



GREATER OUARZAZATE, A 21ST-CENTURY OASIS CITY : HISTORICAL BENCHMARKS AND INTERNATIONAL VISIBILITY

CONTEXT DOCUMENT

INTERNATIONAL WORKSHOP OF URBAN PLANNING
OUARZAZATE - MOROCCO -
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les ateliers
maîtrise d'œuvre urbaine



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1 Contextual Framework

1. Presentation of Morocco: population, climate, diversity



1.1. General description of Morocco

Morocco is a North-African unitary State divided in regions. Its political regime is a constitutional monarchy. Rabat is its capital, while Casablanca is its largest city. In terms of its geography, it is characterized mostly by its mountain areas and desert regions. It is one of the only countries – with Spain and France – to have a coastline on both the Mediterranean Sea and the Atlantic Ocean, the latter reaching 6 300 km in length (Western Sahara included). Located north of Morocco and south of Spain, the Strait of Gibraltar (14 km wide) is the only passage connecting the Atlantic Ocean to the Mediterranean Sea as well as connecting Europe and Africa. Morocco's population is close to 34 million (High Commission for Planning – 2014) and totals 710 850 square km. The last few centuries have been characterized by a Berber and Arab culture, which has spread to the whole Maghreb and the south of Spain. Moroccans primarily adheres to the Muslim religion. Morocco is a member of the United Nations Organization, the Arab League, the African Union, the Arab Maghreb Union, the Organization of Islamic Cooperation, the International Organization of the Francophonie, the Group of 77 (G77), the Union for the Mediterranean and is a candidate for the Economic Community of West African States (ECOWAS). The Moroccan constitution names Islam, and the Arab and Amazigh (Berber) identity as "fundamental components" of the Moroccan

population's identity and defines the country as Islamic soil. Islam is the State's religion, but it guarantees freedom of religious worship.

1.2. Toponymy

In the XVIth century, Morocco was named the Kingdom of Marrakech during a period where three dynasties had chosen the city as the capital. Later it was named Kingdom of Fez when other dynasties resided there. In the XIXth century, european mapmakers kept mentioning a "Kingdom of Morocco" and calling its capital "Morocco" (instead of Marrakech). Under the reign of the Alaouite dynasty – still ongoing – the country went from being called "Cherifian Empire" to "Kingdom of Morocco" in 1957¹ when the then Sultan Sidi Mohammed ben Yusef became King under the name Mohammed V. Morocco can also be nicknamed "Cherifian Kingdom" or "Sharif Kingdom", which refers to the Alaouite monarch, a descendent from the prophet of Islam, Mahomet, who all enjoy the appellation "Cherif" or "Sharif".

¹ « Maroc », dans Dictionnaire de l'Histoire de France, Larousse, 2005 p. 794

1.3. Geography of Morocco

Morocco is one of the countries with the most diversified landscapes: it has mountains, deserts, plains, plateaux, oases, and is among the countries which have the longest Atlantic coastline. Moreover, its situation creates a huge diversity in landscapes. Its long Atlantic coastline ends at the Strait of Gibraltar where its Mediterranean coastline begins.

Mountains make up more than two third of the Moroccan territory and reach high summits. A few of them are over 4000 meters high. The djebel (meaning mountain) Toubkal, the highest mountain in the country reaches 4167 meters. Four main mountain ranges can be found in Morocco: the Rif (north), the Middle Atlas (east), the High Atlas and the Anti-Atlas.

In the north of the country, the mountains of the Rif follow the Mediterranean coastline. The highest summit of the Rif is 2456m high and is called djebel Tidirhine.

- The Rif offers diverse terrains depending on altitude and regions. This means that in the west, vegetation is prickly (with firs, pines and cedars), whereas the east has more arid steppes and maquis. Even more east, one will find hemp. Further away from the Mediterran Sea inside the country, the existence of three other huge mountain ranges become noticable: the Middle Atlas, the High Atlas and the Anti-Atlas, where, again, there is a vast landscape diversity.

- The Middle Atlas, the "water tower" of Morocco, is separated from the Rif by arid plains in the east and fertile ones in the west. Between both mountain chaines is the famous Taza Gap. The Middle Atlas is divided into two very different landscapes. East of it lie high and steep mountains with summits reaching an altitude of 3100m like the djebel Bou Naceur or Bouiblane, where it snows a lot. In the west, the range softens, the topography is more accessible and one can find a few small plateaux. In the South the range is bordered by the High Atlas.

- The High Atlas is the highest moutain chain of North-Africa and often nicknamed "the roof of Morocco" or "the roof of North-Africa". It forms a massive barrier that's 750km long and separates Saharan Morocco from Atlantic and Mediterranean Morocco. All the main and highest Moroccan mountains are located there on a surface of 100 200 square km.

- The Anti-Atlas is a mountain chain in south-west Morocco, pointing from south-west to north-east in a 600km line. It is the last part of the Atlas mountains after the Middle Atlas and High Atlas.

1.4. Plains

The plains in Morocco often stretch very far, covering the space between the Rif and the Middle Atlas. The Sebou bassin (36 000 square km) is made out of low plateaux, watercourses, a few hills and fertile plains which makes it possible to grow multiples foods. The Gharb plain in the north of the country has sugar beets, rice, cane sugar

and tobacco crops. This plain is distinct from others because of the Maâmore forest where cork oak and eucalyptus grows. When going beyond the Zair region and the phosphate plateau, vast plains start to appear. This is where one finds the Chaouia, the Doukkala and further east by the Middle Atlas, the Tadla. Moving south, the Haouz plain is situated in the Marrakech region and the Souss plain creates a triangle with the High Atlas and the Anti-Atlas. Other fertile but smaller plains are mostly located in the north (Lukos, Nekkour, Trifa, Ouergha Wadi valleys Ouergha, Baht, Inaouen...).



Larousse.fr - 2005

1.5. Coastline

The Moroccan coastline is naturally diverse because one borders the Mediterranean Sea in the north while the other is of the Atlantic Ocean in the west. All in all the coastline is 2390km long, making Morocco the African country with the longest coast. The Mediterranean coastline is 500km long, the Atlantic one 1890km. Moroccan waters are famous for having of the largest number of fish in the world.

