



**2015 - 2016**

**Factors affecting collective action for managing resources:  
A Case Study of Mchaitiyye Water Users' Association in  
Lebanon**

Njeim, Nassim

Promoter: Dr. Sergio Villamayor-Tomas

Co-promoter: Prof. Dr. Ir. Stijn Spielman

Thesis submitted in partial fulfillment of the requirements for the joint academic degree of International Master of Science in Rural Development from Ghent University (Belgium), Agro campus Ouest (France), Humboldt University of Berlin (Germany), Slovak University of Agriculture in Nitra (Slovakia) and University of Pisa (Italy) in collaboration with Wageningen University (The Netherlands).

This thesis was elaborated and defended at Humboldt University of Berlin within the framework of the European Erasmus Mundus Programme “Erasmus Mundus International Master of Science in Rural Development “(Course N° 2010-0114 – R 04-018/001)

### **Certification**

This is an unpublished M.Sc. thesis and is not prepared for further distribution. The author and the promoter give the permission to use this thesis for consultation and to copy parts of it for personal use. Every other use is subject to the copyright laws; more specifically the source must be extensively specified when using results from this thesis.

The Promoter

Dr. Sergio Villamayor-Tomas

The Author

Nassim Njeim

Co-promoter

Prof. Dr. Ir. Stijn Speelman

### **Thesis online access release**

I hereby authorize the IMRD secretariat to make this thesis available on line on the IMRD website

The Author

Nassim Njeim

## Chapter 6: Conclusion and Recommendations

A civil war that lasted 15 years (1975-1990) and a stagnation and instability in Lebanon's politics still causes water quality and allocation problems all over the country, and in rural areas in specific. Although Lebanon enjoys a high precipitation level with good abundance of water, that is not, however, used efficiently (Comair 2008; Mallat 1982; Mallat 2008). A national strategy launched by the MEW was set to improve the water status and the managerial gaps that were acknowledge; Unfortunately low advancement have been experienced and as stated by the USAID report that most of the developmental projects were oriented towards infrastructure rather than management and still water allocation is a problem in Lebanon. When water management decisions are central, an important development apparatus is to adapt water allocation mechanisms to local conditions (Merrey et al. 2007; as quoted by Gharios 2009); in addition, the third point of the development strategy set by the MEW was the creation of Water User Associations to facilitate and organize the use of irrigation water. This is the case with water allocation in Mchaitiyye village that is far from the capital Beirut and that faced water depravity for almost five decades until MWUA was created and made water available to the village.

This research started because there was a need to investigate the factors that affected the emergence and robustness of MWUA. Through an overview given by the president, an inflection point in the management of MWUA was noticed, and events were analyzed before and after the inflection point. In order to do that, a holistic understanding of the history of the area and Mchaitiyye in specific was necessary. In addition chapter 3 gives a detailed analysis of the events that happened throughout MWUA were noted. Later on in chapter 4, factors of CPR management that were present in MWUA were highlighted with their corresponding value, and chapter 5 analyzes the outcome on performance, and social and ecological factors.

This concluding chapter is mainly a summary of the findings and answers the TRQ related to factors affecting CPR of this research; in addition it also answers the Societal and Scientific objectives of this research. In the second section, recommendations are stated for

both the MWUA for its further improvement, and on the national level related to creation of WUA.

### *6.1 CPR management factors in MWUA*

This paper examined the successful emergence and robustness of irrigation governance and collectiveness in Mchaitiyye village done by the MWUA. The expected outcome of the study was that the management of MWUA would justify and comply with the factors suggested by the model set by the author. Analyzing the MWUA case, referring to a certain number of variables chosen by the author, it is still difficult to concentrate on each variables' effect, and on the outcome generated on the stages of emergence and robustness; which also proves Agrawal's (2001) conclusion that "the large number of variables affecting the management of CPR creates obstacles that exist in the problem of spurious correlation, and the difficulty of avoiding multiple and contingent causation in single case studies". The focus was on the events taking place before an inflection point and after an inflection point to find out the mechanism and factors relating to these two periods.

**First Snapshot:** The MWUA low group size with high homogeneity of identity and interest, and the personal initiative of the president that was the main catalyst for the creation of MWUA were of high importance in the emergence of the WUA. A close interrelated factor was resource dependency which concentrates on the group's poverty and the need to generate an income.

**Second Snapshot:** Contracting an expert (agricultural engineer) that helped in better allocating rights and did a positive impact on the production system along with installing a water meter to insure proportionality and monitoring were of a highlight. Monitoring and enforcement (M&E) played an important role in the robustness of MWUA, which proved Agrawal's (2001) argument that M&E are determining effects in robustness. While MWUA has been working its way to improve M&E, though highly interrelated with proportionality of rights, through the water meter this step will help them to sustain the WUA hypothetically. Since the water meter was installed in 2016, this leaves us with a new research for the future

to analyze how efficient was the MWUA with installing the water meter? And what role did the water meter have on monitoring and enforcement, and on proportionality?

**Societal Objective:** This paper proves that MWUA is well allocating water and developing Mchaitiyye in different aspects that are proved in the outcomes section. Although this case study is group specific, in addition person specific when it first started, other villages in Lebanon can learn and acknowledge that collective action is a high possibility to overcome governmental stagnation related to water rights and allocation. While hill lakes are now the primary development projects in rural Lebanon, especially in mountainous areas where water can be collected from precipitation gravitationally, these hill lakes are still privately owned and not organized under an Association leaving marginalized farmers with low water allocation.

