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Green Illusions in Morocco: Climate Policy, Water Scarcity, and the Hidden Social Costs of Agricultural Modernization

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Abstract

supporting small farmers in marginal areas with financial investments of 104 billion dirhams(40% public and 60% private), However, our ethnographic research shows that, under Moroccan conditions, this new environmental policy tends to be associated with high agricultural intensity and a shift to more water-intensive crops, which are incompatible with the country's environmental conditions. The Green Morocco Plan not only promotes the development of production chains and marketing routes and the doubling of agricultural production and exports, but also encourages competition for resources, ignores drought and climate change, and contradicts the country's hydrological reality, contrary to what is advertised. We identify contradictions in official discourse and policies, and show how current policies lead to social conflicts that reflect how natural resources (water) are managed at the level of agricultural and industrial investment. Recognizing the importance of the relationship between natural resources and the characteristics of the political, economic and social structure, this paper seeks to uncover the constants and transformations resulting from new development/agricultural trends. This is achieved by observing the role of these trends in creating social tensions in several Moroccan regions, in the context of the declaration of a state of water emergency.

Keywords: *New Eecopolitics -Water security- Social hierarchies- Protest movements-Marginal spaces*

1. Introduction

Morocco inherited a situation of marginalisation in various vital areas from the colonial period. Following Morocco's declaration of independence in 1956, the political elite, like the rest of the Moroccan population, aspired to live in an independent homeland that would guarantee a minimum standard of social advancement and integration for all. In this context, agriculture was established as a priority for the country's development, a strategy confirmed during the first meeting of the Supreme Council for National Revival and Planning in 1964. This strategy was heavily reliant on the construction of dams for the purpose of irrigating land.This

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commitment was further emphasised by King Hassan II's strategic "dam construction policy", which focused on developing infrastructure in various Moroccan regions to ensure reliable access to water for all citizens (World Bank, 1980). Furthermore, in order to continue public investment in basic infrastructure and water supply facilities, the "dams" program was launched in 1967, and the Agricultural Investment Law was enacted in 1969 with the aim of modernizing the sector. In the same context, water extraction taxes were frozen throughout the 1970s (Morocco Possible Report,2006),

Furthermore, special attention was paid to the mechanization of the agricultural sector, and numerous integrated development projects were launched. This underscores the state's early commitment to establishing an agricultural sector that would ensure the country's food self-sufficiency, with exports exceeding imports of food products. Natural resources received similar attention during the 1993-2004 strategy period, through the promulgation of the Water Law and the launch of the National Irrigation Program (1993-2000). During this period, similar national programs were also initiated, including the Collective Program for the Provision of Drinking Water to Rural Populations (Morocco Possible Report,2006)

During the political transition in 1998, three new strategies for rural areas were formulated: the Rural Development Strategy 2020, the Economic and Social Development Plan 2000-2004, and the Long-Term Strategy for the Development of Moroccan Agriculture. These programs were conceived as a response to the shortcomings of previous initiatives in enhancing the living conditions of a substantial segment of the Moroccan population, particularly in rural areas. Despite this, the agricultural sector remained divided into two distinct sectors: a modern, export-oriented sector and a traditional, low-productivity sector focused on self-consumption. Since then, the sector's weakness has become evident. The measures implemented have primarily focused on benefiting farmers and large investors, while restricting access to resources (such as land or water) for vulnerable sectors and groups. It is important to note that this has not been offset by any gains in wealth production (**Morocco Possible Report, 2006**)

1.1. Problem

In order to address the imbalances resulting from policies adopted in the agricultural sector, the state developed the Green Morocco Plan (2008–2018), overseen by the Ministry of Agriculture, Fisheries, Rural Development, Water and Forestry. The plan was conceptualized based on a set of fundamental principles, including: Prioritizing agriculture, accelerating the development of high-value and high-productivity sectors, and addressing rural and peri-urban poverty by supporting small farms and creating a middle peasant class are key to the nation's economic success. The plan presented figures illustrating its achievements: annual growth in agricultural GDP of 25.5%; 1,575 projects covering 112,000 hectares; investments worth $22.3 billion; an increase in working days per worker from 110 to 140 thanks to expanded cultivated areas, crop diversification and improved production; drip irrigation covering 542,000 hectares; and a 117% increase in agricultural exports.(Amal Nabih &Institute for Policy Analysis,2025) However, the outcome fell short of expectations as the plan increased the number of investors and economic elites in the agricultural sector.

This has led to social tensions due to the economic and environmental costs imposed on local peasants by this development vision. In light of these considerations, this study seeks to address the following research question: How effective are programs designed to support vulnerable groups and the middle class in addressing climate change, economic risks, poverty, social exclusion, and other issues?