1.6. Climate in Morocco

The Moroccan climate is mostly Mediterranean, but is being influenced by the Atlantic climate in the plains, where there is a dry and hot season, followed by October rains, and a cold and humid season after that. The sea makes temperature gaps smaller, seasons moderate and air humidity higher (400 to 1000mm of rain on the coastlines). Away from the coast, climate varies depending on altitude. Summers are hot and dry, especially when the burning sirocco or chergui wind (coming from the Sahara) blows. During this season, average temperatures reach 22-24°C. Winters are cold and wet and include ice and snow. Average temperatures then go down to -2 to 14°C and can go as far down as -26°C. In mountainous regions, there is a lot of rainfall (more than 2000mm a year in the Rif and around 1800mm a year in the Middle Atlas). Presaharian and saharian parts of Morocco have a dry desert climate. The country's climate can be divided in seven subzones, where different influences are noticeable: oceanian, mediterranean, mountain, continental and saharian influences.

1.7. Morocco's hydrography

Morocco has a lot of watercourses (rivers and wadis), the main ones being :

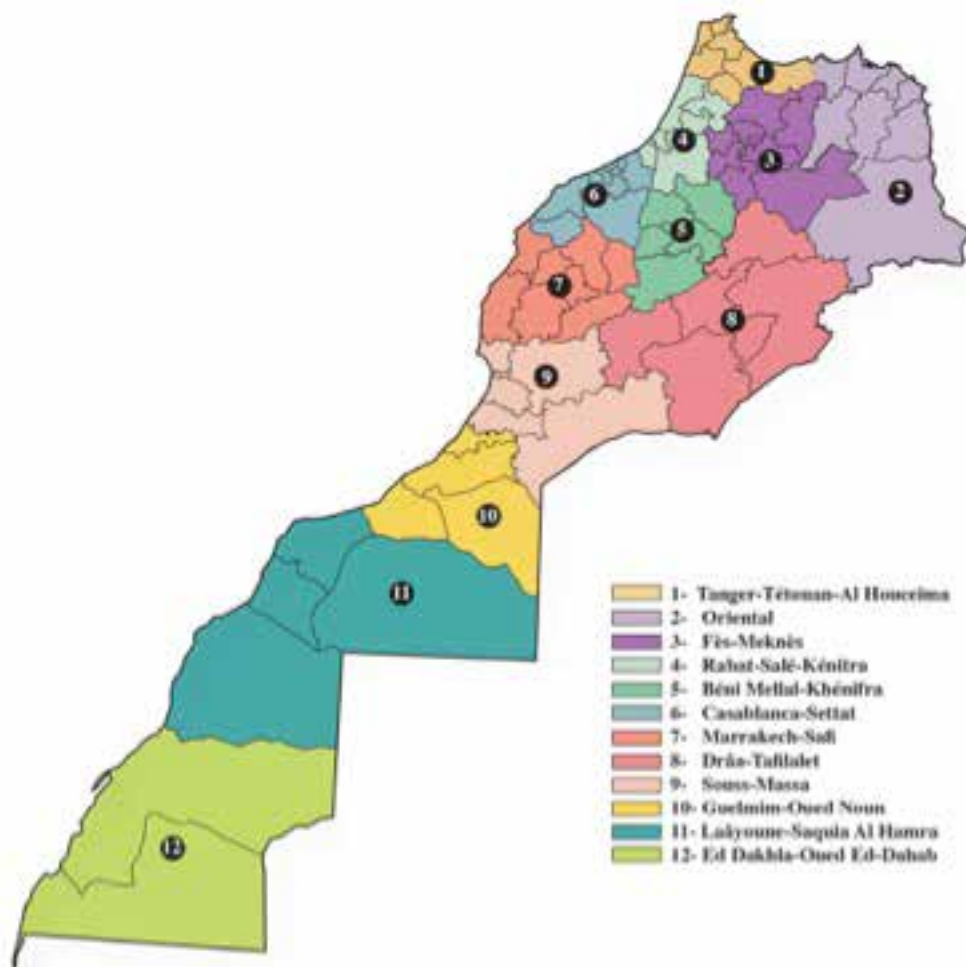
- Bouregreg, Moulouya, Ouargha, Oum Errabiaa, Ourika, Sebou, Souss, Tensift Drâa

Large rivers like the Bouregreg, the Oum Errabiâ, the Moulouya, and the Sebou have variable flow rates depending on seasons but can also be different each year. A great number of smaller watercourses can even be completely dry for a few months (even a few year when close to the desert). Water shortage but also the variation in water flows is an important issue in Morocco, especially for agriculture (weather it is irrigated or not).



Source: Morocco, hydrography, towns, flora Maroccana

2. 1. Territorial organization in Morocco



Découpage territorial du Maroc depuis 2015 - les douze régions

Morocco is made of twelve regions, each having at its top a wali, a governor sent by the Ministry of Internal Affairs, as well as a regional Council, representing the "dynamic forces" of the region. Those regions have the status of a territorial collectivity. The Article 135 of the Constitution stipulates : " A territorial collectivity constitutes a moral person of public law, which democratically administer their affairs. In the name of the government, they assure the application of the laws, implement the governmental regulations and decisions and exercise the administrative control. The walis and governors assist the presidents of the territorial collectivities."

The twelve regions in Morocco are the following:

- Tanger-Tetouan-Al Hoceïma
- Oriental
- Fes-Meknes
- Rabat-Salé-Kénitra

- Beni Mellal-Khenifra
- Casablanca-Settat
- Marrakech-Safi
- Drâa-Tafilalet
- Souss-Massa
- Guelmim-Oued Noun
- Laâyoune-Sakia el Hamra
- Dakhla-Oued Eddahab

Regions are now also subdivided in provinces and municipalities. "In 2015, Morocco reorganised its territorial division, which had been announced in 2011. Today it has twelve regions and wilayas, 75 counties or provinces (13 counties and 62 provinces), and 1538 municipalities"¹.

¹ Décret n°2.15.40 du 20 février 2015, fixant le nombre des régions, leurs dénominations, leurs chefs-lieux ainsi que les préfectures et provinces qui les composent, publié au Bulletin Officiel n° 6340 du 05 mars 2015 »et qui entrera en vigueur à la même date que le décret prévu à l'article 77 de la loi organique no 59-11 relative à l'élection des membres des conseils des collectivités territoriales.



