

Socio-cultural organization of water in the region of Imintaqat, Socio-anthropological observations

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Abstract: This article attempts to unveil the reality of water use and management in the region of Imintaqat, especially the cultural and social dimension in its management when it is bound between the binary of tradition and modernization. It also aims at providing some solutions and strategies to confront the problem of water scarcity in that region.

Keywords: Water, Traditional use, Modern use, Socio-cultural organization, Social transformation, Imintaqat.

01. Introduction:

The water has an important value for humans and civilizations, so there is no other element to replace water in many of its uses. Thus, throughout history, water has been synonymous with fertility, growth, living, stability, and security. Wherever water is found, otherwise humans would exist. Ancient societies or civilizations throughout history built their political, social, cultural, military, and economic systems on the banks of rivers, springs, and waterways as a strategic location, and as a step to employ this vital material in the field of irrigation. Crops and livestock grazing, given that these two activities are the first activities that a human has mastered after hunting and harvesting, so he tried, through a system, to divide irrigation water between their tribe and other neighboring tribes, or between the same tribe, according to a set of conditions and characteristics social and cultural, including land.

The scarcity of water imposed on the inhabitants of the Moroccan mountains to develop techniques for its exploitation and the formation of tight social organizations, which are still in force in many regions. Among these regions, on which the scarcity of water and the harshness of the field imposed the development of its exploitation and the conclusion of

contracts between people, we find the Imintaqat region as a mountainous region in the depth of the eastern High Atlas. The inhabitants were given great importance to their social and cultural system that is unique to the conduct of public affairs in the region. Among all that there is a part that the social system watches over, which is the area of irrigation and the management and management of its operations. The formations that the inhabitants of the region have crystallized are not new to the region because they are steeped in antiquity and extend to an ancient history. Oral narration says that they date back to pre-colonial times.

02. Problematical of study:

One of the important sources of economic life in the Imintaqat region is based largely on the agricultural sector. Therefore, agricultural lands have a crucial role in the process of social and cultural construction of that region and its relationship to the process of water management. The process of water management in Imintaqat is framed by a set of cultural and social values and standards linked to the cultural and social imagination of the Imintaqat region, in parallel with legal management with the challenges of water scarcity at the present time.

In light of the social and climatic transformations, many regions of Morocco, including the Imintaqat region, it is still managing water affairs through their social and cultural institutions without the interference of state institutions in managing this water resource. Rather, social institutions such as (JEMAA/اجماعة) and the people of rural areas have adopted more ways of managing the problem of water scarcity.

In view of this, the issue of water has been one of the most prominent topics that has not received (sufficiently) in-depth sociological study that focuses on analyzing the forms of water management through the sociological and anthropological approach. Therefore, we have chosen this topic, as the Imintaqat region was a field of study, through participatory observations and interviews.

Hence, the problems of this study were as follows:

- What are the social and cultural dimensions of water use and management in the Imintaqat region?
- What are some solutions and strategies to confront the problem of water scarcity in the Imintaqat region?

03. Importance and objectives of the study:

Through this proposed research, we aim to contribute to the discussion about water resources and the ways in which they are distributed among the members of the villages, in the field of the Imintaqat region. Therefore, that we will try to highlight the manifestations of social and cultural systems and their organizational function. Reflect the ways in which the population manages water resources and how they are distributed, the institutions that manage watering operations; separate between man and the importance of the customs contracted by man. In addition to the transformations that the region witnessed at the level social and cultural management of water and strategies for managing scarcity water.

The objectives of this study can be summarized as:

- An attempt to produce field knowledge based on the foundations of sociological research on the socio-cultural organization of water.
- Revealing the specific mechanisms of social change, and breaking the scientific decency that affects the process of managing, distributing, and controlling water from a scientific standpoint.
- Directing attention to the phenomena of social and cultural change in water, by adopting a scientific sociological and anthropological approach, and freeing the issue of water management from the perceptions of common sense.

04. Methodology and sample of study:

The scientific method requires a comprehensive description of all its steps and processes so that the researcher themselves or other researchers can follow the same processes, which provides an opportunity to develop the method. The technical procedures of the research are a kind of cognitive extension of the method and determining its suitability with the dynamic of reality, and are not prior or independent procedures to it, because the method is a tool for creating a specific system for a given reality in its indefiniteness.

