

Women and Water Rights in Wadi Tuban, Yemen

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This paper examines women's access to, use of and control over water in the context of spate and well irrigation in Wadi Tuban. It aims at showing how women strategise to obtain spate and well water. Women's water tenure cannot be understood without understanding land tenure patterns in Wadi Tuban and therefore land tenure is elaborated first. Secondly, agricultural production is elaborated upon, before exploring water management in Wadi Tuban. Spate irrigation is managed by the Ministry and the recently established Water Users Associations (WUA). Women's involvement herein is analyzed using a gender perspective. Next, well irrigation is explored, describing women's access, use and control over well water. Finally, the article focuses on women's water rights. The research findings show that there is a gender inequality in women's access to, control over and use of land and water. Few women are independent landowners. Even fewer women own wells. Reasons have to be sought in the traditional gender-segregation in terms of division of labour, the division of crops and revenues and inheritance rules according to Sharia, which stipulate that men receive twice as much as women. Women have limited access to and control over land and water. Hence, there is a lack of recognition and acknowledgement of women as independent water users. Their needs and interests are not transformed into formal water rights. The establishment of WUAs reinforces this weaker position: their bylaws as well as their principles of organisation are gender-biased i.e. male-privileged. Therefore, WUAs have not contributed to an empowerment of women farmers. On the contrary, women's dependency has increased as a result of the mechanisms that the WUA has put into motion.

1. Background

Wadi Tuban is a coastal area, located to the northeast of Aden. With an annual average temperature of ≥ 30 degrees Centigrade and rainfall between 50-400 mm, it relies on spate irrigation and wells for its agricultural activities. The Wadi spans 12000 ha of agricultural land (SOURCE). The main spate season runs from August until October, while there is smaller spate flood from March until June. Agriculture in Yemen is an important sector of the economy. 'Up to 77% of its population still lives in rural areas and nearly 60% are involved in family-based and traditional farming production' (Pelat and Thompson, 2005:5). Modernization of agriculture started in the 1970s, during the Marxist regime:

'Groundwater became a newly available preserved resource, more or less invisible and thus seemingly unlimited. The first motor pumps were introduced freely and government strategies, supported by international donors, focused on developing subsidized irrigated agriculture and cash cropping schemes. The State built more dams, established public institutions to centralize management and provided maintenance of concrete water diversion structures in traditionally community-managed spate irrigation systems. At the same time, private farmers invested in well-drilling and supplemental irrigation technologies' (Pelat, 2006 : 2).

Until the 1990s, this unlimited use of groundwater continued. As a result, Yemen today is suffering from a pressing water crisis. 'Annual withdrawals from groundwater resources are now exceeding renewable resources by up to 36%' (Pelat, 2005: XX). The fact that Yemen's population is growing exponentially puts even more pressure on the availability of groundwater. It is said that if this exploitation continues at this speed, in twenty years from now there will be no water left. Fortunately, the overuse of water has been acknowledged by the government since the mid-1990s and a number of large-scale, internationally funded projects have been set up to mitigate the crisis. Parliament ratified a Water Law in 2002 for the regulation of water resource management, which 'aims at better regulating the use of water resources, while [...] protecting water quality and conserving water quantity' (Pelat, 2006: 8). 'Important elements of the law include amongst others regulation of water resources management including well drillings, and foresees in the establishing of Water User Associations (idem: 2005: 7-8) (see appendix 2 for a more detailed description of the Water Law).

2. Land tenure in Wadi Tuban

2.1. Land tenure: past and present

Contemporary land tenure in Wadi Tuban is the result of a complex legacy of significant political historical events. Decades of changing governmental formations (Sultanates, colonialism, socialism and democracy) have left behind a variety of land tenure constructions. Prior to the British colonial powers, Sultans ruled the country for centuries; they possessed most of the land. Next to this, a number of farmers owned land. The British interest lied mainly in the protection of Aden as a strategic seaport *en route* to and from India. Changes were more profound from the 1960s onwards, particularly when the PDRY (People's Democratic Republic of Yemen) was formed in 1967. The new Marxist regime took possession of all of the land, setting up big state farms and distributing land

to families to work on. Each family received five *feddan* (3, 25 ha). After unification of North and South-Yemen in 1990, the new democratic government returned land to those who claimed to be the ‘real’ owners: Sultans’ families and individual farmer families. At present, most of the land belongs to the Sultans or the government; some farmers are private owners. Many farmers continue to work on Sultans’ land as sharecroppers (paying with an agreed percentage of their crops). Farmers in Wadi Tuban distinguish different types of land tenure. They are summarized in the table below.

Table 2.1. Land tenure in the Wadi Tuban (farmers’ description)

LAND TENURE	DESCRIPTION
Malik (owner)	Farmer who legally owns land with papers.
Musarat (owner and farmer)	Farmers who own land and come to work on their own land.
Muntafeh (beneficiary)	Farmer does not own the land. Land belongs to government and is given in use With or without land contract
Musharek (sharecropper)	Farmer does not own the land. Land belongs to Sultan, a percentage of the crops is given to the Sultan
Mustagir (leaser)	Farmer who leases the land from landowners or beneficiaries.
Amlin	Male worker
Amlat (female worker)	Woman farmer who does not own or lease land- She works on other farmers’ land.

With regard to the frequency of the different types of land tenure in Wadi Tuban, it can be stated that, of all farmers in the Wadi Tuban, 42.3% are beneficiaries, 33.3% are owners and 24% are sharecroppers (tenants are less than 1%) (source: IIP 2006). We illustrate the different types of land tenure and their co-existence and overlap by describing a few cases we encountered during our field research. Firstly, we shortly describe the case of Nassr Mohammed Saleh, a beneficiary (muntafeh). Nassr is the Sheikh of Hadarem (located in the mid Wadi) and has 30 *feddan* (approximately 20 ha) of land, which is a relatively big piece of land. He explains: ‘In 1972, the government gave 30 *feddan* of land to a group of people here in Hadarem. Together we cultivated the land. In 1990, the land became bad and all the farmers left. I remained alone on the land’. In 1994, the new government returned the land to the real owners. 50% went to the Sultan’s relatives who had returned to claim their land. The other 50% went to the government. Sheikh Nassr cannot use this land freely: ‘We give 20% of the profit to the Sultans. For the government’s land, we have a contract. Each year, the price is set. I have to pay otherwise they will take the land from me. The price of the lease contract with the government is 5000 Rials¹’. Another farmer explains that, outside the spate season, his family leases a piece of land to other farmers who grow onions and tomatoes on it. After

¹ 5000 Rials equals 26 USD (rate of November 2006).

six months (before the first spate season starts), they get the land back and they themselves put fodder. Yet another farmer lives and works on someone else's farm and receives a salary. Some farmers work their own land and prefer not to lease their land to others. One farmer mentions: 'We don't lease because they waste the land, they don't take care of the land, they put salted water from the wells and after two years the land is useless'.