1.2. Objectives of the Study

This study aims to shed light on the impact of new policies in the agricultural sector on nature and humans. To this end, the study uses the 'Moroccan Oasis Regions' model to analyze the implications of these policies. Innovatively, the study also seeks to reveal how shifts resulting from new developmental and agricultural orientations affect the region's population's access to environmental resources and the extent to which this contributes to the entrenched unequal distribution of resources.

1.3. Questions and Hypothesis

- What dynamics enable us to understand the forms of inequality and exclusion resulting from shifts in access to resources in oasis society?
- What effect do these changes have on the lives of broad social groups within the oases, and how can they be transformed into daily suffering?
- As to whether the "Oasis" movement (which includes the March of Thirst, the Tansifit and Mezguita protests, the Ksour protests, and the demonstrations against water privatization in Figuig) can be considered an expression of the failure of recent modernization attempts to reduce social and spatial inequalities?

2. Literature review

Recognizing the importance of the relationship between natural resources and the formation of economic and social structures, Dixon Homer Thomas examines the elements of environmental tension resulting from the scarcity of natural resources and the ways in which they are exploited, highlighting the centrality of this relationship in the emergence of fissures within human societies. This is what Clifford Geertz highlighted when he analyzed the irrigation system in Morocco, exploring the nature of the relationship between the ecosystem and environmental public policies(Clifford Geertz, 1979) He emphasized three fundamental facts: Firstly, the scarcity of water resources; secondly, the ways in which these resources are managed; and thirdly, the tensions that are expected to arise as a result. A significant number of studies have examined the correlation between environmental change and social conflict in various contexts. These studies have primarily focused on analyzing the nature of issues related to the privatization of natural resources (Paul Collier, 2004; Fouzia Borj ,2019; Ahmed Alkhattabi,2019)

In the Moroccan context, a number of studies have examined the environmental effects of agricultural modernization, particularly with regard to water scarcity, few have addressed its impact on social and cultural structures and social justice. One of the most notable of these studies is that by the sociologist Fouzia Borj, titled ' Environment of the Poor: Adaptation Dynamics and Living Practices: An anthropological approach". This study adopted an ethnographic approach to analyze transformations in resource use and management from a cultural ecology perspective. The study focused on the Jorf Oasis in Tafilalt and aimed to understand the variables associated with the livelihoods of oasis families in their relationship with natural resources (land and water) (Fouzia

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Borj,2019)

The study concluded that the Moroccan state's economic policy has generated numerous social dynamics, including migration and the expansion of the market economy, which in turn has produced a new logic for social actors. In the same context, Ahmed Al-Khattabi's study, 'Ecological Violence and Social Conflicts: A Sociological Study of the Multiple Impacts of Watermelon Cultivation in the Draa Oasis in Southeastern Morocco. Relying on environmental conflict theory, the study examines environmental crises in relation to politics and society. It concludes that conditions generating ecological violence can contribute to social violence and tensions arising from the use of natural resources. It is worth noting that our study hypothesis overlaps with Ahmed Al-Khattabi's hypothesis in his analysis of the impact of watermelon cultivation on water security for the population of southeastern Morocco (Ahmed Alkhatabi ,2019)

The study, 'Managing Moroccan Oases: Dual Discourse and Practice, by Ismail Ait Bassou and Abd el Samad Khediri, is also important in this regard. It sheds light on the reality of oasis conditions in the context of climate change. The study highlights that oases have deteriorated significantly over the past two decades, with a particular decline in groundwater levels of 15 to 20 cubic metres per year and a 34 per cent drop in date production. This situation is further exacerbated by the imbalance between achieving profits through investment and preserving biological and natural diversity, as well as the water table.

As with the studies by Borj and AlKhatabi, the study concluded that “the growth of modern market agriculture introduced under the new agricultural policy began to threaten the subsistence agriculture of small farmers in the oases”. The study also highlighted that the agricultural investments made in the oases since the beginning of the third millennium have threatened the oasis ecosystem through the emergence of investments that are not in line with the ecological specificity of the region(Ismail Ait Bassou&Abd el Samad Khediri,2022)

Another equally important study, prepared by researcher Amal Nabih and published by the Moroccan Institute for Policy Analysis, is titled “A New Water Management Model for an Equitable Water Transition in Morocco.” The study analyzes the repercussions of the worsening water stress in Morocco today, despite the adoption of proactive water management policies since 1964. It also provides a critical review of water policies that are the main reason for the transformation of many green spaces into deserts. The study concludes with a set of substantive recommendations, most notably: The need to make water scarcity the primary criterion for approving investment projects in Morocco, as well as by reviewing public policies that prioritize agriculture aimed at generating hard currency (the Moroccan Institute for Policy Analysis,2025)

3. Methodology

3.1. Research Design

It should be noted that this study is the result of field research I conducted in the Drâa Oasis. The study was conducted using an ethnographic approach at the methodological level. The objective was to ascertain the nature of the emerging challenges stemming from transformations in water and land use, as they pertain to contemporary water and agricultural methodologies and technologies. The research was conducted over a period of approximately one year, from 10 January 2023 to 30 December 2023.