Drapeau du Maroc. **Armoiries du Maroc**

Devise nationale : Dieu, la Patrie, le Roi
Fête nationale : 18 novembre : Fête de l'indépendance (1955)
 30 juillet : Fête du Trône(1933)
Forme de l'État : Monarchie constitutionnelle parlementaire unitaire régionalisée
Roi : Mohammed VI
Chef du gouvernement : Saâdeddine El Othmani
Langues officielles : Arabe, Amazighe.
Capitale : Rabat
Capitale économique : Casablanca
Superficie totale : 710 850 km2
Superficie en eau : 0,7 ou 1,059 %
Fuseau horaire : UTC + 0 ; + 1 en été

Fondation de l'État : 789

Histoire

- Idrissides : 789 - 974
- Almoravides : 1060 - 1147
- Almohades : 1147 - 1248
- Mérinides : 1248 - 1465
- Idrissides (branche des Joutey) : 1465 - 1472
- Wattassides : 1472 - 1554
- Saadiens : 1554 - 1659
- Alaouites : Depuis 1666
- Traité de Fès : 30 mars 1912

Fin du Protectorat : 2 mars 1956 pour le protectorat français
 7 avril 1956 pour le protectorat espagnol



Drapeau du Maroc. **Armoiries du Maroc**

Démographie

Gentilé : Marocain, Marocaine
Population totale (2018) : 36 069 242 hab.
Densité : 77,71 hab./km2

Économie

PIB nominal (2017) : en augmentation 109,82 milliards de \$
PIB (PPA) (2017) : en augmentation 298,53 milliards de \$
PIB nominal par hab. (2017) : en augmentation 3 151 \$
PIB (PPA) par hab. (2017) : en augmentation 8 567 \$
Taux de chômage (2017) : 10,2 % de la pop. Active
Dettes publiques brutes (2017) : 64,4 % du PIB
Monnaie : Dirham marocain (MAD)

Divers

Code ISO 3166-1 : MAR, MA
Domaine Internet : .ma
Indicatif téléphonique : +212
Organisations internationales : ONU (12 novembre 1956)
 UA (30 janvier 2017)
 UMA
 Ligue arabe (1958)

3. Morocco's international positioning

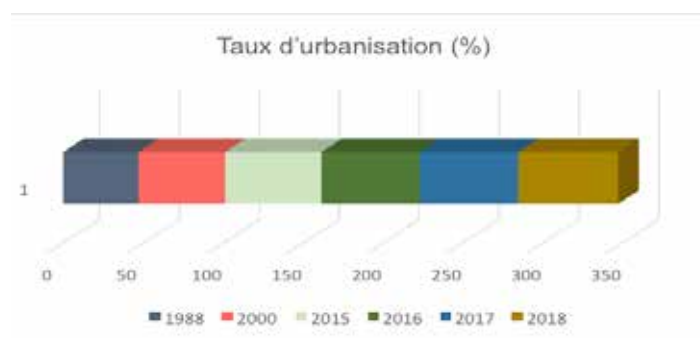
According to the World Bank, the GDP of Morocco reached 116 billions Dollars in 2016, with a growth rate of 1.2%. The country is ranked as a developing country with a market economy (capitalism).

Morocco is the third producer and first exporter of phosphates. It has by far the largest reserves on Earth, with 50 000 billion tons.

According to the 2017 edition of the Global Innovation Index, published the 15th of June 2017 by the World Intellectual Property Organization (WIPO), Morocco is strengthening its position as North-African leader and is amongst the most innovating countries on the African continent, after South-Africa and Mauritius.

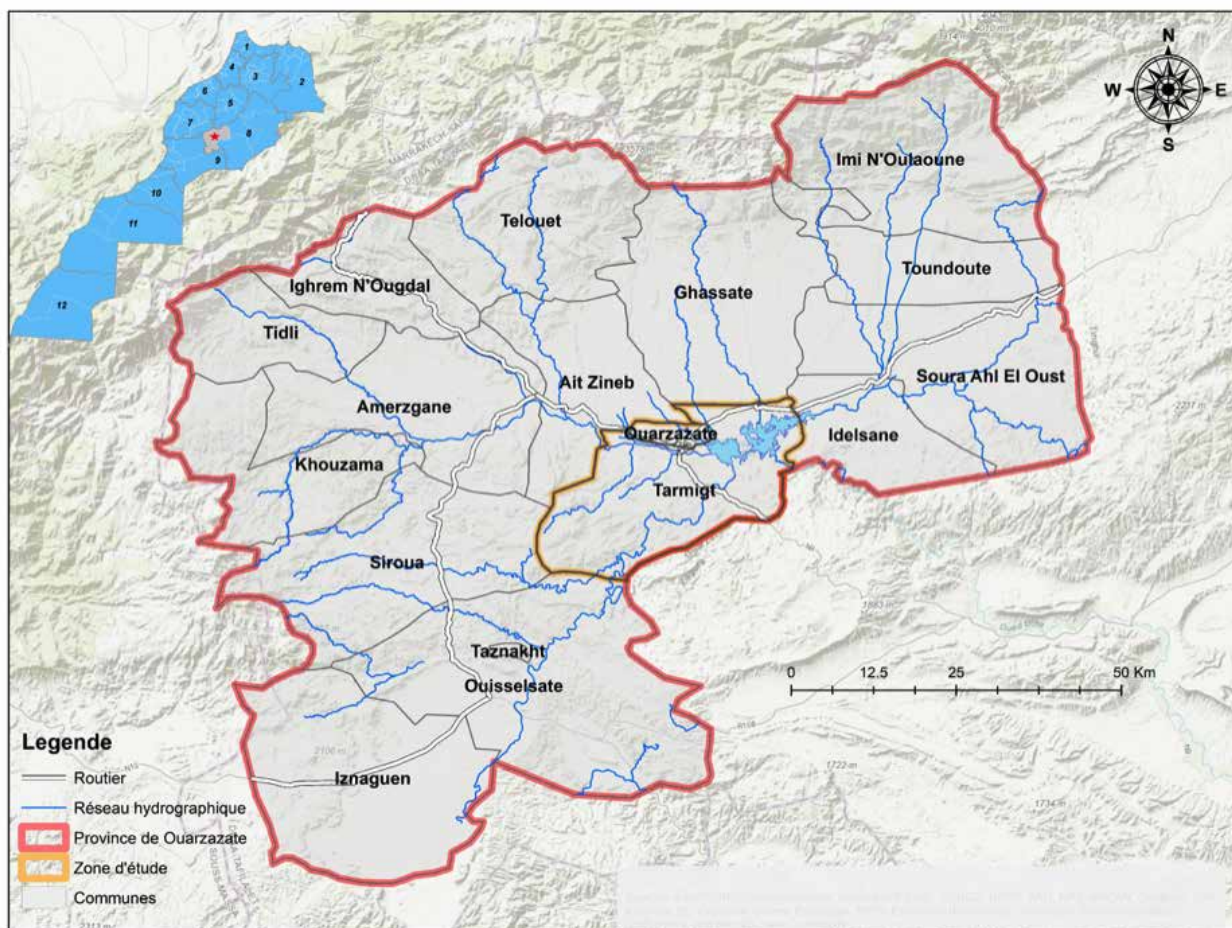
In terms of human development, progress has been logged according to some indexes. This is the case for the Social Progress Index for example, where Morocco went from the 91st position in 2013 to the 78th position out of 128 countries in 2017. A similar progress has been seen in the Inclusive Growth Index where Morocco has been put in 45th place out of 78 developing economies in 2017 by the Research Institutes for Strategic Studies. Concerning the rate of urbanization, Morocco has