Observation by participation and interview are qualitative methods for collecting and classifying data and not for analyzing data that is linked to

systematic concepts, so that they are employed in scientific research due to their efficiency and somewhat ease of completion. Most anthropological researchers employ these methods to evaluate their research and facilitate communication with the investigated. Observation with participation is employed in cases where it is necessary for the researcher to examine the social and cultural conditions of the investigated. To participate in their daily activities and beliefs, and thus enables a deep understanding and assimilation of the behavior of individuals and groups, as it is a record of the environmental features and social life of a particular group. As for the interview, it is an important tool for obtaining information through its human sources, it is one of the most important techniques that are formed through observation, through participation, and this importance is due to its benefits and the ease of its construction. To evoke information, opinions, or beliefs of another person or several persons to obtain some objective data, in which two or more persons play two social roles, any the researcher and the investigated, through which the aim is to obtain the required information and details. Based on the foregoing, and according to the specificity of the research topic and its field, we work with the qualitative approach, in addition to the technique of participation observation and (Semi directed) interview, because this topic strongly touches the culture of the region Imintaqat, the meanings and perceptions that were formed about water and the forms of its management.

The participation observation continued for two intermittent years, and the random sample targeted the people of the region, as the interviews included four individuals, by virtue of the type of interview, the size of the region, and its population.

05. Field of study and its temporal and spatial limits:

As for the temporal field of research, it lasted from July 2021 to July 2023.

As for the spatial field, this contribution focused on the Douar Imintaqat. Administratively, it belongs to the Command Imilchil, Midelt Province.

The two pictures (1) and (2) show the spatial dimension of the search:



Source of the two pictures: taken from Google Maps, On July 12, 2023.

06. Theoretical framework of the study:

The theoretical framework for any scientific study is a scientific answer to a scientific question that was raised before. This theoretical framework is questioned through field study of a topic that we believed had been addressed and answered previously. Therefore, the back-and-forth equation between theory and reality remains the starting point and essence of any scientific research, especially in sociological and anthropological research.

1. Jacques Berques's approach to rural (tribal) society:

Berques's close contact with the society of the "Greater Maghreb" - as he called it - had a great influence on his sociological productions. He dealt with the social phenomena that distinguished North African societies from the fact that he was an individual belonging to this geographical

field. So, his studies entirely focused on this framework. Based on the fact that the rural sphere was the degraded one in that period at the expense of the urban sphere (the city). It was logical for most of the works he produced to focus on the rural spheres.

In his analysis of social phenomena, Jacques Berques relied strongly on history. He is, above all, a social historian of the Islamic world. Through his focus on history, Berques tried to gain familiarity with all aspects of interest to the life of the community that he addressed as a subject of study. History represents at the same time the logic and the result in this research, where he talks about the research he conducted in his book (Jacques Berques, 1955). Naturally, the focus was not only on history in his book, but it was the core of most of the works he did, in terms of his dealing with religious topics among the "Saksaoua Tribe," for example, and the Zawiyas, the history of the development of the Moroccan state since the coming of the Saadians... and other topics. Perhaps this strong presence of history in Berques's sociological research has profound implications and deeper dimensions, given that any society whose social phenomena we want to study would be better able to understand its history and the historical transformations that have occurred in it. Especially if we know this geographical area of the "Greater Maghreb", which was the cradle of the studies carried out by Berques, pays great attention to its history. The social-historical analysis is what enabled Berques to understand some aspects of collective behavior and the mental and psychological characteristics that still influence the relationship between individuals and groups within the dialectic of conflict inherited from the past.

In this context, Jacques Berques considers that the social unit is not of the earthly type, but rather of the dynastic type, and that the basic cell; It is "Ikhas" (إخص) in the Amazigh language, or "bone", meaning that the communal male Abisian (الأبيسية) family revolves around the head of a family whose members share a common ancestor. This cell has its common homes, fields, and herds, and according to "Ikhsan" (إخسان) the land and water must be distributed, and thus it is the basis of the agricultural system and the framework of daily life. As for political life, it takes place within the framework of "Taqbilit" (تقبيلت) or the tribe, even if

it bears the name of a common ancestor and considers itself a gathering of those present from one origin. In reality, it is a composition of people coming from different horizons, but without affecting the moral unity of “Taqbilit” and the Taqbilet mini-state, and “Taqbilt” can belong to one ancestor.

2. Paul Pascon's approach to rural society:

All of Paul Pascon's works are considered integrated research into Moroccan society as a whole and its rural world in particular. His work did not take a single direction. As much as he was interested in monographic research, he was also interested in the pedagogical-epistemological dimensions of Moroccan sociology, so to speak. Thus, we can consider him the true founder of Moroccan rural sociology. As much as Paul Pascon tried to break with the colonial legacy, he was careful not to throw the baby out with the laundry and thus exploit the colonial scientific gains in order to understand Moroccan society.

