



Netherlands Organisation for Scientific Research
WOTRO Science for Global Development



Cocoon-Integrated Project in Yemen

Groundwater in Political Domain

Water and Environment Center

METAMETA



Water and
Environment Centre

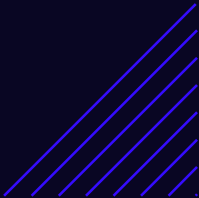


META
META Research

Conflict and Cooperation Over Natural Resources in Developing Countries.

Objectives:

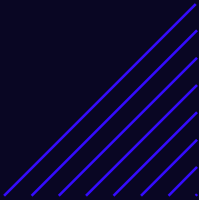
- Get into the political black box.
- Understand the political game.
- Examine inter politic and management action under different conditions.
- Put management of groundwater on the political agenda.



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Methodology

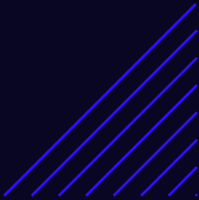
- Laissez-passer: no conflict, no cooperation.
- Conflict: conflicts manifest between users
- Cooperation: development: laws, institutions and monitoring systems.
- Cooperation and conflict: competition, development and access systems, laws, institutions monitoring.



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Components:

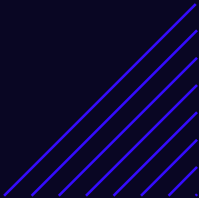
- Local Groundwater Security, Accountability and Governance:
 - Role and responsibilities of local communities
 - Informing and enabling local groundwater governance
 - Building on traditions and enabling communities to craft new rules
- Analysis of water sector:
 - Historical foundation and administrative of water Sector form
 - Actual institutional hierarchy and water legislation Framework
- Impact of policies on water rights
 - Remote sensing to assess water budget of Wadi Zabid
 - Disappearing ground water in Al Mujelis coastal zone
- Effect of political conflict and cooperation on groundwater
 - Groundwater, diesel and politics nexus in Yemen
 - Debate, negotiation agreement between politicians about diesel price



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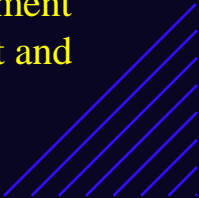
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- Role and responsibilities of local communities
 - Farmers groundwater local management and link with water law and other legislations.
 - Local groundwater management is not exceptional farmers response to groundwater risks.
 - Since 2000 substantial effort has gone into creating awareness on groundwater overuse.
 - Importance of water law and NWRA as a regulator to control well drilling.
 - Role of programs and projects to support establishment of many WUGs and WUAs.
 - Lessons gained from local groundwater management cases :
 - Investment in groundwater is surprisingly collective.
 - There is a high level of local management in several cases
 - Local management is encouraged by projects
 - Water law and the licensing procedures imbedded in it are important
 - local sheikh, Aqil or WUA take the initiative of local groundwater management
 - Rules; wells depths, separating, recharge measures, reservoirs management and cropping bans.
 - Not in all cases has local management been able to reverse the tide.



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- Informing and enabling local groundwater governance
 - How stakeholders can work together to improve water governance?
 - Trend towards development of local groundwater governance;
 - Where local conflicts on groundwater were developed?
 - What are the local rules and regulations invented to protect aquifers and springs?
 - Enforcement of the water law regarding the high number of unlicensed wells being drilled
 - Scope for improved local groundwater management in Yemen
 - Visibility and implications for monitoring groundwater local management
 - Good examples from other different parts of the world had been mentioned



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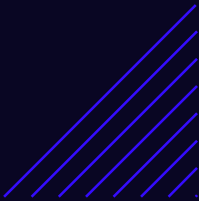
- Building on traditions and enabling communities to craft new rules
 - Means to improve and strength water governance, support local management and scale it up.
 - Lessons from local initiatives:
 - There is a high level of collective local management in several cases
 - Local management is in some cases encouraged by projects
 - Community organizations take multiple forms: informal and formal, small and large, for piped domestic supply and for irrigation, they play important role in water management.
 - Last 40 years of agricultural development efforts were state centered and ignored local traditions of water management.
 - Suggested options to support rural communities in improving water management:
 - Promote awareness and knowledge extension on water related issues
 - Incorporate informal management into water sector formal management policies
 - Revive and adapt customary and traditional rules
 - Develop simple monitoring tools for local water users