3.2. Participations

As part of the ethnographic research, fieldwork included participation in the agricultural activities of the local population. Visits were also made on a weekly basis to local markets, where time was spent with local families and sheikhs. Meetings were organized with peasant families and khattara sheikhs. The sample was studied according to age, gender and class variables, with the primary focus being on small farmers, merchants, khattara sheikhs and supervisors of the Zawaya Foundation (E.E.Evans Pritchard, 1974)

The sample was distributed as follows:

Table 1. shows the samples /participations

	Gender		Age			
the total	**Males**	**Females**	**65-51**	**50-35**	**34-20**	**Category**
13	**6**	**7**	**3**	**6**	**4**	**Farmers**
14	**14**	**-**	**6**	**5**	**3**	**Merchants**
9	**9**	**-**	**9**	**-**	**-**	**Sheikhs of the Khattarat**
14	**14**	**-**	**14**	**-**	**-**	**of the Zawaya Foundation Supervisors**
50	**43**	**7**	**32**	**11**	**7**	**Total**

3.3. Tool

Following a thorough analysis of the field data, the interview guide was divided into two axes. Firstly, the period of the oasis before modernization trends was presented in the context of the lived testimonies of farmers living in the oasis, which were extracted through semi-structured interviews. The objective of this axis was to illuminate the local knowledge that the inhabitants had established in the past to combat natural limitations, namely the utilization of water and the perpetual concern for its continuity as a rational measure that shaped the morphology of the oasis. Secondly, the axis examined the period of the oasis following the modernization of the agricultural sector, as revealed by daily observation.

4. Introducing the sectoral policy under study

As previously noted, the country developed the Green Morocco Plan during the period 2008-2018 (Najib Akesbi,2011). These policies were part of the country's strategic plans (PASA 1985-1993, PASA 1 and 2, PAGI 1-2, PISA 1-2, and the strategy phase 1993-2004).

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In light of these considerations, the plan established a target for the project that remains consistent to this day: namely, to reduce family subsistence farming (the cultivation of food for personal use), a practice that has historically been of paramount importance to the national agricultural system. Conversely, the promotion of water-depleting commercial crops, such as watermelons and Medjool dates, has exacerbated the water crisis in many regions, particularly in oasis areas in the southeast of Morocco. The benefits have been concentrated among large farmers who adopt modern water management techniques, thereby perpetuating the existing disparities between two distinct groups. The exploiters are financially influential investors, while the local peasants rely on the Khettaras system or waterways (Anas Mouafi,2021) This indicates that the initiative for development through this plan did not deviate from previous strategies. From a pragmatic standpoint, the Green Morocco Plan fell short in achieving a balanced equation: the goal of achieving growth without compromising the fundamental rights of individuals. The clear disparities in patterns of access to resources confirm that the development strategy, which is oriented towards the economy, was not sufficiently targeted to benefit the poor and vulnerable (Ahmed Alkhatabi ,2019; Ismail Ait Bassou& Abd el Samad Khediri,2022; N. Akesbi, (2001b); Fouzia Borj,2019)

In practice, the marked discrepancies in the patterns of access to resources revealed by the policies of the last fifty years become socially explicable when the researcher compares the unequal distribution of resources with the resulting social conflicts and tensions, which necessitated thinking about the social implications associated with sectoral economic policies to analyze the components of the relationship between the ecosystem and the conditions that produce conflicts, thus understanding man's relationship with his environmental surroundings (Ahmed Alkhatabi ,2019)

4.1. The Dialectic of Environmental Violence and Social Conflict

Sociologists have long been interested in conflict, with most of their research focusing on a fundamental question: what is the role of conflict in social life? In this context, some sociologists view conflict as having a positive role. For example, according to Georg Simmel, conflict is a form of socialization and a source of social control. Louis Coser, on the other hand, views conflict as a safety valve that prevents the collapse of relations between opposing parties and strengthens social identity. Meanwhile, the concept of conflict in Marxist theory has different connotations. It is considered a manifestation of class conflict between two classes: one that possesses the means of production and can therefore exert pressure, and one that lacks the means of production and is forced to accept social organizations that serve the interests of the former and justify its exploitation. This reflects the fundamental paradox of social relations (Ahmed Alkhatabi, 2019; Jamal Fezza, 2016)

Within this logic, the conflict between social parties over natural resources appears as a conflict of a social and economic nature, since people build their relationship with the environment on a basis that serves their interests, and thus the environment takes on an economic character linked to the irrational exploitation of natural resources. This is what we mean by the dialectical relationship between ecological violence and social conflict. While we might imagine that we are facing societies that have managed to dry up all sources of conflict, reality shocks us with the emergence of new forms of conflict that reflect the nature of social relations based on the subjugation of both the environment and humanity (Goetschel Laurent& Péclard Didier,2006)

4.2. Oasis and Modernization Policies: The Case of Research

Firstly, it is vital to acknowledge the significance of oasis regions to Morocco's primary development agenda (Ali Al-Hasani, 2013) In this context, the Green Morocco Plan was launched, with the aim of diversifying crops, boosting production, and increasing agricultural exports by 117% (Agricultural Development Agency) Furthermore, the 2010-2020 palm tree development project and the launch of the Oases and Argan Development Strategy, with an estimated budget of around 92 billion dirhams, were both overseen by the National Agency for the Development of Oases and Argan Regions.