Rural sociology, according to Pascon, is the attempt to make the rural subject readable, understandable, analyzing, and interpreting, whether at the field level through interviews or questionnaires, or at the level of describing, understanding, and analyzing documents, in order to control all social dimensions, living and technical, and material or symbolic production. Rural sociology For Pascon, it is not only a means of knowledge, but also a means of struggle to get out of the impasse of backwardness towards development and the well-being of the villagers...

The Haouz-Marrakech (Paul Pascon, 1984), like many regions of the deep Maghreb, was a laboratory for precise sociological analysis for Paul Bascon. Field observation, previously conditional on theoretical equipment, formed the practical basis for capturing these details and reformulating them again within the sociological clinic, which enabled Paul Bascon to produce the thesis mixture/complex society. Thus, providing evidence that the theory is born from the womb of field sociology.

3. Grigori Lazarev's approach to rural society (Agricultural development):

Grigori Lazarev (Grigori Lazarev, 1978) points out the importance of the (JEMAA) institution in tribal society, despite its lack of official

recognition by the state. This institution (JEMAA)) consists of important figures in tribal society (tribal notables and families are more influential), and they represent these positions according to social standards in the first place and not according to Economic standards. This institution was distinguished by its ability to discuss the entire tribal community and adhere to the decisions issued by this institution, in addition to its democratic character through collective decision-making.

The (JEMAA) played a number of roles within the tribal community, such as giving wages to the jurist, maintaining the mosque, and could also discuss buying or leasing land... Grigori Lazarev expresses this idea that the (JEMAA) institution and the role it plays cannot be abandoned, so they considered it is important in the development plan and its ability to bear responsibility. He also pointed out the possibility of transforming the (JEMAA) Foundation into cooperatives through which social development can be achieved. This transformation, which can be considered as a gradual modernization of the institution of consensus, would contribute to giving importance to agricultural development, by allowing individual efforts to be freed from the constraints of consensus.

The rural world experienced several problems, represented by the conflict over lands between the Royal Commission and the rural bourgeoisie. The Moroccan government expressed its desire to achieve rural development (the Sebou Project) (Grigori Lazarev, 2017), but it did not intend to accept the practical framework proposed by Grigori Lazarev and the experts (the Sebou Project). It had to consider this project in order to be able to benefit from the international financing needed to realize it.

This project begins with the state's contributions, which will be made at the level of agricultural structures existing at that time, without prejudice to the collective land law, while working, at the same time, to increase their areas. In this regard, the Royal Commission recommended using the total lands that include public property lands (Private property, Recovered lands, and Habous and army lands) (Lovo Remy, 2011).

07. Limits of the study:

No scientific research, especially sociological research can be accomplished without subjective, objective and material difficulties and

obstacles, and here it is necessary to point out the difficulties that we faced in this research, as follows:

- Lack of references about the region.
- The absence of any scientific study about the region.
- We ventured into producing scientific knowledge about the region, so we inserted the word "Observations" in the title to avoid claiming that it was purely scientific research, at the same time, we have tried to strictly abide by the rules of scientific research.
- Because I belong to the region, we tried to adhere to the scientific distance (between the researcher and the subject).
- Difficulty translating some of the used words related to the search area, so we tried everything possible to reach the words in their context and without losing their local meaning.

08. Presentation and discussion of results:

1. The traditional use of water in Imintaqat

Tribal societies have tried for centuries to form tight social organizations whose features are still prominent until now. These organizations have contributed to the development of agriculture and the development of techniques and regulatory means consistent with the surroundings and their environment, with the aim of circulating water. The formation of collective institutions and the maintenance of irrigation canals is a desire of the population, to adjust this essential element in their living life.

Religious managing of water:

The people of Imintaqat resorted because of successive climate crises during various eras. Historic religious managing was embodied in performing some rituals, such as praying for rain, Fasting, and supplication.

The first religious rites that were strongly attended during periods of water shortage and the vow was represented at prayer, watering, and some raining rituals were the solution that people of Imintaqat resorted to repeatedly during periods of drought. Perhaps this is justified by the existence of a legal support and rooting for this type of ritual call for help. As the historical sources indicate in their testimonies, the Moroccans' relationship with water was of the nature of desire and fear. Therefore, supplication usually embodied this duality, as it included calling God to

send down rain but was characterized by a utilitarian nature, and this justifies that the relationship with rain was governed by the coercion of drought and torrential rain.