2.2. Women and land ownership in Wadi Tuban

According to the director of the MAI², 30% of landowners are women. 5% of them have bought land, but the vast majority (95%) of women have inherited land. Women can also receive land from the government or buy land if they have money; 'this happens until now', he claims. He also states that the majority of female landowners are located in the lower part of Wadi Tuban. He ascribes this to the past. His statements contrast with our research findings. In the villages of Hadarem and Mujahed, located in the mid and low part of the Wadi we found only one woman who claimed to be a landowner. Our findings are confirmed by Sheikh Al-Kabila of Hadarem village, who states that 'some women received land during the PDRY times, but this is less than 1%. There are many women farmers but they are not owners or beneficiaries'. He knows one woman owns land but 'her sons are responsible for the land'. His mother claims to know two families with women landowners. One woman inherited land from her father, the other one is a widow. However, when visiting these women in the village, one woman was not present and the other one denied being a landowner. In contrast, we found more women owning land in Al-Arais, located in the upper Wadi (see appendix 1 for the locations).

It is hard to determine the exact number of female landowners, because data on this are not available. IIP (see table in appendix 3) indicates that the total number of farmers in Wadi Tuban are 8307 and that 1671 are women farmers (20 %). Of those 8307 farmers, 33% are owners, 24% sharecroppers, 0,4% tenants and 42% beneficiaries. However, land tenure is not gender disaggregated, so we do not know how many women are owners or beneficiaries. We discovered that the majority of women land owners have papers registered in their (deceased) fathers' or husbands' names. That makes them, so to speak, invisible land owners, because their own names are not registered. However they often perceive themselves as land owners. To illustrate women and land tenure in Wadi Tuban, we describe three interesting stories of three women land owners below.

Case 1. Arwa and her mother, Al Arais (upper Wadi)

Arwa's mother is quite a remarkable woman who was a liberation fighter against the English, fighting on her donkey with a gun! She calls herself an owner and a beneficiary, because they use the land. She has no property documents. She is not paying anything. Her (grand)father was a beneficiary working on the Sultan's land. During the Marxist regime, the government took the land from them. After unification, the government found out to whom the land belonged and who worked on the land. The mother has 4 brothers, The brothers died. Their children are using the land (inherited). They agreed between them that the two sisters did not need the land because they were married. She was the one who received the land because she was a widow with children. In a separate interview, her daughter Arwa refers to herself as a *Muntafeh* (beneficiary). Her story differs somewhat from her mother's: 'After 1994, the government took the land and gave the land back to the families of the Sultans. They allowed her father to work on the land, sharing the crops: half of the crops was for the kings and half for the family. This is still the case until now'.

Case 2. Naima, Al-Thaleb (mid Wadi) – Involved in a family court case over the land

Naima is a middle-aged woman who presents herself as a landowner (*malik*). Her father bought land from the Sultans and inherited another part. The size of the land is 8 *feddan* (approximately 5 hectares) will be divided over Naima and her two brothers and two sisters (one brother and one sister died, but their children will inherit their share). All of them live in Aden, she is the only one living in al-Thaleb. The family is involved in a court case over the division of land. According to Naima, the problem came from the deceased brothers' sons. 'We suggested dividing according to the religion, but they refused to divide the land through the Sheikh. They think he will give me the best land as we live in the same village'. Her only brother agrees with her and supports her. The court case is expensive. 'They charge 40.000 Rials only for deciding which piece goes to whom', Naima explains. The case had been in court for 18 months and has not been solved yet.

Case 3. Fatima and Shams, Al-Shakha (upper-Wadi) – Inherited land from deceased husband

Fatima and Shams are both widows who call themselves landowners. They inherited land from their husbands when they passed away. Fatima explains: 'When the sultan died, no one of the sultan's family came to claim the land. The land went to my husband's grandfather, his father and to my husband. Then our husbands died and all their brothers had died. My children and I inherited his land'. The land is still on the name of the husband.

2.3. Analysis

Land tenure pictures a diversified scenario in Wadi Tuban. Farmers can be owners, leasers, sharecroppers and beneficiaries at the same time, whether at one point in time or sequentially, depending, amongst others, on the season, the location of the plot and the access to space or well water. Most farmers in Wadi Tuban are beneficiaries (followed by owners and sharecroppers, see appendix 3). Most of the land in Wadi Tuban belongs to the government or to Sultans. Land sales and purchases do not happen frequently; land is passed on through inheritance, be it owned or leased land. Men are involved in the commercial activities of land tenure such as leasing from Sultans or government or to other farmers. Adding a gender perspective, it can be argued that land ownership is a male-dominated domain. More specifically, most women in Wadi Tuban do not have independent access to and even less control over land as a resource. In almost all cases there is a male family member involved in land ownership. Only a few women are independent landowners, beneficiaries, or are involved in commercial activities. Most female landowners are found in the upper part of the Wadi. Even less female landowners are found in the mid and lower part of the Wadi. Reasons for the lack of female landowners include the following. Firstly, most of the purchases of land are done by men. Secondly, Yemeni society is virilocal; after marriage, women go and live with their husband's family and work on their land. Land is passed on through the male family line. The biggest chance a woman has of becoming an independent landowner is through inheritance, as shown in the cases above. This can occur in two ways. Firstly, a woman can inherit land if her husband dies. The land is divided between her and her children, but the land remains on the male family name (e.g. family of Ahmed). Secondly, a woman

can inherit land if her father dies. The division of land occurs through the *Sharia*³, which stipulates that males receive twice the size of land as females. Thus if a woman has brothers, they receive twice as much land as she does. It is clear that there is a strong gender inequality in terms of (gaining) access to and control over land.

3. Agriculture in Wadi Tuban

3.1. Agricultural reforms in the socialist time

The PDRY, governing south-Yemen from 1967-1990, pushed through major agricultural reforms. State farms were formed and agriculture was strictly regulated with fixed crops, fixed prices and fixed state-regulated demand. There were state-owned tomato factories, such as the one in Lahj, which closed after unification. Also, there used to be a cotton factory, where cotton was produced for pillows. It was managed by the Cooperative Society (CS), an organization which provided necessities such as loans and seeds to farmers. Farmers grew cotton for the CS for a fixed price. They used to have a registration card from the CS which stated amongst others the size of the plot, its location in the irrigation scheme (which canal and gate) and so on. Some farmers still use this card today, referring to it as an ID-card and a proof of land registration on their (family's) name. Many farmers refer to the socialist era as the 'good old times' as they recall the advantages of having fixed markets and prices. Today's free market fluctuations seem to leave them with a feeling of insecurity. As one farmer put it: 'In the old days, it was better. Everything was taken care of. Prices were fixed. Now everyone grows whatever he wants' (Sheikh Al-Kabila, pers.comm.). Another farmer recounts that in socialist times, they were paid 120 Rials for a box of onions. In contrast, 'last year, we could not sell them and we had to feed them to the animals. Now we are getting 2500 Rials for a box!' (it has to be noted that the value of the Rial was probably higher in the socialist era).

