



GP- CoCooN-Integrated Project



Netherlands Organisation for Scientific Research
WOTRO Science for Global Development

Example of Partnership Research

Groundwater in the Political Domain

Al-Mujellis Case study

Field work done by team:

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META
META Research

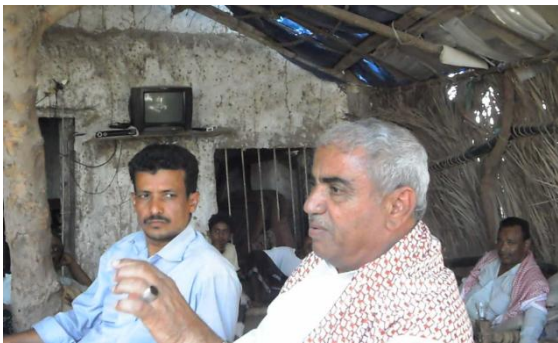
Objectives

- To assess the water resources problems and seeks for solutions by using bottom-up approach.
- To put the suggested recommendations on the political agenda.

Methodology

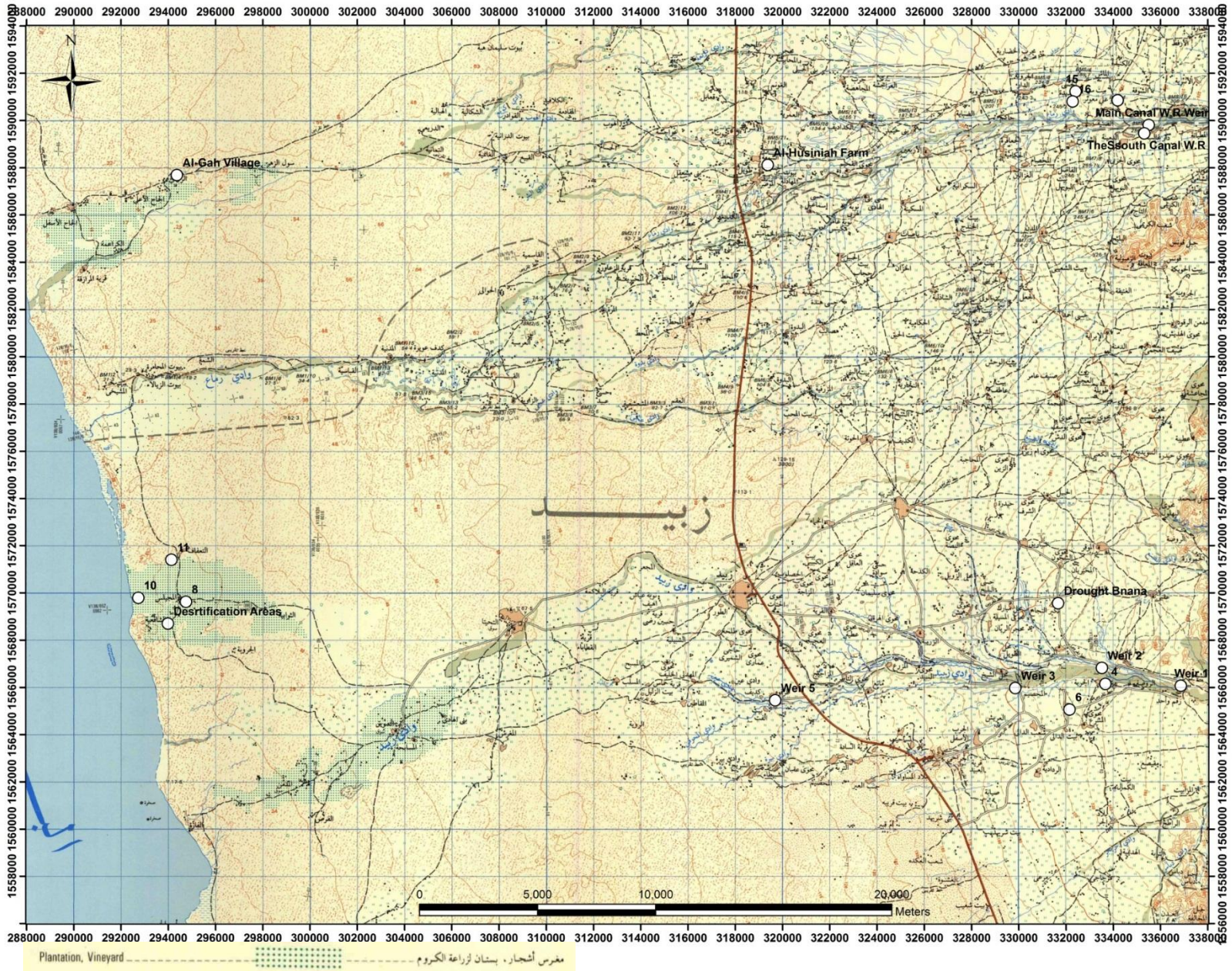
- Participatory Rural Appraisal (PRA).
 - Discussion groups.
 - Problems and solutions Tree.
 - Time line and etc.