Furthermore, in order to meet the growing demand for water, King Mohammed VI presided over the signing of the framework agreement for the implementation of the National Program for the Supply of Drinking and Irrigation Water (2020-2027) on 13 January 2020 in Rabat. The program requires investments of 115.4 billion dirhams, which will be distributed over five main objectives:

- Developing a water supply linked to the agricultural sector through the construction of dams;
- Strengthening the supply of drinking water in rural areas;
- Reusing treated wastewater to irrigate green spaces;
- Establishing seawater desalination plants;
- Raising awareness of the importance of preserving water resources and rationalizing their use in a context characterized by "scarcity" rather than "abundance" However, despite these efforts, the situation of the oases has not improved, and in fact has deteriorated significantly in recent years, with groundwater levels declining by an average of 15 to 20 cubic metres annually and date production declining by 34%. This has prompted a number of advisory bodies, such as the Economic, Social and Environmental Council, to voice concerns over the threat to Moroccan oases in terms of the right to water and water security resulting from the overexploitation of water resources (Ismail Ait Bassou& Abd el Samad Khediri, 2022; ECOSOC document, 2019)

The oasis's inhabitants are facing a significant challenge in dealing with the issue of "thirst", (Water Resources in Morocco(Report), 2022; Ministry of Equipment and Water. Report 2024) particularly in the context of the promotion of high-value crops by the Moroccan state's public policies. The cultivation of red watermelons, as part of the Green Morocco initiative, is a prime example. This crop requires substantial amounts of water, up to 6,000 square metres per year per hectare, leading to high salinity levels due to the drying up of wells and surface water. In the same context, we can include the tourism strategies and programs adopted in the oasis that led to water depletion and control. For example, there was a program to receive 10 million tourists by 2010 (Ali Al-Hasani, 2013) This was also based on encouraging tourism investors to diversify the hotel offer in oasis areas with pools and green spaces (Ismail Ait Bassou& Abd el Samad Khediri, 2022). This led to a severe social crisis, as residents protested against the authorities due to the severe water shortage. This fact confirms that the ecological balance in the oasis is very

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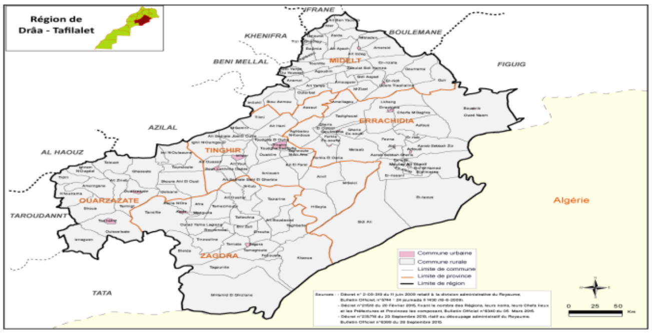
fragile and sensitive (Ait El Mokhtar, Mohamed & Ben-Laouane, Raja & Anli, Mohamed &[Boutasknit, Abderrahim & Wahbi, Said & Abdelilah, Meddich, 2019). these corrective policies contribute to generating new forms of inequality and discrimination.

Figure 1:Communal division of the Drâa-Tafilalet Region



Source : Monograph of the Drâa-Tafilalet region- KINGDOM OF MOROCCO -Ministry of the Interior- General Directorate of Local Authorities.

4.3. Social crises of selective policies:

The model we present (the Drâa Oasis), built on scarce natural resources, shows that after the limitations of the development policies and projects launched there became apparent, they backfired and created a sense of deprivation. This led the residents to protest their social poverty and spatial exclusion in 2017.