The praying for rain and their accompanying rituals were at the forefront of methods that were contemplated as a solution and therefore were usually held after the rainfall. Water has its sacred presence in Moroccan imagination as the origin of life. This status raised water to the rank of sanctity, in which the two characteristics of fertility and punishment were combined. The vow of this element was the beginning of the practice of rituals, even if necessary, to repeat them several times, and this is true of the year 1634, because of the lack of rain the thirst of the crops. So people repeated the prayer for rain, as it was held After high prices and famines, "In the year 1680, there was a high price due to the delay in rain (..) Moreover, the people prayed the prayer for rain repeatedly (Idris Beblaabed, 2021).

Sociocultural managing of water:

The emergence of crises of all kinds in Morocco, accompanied by a series of ancient societal rituals and beliefs. The drought was an occasion in which some beliefs that were inherited from symbolic expression were manifested. The most prominent of which was the "ritual known as (Taganga/تاغنجا) or (Tislit N Onzar/تيسليت ن أونزار) meaning the rain bride, which It is one of the oldest rain rites, and aims to rain the sky when the land and crops are threatened by drought, damage and water scarcity (Ousous Mohamed, 2007).

The Moroccans practiced other beliefs during the drought period, especially in the country of Jabala in the north. When the village men went out barefoot with their children and elders, with the adoption of rituals that ended with the slaughter of a fat cow belonging to a particular family, for which a symbolic price was determined, and each one took his share of the distribution (Elouziaa /الوزيعة) (Elbazaz Mohamed Almine, 1992). Most of these rituals were in essence a number of symbols that reflected part of the Moroccan mental structure in its search for ways to escape from crises and their repercussions.

The water in the region of Imintaqat:

Firstly, the name of the region must be specified, which consists of two words, (Imin/إمين/Mouth) (Taqat/تقات/Torrent), which means the mouth of the torrent. For the people of the region, the torrent means the feminine form, this is because of the reasons for the size of the torrent and its nature (its narrowness). The region of Imintaqat belongs administratively to Qasr (Ighrm or Douar) Ali Oudaoud, the Imilchil community, and the Midelt province.

The Imintaqat region is a small area inhabited by one large family with origins belonging to the palace of Ali Oudaoud. According to the expression of the people of the region, it is somewhat independent, but it still performs its role in terms of the tax (the right of the Faqih/الفاقيه) that is paid to the Imam (Faqih) of the mosque (the Faqih/الفاقيه), for example, and solidarity for the repair of the waterwheel.

According to the analysis of the divisionary approach. The morphology of the Imintaqat region is made up of four bones (4 Ikhsan), Ikhas Ait Said, Ikhas Ait Hammou, Ikhas Ait Haddou, and Ikhs Ait Moha, and they are four brothers, with a common ancestor with the name Oualisou, In the same regard, the people of the other region are called Ait Alisou.

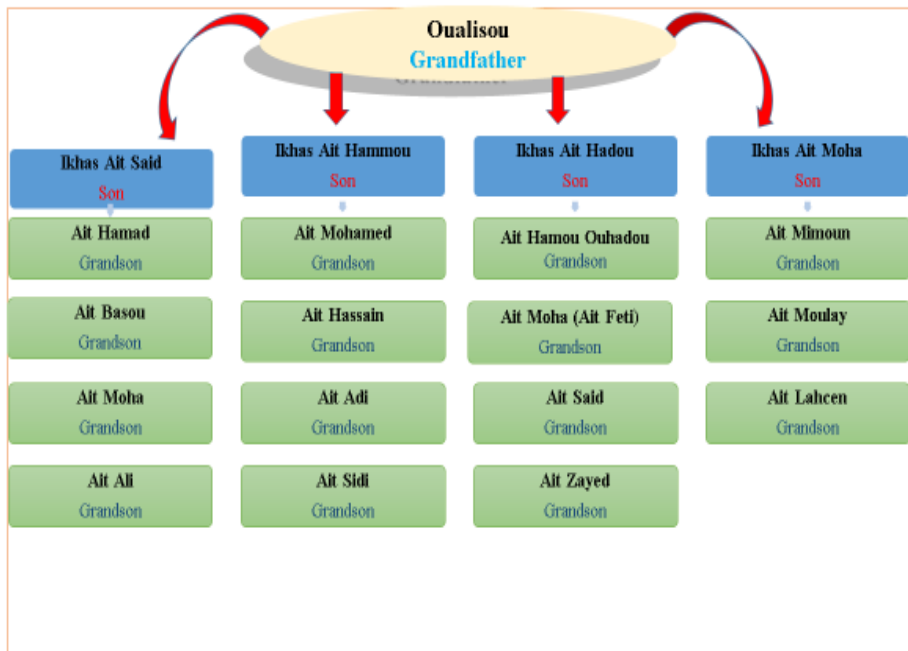
Mohamed (46 years old, from the Imintaqat region) said:

"The man named Oualisou was at an earlier time (the colonial stage/Lewqt Noromiy), he lived in a region called (Merchid) located between the regions of Imintaqat and Qasr Ali Oudaoud. He bought the land of Imintaqat, and they fought conflicts with another family - belonging to the palace of Ali Oudaoud- who wanted the same region until the Oualisou family defeated them. They lived in the region with four Oualisou children, and they multiplied in the region until they have now become eleven independent families, and they have one common ancestor..."