Methodology



Previous Studies

Topographic Map of the Study Area



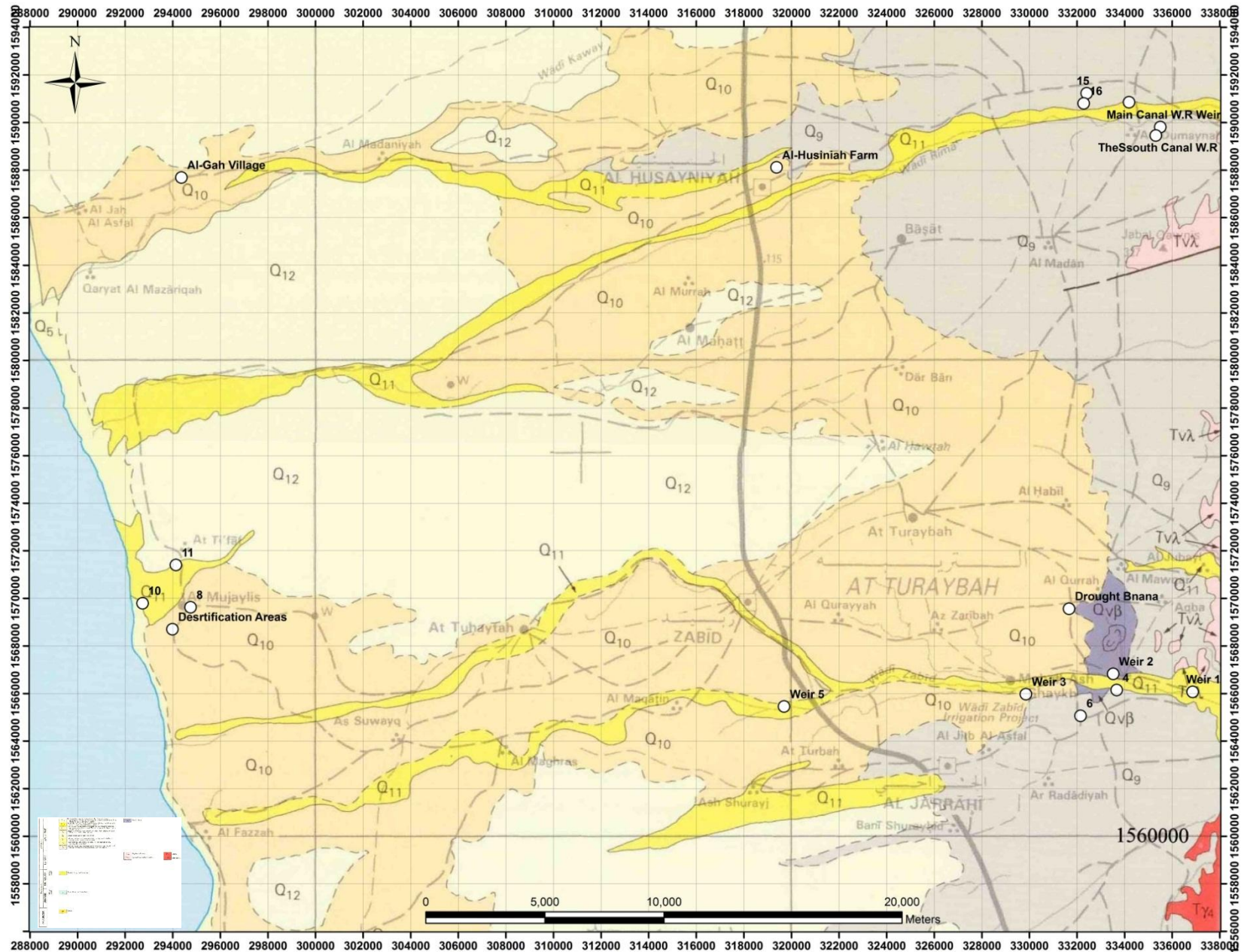
Previous Studies Population

The population of Al-Mujellis village distributed in its hamlets

Directorate	Privacy	Village City	Hamlet	Number of building	No. of families	Male	Female	Total
Al-Tuhitah	Al-Karashiah Al-Sufla	Al-Mujellis	Al-Mujellis	70	67	186	187	373
			Al-Zakham	22	22	74	51	125
			Al-Huriah	53	53	173	163	336
			Al-Shafeeiah	20	20	62	51	113
			Al-Sahel	130	129	326	350	676
			Bani Bukash	8	8	20	16	36
			Al-Garubah	41	41	111	106	217
			Al-Thwabiah	22	22	49	52	101
			Al-Tefaf	166	125	280	275	555
			Al-Mfger	22	22	47	63	110
Total in Al-Mujellis Village				554	509	1328	1314	2642