experienced a strong urban growth with the urban population having exceeded the rural population at the start of the 1990s. This phenomenon will certainly experience acceleration with the national economy becoming more diverse and the impact of climate change, according the the High Commissioner for Planning.



4. Physical and environmental setting, and geographic location

4.1. Geographic location of the workshop's perimeter



The province of Ouarzazate is a mostly rural subdivision of the Drâa-Tafilalet region. It takes its name from the province's seat, Ouarzazate. It is located in the south-east of the country, 500km south of the capital, Rabat. Ouarzazate has a majority of Berbers and cover 19 464 square km incorporating parts of the High Atlas as well as the Valley of the Drâa which follows the longest river of Morocco, the Drâa Wadi.

The town of Ouarzazate is located south of the High Atlas, at the crossing of two main highways connecting Marrakech and Agadir (Marrakech highway – RN9) to the Drâa and Tafilalet (Errachidia highway - RN10). Being a town and seat of the province, Ouarzazate

has know a meticulous development around an architectural complex of historical cores as seen in the prestigious Kasbah of Taourirt and its neighboring districts.

Simultaneous to a long track record of commercial activities (the must-see route of trading caravans), sedentary activities relating to food-producing agriculture and handicrafts have developed to make of today's Ouarzazate a town where history, culture, trade and tourism are blended together, promoting the coexistence of tradition, modernity and well being.

The Tarmigte municipality is located 3km south of Ouarzazate's town center. The national road N9 linking Ouarzazate to the Zagora municipality

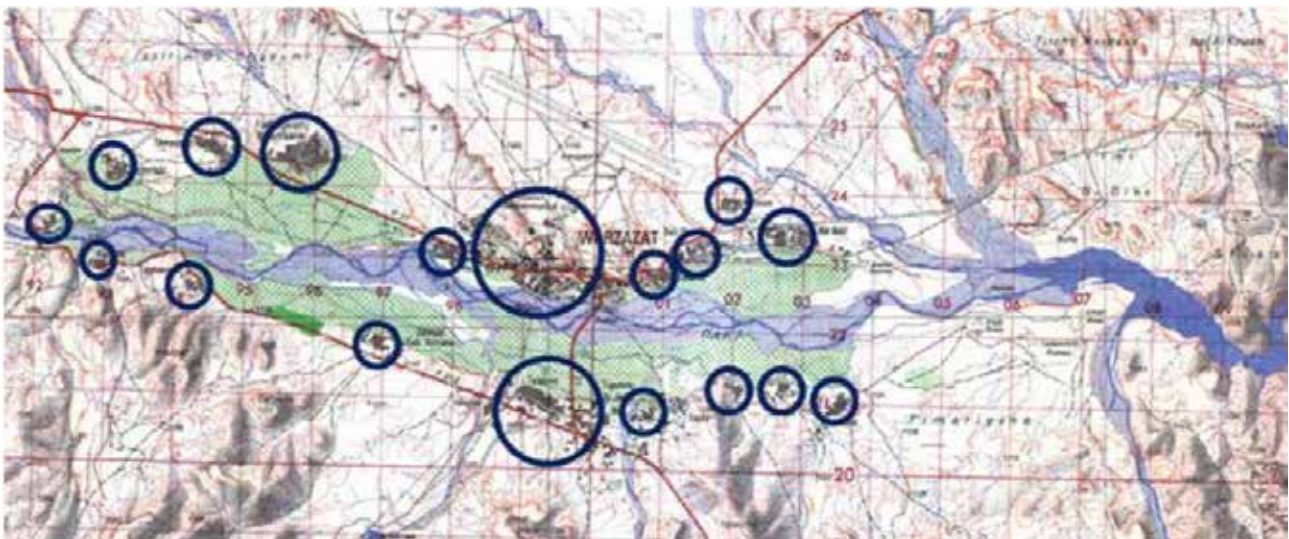
is passing through it. Tarmigte is 872 square km large. The districts and douars (rural villages) making up the municipality are: Ighels, Tamayyouste, Taguenzalt, Fint, Tiffoutoute, Aghane, Tagherramt, Zaouit Sidi Othman, Tabounte, Tigmi Lejdid, Tajda, Tazrout, Telmasal, Talat and Kchait. Tarmigte is part of the province of Ouarzazate. On administrative matters, it got the statut of a municipality on the 2nd of December 1959.