In the same context, the Ikhas of Ait Said are divided into four brothers (Ait Hammad, Ait Bassou, Ait Moha, Ait Ali), three of whom live in Imintaqat, and the other leaves from the region. As for The Ikhas of Ait Hammou are divided into four other brothers (Ait Mohamed, Ait Hassine, Ait Adi, Ait Sidi). While the Ikhas of Ait Haddou are divided into four brothers (Ait Hammou Ouhadou, Ait Moha, Ait Said, Ait Zayed) two of

them live in the region and two others have been left from the region. The last one is Ait Mouha are divided into three brothers (Ait Mimoun, Ait Moulay, and Ait Lahcen)) two of them live in the region and one other have been left from the region.

A frame (1) of the family and kinship of Ait Alisou:



The Imintaqat belongs tribally to the Ait Hdidou tribe, as large tribe inhabiting the eastern High Atlas. In general, the economy of these regions is based on two main sources, namely; Livestock breeding and agriculture, we may say subsistence agriculture.

Since agriculture is the main source of life for the people of the Imintaqat region, it constitutes a set of perceptions, beliefs, and rituals that manage this agriculture as an economic activity for the people of the region. In this context, when talking about agriculture, it is necessary to evoke and talk about the role of water.

Water plays an essential role in the life of the region, and in order to manage this element, the people of Imintaqat produced standards, values, customs, and rituals that frame the water in order to control and distribute it in the irrigation process, for example.

In this regard, the diversionary dam plays an important role in the process of controlling water in terms of its rationalization, collection, and economy for the people of the region, whether the traditional or modern diversionary dam, and it is called by the people of the region in the Tamazight language (Ougouj/أوكوج).

Hmad (62 years old, from the Imintaqat region) said:

"At each agricultural season, the diversionary dam(Ougouj) is built and repaired by the people of the region, and every family has at least one member of it participating in order to cooperate(Amaaoun) between them, as well as when floods pass that destroyed the dam(Ougouj), especially in the irrigation and planting seasons, and this is done within one to three hours, and this is done Building it with stones, herbs, tree branches, and soil in order to fill the dam with water, and then turn it towards the water channel(Targa)..."

The difference between these dams is that the modern dam is built with cement, stone, sand, and gravel in a modern way. While the traditional dam has built with fragile materials consisting of tree branches located near rivers, such as old unused clothes and reeds, and heavy with large stones, and grass and gravel are added to them to bridge the gaps, so the dam can from collecting water and raising it towards the water channel (Targa/تاركا).

Hmad (62 years old, from the Imintaqat region) said:

"...When the diversion dam (Ougouj) is repaired, the water channel (Targa) is also repaired because it is a part of the diversion dam (Ougouj), and in the same way, it is cleaned of weeds and branches in order to divert water towards the agricultural fields in a good way".

In addition, the traditional dam is built every time the floods pass, because it is destroyed due to the fragility of its construction and the force of the flood, and it is built in a collective way, any solidarity among the people of the region. Thus, the cost of construction continues in terms of effort, while the matter is considered by the people of the region to be solidarity and cooperation (Amaaoun/أماعاون). While the modern dam, this solidarity and cooperation are eliminated because it was not destroyed during the passage of the flood.

Mohamed (46 years old, from the Imintaqat region) said:

"Cooperation(Amaaoun) in Imintaqat is a feature that expresses a tribe(Taqbilt) and the community(Ajmaa), and with it the region continues, and cooperation (Amaaoun) is not only found in repairing diversion dams (Ougoujn) and water channels (Tirgin), but is present in many seasons such as the harvest and planting season, ..."