Final Census Results 2004, Source: <http://www.cso-yemen.org/content.php?id=457>

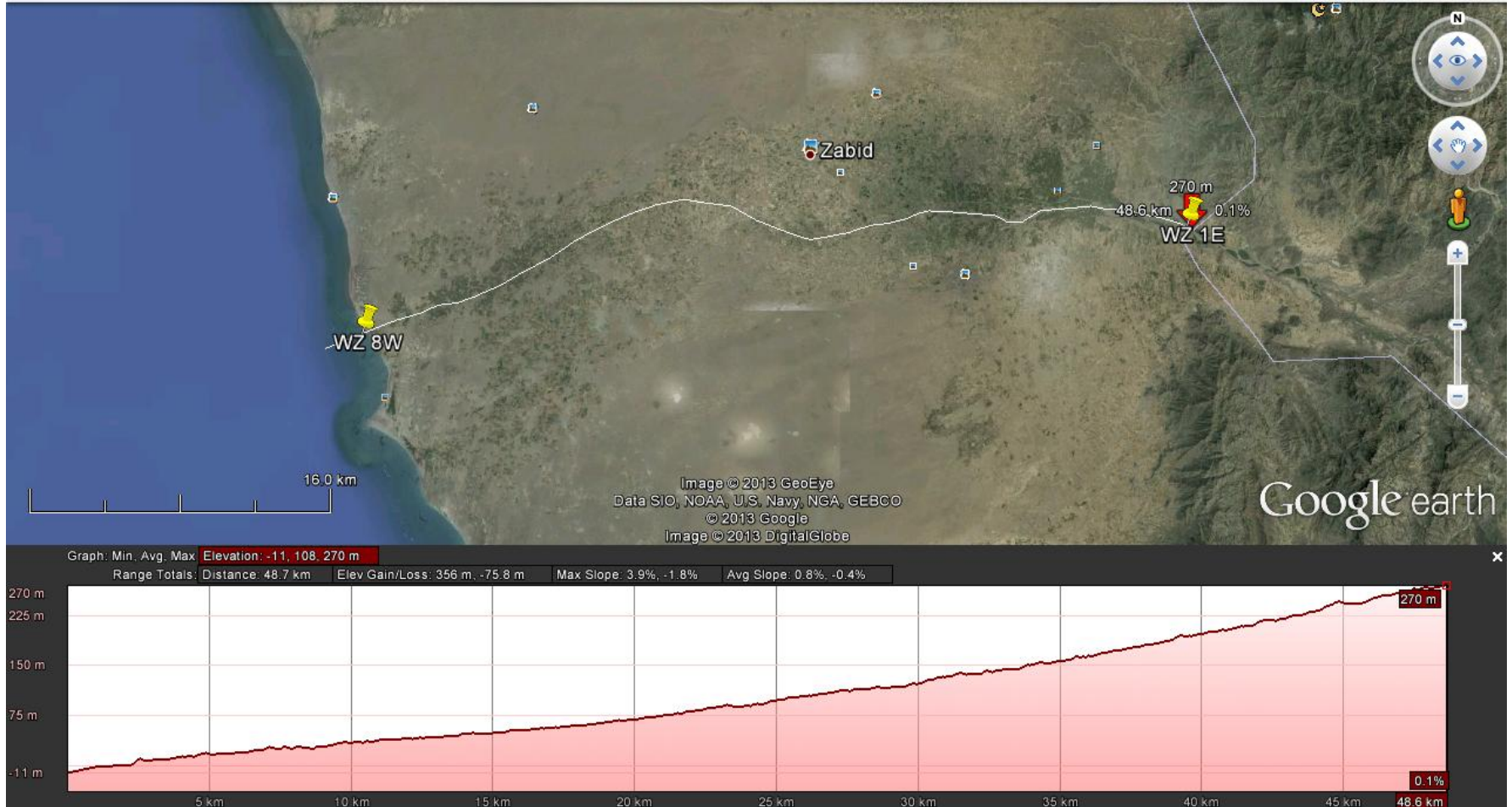
Previous Studies Geologic Map of the Study Area