Elinor Ostrom expressed this idea in her book "Managing Commons: The Evolution of Institutions for Collective Action"(Elinor Ostrom, 1990) which highlights the conflict of interests and values in resource use. This conflict refers to a set of rules that suit the economic and social conditions of a particular group, while negatively affecting the economic and social aspects of many social groups. The notion of the 'tragedy of the commons' and the need to move towards a 'private property' model is increasingly recognized in the new environmental discourse, which argues that local knowledge in regulating natural resource use is no longer appropriate for plans to accelerate agricultural development. This was one of the assumptions used by the state to justify its selective policies and the cultural exclusion of oases (ignoring local knowledge). In practice, these policies sought to reframe the environmental discourse to serve its political vision and the interests of its economic elites by allowing new investors unrestricted access to resources (Fouzia Borj,2019)

5. The difficult combination of local water management knowledge and modernization policies

Water is considered the most important factor in the organization of the oasis, as its possession equates to life and stability, while its loss means movement, migration, and wandering. The significance of the struggle over water in all aspects of social life in the oasis cannot be overlooked. While this phenomenon is not a recent development, water has nevertheless been a source of social meaning and significance for many centuries. This phenomenon has been documented by Leo Africanus in his book "Description of Africa," following his visit to the Tafilalet region and its environs, regarding the frenzied competition among clans for water. He articulates this perspective with remarkable eloquence and brevity: "In the spring, the desert areas experience an abundance of grass, attracting neighboring Bedouins to graze their camels. However, this can sometimes lead to conflicts, resulting in fatalities"(Hassan ibn Muhammad al-Wazzan, 1990) Furthermore, the construction of water supply infrastructure, including aqueducts, ditches, wells, canals and small dams, has been a contributing factor to numerous intertribal conflicts and the disintegration of tribal society in southeastern Morocco. This has resulted in widespread unrest and conflict, as documented in both national and foreign sources. In this regard, the study conducted by L. Clarimond in the 1930s is of particular importance, as it provides a wealth of information on the importance of water and the conflicts it generates(L. Clariond,1973) The writings of E. Ross Dunn also contain unique information on the presence of water in the oases(C. De la fosse, 1975) This includes details of the location of water among migrating tribes and the methods of extraction that residents could use to manage it and overcome its scarcity. These include transporting water from the interior to the surface via "khettaras" and then to the fields. From this perspective, we can also examine the customary system and the formulas that emerged from it regarding the rationing of water in the oases and the measurement of its importance and scarcity(Spillmann Capitaine Georges ,1936; C. De la fosse , 1975;*Abdellah* Estetito, 2011) Today, however, water has become the primary, or rather the only, source of social meaning, especially as our societies are experiencing a historical phase characterized by a state of "water stress".

From the perspective of the oasis inhabitants, the irrigation system was a fundamental incentive for them to consider forming groups and alliances that would achieve the goal of water conservation, serve the political system and economic model, and respond to the surrounding climate changes. They relied on alliances between palaces and clans to achieve this goal. An example of this is the Moroccan historian Larbi Mezzine's study of the Tafilalt oasis, in which he presents several models he observed relating to the economic dimension and its role in bringing together the settled tribes, highlighting the human communities that were formed to provide water. Therefore, the logic of these tribal alliances can only be understood by invoking water (L. Mezzine, 1987)

There are several intersections that demonstrate the economic, social and political weight of water in the oasis system. Given this intimate relationship between the oasis and water, local adaptation practices have emerged, governed by a collective mindset that is imbued with many principles of justice and equality in access to natural resources. Today, however, the situation is different, with a number of measures being taken to diversify agriculture. As a result, government intervention in the oasis has gone beyond the local irrigation system and its associated traditional practices and local knowledge. These interventions have focused on encouraging investors to drill private wells, allowing private capital to control the resources. This has increased competition for natural resources and exacerbated the social vulnerability of the local population (Fouzia Borj , 2019; Dufault Evelyne,2004).

As mentioned above, the Green Morocco Plan is based on authorizing the cultivation of modern market crops, such as watermelons, which require large amounts of water. According to a study carried out by the Souss-Massa-Drâa Hydrological Basin Agency in 2014(It was mentioned by Ahmed Alkhattabi), this crop causes a significant shortage of groundwater, amounting to 5 million m3 per year, while the aquifer's water supply does not exceed 10 million m3 per year. In addition, the volume of water used in agriculture is around 12 million m3/year, of which only 0.8 million m3/year is for drinking water. This means that one fifth of

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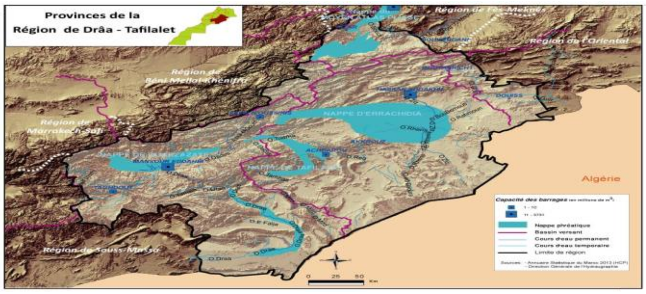
the surface water resources of the entire Drâa basin are consumed by this new crop, which has become attractive to new investors due to the very high profits it generates, with investors potentially earning between one and six million centimes per hectare (Ahmed Alkhattabi,2019; Ismail Ait Bassou& Abd el Samad Khediri, 2022)