3.2. After unification: the agricultural picture today

Since 1994, more and more farmers have started to farm in the Wadi Tuban. Mohammed is one of them. His son explains: 'In socialist times, this was empty land. My father started to grow here in 1994. He fixed the land to make it suitable for agriculture. Because when the spate came, there was too much water and the land eroded. Nowadays, nearly everyone has a farm'. Farmers in Wadi Tuban grow a variety of crops. They are summarized in the table below, categorized according to the water source (please note that this list is not exhaustive).

Table 3.1. Crops according to water source

SPATE	Sorghum for fodder, wheat, sesame, cotton, melons, eggplant.
SPATE AND WELLS	As above and orchards (mango, lemon, jasmine flowers, olives), vegetables.
WELLS	Vegetables (tomatoes, onions, okra, chilies).

(source: research proposal Linden Vincent and own observations)

³ Sharia is the Islamic law

Fodder is the main crop grown in the spate season (August to October) – it needs to be irrigated only once. It is grown for livestock feeding and for commercial purposes; it is sold on the market of Aden and to other farmers or livestock keepers. Tomatoes and onions are mostly grown outside the spate season and irrigated with well water (and sometimes with spate water). Next to this, most farmers have some goats or cows, which serve as a financial or food reserve in times of scarcity. Some farmers produce yoghurt. We did not inquire extensively on *revenues* derived from farming, but they seem low. Consider the case of Mohammed, who has a well and leases land.

Mohammed, a land tenant and well owner

Mohammed Ahmed dug his well in 2000 on another farmer's land. He accumulated the money by selling his livestock and borrowing money from friends. He does not share water with others, because there is not sufficient water. Depending on the season and the availability of water, he grows fodder in January/February, and onions and tomatoes from August to October (the spate season). This season he is growing 5 *feddan* of onions, and 10 *feddan* of tomatoes. Mohammed pays 40.000 Rials (200 USD) per *feddan* he leases. His diesel pump, which pumps water from 7-12 in the morning and 2-7 in the afternoon, consumes 220 liters diesel per 5 days, which costs 9000 Rials (45 USD). He leases a car to transport the diesel from Aden; this costs 1000 Rials (5 USD) per day. (He has a drum that he puts by the machine). His family is not involved in agriculture (his children are studying), so Mohammed hires workers. He pays them 400 Rials (2 USD) per day, plus breakfast and lunch. This week he is using 15 workers for the period of one week. In addition, he has to buy inputs such as plants, seeds, fertilizers and insecticides (he needs around 2000 plants, which cost 4500 Rials). The yield of the onion harvest is 50.000 Rials (250 USD); profit is 3000 Rials (15 USD). For the tomatoes, the yield is sometimes only 5000 Rials (25 USD).

Other farmers we spoke to mentioned similar revenue rates. For example, a woman with half a *feddan* mentions that her revenues are 10.000 (50USD) Rials for one fodder harvest. Farmers growing tomatoes sometimes make a profit, sometimes not. Other sources of income farmers can have are pensions, salaries from commuting family members or remittances from migrated relatives. When asked what farmers would like to see changed, one farmer mentioned he would like to see the tomato factory re-opened. Also, he would like to see agricultural diversification: he does not like the fact that everybody is growing the same crop, referring to the socialist time as this being (better) regulated. He wishes that the government would help them, by decreasing the prices of inputs, for example. Obviously, contemporary farming makes up a poor livelihood.

3.3. Women in agriculture in Wadi Tuban

It is said that 'women play a vital role in agriculture' in developing countries. Indeed, many farmers in Wadi Tuban state there are more women than men working in the fields. Driving through the Wadi Kabir (see appendix one for a schematic layout) on a Thursday afternoon in November 2006, a day after the spate had come, we counted 58 men and 74 women workers on the fields; which seems to confirm the hypothesis. Data suggest that 33% of all farmers (unspecified which type of land tenure) are female (IIP, 2006). Looking at the *gender division of labour*, we are told that women mostly carry out planting and harvesting tasks. Men mostly take on irrigating and carrying tasks. In orchards, men do the largest part of the labour. Men sell the produce in the markets. Male

traders buy directly from farmers; sometimes traders pick the fruits in orchards themselves. Weeding seems a shared task while ploughing is carried out with machines (driven by men). Home gardens are a female domain. Male and female workers are hired by both female and male landowners or beneficiaries. However, an often-heard statement is that women workers are preferred over men because they work better and men are more expensive as they want to chew *qat* and smoke cigarettes. Daily wages vary from 300-400 Rials (1.50-2 USD) including breakfast and lunch. Some farmers give their workers some fodder and tomatoes for personal use. One female landowner hires a male worker to bundle her fodder, paying him 800 Rials for 100 bundles. The man can decide if he wants to bring someone along or finish the job without help.

With regard to the *gender division of harvested produce and its sales*, it can be stated that crops and revenues are often divided among family members according to ‘the religion’ i.e. men receiving twice as much as women. However, as one farmer mentioned, his mother, being a widow, receives an equal share of the revenues (which by the way she uses to help one of her children if they are sick or if there is a wedding). It is clear that the rule of division according to the religion is not applied rigidly and is shaped by everyday practicalities and necessities. Finally, with regard to the *geographical location* of female farmers in the Wadi, the irrigation director of the MAI states that most women workers are found in the upper Wadi. This is because women clean the canals from weed, stones and other material prior to the arrival of the spate water. Also, during the spate season many women workers can be found here planting and sowing. Men in this part often have other non-agricultural jobs, leaving the agricultural gap to be filled by their female counterparts. In contrast, in the mid- and lower part of the Wadi, it is harder to find women workers, according to the Director. A reason for this might be the lack of labour due to less spate water, but also due to a more traditional approach towards women: women are not supposed to work outside the house; men are the breadwinners. A few female farmers indicated, indeed, that the lower part of the Wadi is more ‘traditional’ than the upper Wadi. It could also be that due to the prevalence of interventions in the upper part and its more central location women workers are more ‘acceptable’. However, we have not been investigating this, nor the reasons behind it.