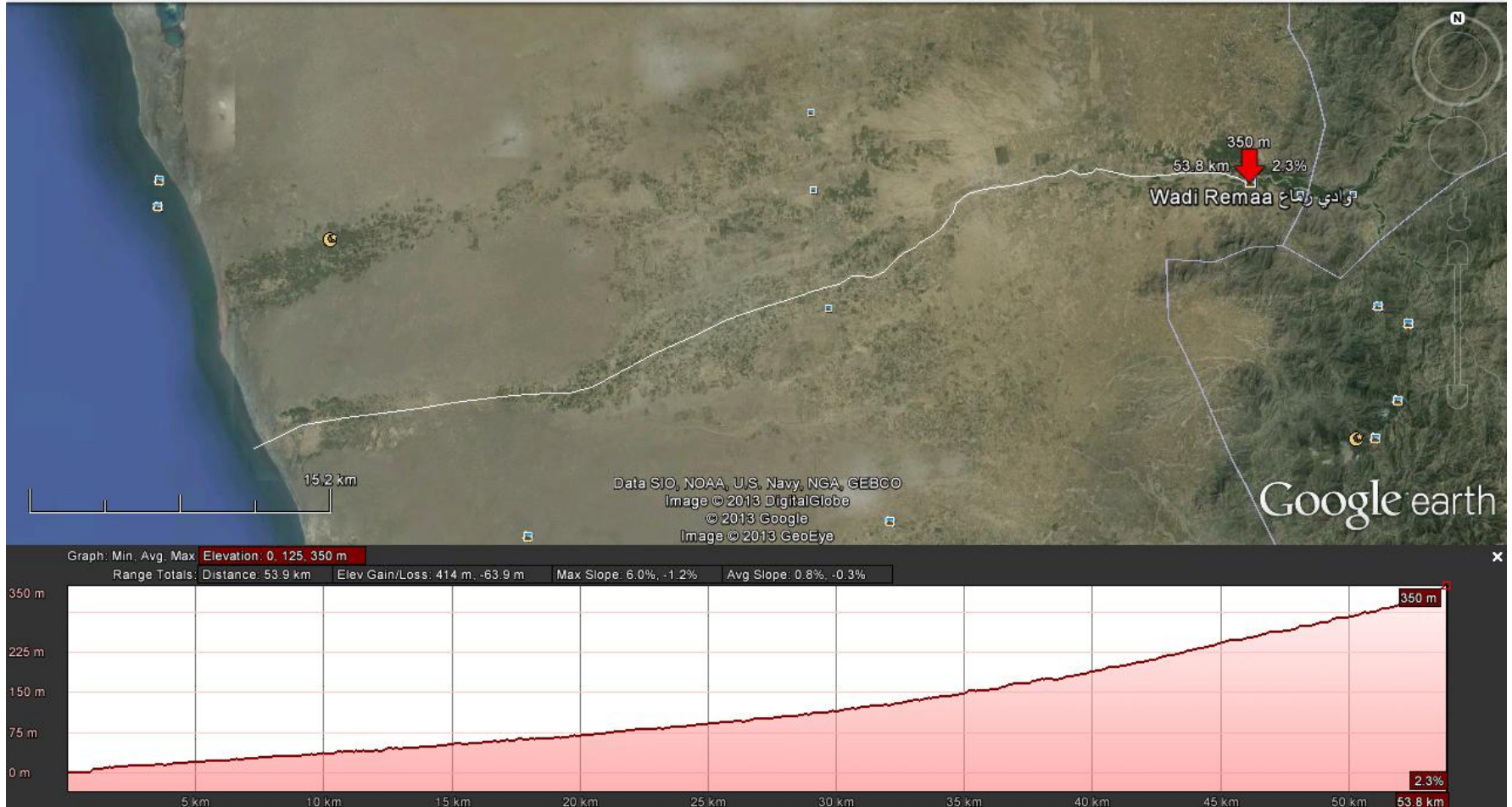
Location of Wadi Zabid and Wadi Rima



Elevation Profile of Wadi Zabid



Elevation Profile of Wadi Rima



Findings

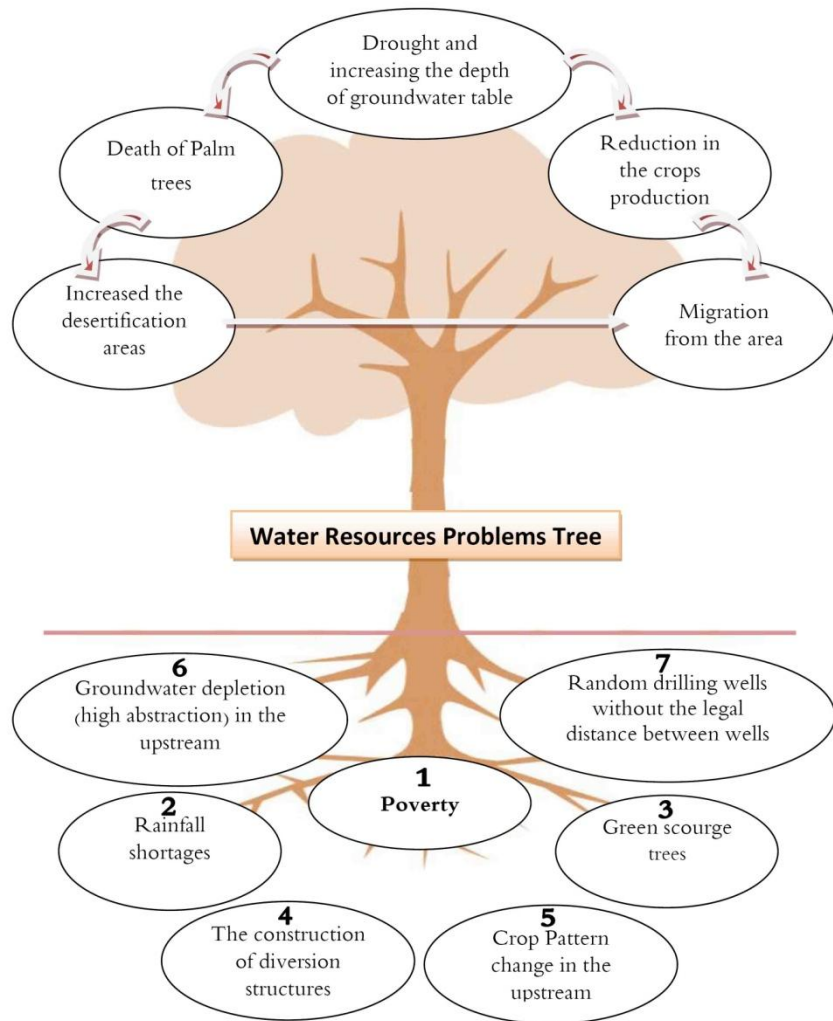