Picture (3) of the traditional diversion dam:

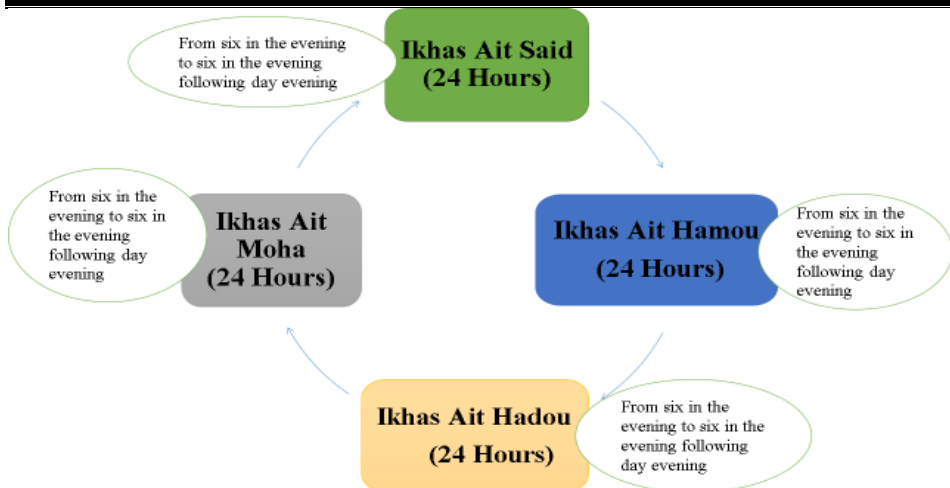


Picture (4) of the modern diversion dam:



The process of distributing water among the people of the region plays an important role in managing the scarcity of water, especially in summer, including avoiding any dispute over water. This water is distributed through a social standard called turn (Nuba/النوبة), this is done through four bones (Ikhas/إخص), which we talked about previously, and each bone (Ikhas/إخص) has a share (Aghbdil/أغبديل) equivalent to 24 hours. It is from six in the evening to six in the evening following day evening.

A frame (2) of water distribution form through the turn system (Nuba/النوبة):



It was previously embraced in the region when it did not face the problem of water scarcity, it is sufficient only to distribute between the four bones. However, as time goes on, any the present time, it is more being divided the water within these four bones.

In this regard, the share of water for Ait Said (Ikhas / إخص) is divided into four parts, which is equivalent to six hours for each part. Since the land that he owns (the family of Ait Ali) is protected by the family of (Ait Bassou), they own his share of the water, and the water is re-divided between the Ikhas (Ait Said) in a special way. Which is that (the family of Ait Bassou) owns a full share, which is 24 hours. 12 hours for (the Ait Bassou family) and another 12 hours for the land (the Ait Ali family). When the water is distributed, its cycle is in turn (Nuba), so (the family of Ait Hammad) and (the family of Moha) have a share of water at a rate of 24 hours, which is divided between them in half, alternating day and night. In the language of the people of the region, it is called a share of the family of Ait Basou and Ali, and another share for the family of Ait Hammad and Moha, after the completion of the water distribution between the four bones (Ikhas/إخص). "Aghbdil Tkh Win Ait Basou D Ali, Aghbdil Yadnin N Hammad D Moha".

As for (Ikhs Ait Hamou), the share of water is distributed among them, in the manner of (Ikhas Ait Said), which is a full share (24 hours) for the two of them, and another share (after completing the water distribution between the four bones) for the other two, as well as alternately.

As for (Ikhs Ait Haddou), the water share is distributed among three parts, which is an 8 hours share for the family of (Ait Mouha / Ait Fitti. Attribution to their mother after the death of the father), and 16 hours of the full share for the family of Ait Hamou Haddou and for the land of the Ait Said family (their land is protected by the family of Hamou Haddou), as well as alternately.

Finally (Ikhas Ait Mouha), the water share is distributed among four parts. Which is 6 hours share for each of the Ait Mimoun family, 6 hours for the Ait Moulay family, and 6 hours for the Ait Lahcen family, while the remaining 6 hours of the full share is for their father's land because his land was not divided yet (the father's death date was recent), as well as alternately.