3.4 Analysis

Agriculture in Wadi Tuban is mainly the production of subsistence-oriented fodder crop and the cash crops tomatoes and onions. Both crops do not leave farmers solvent; in contrast, sometimes no profit is made at all. It seems that today’s free market conjunctures do not work sufficiently and leave farmers with a yearning for the socialist times, where everything was regulated i.e. secured, according to the nostalgic memories of farmers today. Increasing prices for agricultural inputs and secondary necessities worsen the situation. Women farmers are no better off. On the contrary, bound by a traditional gender division of labour, women in agriculture in Wadi Tuban are limited to fulfil worker positions –the only domain, seemingly, in which they outnumber men. Most female workers and women landowners seem to be located in the upper part of the Wadi –this might be due to its more central position and the prevalence of more profound foreign interventions, but we have not investigated this. The division of land, crops and revenues according to the religion places women in an even more unequal position than

their male counterparts. Their limited access to cash, crops and well-paid agricultural jobs, ironically, makes them desirable workers.

4. Spate irrigation and wells: water management in Wadi Tuban

The relationship between land and water encompasses various use, users and management aspects. Below, we will explore some of these aspects in the context of spate irrigation in Wadi Tuban, followed by an elaboration of irrigation from wells.

4.1. Spate irrigation

A plot in the irrigation scheme of Wadi Tuban provides a farmer with the right to obtain spate water. It is set up in such way to ensure an equal distribution of water over the plots in the scheme (see below). Within the main spate season, from August to October, there are usually three spate water floods, one in each month. The first water is allocated to the farmer in the scheme nearest to the gate. He irrigates his plot, after which the next farmer follows suit. The process continues until all the water is distributed (if there is enough water for the whole Wadi, allocation restarts from the upper Wadi downwards). The second spate water is allocated to the first farmer in the scheme who did not receive water the first time. The same goes for the third spate water flood. Sometimes, the second or third spate water is allocated to farmers of another village instead of those in the previous village who have not received water the first time. In the new season, the allocation of water restarts from the upper Wadi. These plots, therefore, always receive more water than the mid- or lower part. It is a logical fact considering the fact that a substantial part of the spate water is lost if it is distributed straight to the lower Wadi. The irrigation director explains: 'You can irrigate 50 ha in the upper Wadi and only 10 ha in the down Wadi. So we want to use it [the water] economically'. 2004 was the last year in which spate water reached the mid Wadi while farmers in the low Wadi have not received spate water for seven years. The total number of plots that can be irrigated depends not only on the quantity of spate water but also on the maintenance of the canals and gates and the management of water. To this topic we turn our attention now.

4.1.2. Spate water management in Wadi Tuban: Water User Associations (WUAs)

In 1999, the MAI initiated the Irrigation Improvement Project (IIP), introducing Participatory Irrigation Management (PIM) in traditional spate irrigation systems of coastal areas. While during the first phase of the project rehabilitation works of canals and gates were implemented, the second phase entailed the establishment of Water User Associations (WUAs) for the management of spate water. In Wadi Tuban, the IIP set up 16 Water User Associations (in 2003 and 2004). The projects ends around May 2007 (according to Mr. Annar Abdul Karim, director of the project), after which full water management responsibilities will be transferred to the WUAs. A Water User Association (hereafter called WUA) is the most decentralized legally established water management entity (Pelat, 2005: 8, footnote 4). WUAs are composed of members who can register if they comply with the membership criteria. The main activities of the WUA include the maintenance and repairs of secondary canals and gates, and water distribution and control. WUAs are formed from Water User Groups (WUGs). The latter are village-level

farmers groups which act as ‘a representative of farmer communities for awareness and capacity building activities’ (Pelat, F. and Thompson, L. 2005: 8). All farmers with land can become a member of a WUG. Membership is free of charge. Farmers contribute to the costs of canal maintenance (the amount of which depends on the number of canals and farmers). Farmers who want to become a member of the WUA, pay 1000 Rials entrance fee. This money is used for the operational maintenance of the WUA.

WUGs and WUAs work together in the maintenance of the canals and gates and water allocation. WUGs allocate a representative among the members, who joins the board of the WUA. Each WUA has a board of eleven people who remain on their seat until they quit or die. Functions include the head, vice-head, financial responsible, communication, social issues, culture and media, and five board members without a specific function. The board meets once or twice a year (or more often when necessary) to discuss maintenance works, land issues, technical issues and possible problems.

WUAs are not isolated entities. They work together with various individuals and institutions involved in the maintenance and management of the irrigation scheme. They cooperate, for instance, with the Irrigation Council of the MAI, who is in charge of water distribution in the main canal. The WUAs allocate the spate water in the secondary canals while WUGs allocate the water in the tertiary canals. To ensure a fair distribution of spate water, the MAI places policemen at the gates of the main canal; WUAs and WUGs employ water controllers for this. WUAs also cooperate with the sheikh *Ober*; this is the traditional local village manager of the irrigation scheme. We interviewed the Sheikh Ober, Mr. Oman Alwan, of Lahsan (upper Wadi), who told us that his tasks are supervisor of the construction works around the gates and mediator in case of problems around land and water between farmers. Problems that he cannot solve need to be solved by the head of the WUA, or the MAI. All WUAs have a sheikh *Ober*.

4.1.3. Gender aspects of WUAs

Our research indicated gender differences with regard to the WUAs, on several domains. They are listed below.

WOMEN MEMBERSHIP

The membership rules of one representative per family turns out to be gender-biased in practice. Since the head of the family is male and he is considered responsible, he becomes the representative for the family in the WUA. Only if men are absent or deceased, women can go to represent the family; but even then, it is often brothers or sons who go on their behalf. An exception to this rule is Khadiga, a woman farmer with her own well, who mentioned that her husband did not want to become a member, he thought it was tiring. So she became a member! It is also said that the WUA only accepted men at its launch. A woman farmer in Al-Arais states: ‘When the association decided that women can be members, 20 women went and found out that their husbands and brothers were already members. So 15 women left because their husbands and brothers did not want to pay the 1000 Rials entrance fee twice’. Next, the entrance fees are often paid for by the husbands’ salary. Also, many women pay the membership fee

through a female representative, hence indirectly, in contrast to men who pay for themselves.