Figure 1A: Water resources problems tree with problems ranking, group 1: Al-Tefaf schools

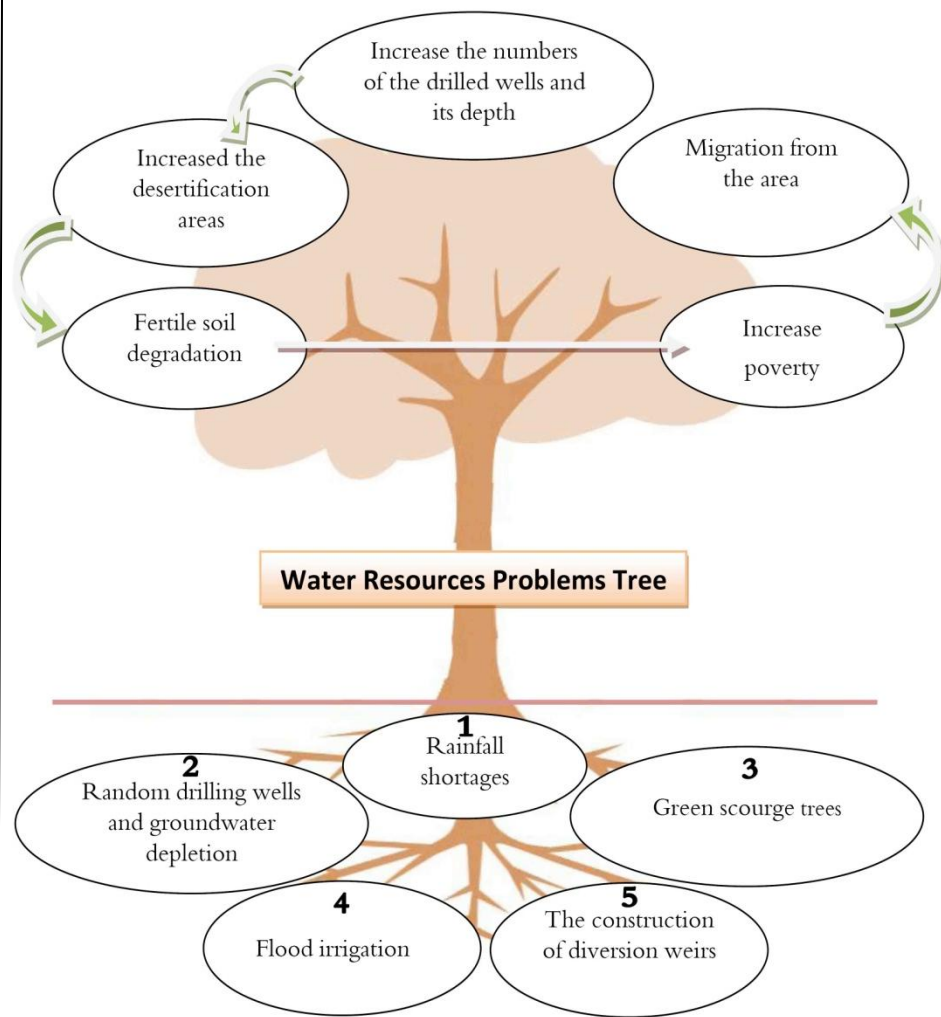


Figure 2A: Water resources problems tree with problems ranking, group 2: Al-Mujilles hamlet