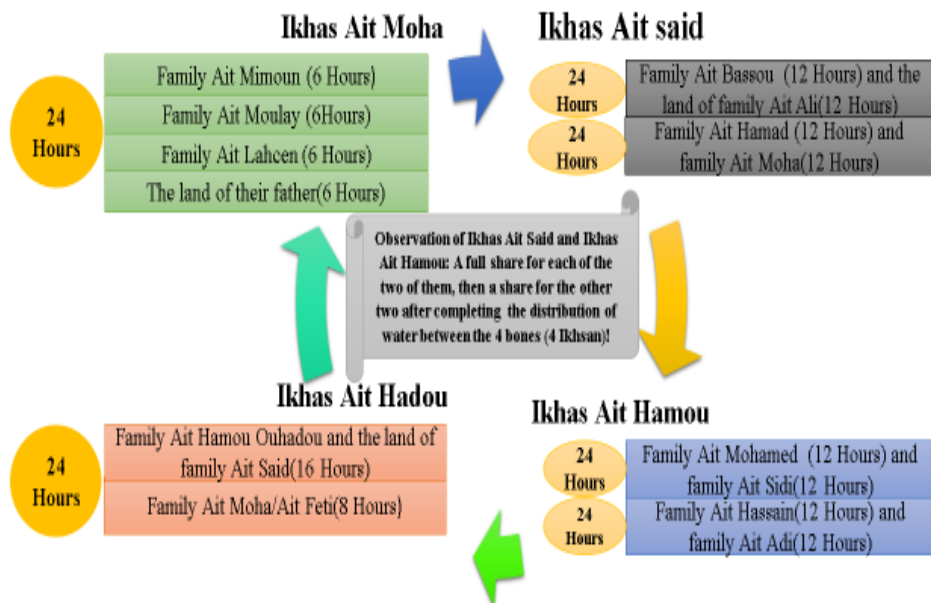
Here we conclude an important observation, which is that the distribution of water shares between the people of the Imintaqat region is linked to the ownership of the land; that means, ownership of a share of water is linked to ownership of land.

Mimoun (56 years old, from the Imintaqat region) said:

"The distribution of water is a solution to the problem of lack of water in the region (Tamazirt), and then a solution to some of the conflicts that may result due to the lack of water... Regarding the method of distributing water, four divide it, given that the region has four bones (Ikhsan), and each bone (Ikhas) has night and day, which means 24 hours for each. A bone (Ikhas) and from within a bone (Ikhas) it is divided according to what the sons of the bone (Ikhas) of so-and-so agree upon..."

The observation that we record here is that there is a sanctity of water distribution based on the age arrangement between the bones of the region. In other words, that the distribution of water shares starts from the older brother towards the next brother to the younger brother.

A frame (3) about the new division of water after the problem of water scarcity for the last years:



2. The modern use of water in Imintaqat:

Due to the social, cultural, economic, political, and technological transformations that human societies accompanied with the passage of time, it has led to important changes in all aspects of human life, whether in the urban or rural field, including the Imintaqat region, which belongs to the rural field.

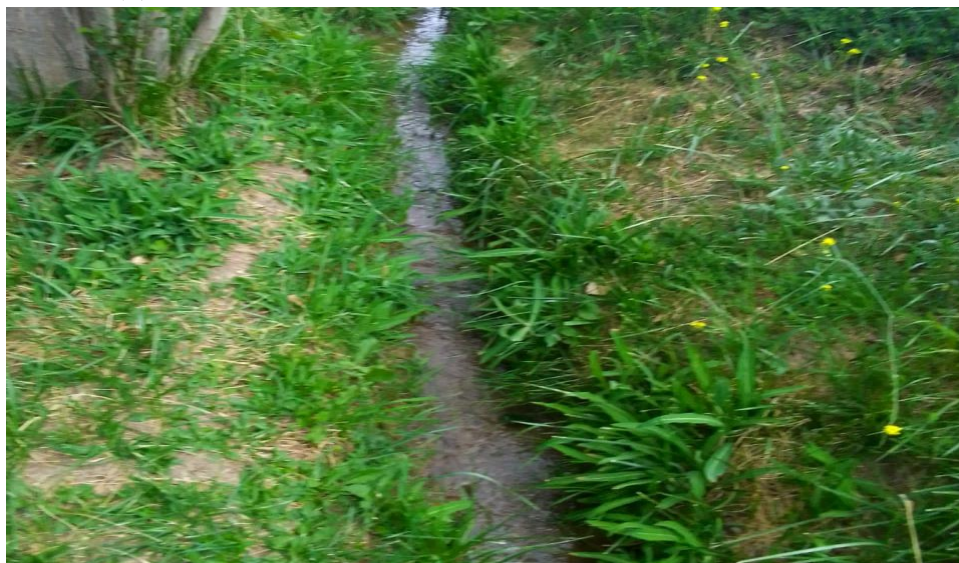
Among the changes that have taken place regarding the distribution and management of water is the modern diversionary dam, as we talked about earlier. In this context, the modern diversion dam is considered an important change in the management of water, in terms of the lack of construction cost and the effort that is required after its destruction by the flood.

In addition, the loss of water in the gaps of the modern diversion dam no longer exists, because of the building materials, and therefore the modern

diversion dam played an important role in rationalizing water in exchange for the traditional diversion dam. It should be noted that the date of construction of the modern diversion dam is the year 2013.