REGISTRATION OF WOMEN AND NUMBER OF WOMEN MEMBERS

Table 4.1. WUA-Membership, gender-disaggregated data

Area	Male WUA members			Female WUA members		
	Nr. of farmers	Total members	% membership	Nr of farmers	Female members	% membership
<i>WADI ALADAM</i>						
Al Arais	1113	199	18%	259	5	3%
Ras-Awadi	757	70	9%	232	0	0%
<i>WADI KABIR</i>						
Assadain	323	69	21%	95	4	6%
Faleg-Alnino	208	47	23%	79	1	2%
Faleg Iyad	784	88	11%	171	n.a.	n.a.
Lafiah/Alfakih	342	47	14%	35	0	0%
Mugahid	424	53	13%	103	1	2%
Al-What	473	64	14%	84	0	0%
<i>WADI SAGHIR</i>						
Lahsan	86	35	41%	27	2	6%
Beizeg	1007	120	12%	258	2	2%
Al-Thaleb	264	49	19%	4	0	0%
Al-Hadarem	418	64	15%	115	0	0%
Ober Yaqub	413	61	15%	76	0	0%
Middle Area	884	212	24%	126	1	0%
Al-Furda	552	65	12%	7	0	0%
Al-Riyadh	259	63	24%	0	n.a.	n.a.
TOTAL	8307	1306	16%	1671	16	1%

The table shows that the overall number of women members in the WUAS is extremely low. It has to be noted that not all women are registered in their own names: out of 16, 3 women had registered on their family names. Only widowed women had registered in their own names. Some women register in the names of their fathers (the ‘responsible’ one for the land). Other women are registered in their husbands’ name; these women cannot be retrieved in membership lists.

(PERCEIVED) BENEFITS OF MEMBERSHIP

Some women farmers referred to the cheaper access to seeds and machines as the main benefits of the WUA. Other women mention the access to help in case of problems as an incentive, as well as the mediation in conflicts on issues such as the distribution of water. However, many women we spoke to, were not very positive about the benefits of WUAs and implied that it is a man’s business. They feel that the WUA ‘doesn’t do anything for them’. They do not get any information, and do not hold separate women’s meetings, something which is necessary for women due to separated gender worlds. The Sheikh *Ober* of Lahsan, for instance, mentioned that many women in his village are reluctant to become members, they argue that everything was better in the old times. Many women

also feel it as a burden on top of their daily activities to attend meetings. They prefer that their male family members go. Financial issues play a role too. One woman argued: ‘they want money for everything, like *qat*...if you want a machine you go to the MAI and they give it to you directly if you promise to pay for diesel and so. Via WUA you have to pay twice, once to the WUA and once to the MAI! If women want to get something done, they organize themselves’.

ALTERNATIVE WAYS

Women can find alternative ways around the WUA to satisfy their needs. For instance, women do not need to be a member to obtain a cheaper machine: a paper with their husband’s name suffices. Some steal water. Fatima, a middle-aged widow who constructed her own gate four years ago, because she had problems was sharing a gate, explains:

‘When the first spate came, I took water twice. This is illegal! The water controller was not there when I took it, as it was 4 in the morning. I was on the field with my two sons. We decided that one stayed on the land and one went to see if the irrigation people were coming. When he saw them coming, he phoned me: one missed call meant they were coming! So we ran! I told the controller that the water just came through my gate! But they (MAI) made a problem. I had to pay 30.000 Rials, but the other people helped me. They said she is a widow, and she needs it. Then they forgave me and forgot about it’.

Some women farmers build their own canals or gates. Aziza, for instance, claims to be a member of the WUA. Her plot, however, is not located near an official canal. Each year, therefore, Aziza and her neighbour clean their own canal and construct a gate for their own spate water flow.

PREVAILING NORMS AND VALUES/CUSTOMS

Many women have a passive attitude towards membership of the WUA. This attitude is reinforced by prevailing male perceptions of women as male-dependent. Engineer Abdullah, the extension officer of the IIP, mentions about three women members: ‘These women have land and they have no one to help them. They are by themselves, others have family going on their behalf’. Also, it is ‘not done’ for women to attend meetings or to speak in public together with men, particularly in the lower part of Wadi Tuban. This is referred to as ‘our tradition’. Most women simply do not go instead of their husband. Some women do attend meetings together with their husbands.

WOMEN BOARD MEMBERS

Two WUAs (in Al-Arais and Lahsan) have a female representative in their board. These women function as spokespersons for their village. Arwa was chosen, according to her mother, because her mother used to work for the government. As spokespersons, they communicate news and information to women in their village by organizing meetings in their house. Stimulating women to become members also occurs through these women, hence indirectly.

Gender Analysis

It is obvious that:

- The number of women members in WUAs is low in all 16 WUAs. Only 16 out of 1306 or 1% of all members are women! There is a strong gender inequality in the representation of women.
- There is a strong gender inequality in registration opportunities: men are considered responsible for the family and thus act as representatives in the WUA.
- Only widows register in their own names. Women members who are not widowed mainly register on their family names or on their husband's names (which makes them invisible).
- There is a strong gender inequality in terms of the number of women in influential positions: only two women have board functions.
- Prevailing norms and values hinder the active presence and participation of women in WUAs.
- Women membership has not been a priority so far in the IIP.
- WUAs bylaws are gender-blind with regard to the above made points.
- WUAs bylaws do not take into account these women's water needs and interests, which include:
 - Possibilities for women to register in their own names at all times (i.e. independent from their male family members)
 - Separate women's meetings
 - Women representatives in the board
 - Possibilities to create incentives for women
 - Recognition of women's position in the family and in relation to farming.

4.1.4. WUAs' achievements

The total number of farmer members of WUAs is 1306, which is 16% of all farmers in Wadi Tuban. In order to gain some insight in the functioning of WUAs, we spoke to the head of the WUA of Al-Arais, Mr. Awel Vela. He specified the main problems he is facing in the WUA. Firstly, there is a practical issue: not sufficient space for all the members in the meeting room. Secondly, farmers do not apply the rules of membership. They do not pay 300 Rials for each ha of spate water (which is a prerequisite). Some farmers have openings in the canal from where they steal water; this damages the canal. Thirdly, there is no money in the WUA to buy tax-free machines abroad, to provide cheaper services to farmers. Next, he mentions the lack of participation of farmers. Although they are raising awareness of the benefits of the WUA, many farmers remain reluctant to join it. The main problem, he argues, is lack of cooperation between the Agricultural Union and the WUAs. As a result, they do not take the interests of the WUAs into account. They cannot get loans either. That is why the WUAs want to be member of this Union. He mentions that the WUAs are considering establishing an Irrigation Union. His perspective on the future of WUAs is not very positive: only if they manage to set up a Union in order to set rules and laws they can continue. Otherwise they will finish. 'I want to continue with many activities, we want ploughs, wells, machines and also help for women in agriculture', he argues.