Findings

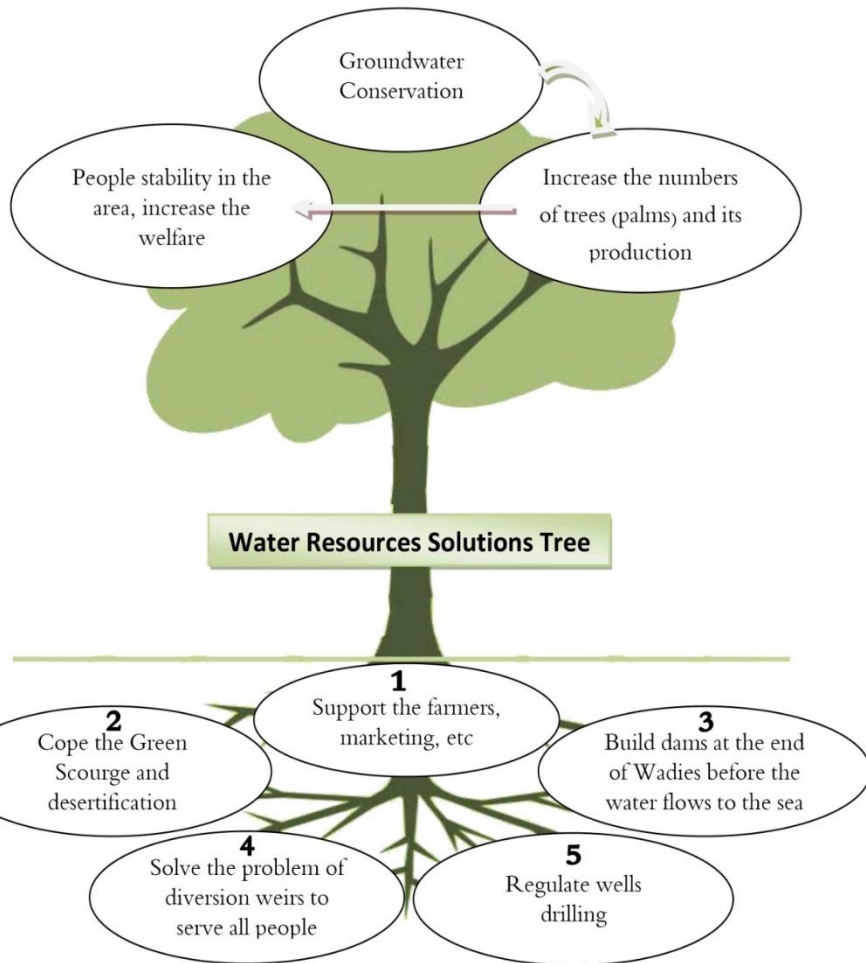


Figure 1B: Water resources solutions tree with solutions ranking, group 1: Al-Tefaf schools