It is bordered by:

- West: AIT ZINEB OUSSERWA municipality
- East: GHASATE municipality
- North: ADALSANE municipality
- South: TANSIFT and SALSSATE municipality

The Tarmigte municipality grew progressively

by annexation of all the douars that now make it up. This linear and fragmented expansion shows a growing urban sprawl and its consequences has inhabitants leaving the economic center that is Ouarzazate. But this urban spread also results in ecological risks due to pollution and the usage of land normally dedicated to palm grove and other agricultural activities and an uneven geographical and fonctional distribution. The Tarmigte municipality is sometimes regarded as "the dormitory" of Ouarzazate, as the latter condensates the entirety of services and economic activity.



1977, carte au 1/50 000 - localisaion des anciens Ksars à l'origins du développement urbain de Ouarzazate et Tarmigte

4.2. Physical data of the Great Ouarzazate:

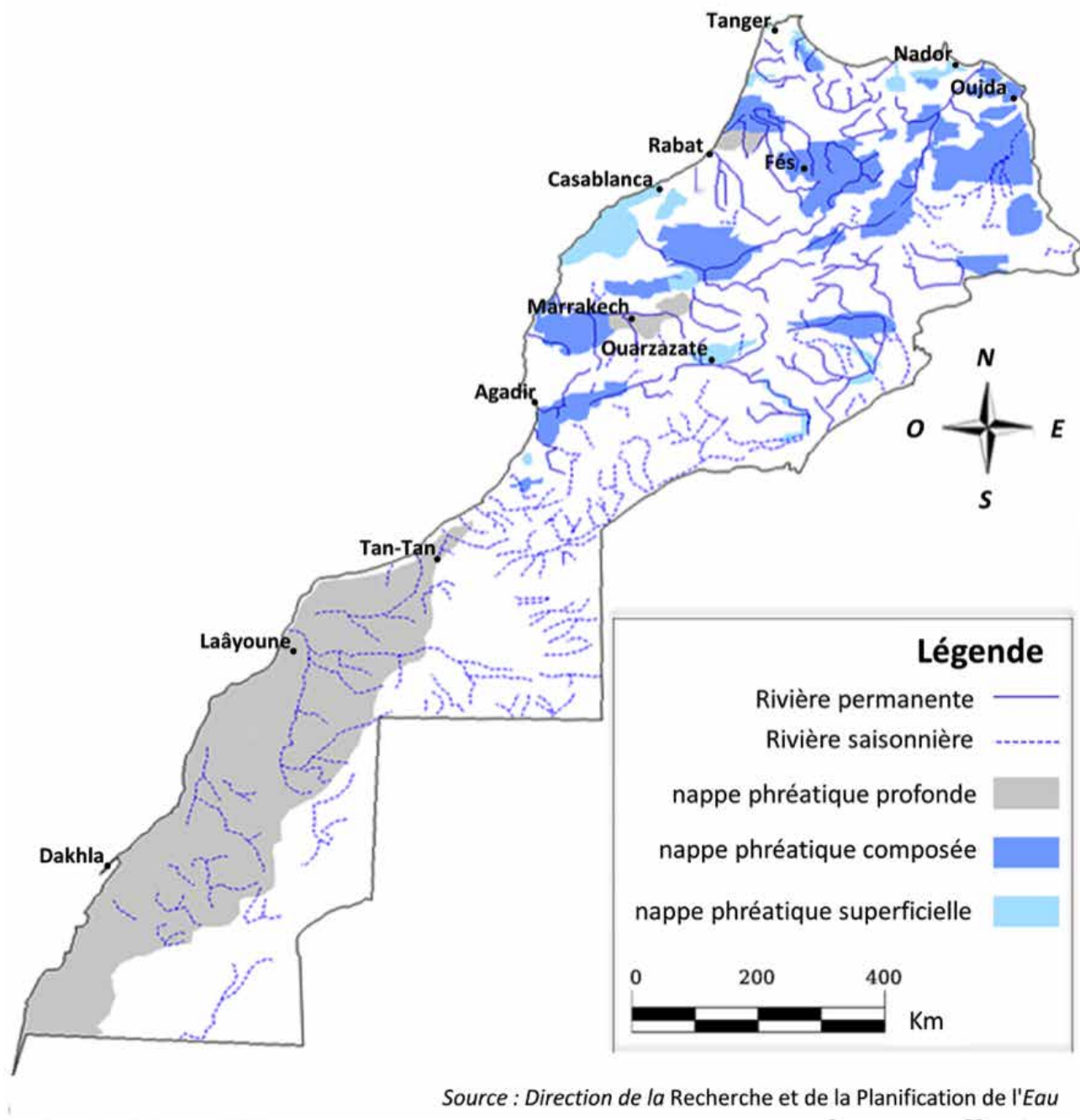
4.2.1. Climate

The climate in the Ouarzazate province is semi-arid with a strong continental influence. Average yearly rainfall is low (150mm) and temperatures vary a lot between the north and the south of the area: winters experience a temperate climate between 0.5°C and 20°C and summers between 30°C and 40°C. Dominant winds generally come from the north-west: the Sirocco or the Chergui.

4.2.2. Hydrography

The water system of the Great Ouarzazate is made up of the wadis DADES, M'GOUN, IZERKI, OUARZAZATE and their affluents (EL MALEH, IMINI and IRIRI and the AIT BOUCHCHENEFINT). The latter wadis and their offshoots create the upper basin of the DRÂA, which has a surface of 15 170 square km. On the former confluent N'OURBAZ was built the EL MANSSOUR EDDAHBI dam.