**Scientific Objective:** MWUA case proves many theoretical points related to management of CPR. Though as any single case study the MWUA has its own specification, but what can be learnt from theory is that some variables to be implemented can improve the overall performance of MWUA. What can be a useful variable is *membership exclusivity* that enhances belonging and farmers incentives to collaborate. In addition, the leader had a big portion of the success in MWUA though leadership roles should be defined not to interfere with the farmers' participation in decision making and their overall participation in order to keep them motivated and aware of their liabilities towards the WUA and its sustainability, and this would lead to a further accountability of the MWUA by its farmers.

## *6.2 Recommendations and opportunities for the future*

### 6.2.1 MWUA level

Advised by the engineer and according to the local conditions that are a dry climate with a dry wind that has a low moisture content and that leads to a high transpiration and evaporation rates, with a rocky red loamy soil that has low rates of calcium, and that has a low water holding capacity, the irrigation requirements per apple tree are:

5 year old trees require 15 – 20 Liters/ Day (Irrigation interval of 15- 20 days)

10 year old trees require 30 – 35 Liters/ Day

While in other areas of humid wind and a more moisture climate, the requirements are

5 year old trees require 8 – 10 Liters/ day

10 year old trees require 18 – 25 Liters/ day

For this reason the engineer advises the MWUA to shift their agricultural production to grapes for wine production that are suitable for this climate and that require less water intake than apples. In addition the grape varieties that are available for wine production better utilize and absorb water from the soil than the apple varieties grown in a soil that does not have calcium; in addition they have a lower cost of production and a ready market of wine production. The agricultural engineer acknowledges that this is an idealistic solution that cannot be implemented within one year, but he suggests the shift of newly plantations and for farmers that are still willing to start cultivation. These improvements, through time, if done will increase the *financial viability* of both farmers and MWUA. In this case MWUA will increase its collections of fees that might ease the way of the association towards autonomy. Moreover the lower irrigation requirements of grapes will decrease the pressure on the resource if calculated upon the wells regeneration capacity. MWUA must take an important step in calculating the withdrawal and regeneration levels of the well in order to set a sustainable withdrawal quantity for the sustainability of the WUA and the sustainability of the well itself.

### 6.2.2 National Level

National awareness raising campaigns towards the importance and efficiency of WUA should be conducted to farmers that lack the knowledge of collective action and its benefits. In addition, farmers will gain managerial training regarding water use and irrigation, as the example of MWUA. When new technology (drip irrigation) was introduced, farmers did not know the efficiency of water to be irrigated and the timing of irrigation. Moreover trainings on tension-meters and tools for measuring soil water content will help farmers in acknowledging irrigation needs.

Although this requires governmental interference, a question will be how much government is needed? And how much can actually the dull Lebanese government contribute? A set of scholars answered this question by calling for co-management<sup>28</sup> by splinting managerial authority between government units and Association groups. What's good for Lebanon is to orient external funds and projects towards empowering farmers to achieve the creation of WUA as a bottom up approach rather than a top down one that is being implemented currently (Gharios 2009). "It is true that initiatives are unfortunately not coming out from the farmers themselves because they lack the knowledge and they require capacity building but, in point of fact, they do call for more independency and accept WUAs<sup>29</sup>" which gives a higher tendency for the development of WUA in the future to solve the water allocation problem in rural Lebanon.

### 6.2.3 Opportunities for the future

Notwithstanding the vast literature that exists as a basis in CPR management, neither theory, nor methodologies, nor technologies, nor strategies are adequately capable of responding to the complex nature of water issues, culture, religion, and background diversity of Lebanese rural communities. A country where resources complications are exasperated by urbanization growth as well as by refugee influx, and where water pollution is an important managerial issue causing water scarcity problems (Chamberlain 2014). The authors' compiled experience in the agricultural sector and in rural development in Lebanon (knowing the fact of high diversity and highly religious dependent and diverse structure of rural villages in Lebanon) acknowledges the opportunities of highly homogeneous groups of identity and past cooperative experience in villages that is mainly met through religious events and practices. In combination to the highlighted factors of the MWUA, leaders in diverse villages can be defined and trained for capacity building on managing WUA, in addition to the farmers training that was earlier mentioned. This combination will enable the same factors of CPR management to be available in different villages in Lebanon and it might lead to

---

<sup>28</sup> Baland & Platteau 1996, Pinkerton 1989, Pinkerton & Weinstein 1995

<sup>29</sup> Dr. Selim Catafago: President of LRA, former consultant of MEW, George Gharios 2009

creation of WUA as a bottom up approach leading to better water allocation in the absenteeism of the Lebanese government.

The water sector is what keeps rural people from migration and is what creates an income for them, this is from the rural societal perspective. From the general perspective of the nation, rural agriculture contributes to the food security of the country and to its political stability indirectly. Allocation of water is highly important to the livelihoods of rural farmers and WUA is a way to do as proven by MWUA. A hope for awareness and acknowledgment of rights to water use and the solutions to overcome it is what the author looks up for to improve the water status in his own country.

عشتم و عاش لبنان

**Long live Lebanon**