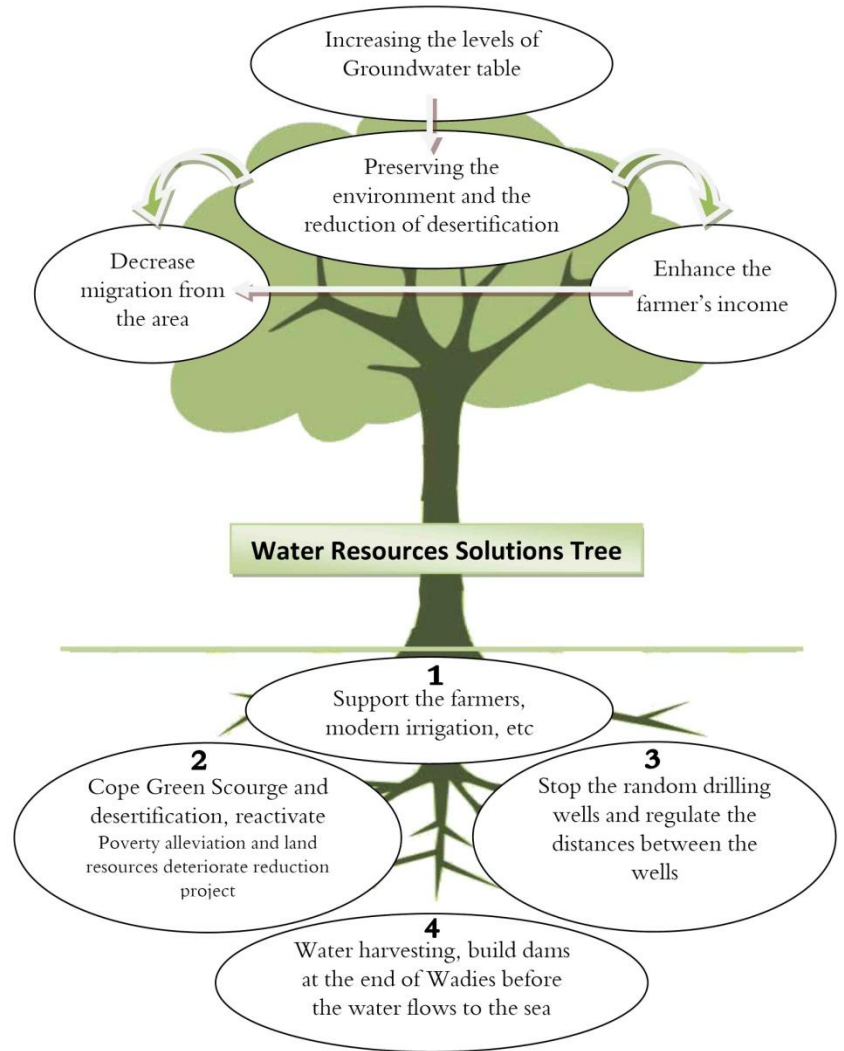


Figure 2B: Water resources solutions tree with solutions ranking, group 2: Al-Mujilles hamlet

Findings

Time line at Al-Mujellis:

Time	Spat water	Agriculture activities			Groundwater status			Des.	Imm.
		Area	C.T	Yield	Total Depth	W.L	W.Q		
1962	Floods comes from the heavy rainfall around the area	All agriculture lands	Palm	100%	0.5m No drilling till 1975	Near the surface till (<0.5m)	Fresh	Non	Non
1979	Same as above	All agriculture lands	Palm	100%	As above	0.5m	Fresh	Non	Few (10 P)
1985	Same as above	The start of agriculture lands shrinking	Palm	100%	6- 8m	5m	Fresh	Start to cover Palms	
1990	Same as above	As above	Palm	25%	12m	7- 8m	Fresh	As above	30%
2000	Rainfall shortage	Continuous decreased in agriculture lands	Palm	25%	16- 17m	5- 9m	Fresh	Continuous cover Palms	60%
2011	Rainfall shortage	The most decreased in agriculture lands	Palm	10%	30- 50m	12	Fresh	It remain 15% Palms	

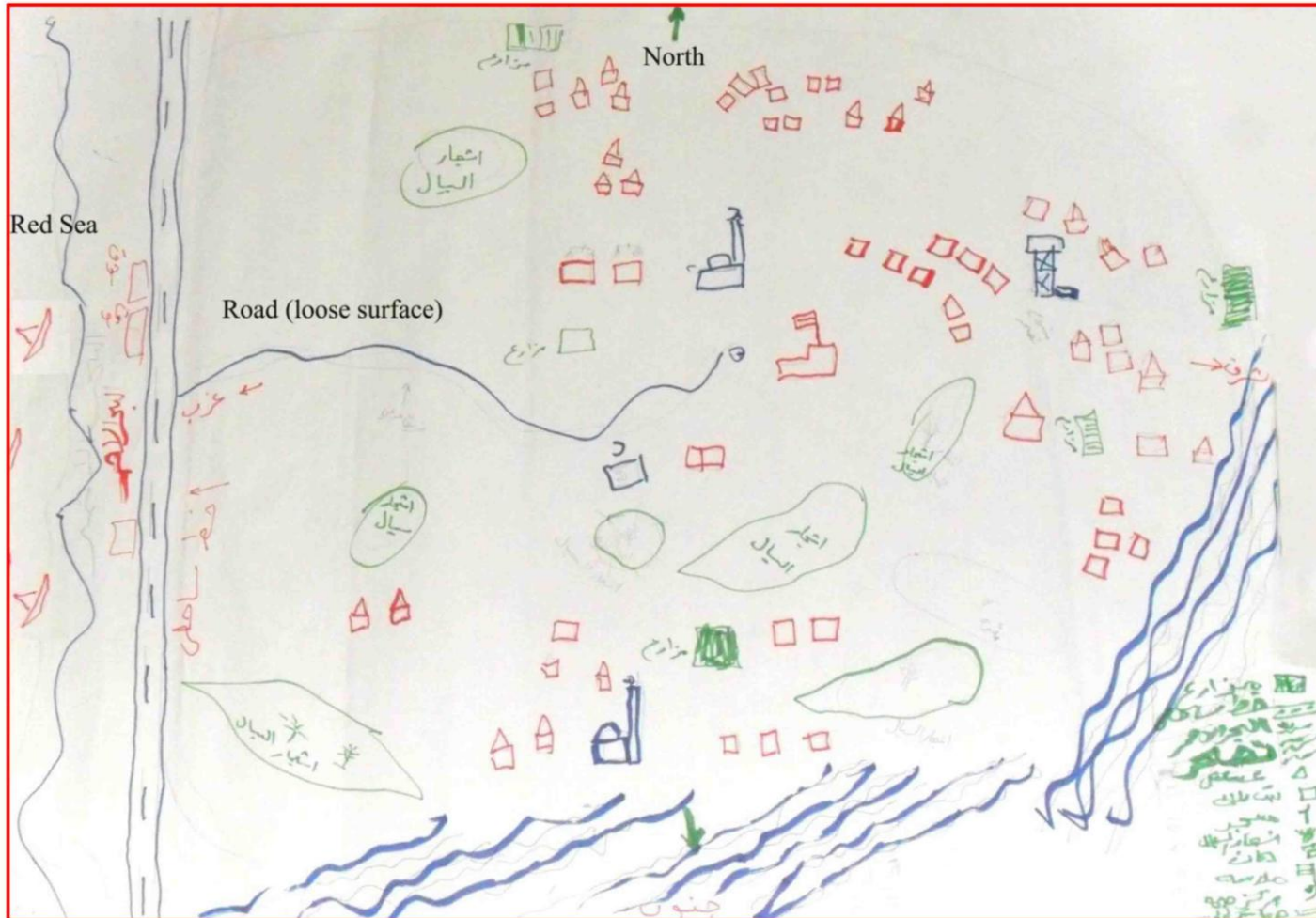
C.T= Crop type, W.L= water level, W.Q= water quality, Des.= Desertification, Imm.= Immigration, P= Persons