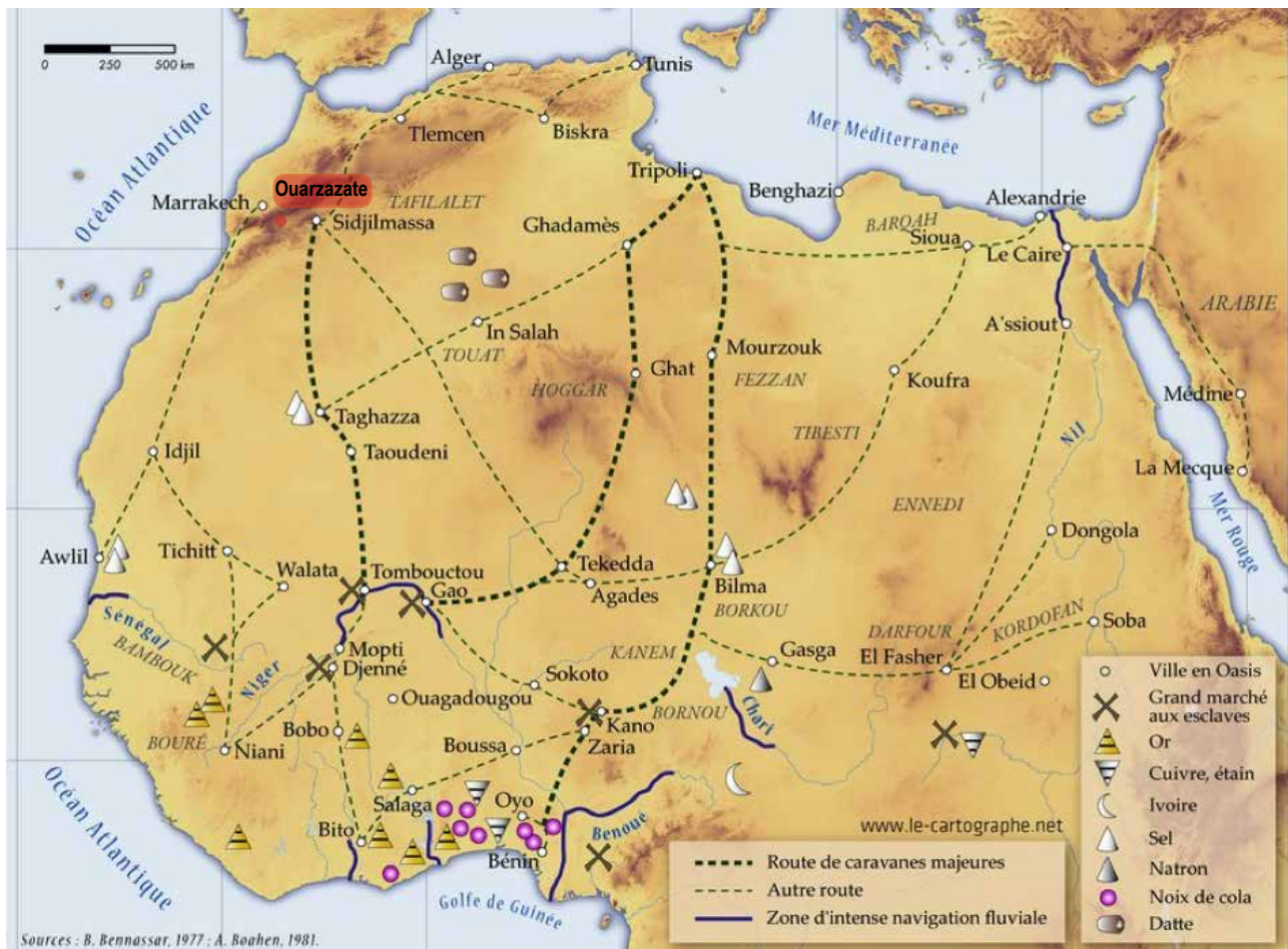
Ressources en eaux de surface et souterraines au Maroc



5. Histroy of the given territoiry

The Ouarzazate region has always drawn the attention of numerous historians, but it stays mysterious. However, multiple archeological excarvations show that various civilizations have prospered in these regions. Those same excarvations have uncovered cave art, burial mounds and troglodytea caves dating back to prehistory. From the VIIIth century on, when the Kharijite revolt spread, the Idrisside appeared, opposing

the khalifats from Damas' authority, and when Sijilmassa and Tafilat were founded as a result, it lead to the downfall of old towns like Todgha and Ziz. The province of Ouarzazate was used as a passageway for caravans full of merchandises coming from Soudan and Sijilmassa and going to the north of the Atls (Marrakech and Fès). Ouarzazate was then perceived as a major and central town in Morocco and its commercial reputation had an impact in the whole country. During the second half of the XIIIth century, the



Maâquils Arabs reached the south of Morocco, shattering the social organization and leaving the region in total anarchy. The Saadi dynasty's reign (XVIth and XVIIth century) meant a recovery and new economical and cultural rise for the region and a flourishment of transsaharian trade. After the death of Sultan El Mansour and the rise of seaborne trade dooming land trade, the Ouarzazate area experienced a new deterioration. The still ongoing Alaouite period followed the Saadian era and the region experienced varied periods. At the beginning of the last century, no rural or urban center existed between Ouarzazate and Errachidia. The only big urban centers mentioned in historic litterature are those of Sijilmassa, Tinghir and Tafilalet.

With a european presence, foreign authority (colonizing or occupying) demanding obedience founded a high number of administrative centers to have a better control over the population. The given territory for the workshop has suffered the impact of authoritarian colonialism that is the cause of an irretrievable rupture in the contemporary history. The strong resistance of locals against the protectorate was countered by a densification of the administrative network. To control rebellious tribes, the colonial power decided to break down their social fabric, sabotage the transhumance economy and separate complementary territories vital to them. With that being done, the protectorate authority started establishing control offices in Tinghir, M'semrir, Tinjdad, Kalâa Mgouna, Skoura, Ouarzazate and Agdz as early as 1919. This density of control centers, scattered along the road from the Drâa to the Tafilalet was the start of a new era of organization in the southern Atlas area.

The town of Ouarzazate was officially founded in 1928. Being a garrison town, it quickly became the administrative center of the region. After the Independence and the departure of the French, people from nearby douards migrated to cities who then became attractive centers used by national and international metropolises to recruit workers. Between 1970 and the start of the 1980s, those centers have experienced an unprecedented demographic dynamic and their growth has accelerated a lot.