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Analysis of water sector:

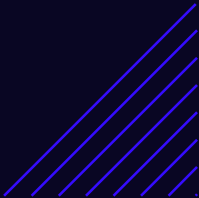
- Historical foundation and administrative of water Sector form
- Actual institutional hierarchy and water legislation Framework



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Historical foundation and administrative of water Sector form

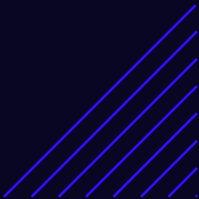
- Strong points
- Good laws, regulations and strategies
- Existence of basin committees and water user associations (incipient stakeholder participation)
- Existence of local water corporations; with performance indicators
- Issuing of a manual for local government services
- Issuing of a statistical yearly book
- Existence of web sites for most agencies
- Weak points
- Lack of implementation of laws and strategies
- Implementation timeframe for strategies is not specified
- Absence of the concept of monitoring and evaluation
- Over-centralization in the water sub-sectors
- Responsibilities are often not well understood
- Duplication of responsibilities and mandates among agencies
- Weak capacity of local administrations
- Little transparency in the criteria for appointing governmental staff and allocating the funds
- Poor accountability and poor integrity within agencies



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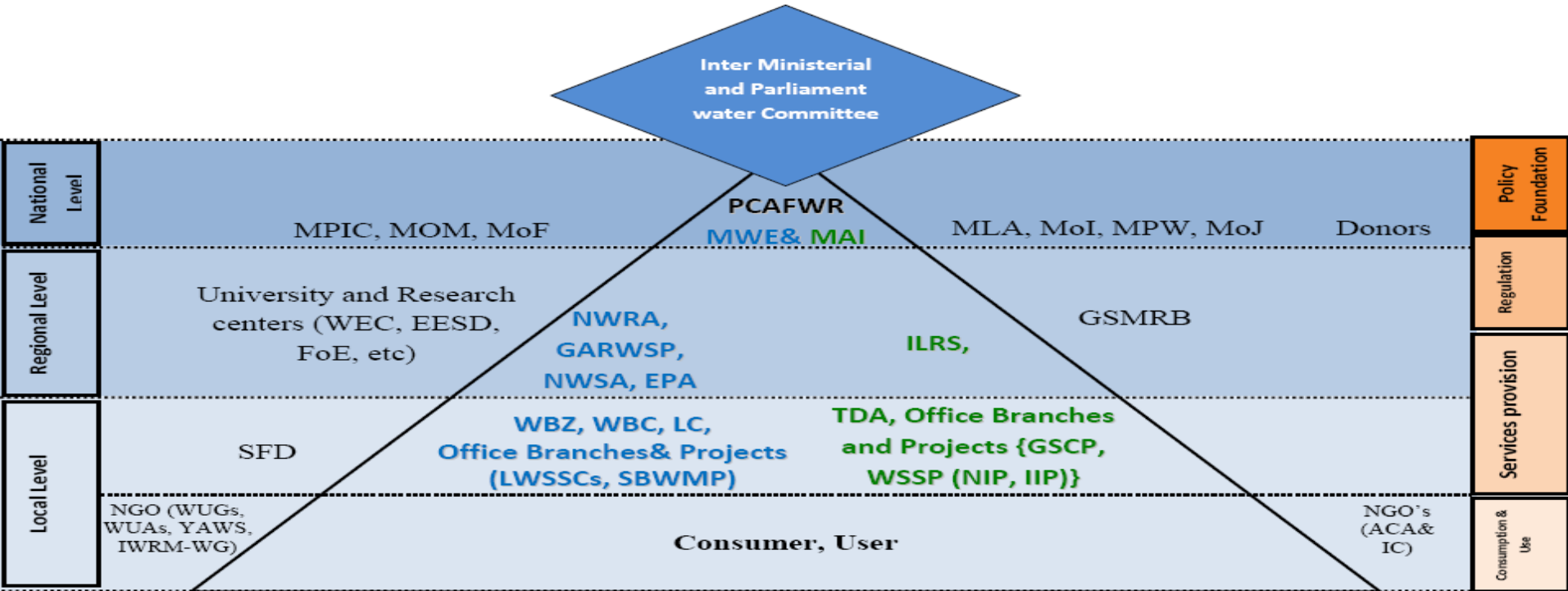
Actual institutional hierarchy and water legislation framework