Findings

Daily calendar at Al-Mujellis:

Career	Time (hr) and daily activities				
	5:00 AM- 6:00 AM	6:00 AM- 9:00 AM	10:00AM- 12:00 AM	1:00 PM - 3:00 PM	3:00 PM- 6:00 PM
Farmer	Dawn Prayer	Farm work	Shopping	Rest	Chewing Qat
Employer or worker	Dawn Prayer	Go to the work	At work	Rest	Chewing Qat
Jobless	Don't do anything				
Fisherman	Go to the sea for fishing in the fishing seasons				

Findings



- | | | | | | | | | | |
|-------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------|--------|
|  | Farms |  | Desertification |  | Clinic |  | Houses (concrete brick) |  | Road |
|  | Green scourge trees |  | Drinking water project |  | Masjed |  | Houses (straw) |  | School |

Findings



Upstream



Wadi Zabid

Banana is exported imported from neighbor countries?!

Poverty alleviation and land deteriorate reduction project

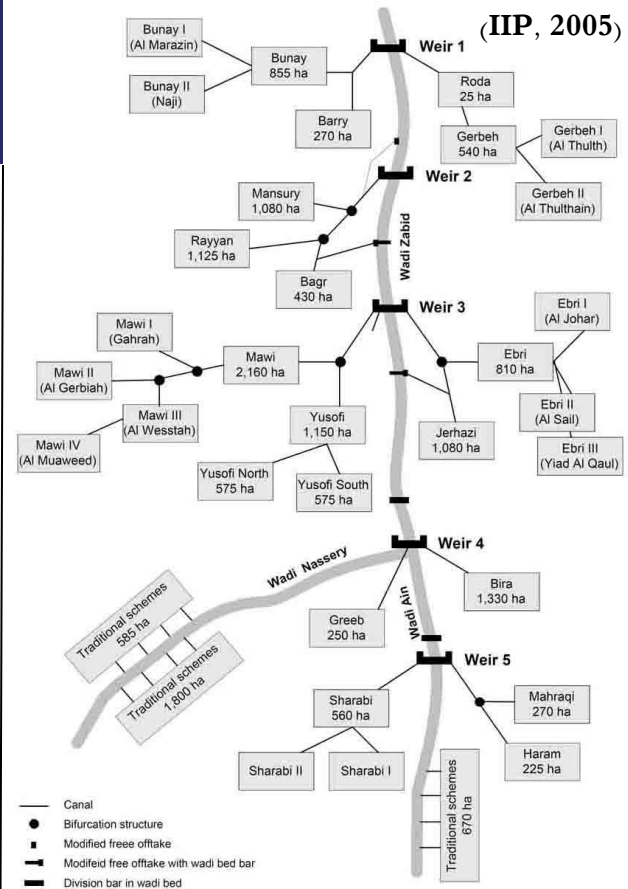
Middle



Community Improvements



Downstream toward N



G. Improvements US



Findings



Recommendations

- 1- Enhance spate water rights in the wadies.
- 2- Support the farmers by
 - Modern irrigation techniques.
 - Marketing their crops or find another cache crops.
 - Cope with desertification and green scourge trees

Thank You