This unique situation of the new economy and capitalist agriculture means that much of the Drâa oasis is threatened with complete desertification due to the high salinity of its water, making it polluted and unusable. This means that we are dealing with a region that has effectively entered an 'environmental crisis'. In addition, investment licenses continue to be granted in the oases without taking these challenges into account (Mindy, Wright. 2019; Ahmed Alkhattabi,2019; Ismail Ait Bassou& Abd el Samad Khediri, 2022) These changes have led the residents of the oases to protest against their lack of access to drinking water and their deprivation, especially in light of the measures taken by the local water authority to maintain a minimum reserve of drinking water by reducing the water supply to one hour a day during the summer, a period of high water demand in the region. Says Fatima, 63. "The new investors have exacerbated existing vulnerabilities and increased our suffering and environmental fragility. On the other hand, the government's policies and its concessions to large farmers have only increased our suffering; [...] the effects of economic progress based on the depletion of natural resources have been terrible...".(Research interview,4/05/2023.) Furthermore, the tension in the comments of some of the interviewees reflects a decline in optimism and the prevalence of negative thoughts about the future of the oasis. These are all key indicators that individuals are losing faith in the state's development policies.

Figure2 :Water resources in the Drâa-Tafilalet region



Source: Monograph of the Drâa-Tafilalet region(Previous reference)

5.1. Green Morocco Plan: accompanying measures and discourses

The Green Morocco Plan was an unprecedented public policy aimed at modernising the agricultural sector, strengthening the national economy and reducing poverty rates by 2020 (Ministry of Agriculture and Fisheries, Green Morocco Plan (Report), 2009)With a budget of around 104 billion dirhams (40% public and 60% private), the plan included the National Water Savings Programme (PNEEI) to help achieve its objectives. This programme dates back to 2007. The programme is based on the vision of conserving water supplies and improving the management of natural resources by promoting government-supported drip irrigation technology (Amal Nabih &Institute for Policy Analysis,2025)

Based on this approach, the Green Morocco Plan appears to offer a model for agricultural development based on a balanced strategy aimed at revitalizing exports and reducing unemployment rates, thus enabling the country to have a strong lever for development and employment at the same time (Green Morocco Plan (Report) ;2019)

However, the figures presented by the Green Morocco Plan to demonstrate its achievements have been questioned by a number of Moroccan economists who have been working to compare the plan's impact on water security (Nicolas Faysse ,2015) Contrary to what has been promoted in the official discourse surrounding the plan, several sources have reported that employment in rural areas has declined significantly, with 159,000 jobs lost between 2023 and 2024, reinforcing a broader trend of one million rural job losses between 2016 and 2023 (Badr Elhamzaoui ,2024). (In 2014, the respective shares were: 10.7%5 and 39.4%. In other upper middle-income economies). In addition, the working-age population increased by around 374,000 people per year between 2000 and 2019, while an average of only 112,000 additional jobs were created each year. This resulted in an annual deficit of 262,000 jobs (World Bank, 2022; Dadush, 2017) As a result of several factors, particularly the competition for resources created by the Green Morocco Plan between those with the means of production (large investors) and those without (subsistence farms) (N. Akesbi,2001b) rural and desert areas, particularly oases, have become less economically attractive. Indeed, our field study reveals a significant gap between the announced achievements of the Green Morocco Plan and the real needs of the population, their economy, and their social security, particularly for young people who have been forced to migrate to cities in search of a livelihood (Amal Nabih &Institute for Policy Analysis,2025; Medias,2024) These young people often move on to other informal, low-skilled or insecure jobs in the service sector or manufacturing industries in urban areas (Isabelle Tsakok,2023)

When discussing modernisation policies, it is worth noting the Green Generation 2020 strategy, which takes a similar approach to water management to that of the Green Morocco Plan. In addition, efforts are being made to promote renewable energy sources for water pumping, particularly solar energy. In this context, the state has supported this type of energy by enabling farmers to purchase solar panels. However, this has led to the depletion of wells in some areas, such as the Ferkla Oasis (Yassine Khardi; Zein Taleb; Amar Imache; Marcel Kuper; Sami Bouarfa; Ali Hammani; Guillaume Lacombe; Abdelilah Taky, 2024) This illustrates the negative impact of renewable energy on farmers' hydro-agricultural practices. This is reflected in the statistics: the number of irrigation water pumping stations increased from 20 to 180 between 2013 and 2020 (*Ali Hammani&* Yassine Khardi& Guillaume Lacombe& Marcel Kuper& Taky Abdelilah& Sami Bouarfa,2023) This demand is, of course, due to the low cost of pumping water with solar energy compared to the cost of butane gas or diesel. In the same context, according to the report issued by the United Nations Development Program, the cost of pumping water using butane gas is estimated at 0.79 dirhams/ cubic meter, diesel at 1.59 dirhams/ cubic meter, and electricity at 0.74 dirhams/ cubic meter, compared to pumping using solar energy, which, according to the same report, does not exceed 0.45 dirhams/ cubic meter (Amal Nabih &Institute for Policy Analysis,2025)