- The national level and policy formulation
 - Parliament committee of agriculture fishery and water resources
 - The main two ministries; MWE and MAI
 - Other related ministries; MPIC, MoF, MOM,...
 - Donors
- The regional level (regulating level)
 - Authorities; NWRA, GARWSP, NWSA,...
 - Research centers; WEC, EESD, FoE,...
- The local level
 - Offices and branches belong to MWE and MAI; TDA, GSCP, NIP,...
 - Institutions; SFD
- The consumers level
 - NGOs; WUGs, WUAs and BC



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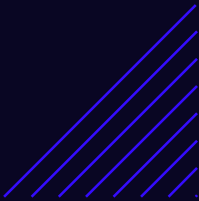
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Impact of policies on water rights:

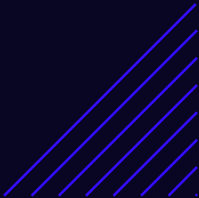
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Remote sensing to assess water budget of Wadi Zabid

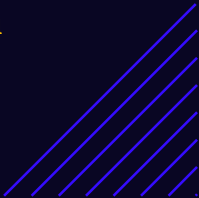
- The actual irrigated area is estimated 71,304 ha.
- The annual average total system efficiency for Zabid is 47%.
- Wadi Zabid actual and reference evapotranspiration had been calculated
- Wadi Zabid precipitation and surface water balance had been calculated
- Almujelis actual and reference evapotranspiration had been calculated
- This study has been able to demonstrate that some surface parameters such as surface albedo, vegetation index, surface temperature can be accurately derived from satellite image data using M-SEBAL model.
- water balance is minus. Most of the flood is used at the upstream region: directly as surface water or indirectly as pumped water.
- Excessive pumping at the upstream leave little base flow for downstream.



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Disappearing ground water in Al Mujelis coastal zone

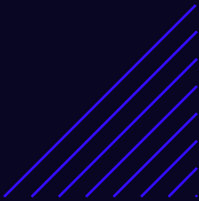
- **Environmental degradation in Al Mujelis is characterized by:**
 - **Desertification increasing in area**
 - **Rapid depletion in groundwater**
 - **Increasing probability of saltwater intrusion**
- **Water Rights is the master key to figure out the case of Al Mujelis**
 - **Evaluate the real effect of existing diversions in upstream**
 - **Study Wadi Zabid actual water budget**
 - **Assess role of policies and powers in water rights and re-put each player in its proper role**
 - **Modify upstream area crop pattern from water conservation vision**
 - **Redistribute seasonal flood water equitably between up and down streams.**



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Effect of political conflict and cooperation on groundwater:

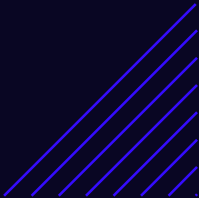
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- Debate, negotiation and political agreement about diesel price



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Groundwater, diesel and politics nexus in Yemen

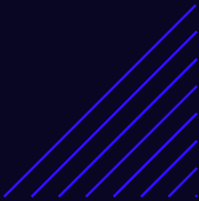
- **Impact of Diesel Crisis on Water Pumping**
- **Impact of Diesel Crisis on Diesel Consumption**
- **Impact of Diesel Crisis on Agricultural Productivity**
- **Impact of Diesel Crisis on Groundwater level**
- **Impact of Diesel Crisis on products market chain**



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Debate, negotiation and political agreement about diesel price