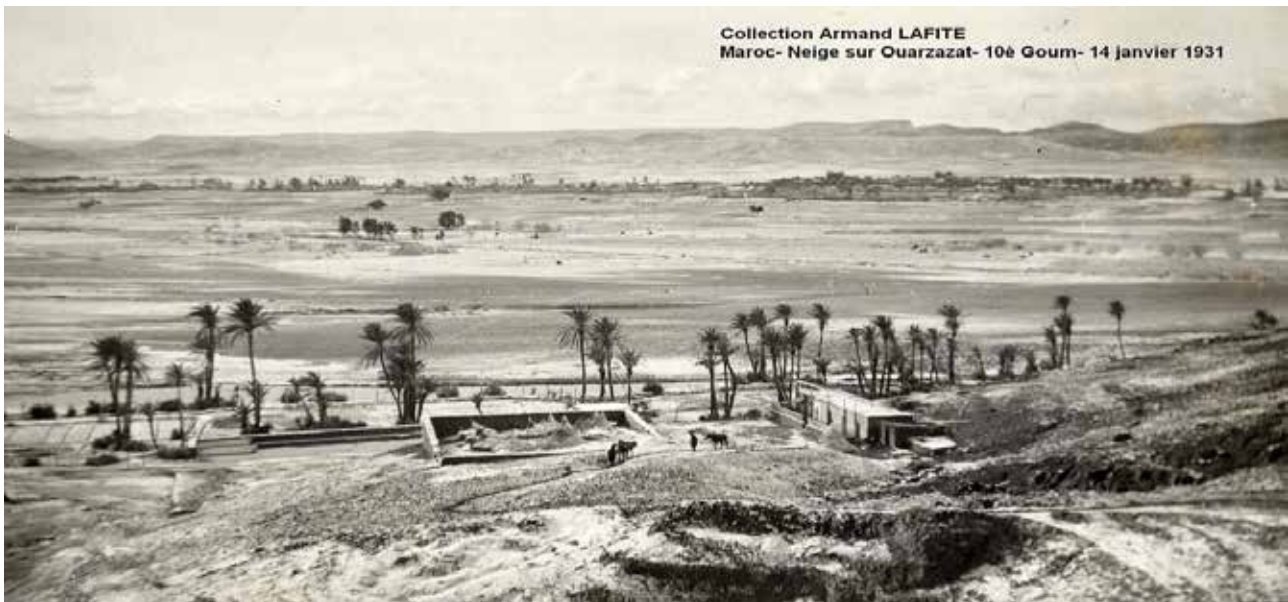
Ci dessus, la chapelle Sainte Thérèse dans les années 1930 à Ouarzazate, et ci-dessous, le quartier de la chapelle.
Source : *blog mémoire de Ouarzazate, photos documents et souvenirs*



History of Ouarzazate

At its start, the town was known as "Tamghzezte". After becoming the province's seat, it was renamed Ouarzazate, the merge of the two Berber words "Ouar" which means without and "zazate" which means noise. The Berbers were the first inhabitants of Ouarzazate, subsaharian africans coming to the town only later, the last being the arabs, who joined in the Middle Ages.

The town has played an important role in the past by being the meeting and departure point of commercial and cultural trade between the north and the south of Africa.



History of the Tarmigte

"Tarmigte" is the name of a hill in the municipality. According to an oral tradition, this area used to be a stopover for trade caravans passing through the desert coming from Marrakech. They made a stop at the Kasbah of Tabounte. Most of the people originate from Amazigh tribes. During colonial times, Tarmigte was the territory of Glaouas'. They were powerful Qaids (leaders), often called "Lord of the Atlas". The territory they had power over spread to the whole south of Morocco. The Kasbah of Tifoultoute, owned by the Qaid Glaoui, dominated Tarmigte. The Jewish population also took refuge in Tarmigte. It lived in the Kasbah of Telmasla. The remnants of a Jewish cemetery in Tajda is a testimony of their presence there. Tarmigte was home to a rich palm grove which spreads along the Wadi of Ouarzazate and is populated by Ghalil, Tademricht and Hbib tribes. It disappeared at the same time as the construction of the Elmansour Edehbi dam in 1971.

6. Political and legal framework of the urban sector

6.1. The tools used for local planning

A couple of different laws and urbanism documents regulate urban planning and the development of the terrain. Those documents apply do different scales of the territory of Great Ouarzazate.

- First of all, the National Planning Scheme of the Moroccan Territory (SNAT) dictates some rules in the entier country.

"The outcome of recent changes concerning the regional administrative limitations is that the region

of Drâa-Tafilalet (in which Great Ouarzazate is included) has to come up with a new Regional Planning Scheme for the Territory (research in progress) which would better correstond to the new reality of the region".

- On the scale of intermunicipality, a master scheme for town planing and urban design (SDAU) is currently in effect since December 2001

and covers the joint territory of Ouarzazate and Tarmigte. It stands on three pillars and actions (the remediation of old centers, renovation of the town center and restructuring of illegal districts and/or slums; The readjustment of the two banks in terms of demography, socioeconomics and infrastructure; The protection and valuing of the environmental heritage which includes the food agriculture areas and the artificial lake created by the dam "Mansour Eddhabi".) on which were then built an elaborate development scenario for strategic measures. The fulfillment of this SDAU can only happen if those major actions are being tackled (renovation of the town center; rebalancing of the two banks; restructuring of unsafe habitat; improvement of the network between the two banks; tourism planning on the dam's side of the river; afforestation of the banks of the lake, the wadis and the green belt), and those operations and concrete investments are a goal for the year 2020. In 2017 a mission for diagnostics and updates of the SDAU has been implemented by the urban agency of Ouarzazate – Zagora.

The SDAU of Great Ouarzazate

The study terrain of the SDAU of the Great Ouarzazate encompasses 7 municipalities, the territory including Ouarzazate, Tarmigte and the banks of the El Mansour Eddahbe dam's lake.

SDAU's development scenario of 2001

The diagnostics of the territory and its potential are the incentive to those main five prospective

aspects in the context of the development scenario:

- The consolidation of the town of Ouarzazate as capital of the province and as a primary center in the interior western south;
- The strengthening of its capacities of retainment and well-usage of investment;
- The jointure of the different components of the Great Ouarzazate, in order to reduce the strong contrasts that are observable in its urbanization processes;
- Increase the urban quality of the Great Ouarzazate;
- Create the perfect conditions to enable the tourism industrie to fulfill its role of attracting more and more people.

