water Corporation Ltd

Water Security: Risk and Solution (3)

Situation at the Coast: "Resolution"

- **NDTF - Mile 6 Desalination Plant (BOOT)**
  - Resolution of Outstanding Issues
    - *Procurement*
    - *Technical*
    - *Financial*
    - *Commercial*

- **Make an Award before Dec 2013**
- **Construction Start in early 2014**
- **Water Flow by late 2015**

SCHEDULE REALISTIC ?

NAMWATER
Namibia Water Corporation Ltd

Water Security: Risk and Solution (4)

Situation at the Coast: Serious

- **Concern About Further Delays**

INITIATE THE NEGOTIATION WITH AREVA FOR EXCESS WATER FROM THE EDC PLANT

NAMWATER
Namibia Water Corporation Ltd

Water Security: Interim Solution (1)

<u>Engagement with AREVA:</u> Progress

- **2009 –** No Progress; Project Abandoned
- **Late 2011 –** Resumed; Slow
- **Mid 2012 –** Noticeable Progress
- **Late 2012 -** Mines Accepted Offer by AREVA
- **All Technical Works for Tie-in Completed**
- **Refine the Commercial Agreements**
  - ✓ June: Flow of 300m^3/h (0.17Mm^3/y)
- **Water for the Construction of the Husab Mine**

NAMWATER
Namibia Water Corporation Ltd

Water Security: Interim Solution (2)

Engagement with AREVA: Progress

Sources Limitation:

- **Abstraction Permit for Omdel to Expire Soon**
  - Abstraction to Reduce to 4.5Mm³/y
  - No Inflows in the Omdel (4yrs)
- **Water Levels in the Omdel is Dropping**
  - Environmental Risk

- **Must Find Another Source to**
  - Replace the Omdel Water - Rössing and LHM
  - Supply the Local Authorities (emergencies)

NAMWATER
Namibia Water Corporation Ltd

Water Security: Interim Solution (3)

Engagement with AREVA: Progress

Replacement Water:

- **Technical Work in Progress – 10Mm³/y**
  - Connect AREVA Pipe to the Omdel Pipe
- **Commercial Agreements in Progress**
  - ✓ Q2 of 2013 (August): **6Mm³/y**
  - ✓ Q4 of 2014 (Dec): **(6 + 4) = 10Mm³/y**

- **2016 : Mining Demand > Supply**
  - If Mile 6 Plant is **NOT** in place

NAMWATER
Namibia Water Corporation Ltd

Water Security: Interim Solution (4)

AREVA Desalination Plant: Fresh Look

Plant Capacity & Water Demand	Production Mm^3/y	Production Mm^3/y (Upgrade)
Desal. Plant Capacity	**20**	**25**
Mining Demand (2016)	**12 - 15**	**12 – 15**
Excess Capacity	**8 – 5**	**13 - 10**

- **This Quantity CANNOT be moved to Swakop Base**
- **Limitation of Omdel-Swakopmund Pipeline**
  - Poor Condition & Capacity

- **Construction of a New Pipeline (NamWater) ?**
  - Risky: Plant Ownership (AREVA)

NAMWATER
Namibia Water Corporation Ltd

Water Security: Long-Term Solution(s)

Some Facts: Availability and Needs

- **EDC Plant has Plenty of Water: No User**
- **NamWater Needs Water: Nothing to Supply**
- **Poor Water Security: Implications**
  - Mining Operations Being Derailed
  - Some Investments on Hold
  - Coastal Towns' Expansion Limited

POSSIBLE SOLUTIONS

NAMWATER
Namibia Water Corporation Ltd

Water Security: Long-Term Solution(s)

"Possible Solution(s) – PLAYING WITH IDEAS"

1. **NamWater Purchases the AREVA Plant**
   - Construction of New Pipeline and Storage
   - Supply **all the Mining Demands** from EDC Plant
2. **Finalise the Procurement Process for the "Mile 6 Plant"**
   - Delay Construction
   - Favourable Increase in Uranium Price:
     - Developments New Uranium Mines
     - Expansion of Production by Existing
3. **Construct the "Mile 6 Plant" and Wlotskasbaken**
   - Savings on Intake & Power Supply Costs : Off-set by New Pipeline
   - Less Impact on the Environmental

NAMWATER
Namibia Water Corporation Ltd

“PLAYING WITH IDEAS”

NAMWATER
Namibia Water Corporation Ltd

Water Security for the Mining Industry

Conclusion:

1. Water is Key to the Mining Industry
2. Poor Water Security is a Risk to Mining Operations in Namibia
3. Poor Water Security is a Major Risk to Mining Operations in the Coastal Area of Namibia
4. Integrated Approach to Water Supply can Improve Water Security
5. Broad Participation Stakeholder is Essential

NAMWATER
Namibia Water Corporation Ltd

THANK YOU


WATER SECURITY:
MINING HOUSE
Research and Development
Governance
Etc.
Institutions
Organizational Alignment
Hydro-Diplomacy
Technology
Infrastructure
Culture
Policies
Service Providers
Sources
Climate
Finance
Public
Politics
Economy
Policies
Energy
Human Resources
Hydro-Politics