- **Reasons caused fuel crisis 2011 and its negative impacts**
- **Story from debate to agreement about hike diesel price**
- **Water needs and politic unfair games**
- **Jatropha trees as a source for bio-diesel**



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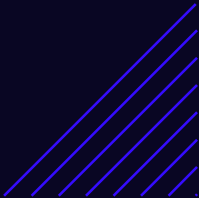
ACTION PLAN:

1. Al Mujelis coastal zone

Conduct discussions about water rights in Wadi Zabid and Al-Mujelis Village:

- More focus on institutions that are responsible to what happened in Al-Mujelis
- Evaluating the real effect of existing diversions in upstream
- Assessing role of policies and powers in water rights and re-put each player in his proper role
- Modifying upstream area crop pattern from water conservation vision
- How to redistribute seasonal flood water equitably between up and down streams.

Some technics will be used as; transect walk, time line, a joint resource mapping, seasonal calendar.

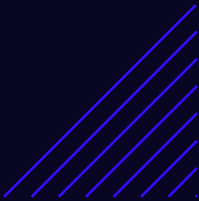


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ACTION PLAN:


2. Debate, negotiation and political agreement about diesel price

- As it appeared from study that events occurred rapidly and situations suddenly changed and groundwater is directly affected. So, continuous observing effect of political situation on groundwater though its effect on diesel availability in markets and its fluctuation price could happen in the future specially with the next political calendar in February 2014 date of presidential election.
- Also, continuous recording after agreement debate between parliament and government and effect of that decision on agricultural activities will be assessed.



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ACTION PLAN:

- 3. Local Groundwater Security, Accountability and Governance:**
 - **A plan to discuss the good examples of local ground management by famers and with union of wuas:**
 - **A meeting will be held with them, during it every WUAs leader appear in the DVD can explain to other his community experience to other WUAs leaders in the present of the Leader of the WUAs Union.**
 - **Discussion about what each WUAs leader has profit from this presentation and how could he transfer the main concept of local groundwater management to his community and mentioned problems faced development of groundwater in his area and make a brainstorming that help them find solutions.**
- 

CoCooN Yemen	Local Groundwater management	Water Sector Policy	Water Rights	GW, Diesel, Political Nexus
Year 3	<ul style="list-style-type: none"> - Shearing information and changing experiences about LGWM success stories between WUAs - Achieve a memorandum of understanding between WUAs about role of local community in regulating and conserving groundwater resources 	<ul style="list-style-type: none"> - Identify relation between GW problems and departments responsible in water sector form as hierarchy and legislations - How to remove the overlapping between departments forming water sector - Advise government and donors with policy briefs 	<ul style="list-style-type: none"> - Conduct discussions about water rights in Coastal area in Wadi Zabid and Al-Mujelis Village (Field visit) and continue analysis through the years 3 to 5 	<ul style="list-style-type: none"> - Make joint policy brief with others - Keep following the debate complement with economic analysis
Year 4	<ul style="list-style-type: none"> - Identify the local groundwater management in new areas as Dhamar (middle plateau on alert), Hadramout (southern east part rich basin), and Sana'a (middle plateau going dried) continue through years 4 and 5 - Support the union of WUAs to take leading role 	<ul style="list-style-type: none"> - Follow up studies of earlier Interventions - Organize debate and training events for stakeholders, politicians, officials and donors about GW management - Do analysis of water sector institutional with stakeholders and farmers in each area and how it is related to the central system 	Continue of year 3 objectives	<ul style="list-style-type: none"> - Continue research and prepare regular reports on groundwater pumping and relation with diesel price and other factors - Organize debate with large rang of stakeholders especially with WUAs on groundwater management
Year 5	<ul style="list-style-type: none"> - Strength and enforce connections between parts forming water sector and communities' organizations 	<ul style="list-style-type: none"> - Continue of year 4 - Explore sister NGO to support facilitation of better groundwater management and water technology 	Learning lessons: similarities differences of GW in political domain between different Cocoon regions	Identify main items that should be considered into inter politicians agreement to keep groundwater away of political unfair games