This means that the promotion of solar pumping has led, on the one hand, to the expansion of irrigation in the oasis area and, on the other hand, to an increase in unregulated groundwater extraction in a context characterised by structural drought (Intissar Ferchichi& Zakaria Kadiri& Abdelilah Taky& Insaf Mekki& Ali Hammani&

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Nesrine Taouajouti&Guillaume Lacombe& Yassine Khardi& Nicolas Faysse ,2023)

5.2. Discussion

There are many intersections that point to the economic, social and political importance of water in the oasis system. Given this close relationship between oases and water, and given a series of structural and functional imbalances that affect the agricultural development system and the population's water rights, the general standard of living of oasis dwellers has been affected by hybrid irrigation practices that combine local irrigation systems with modern resource management practices. These practices have been imposed by state interventions that support the logic of capitalist production and continue to hinder human development, exacerbate social inequalities in the oases and undermine the logic of local social solidarity. Faced with a shortage of drinking water, residents resorted to new forms of protest, mainly related to climate and environmental change, demanding that the authorities address the problem of water scarcity caused by the depletion of groundwater by the farms of new investors with political and economic capital. The authorities responded by arresting a group of demonstrators, most of them young, and charging them with "gathering and participating in an unauthorised march" (Ilham Talbi, 2021) The Draa oases were not the only ones affected. A group of civil society activists wrote to the Prime Minister on 9 July, urging him to protect the water resources of the Tata oases from drought and water stress (Tata Province Civil Consultation Committee,2021; Ismail Ait Bassou& Abd el Samad Khediri ,2022)

Returning to the water situation in Morocco, it can be argued that the deterioration of groundwater resources is closely linked to the contradictory and conflicting policies of the Ministry of Agriculture. As this paper shows, investor support for the intensification and expansion of market agriculture threatens the country's water situation. Despite the objectives of the Green Morocco Plan, which aims to develop food security rather than food self-sufficiency through the exploitation of productive capacities, it is being implemented without zoning in line with the availability of water resources (F. Molle, O. Tanouti/Agricultural Water Management) The plan seems to focus on productive investments without taking into account their environmental impact. All of this, of course, takes place against a background of gloomy forecasts for the present and future of water in Morocco. According to the projections of the committee that drew up the "Fifty Years of Human Development" report, Morocco will be facing a serious water crisis in 2025, as the volume of available resources in 2020 (16 million cubic metres) will exceed the country's needs for irrigation, drinking water and industrial purposes (15.4 million cubic metres, or 81%, for irrigation alone). The projections also paint a bleak picture for the future of the country's water basins, with six of the country's eight largest basins in water deficit. These basins are: Moulouya, the Anti-Atlas, Souss-Massa, Tensift, Bouregreg, Loukkos and *Oum-Er-Rbia* (Morocco Possible Report**,** 2006;Water Security in the Country(Report)**,** 2022)

These factors are exacerbated by cumulative population growth and successive years of drought. All of these factors are expected to increase demand for water, leading to a further decline in available quantities. The aforementioned report committee projected that water availability would reach 520 cubic metres per capita per year by 2020. Meanwhile, recent statistics show that Morocco's annual per capita water resources have declined significantly, from about 2,560 cubic metres in 1960 to 620 cubic metres in 2019. According to several official reports, the per capita water share is expected to fall below 500 cubic metres by 2030. In addition, the 2024 report of the General Directorate of Meteorology indicates that 2023 was the hottest year since the beginning of the 20th century, with a temperature deviation of +1.77 degrees from the climatic average calculated for the reference period 1981-2010. Moreover, the national precipitation deficit for the same year (i.e. 2023) reached 48 per cent of the climatic average. Thus, the situation described above clearly indicates a contradiction between sectoral policies, in which agricultural interests prevail over environmental ones. This is the same position expressed by the Economic, Social and Environmental Council when it highlighted the lack of coordination and inter-sectoral linkages in the institutional structure of the water sector (CESE, 2014)

What's more, agricultural development programmes don't take climate change into account, even though the country's water resources, both surface and groundwater, are expected to decline by15-20% by2030 (HCP, 2007)

In conclusion, thinking about the oasis field in the Moroccan context offers great potential for understanding environmental, economic and social aspects as a product of the political context.

5.3. Hypothesis Result:

In a desert environment such as the Oasis region of Morocco, which is threatened by climate change and successive years of drought, implementing sectoral policies that do not consider the country's water resources poses a direct threat to its economic, environmental and social balances, particularly in arid and semi-arid regions.