4.2. Wells in the Wadi Tuban

Well water is the second natural resource farmers in the Wadi Tuban can dispose of, before, during or after the spate season. Well water is mostly used to grow cash crops such as tomatoes and onions, which need to be irrigated regularly. Prior to the implementation of water use measurements, farmers were free to dig wells unlimitedly. Anybody with around 1.000.000 Rials (5.000 USD) to spend was able to dig a well, and many did so, particularly in the 1990s. Therefore, at present many wells can be found in Wadi Tuban. Sheikh Al-Kabila, for instance, of Hadarem, mentions that in the sixties, there were only three wells (for drinking water) in Hadarem. Now there are 26 wells in Hadarem; the majority was constructed in the 1990's. They mostly belong to private landowners and beneficiaries; 5 wells belong to government or Sultans. Two years ago, the government has put a halt to the unlimited digging of wells. Permissions now need to be granted to farmers by the government. An engineer from the GSCP (Groundwater Soil and Conservation Project) determines if the desired location is far enough from drinking water, to avoid salinity of the latter.

Water and land deals

Not all well owners have land; in the same way, not all landowners (or beneficiaries) are owners of wells. Thus, an exchange of water and land takes place. Water is a scarce and thus valuable resource. Well owners 'sell' their water for high prices. One woman farmer mentions that they charge 40% of the yield of the crops (in money). Some well owners seem reluctant to provide other farmers with their precious water. They prefer to lease land to grow cash crops. Landowners, on the other hand, charge high money too. A male well owner mentions that he leases land for 40.000 Rials (200 USD) per *feddan*. Some landowners are reluctant to lease their land to well owners. Not only are they afraid the leaser will return the land wasted, also they feel it is an unfair bargain. One farmer says: 'The well owner will say: I want your land, give it and I will give you 70.000 or 80.000 for one year. If we take the money, we have only 15.000 per person (he has 4 brothers). This is only enough for one week! They take maybe one million [profit]. I'd rather earn nothing than to give him my land'. 'They want too much money', is the similar comment of another farmer.

Quantity and quality of well water

Farmers explain that the quantity of well water is 'weak', meaning that they have to dig deep in order to extract water. The son of Mohammed says: 'In 1994, there was a lot of water coming from the well, but it has decreased!' Another farmer likewise mentions that he has to dig 70 meters before the quality of the water is sweet. Also, the quality is poor: the water is sometimes salinated and it is said that this water does not have many nutrients. In addition, farmers mention that overuse of well water is bad for agriculture: 'we must not irrigate from the well all year, we must take from the spate; because it has nutrients from the sand'. Spate and well water are not two independent water resources. 'As a consequence of irrigation expansion, shallow water tables suffer from depletion and salinity due to seawater intrusion' (Pelat, 2006: 6). WUAs now see to it that well digging

without permission does not occur. Farmers that dig wells without permission are presented a 10.000 Rials bill. The Sheikh Ober (local village water manager) also supervises well practices in his village: he prevents any farmer from digging a well.

4.2.2. Women and wells in Wadi Tuban

Similarly to land tenure, few women in Wadi Tuban own wells, according to the Irrigation Director of the MAI. He claims that ‘if a woman has money, she can be owner of a well. Sometimes the woman gives the money to the brother and he looks after the well. If the person dies, she can inherit the paper. If she can contribute financially, she can dig her own well. But they don’t own wells – only 1% of well owners are women’. The Sheikh Al-Kabila of Hadarem village likewise states that there are no female well owners in Hadarem. During our research, we spoke to an old widow with a small piece of land – a neighbouring farmer had dug a well on her land and she is able to take water freely for the irrigation of her fodder crops. The woman does not charge him any money and her land is small, 1/2 feddan. She also uses spate water for her crops, but she does not have a canal to her land, so her land is sometimes eroded. We also spoke to Khadiga, a female well owner who lives in Al-Arais (upper-Wadi). Her case is described below.

Khadiga, a female well owner

Khadiga is one of the few women owners of a well in Wadi Tuban. 4 years ago, she constructed the well, together with her brother. ‘I wanted to grow tomatoes and onions, so when is not the spate season, I can grow instead of sitting around doing nothing. I suggested it and he agreed’. She was able to gather the money by participating in a rotating credit system (*Hakhbah*), with her husband’s salary. There are 20 men and women involved in this system. Her sister Aisha did the same thing together with her husband. Khadiga and her brother dug the well on their own land, 4,5 *feddan* which they inherited the land from their father. With the well she waters tomatoes, onions, peppers, sometimes the fodder (she starts growing fodder using well water until the spate season starts). Khadiga also receives spate water Khadiga’s oldest son helps in the field. Normally, Khadiga and her brother are the only ones using the well. Sometimes the brother gives water to other farmers. For this, they give her 40% of the crops. The others put fodder. If they put tomatoes, she gets 40% of the profit. Khadiga makes the arrangements and her brother helps her sometimes. There are no problems with the arrangements. Her son and brother control the water that is used from the well. Although Khadiga disposes of a well, she claims that revenues from farming are not enough to survive. She borrowed 30.000 Rials for the production of tomatoes this year. Her husband has a job in an army camp, while her brother works as a schoolteacher. All incomes are shared.

Analysis

Compared to land tenure, it was even harder to find women well owners in Wadi Tuban. Our research and the statements made by farmers and officials indicate that few women own wells. Likewise, few women landowners have access to well water. We have hardly documented the reasons for this. Speculating on this, reasons might be found in the lack of financial resources to build a well or buy water. Another reason might be the lack of interest or possibilities in commercial farming. Most women are involved in subsistence (fodder) crops for which no well water is needed. Notable exceptions to the rule such as

Khadiga and her sister Aisha prove that there are women who manage to break the traditional pattern of the gender division of labour, by creatively managing their financial resources in order to dig a well. Overall, though, the dominant picture is that men own wells and few women have independent access to them. In other words, gender inequality prevails in women and men's access to and control over well water – due to reasons which need to be sought in the financial imbalance and the gender division of labour and land ownership