Without forgetting the role of the modern water channel, whether in rationalizing water or in the lack of cost and effort that it requires during its repair, in contrast to the traditional water channel, which requires every time to be repaired due to flooding, grass, and leakage water in places where there is no soil; it means in fragile places of the water channel. It should be noted that the date of construction of the water channel is the year 2013.

Picture (5) of the traditional water channel:



Picture (6) of the modern water channel:



Not all of this has been modernized in the field of water and its management. Rather, the people of the region have kept pace with modern developments and techniques in the use and management of water.

We mention from that, the technique of (Tonodfi/تانودفي)¹. Which is the technique of collecting water in order to manage the irrigation process. It is built in two ways among the people of the region; the first method is built with stones, cement, and sand. In order to prevent water from leaking out, and an opening at the bottom and a large type spout in order to release water.

As for the second method, a medium-sized hole is dug, supported by stones from its sides, and then covered with pouch from the inside.

Pictures (7), (8), (9) and (10) of (Tanodevi) Technique:

¹ - It is a collection technique that is a small-sized dam called by the people of the region in the Tamazight language (Tanodvi). It is built with cement, stones, and sand or a medium-sized hole is dug and supported by stones from its sides, and then covered with pouch from the inside.



The source of the pictures is taken by my personal phone:

In addition to the (Tanodvi) technique, other techniques help manage water in the region. It is a pipe technique, and it is called by the people of the region as (Tio/تيو), and a technique that helps prevent water from leaking and wasting it in the sand, and then collecting it, whether in the water channel or in (Tanodvi).

Moreover, in order to adjust the work of the pipe technique, because when the pipe is a long distance of about 500 meters, for example, it is difficult to work and the water is interrupted repeatedly, then in addition to the water, it can be interrupted due to the accumulation of sand in the pipe due to the flood. In this regard, the people of the region thought about how the pipe works in a good way, which is the technique of venting water through the large-sized barrel.

It is a technique that facilitates the process of water delivery. It is done by installing a short-distance pipe about 10 meters from the water well or in a place with plenty of water in order to aim towards the barrel, then installing a long-distance pipe from the center of the barrel towards the waterwheel or (Tanodvi).

Pictures (11), (12), (13) and (14) of the technique of venting water through the large-sized barrel:





The source of the pictures is taken by my personal phone:

3. Some solutions and strategies to confront the problem of water scarcity in Imintaqat:

In light of the climatic changes that directly affected water, the residents of the region did not stop without thinking about solutions that might help solve the problem of water scarcity.

In this context, as we mentioned earlier, some techniques helped alleviate the problem of water scarcity, albeit weakly, according to specific fields, in order to protect the agricultural field:

In the technical field, there is the pipeline technique, which helped a lot in solving the problem of water scarcity, and the technique of venting water through the large-sized barrel, in addition to the support of official institutions related to the agricultural field, in the construction of the diversion dam and the water channel.

In the social field, there is more scrutiny and division in the distribution of water shares from within the four bones. In order to avoid any internal conflict and everyone takes their share of water fairly according to the ownership of the land.

According to the people of the region, they believe that the best solution in the future for the scarcity of water is digging wells, but they find it difficult to obtain a license to dig wells from the willful administration.

09. Results obtained from the study:

Through our study of water and its management, we conclude that:

- The social and cultural organization of water in the Imintaqat region is linked to social norms and traditions produced by humans living in the studied region.
- The social and cultural organization (The Nuba /النوبة/ Turn system, for example) played an important role in managing water among the residents of the region at the level of irrigation and agriculture and controlling it at a time of water scarcity.
- The social and cultural organization constituted an alternative solution in managing internal conflicts during the problem of water scarcity.
- The social and cultural organization (JEMAA) replaced the official laws and institutions in the management of water in the Imintaqat region.
- The problem of water scarcity led to the creation of a group of techniques to solve this problem, such as (Tanodevi technique / the technique of venting water through a large-sized barrel...).

10. Conclusion:

To sum up, the social and cultural organization of water in the Imintaqat region is linked to social norms and traditions produced by the humans who live in the region, in order to coexist with the permanent

transformation that accompanies the human throughout his life. This organization played an important role in managing water among the people of the region at the level of irrigation and agriculture and controlling it at a time of water scarcity. Then it formed an alternative solution in managing internal conflicts.

Rather, we can say that this social and cultural organization replaced the official laws and institutions in the management of water in the Imintaqat region. However, the problem of water scarcity has created difficulties in managing agricultural fields and even threatens the lives of the people of the region. The will administrations must meet the demands of the region in digging wells and finding an optimal solution to this issue.

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12. Appendices:

Pictures (15) and (16) of our participation in the process of watering



the agricultural field (Carrots).