6. Conclusion

6.1. Key findings

The relationship between ecosystems and human development is complex and far from one-way. From this perspective, the overarching relationship between them refers to a number of determinants, such as the degree of inequality in the distribution of resources, the impact on poverty, etc. It should be emphasised that the emergence of common demands among the protesting groups is not only indicative of the material components of the importance of water, but rather expresses a growing sense of exclusion and isolation from development plans experienced in Morocco, and reflects the magnitude of the gap at this level between poor farmers and large farmers. It also refers to policies of cultural deprivation and exclusion (ignoring local knowledge) and the degree of weight these elements exert on them. The social inequalities observed are as follows:

- Despite the efforts made to achieve sustainable growth through the implementation of the Agricultural Acceleration Plan, which has enabled Morocco to attract a number of economic groups working in the agricultural sector in recent years, it has not been able to overcome economic challenges, social inequalities and regional disparities. This is one of the shortcomings of the national development model in the context of the above-mentioned plans, which, according to many royal speeches, has reached its full potential in terms of wealth creation and distribution.(Royal address to members of parliament on the occasion of the opening of the first session of the first legislative year of the eleventh term)

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- The increasing pressure on the natural resources of the oasis has disrupted the security of the community in several ways, plunging its inhabitants into a process of socio-economic and environmental vulnerability that has led individuals to form alliances or large-scale movements to denounce the degradation of their local resources.
- A fierce competition for resources has emerged between investors keen to establish viable farms that can benefit from mechanization and local farmers who cling to their local laws. This is, of course, in the context of the new agricultural development plans that envisioned commercial farming within a broader national economic sovereignty.
- - Protest movements highlight inequalities within society and reveal sources of tension between the state and society. The protests by the inhabitants of the oases against "thirst" allowed us to observe this general awareness of "social discrimination" between large investors and local farmers, which entrenches social inequality and, as an inevitable consequence, leads the latter to protest and consolidate a discourse that contradicts the official state discourse.
- The phenomenon of the "oasis at different speeds" is escalating due to the continuing unequal distribution of resources and inadequate preparation for the challenges of globalisation. The continued concentration of resources in the hands of a certain group could lead to an intensification of the migration of oasis dwellers to the cities, where they will settle in dense belts of poverty and unemployment, while the oasis itself will become poorer in the face of the economic opening of agriculture.
- Finally, with a predicted water crisis by 2025, continued pressure on resources in the oasis areas, combined with the cumulative effects of demographic growth and a high frequency of drought years, the level of water demand in the oasis is likely to increase, contributing to a further decline in water availability. What's more, water quality will be threatened by agricultural pollution caused by the use of fertilisers and chemical pesticides, which will make 'environmental justice' protests a feature of the new Morocco (Aït Hamza, &B El Faskaoui,2010 ;World Bank,2022)

6.2. Recommendations

❖ Morocco is considered a 'climate change hotspot'. It has experienced warming trends since the 1960s, with average increases of 0.2°C per decade — exceeding the global average (Isabelle Tsakok,2023).

Given the climate changes the country is experiencing, a number of reports predict that the downward trend in precipitation will continue alongside increasingly erratic patterns (World Bank Group, 2022). According to Ouraich (2010), the Intergovernmental Panel on Climate Change (IPCC) predicts that rainfall will decrease by 20% by 2050 and by more than 40% thereafter. In light of these changes, the ecological economic model inherent in the policies currently being implemented in Morocco requires a change of objectives. It must move away from a neoliberal development perspective and target poverty in oasis communities by formulating a balanced economic model capable of satisfying the needs of all segments of society. This represents a complete break with the perception of capitalist actors, who see consumerism and irrational profit as the basis of prosperity.

❖ As its availability declines, demand for water is expected to increase: figures indicate that agriculture currently consumes more than 80% of available water. Water demand is set to rise alongside temperatures across North Africa, with average annual temperatures projected to increase by between 1.5°C and 3.5°C by 2050, potentially exceeding 5°C by the end of this century. (WBG, 2017). In light of these projections, Moroccan policymakers must recognise the interplay between dynamic social and environmental variables that interact to shape the national economic system. This requires abandoning a technical and sector-specific approach to addressing microeconomic problems. thereby enacting more pro-poor and pro-opportunity policies

❖ The New Development Model (NDM) is concerned about the potential for a water shortage in Morocco by 2030. In this context, the central challenge posed by climate change and the accompanying drought crisis in Morocco is clear: the agricultural sector must produce more with less water while transforming itself into a more inclusive, resilient, productive and profitable sector for small-scale farmers. This is in contrast to the current situation where the majority of small-scale farmers are left in a state of low productivity and are highly vulnerable to climate risks (Serghini, 2014).

❖ The financial, economic and environmental cost of the Green Morocco scheme has been enormous — a burden that should not be passed on to future generations. What is needed today is a radical rethink of a comprehensive framework to transform Morocco's dual agriculture into an inclusive sector in which smallholder subsistence farmers have climate resilience, productivity, profitability and food and water security.

These are the most effective ways to shape and manage the national economy, moving from established food security policy to food sovereignty in order to ensure food and water security in the context of existing climate challenges and with the vision of the NDM.

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