5. Women and water rights: concluding remarks

We have analyzed women's access to and use of land, their agricultural involvement as well as their access to and use of spate and well water. In this section we analyze to which extent women have control over water resources. It has to be noted that 'very often – but not necessarily – land and water rights are linked to each other, and mechanisms to access land rights may implicate accessing water rights' (Boelens, R. and Zwartveen, M. 2005: 86). In the case of Wadi Tuban, spate water rights are based on land rights. This implies that the mechanisms that are at play in land issues also validate spate water issues. The right of a farmer to use spate water is based on his legal right to land. Similarly, the right of a farmer to become a member of a WUA is based on his legal right to the land he uses the water for. In other words, a farmer cannot receive water without land. Having a land right of some kind does not automatically ensure water rights; we have seen that some farmers, such as Aziza, have land but do not receive spate water because it has not been allocated to them. Also, 'having a formal right to water does not always and automatically mean that one also has access to water' (Boelens, R. and Zwartveen, M. 2005: 79). On the other hand, 'even without a formal right, people may still be able to access water and even have some organizational control' (Boelens, R. and Zwartveen, M. 2005: 79). We have seen that farmers steal water at night and that this is (reluctantly) accepted. Thus, 'what happens in actual practice cannot be easily read from these rights. In other words, 'to understand water control, [...], it is not enough to look at the official terminology that defines legal status of right holders. Such an understanding requires a look at actual water use and distribution practices and it requires an understanding of the different norms and discourses various (groups) of users refer to when claiming access to water' (Boelens, R. and Zwartveen, M. 2005: 79). This leads us to question: what do women water rights look like and, more importantly, what is the prevailing discourse that is referred to? In order to answer this question, we must first conceptualize what a water right is. 'A water right consists of the authorized claim to the benefit stream of a water source and includes the particular social privileges and obligations that are associated with it. A water right thus gives the right holder the authorized possibility to subtract water from a particular source' (Boelens, R. and Zwartveen, M. 2005: 77). They distinguish three categories of water rights: reference rights, activated rights and materialized rights (2005: 80). They argue that 'this conceptual distinction is necessary to capture the difference between official rights and actual rights governing concrete water distribution' (idem). The three concepts are explored below.

1) Reference rights: such rights specify the kind of powers a right holder is entitled to [...]it also specifies the characteristics of right holders, for instance by specifying that water right holders should be landowners, men or heads of households (idem).

The prevailing discourse on reference rights is clearly male-oriented. As shown in the research, men are mostly involved in land and water tenure issues. Although official data suggest that 30% of landowners are women and 20% of all farmers are female, this high number of women could not be retrieved in practice. This male-privileging discourse is reflected in the bylaws of the WUA. These papers do not specify the characteristics of a water right holder in terms of the above. What is stated is that a member 'should have a permanent interest in irrigated agriculture in the area of the Association activity'. Although in the by-laws of the WUAs, women are not prohibited from participating in WUAs, their participation is not emphasized or requested either. This lack of description can be interpreted as a lack of the *need* to describe these and thus as an assumed shared interpretation of the characteristics of reference rights and water right holders, which is gender-biased. It is clear that 'men are seen to best represent the water related interests and needs of the household at the level of the community and complete congruence of interests between men and women is assumed' (Meinzen/Dick, R. and Zwartveen, M. 1998: 339). Obviously, women are not included in the discourse on reference rights. Their rights are considered congruent with men's reference rights.

2) Activated rights: refer to the process of transforming reference rights into operational rules and procedures for water distribution. Water distribution schedules are one outcome of this process. Other outcomes are decisions about who in practice should be endowed with possibilities to participate in water users' organizations (idem).

It can be assumed that, in the case of Wadi Tuban, decisions about water distribution schedules and decisions about who in practice should be endowed with possibilities to participate in water users' organizations were made predominantly by men. This can be ascribed to the prevalence of men in decision-making and policy-making positions. The lack of explicit gender-disaggregated descriptions also implies a lack of female representatives in these positions. The process of transforming reference rights into operational rights is thus a domain dominated by men. Since WUAs and WUGs decide about the distribution of water in the secondary and tertiary canals of the irrigation scheme, and few women participate in these organizations, we can state that women are not recognized in their activated rights.

The lack of recognition excludes them from putting their activated rights into practice. The fact that very few women are members of WUAs indeed shows that the possibilities to participate in WUAs for women remain limited. The outcome of the process of transforming reference rights into activated rights are, amongst others, the membership criteria. They are interpreted by farmers in gender-biased ways. The research showed that:

1. In practice, farmers choose one representative per family to become a member. This role is usually fulfilled by men in their perceived positions as heads of households. This attitude represents the prevailing discourse that men are the water right holders.

Women accept this, whether they perceive this as a logical step or they are left with no other option.

2. In practice, the bylaw stating that each member must pay ‘not less than one share i.e. 1000 Rials’ has proved detrimental to women, because male members did not allow for their female relatives to become members too because they refused to pay the share twice (and few women can pay for themselves).

The lack of recognition by the (male) decision-makers of the existence, importance and use of women’s water rights forces out women’s activated rights and hinders their participation in WUAs.

3) Materialized rights refer to the actual water use and distribution practices and to the actual decision-making processes about these practices. These rights refer to the operational rules and arrangements between users that emerge when an irrigation scheme is used. Allowing those without reference rights to take and use water may also be seen as a materialized right.

We have seen that in practice, women farmers steal water at night. They build their own canals and gates to take spate water. They find alternative ways to get access to water. The very need to find alternative ways to access water indicates that women’s needs and interests are not represented in the water use and distribution practices. Arrangements between users that emerge in practice, such as the case of Fatima who was forgiven when she stole spate water, can be interpreted as an informal way of recognizing materializing women’s water rights. But women’s materialized rights are clearly not recognized by those in decision-making positions. They are not taken into account or included in operational rules and distribution practices. Formally, thus, women’s materialized rights are not recognized.

Recommendations

In order to turn this lack of acknowledgement of women water rights, policy-makers including WUAs can specifically target female farmers and create the necessary conditions to enable their active participation in WUAs. These conditions need to emerge from the field i.e. through research (among women farmers by women researchers!), but include amongst others:

- Favourable memberships criteria : e.g. one female representative per family, no membership fees
- Special women’s spaces
- Separate women’s meetings
- Suitable timeliness of meetings
- Specific training in topics, indicated by women themselves.

Also, they can include women’s participation in the decision-making processes on water distribution schedules and membership criteria for WUAs. Only in this way, can women voices be heard and can women represent and empower their reference, activated and materialized water rights.

