Kuwait Environmental Remediation Program (KERP)
Challenges and Opportunities

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- Activities of the Program (KERP)
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Background
The natural resources were devastated by the aggression act against the environment.

Damages were from the burning and gushing of around 800 exploded oil wells.

The released oil managed to reach areas of fresh groundwater aquifers in north.

Movement of heavy military machinery in the desert caused land degradation.
UNCC Related Challenges

• First time in the history of the UN environmental damages were considered for compensation.
• No precedence in terms of international law to address environmental damages.
• Lack of base data or pristine information.
• Not possible to understand the extent of environmental damages without the conduction of detailed M&A studies.
UNCC Challenges/ Awards

- $85 Billion claimed by Kuwait, Iran, KSA, Jordan and Bahrain
- Only $5 Billion awarded (6%)
  - No award for marine damages
  - No awards for public health
  - No awards for PTSD (Post Traumatic Stress Disorder).
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Structure

– Kuwait National Focal Point oversees and coordinates the KERP in collaboration with KISR

– Projects are executed by Government entities with right expertise
  • KOC, PAAF, MEW, MOD, EPA

http://www.kuwaitnfp.org/
The Activities of KERP
Scope

- Fencing and patrolling of five designated areas (DA) 1,679.5 km²
- Produce 18k native seeds and 28 m seedlings in 8 years
- Re-vegetation of 79.2 km².
- Monitoring program for 5 years

Challenges

- Protection of the designated areas is difficult and needs a supporting legal tool.
- Threats due to UXO and/or landmines.
- Production of native plants seeds and seedlings is costly and requires large facilities.
- Persistence of drought may cause severe losses of plants and sand encroachment.
- Alternative sources of irrigation water need to be sought.
- Capacity building is needed.
Total Area: **1,680 sq.km**

**Requirements:**
- 3k kg native seeds
- 24 m seedlings
- 699k trees in 8 years
- Re-vegetation of 79.2 km²
Mass production of native plants seeds in Local farms for the Re-vegetation Projects of KERP
Element 1: Oil Lakes – Remediation (KOC-PMC)

Scope

- UXO Survey and clearance
- Construction of landfills
- Excavation & transportation of material to landfills / implementation of alternative remediation technologies
- Re-vegetate remediated sites

Challenges

- UXO
- Transportation of excavated material to the landfill.
- Demonstration of Alternative technology
List of Proven Technologies

In-Situ Remediation Technologies

- Bioventing
- Enhanced Bioremediation
- Chemical Oxidation
- Fracturing
- Soil Flushing/Washing
- Air Sparging
- Bioslurping

Ex-Situ Remediation Technologies

- Biopiles
- Chemical Extraction
- Chemical Reduction/Oxidation
- Thermal Treatment (Low-Temperature)
- Composting
- Land Farming
- Slurry Phase
- Vapor Extraction
Challenges Related to Project Implementation

• Project nature and size require international expertise, adding cost.

• UNCC recommended remediation solutions but did not consider management requirements and its cost (PMC).

• Long operation process in governmental organizations.
Challenges in Demonstration of Alternative Technology Projects

- Demonstration of alternative technologies in “Restricted and hazardous” sites.
- UXO, EOD management strategy.
- Environmental Health Impact Assessment (EHIA) and Environmental Management Plan (EMP).
- Evaluation Criteria and technology success verification.
THANK YOU

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