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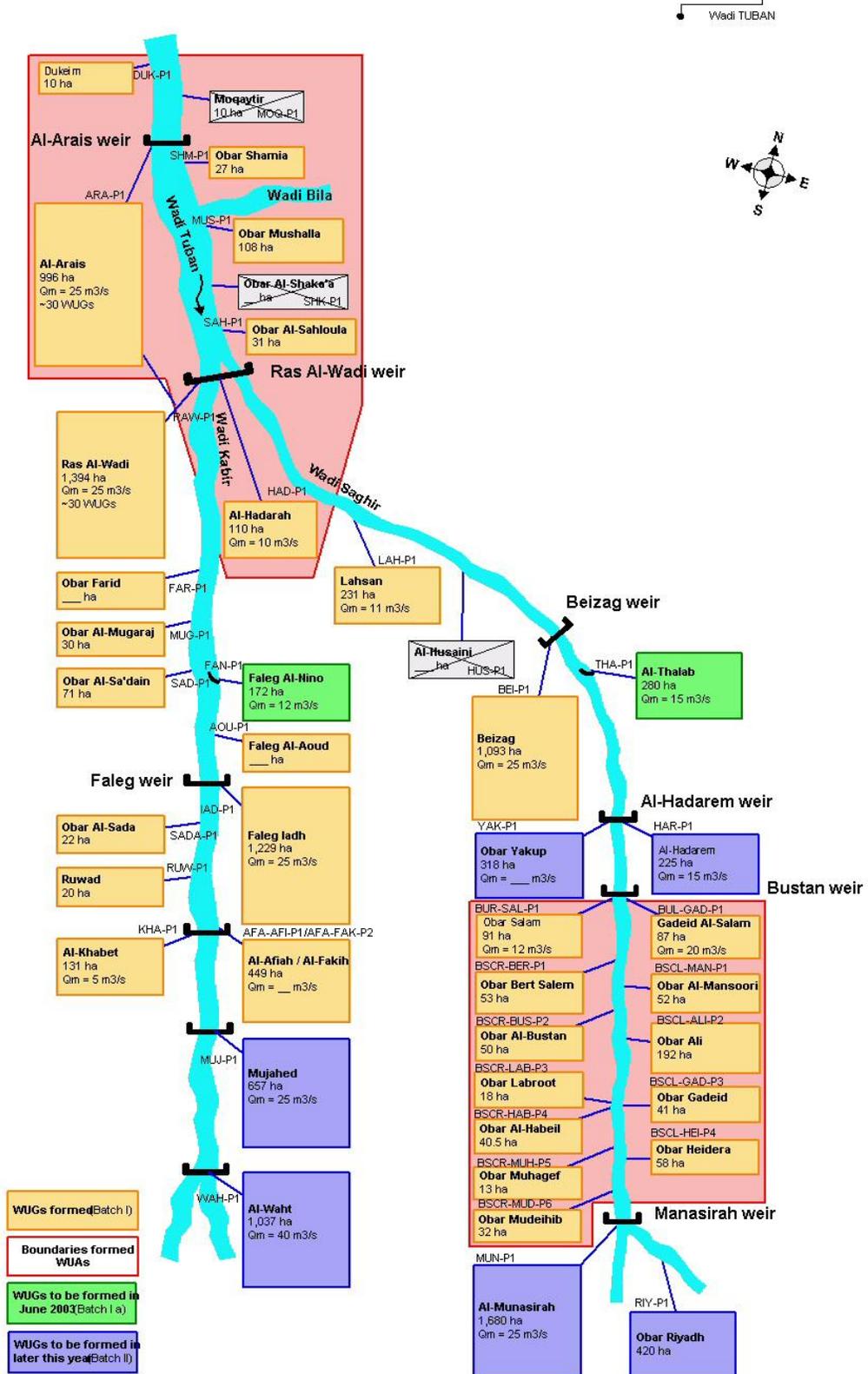
ACRONYMS/CONCEPTS

Feddan	Local surface: 60 by 70 meters
IIP	Irrigation Improvement Project
MAI	Ministry of Agriculture and Irrigation
Sheikh Ober	The traditional local-level water manager
WUA	Water User Association
WUG	Water User Group

Appendix 1. Schematic layout of Wadi Tuban

YIIP

Schematic layout of Wadi TUBAN



Appendix 2. The 2002 Water Law

- 1) An acknowledgement of ancestral traditional water rights for irrigation systems (mostly spate) in regions or situations in which they allow a rational water management.
- 2) Addressing the realistic situation of anarchic well drillings, overexploitation and pollution of groundwater [...] by promoting local community commitment to work in full cooperation with governmental institutions in managing water resources. Concerned populations are encouraged to form Water User Associations (WUAs) and other kinds of groups (article 10).
- 3) Enhancing the role of the existing governmental institutions in dealing with water resources management [...] The Law also focuses on the central role of the NWRA to facilitate decentralization by setting up Water Basin and Water Zone Committees and implementing and monitoring all interventions programmes. NWRA will e.g.
 - a. Monitor all exploitation of groundwater
 - b. Provide appropriate license for diggings water wells
 - c. Register existing water rights
 - d. Control the application of the Law by farmers or any other water user

The law does NOT include water pricing measures but it mentions fees, namely water benefit registration fees (permits and licences), water benefit fees for commercial uses, and water resources protection fees against pollution [...] (Pelat, F. and Thompson, L. 2005:8).

Appendix 3. Land tenure in Wadi Tuban
(Data from IIP, 2006, gender disaggregated on number of farmers, NOT on land tenure).

Area	Nr. Of farmers		Land tenure							
	Total	Female	Owners	O%	Share croppers	S%	Tenants	T%	Benefi- ciaries	B%
WADI ALADAM										
Al Arais	1113	259	119	10.7%	31	2.8%	0	0.00%	963	86.5%
Ras-Awadi	757	232	32	4.2%	4	0.5%	13	1.72%	708	93.5%
WADI KABIR										
Assadain	323	95	138	42.7%	0	0.0%	0	0.00%	185	57.3%
Faleg-Alnino	208	79	33	15.9%	0	0.0%	0	0.00%	175	84.1%
Faleg Iyad	784	171	313	39.9%	22	2.8%	12	1.53%	437	55.7%
Lafiah/Alfakih	342	35	76	22.2%	233	68.1%	0	0.00%	33	9.6%
Mugahid	424	103	10	2.4%	413	97.4%	1	0.24%	0	0.0%
Al-What	473	84	32	6.8%	441	93.2%	0	0.00%	0	0.0%
WADI SAGHIR										
Lahsan	86	27	22	25.6%	0	0.0%	0	0.00%	64	74.4%
Beizeg	1007	258	326	32.4%	0	0.0%	3	0.30%	677	67.2%
Al-Thaleb	264	4	118	44.7%	67	25.4%	1	0.38%	78	29.5%
Al-Hadarem	418	115	236	56.5%	3	0.7%	1	0.24%	178	42.6%
Ober Yaqub	413	76	176	42.6%	232	56.2%	0	0.00%	5	1.2%
Middle Area	884	126	632	71.5%	243	27.5%	0	0.00%	9	1.0%
Al-Furda	552	7	483	87.5%	66	12.0%	3	0.54%	0	0.0%
Al-Riyadh	259	0	23	8.9%	236	91.1%	0	0.00%	0	0.0%
TOTAL	8307	1671	2769	33.3%	1991	24.0%	34	0.41%	3512	42.3%