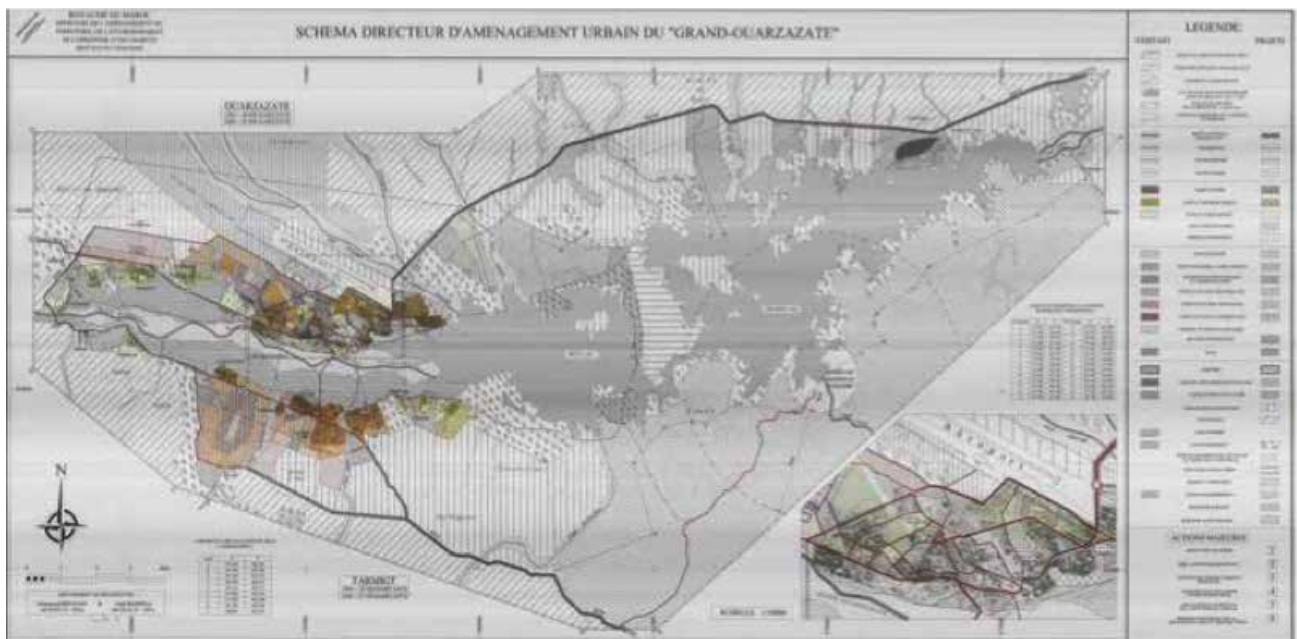
Additional to those five forward-looking aspects, three pillars of urbanization have emerged to help the SDAU towards its goal. Those three principles, now called "major urban planning actions" have been implemented into the SDAU to support them in their journey towards 2020.

Major urban planning principles

- **The remediation of old centers, renovation of the town center and restructuring of illegal districts and slums**
- **The readjustment of the two banks in terms of demography, socioeconomics and infrastructure**
- **The protection and valuing of the environmental heritage which includes the food agriculture areas and the artificial lake created by the dam "Mansour Eddhabi".**

Major actions

- **renovation of the town center**
- **rebalancing of the two banks**
- **restructuring of unsafe habitat**
- **improvement of the network between the two banks**
- **tourism planning on the dam's side of the river**
- **afforestation of the banks of the lake, the wadis and the green belt.**



Source : Carte du SDAU en vigueur. Bennani Mohamed et Bohsina Said, Architectes-Urbanistes (2001)

Liste des documents d'urbanisme s'appliquant à l'aire d'étude - extrait du SDAU Lemay, p.46

DOCUMENTS	COMMUNES DE LAIRE D'ÉTUDE					
	OUARZAZATE	TARMIGT	AÏT ZINEB	GHASSATE	SKOURA	IDELSANE
ÉCHELLE NATIONALE						
Schéma National d'Aménagement du Territoire (SNAT), 2001			X (Homologué en 2003)			
ÉCHELLE RÉGIONALE						
Schéma Régional d'Aménagement du Territoire (SRAT)	SRAT de Draa-Tafilalte est en cours de réalisation (phase de rapport d'établissement)					
ÉCHELLE INTERCOMMUNALE						
Schéma Directeur d'Aménagement Urbain (SDAU) du Grand Ouarzazate	X (Homologué en 2001)					
ÉCHELLE COMMUNALE						
Plan de zonage	Ville de Ouarzazate, centre urbain de la commune rurale de Tarmigt et site du lac du barrage El Mansour Eddahbi (homologation inconnue)					
Plan d'Aménagement	X (Homologué en 2003)	X (Homologué en 2003)		X (Homologué en 2003)		
Projet de Plan d'Aménagement	X (Homologué en 2001)					
Plan d'Aménagement et de Sauvegarde du Ksar Ait Benhaddou	X (Homologué en 2001)		X (Homologué en 2003)			
Plan de Développement des Agglomérations Rurales (PDAR)			X ⁵ (Homologué en 2003)	X ⁴ (Homologué en 2003)		X ⁷ (Homologué en 2003)



List of Regional Development Strategies for the Study Area - extract from SDAU Lemay

Sector	Title	Horizon
Agriculture	Plan "green Morocco": - Morocco 2030: Agriculture, what future for the country in 2030 - Development strategy of oasean and argan zones	2030
Handicrafts	Outlook for handicrafts 2015	2015
Commerce	RAWAJ Plan	2020
Development	The goals of the millenium for development (UNO)	2030
	Sustainable development programm (UNO) National strategy for sustainable development	
Economics	Morocco 2030: the sources for economical growth	2030
	Morocco 2030: current sources with potential for the economy of Morocco	
Energy	Energy strategy for 2030	2030
	Morocco 2030: energy prospective of Morocco, issues and challenges	
	Solar Plan	2020
Water	National strategy for Water 2030	2030
	National programm for water sanitation and sewage treatment (PNA)	
Finance	Morocco 2030: The Moroccan financial system	2030
Habitat	Town without slums (UNO)	
Industry	National pact for industrial emergence	2015
Logistics	Strategy for logistical competitiveness	2030
	Strategy 2030 for urban logistics	
Digital	Maroc Numérique 2013	2013
Sea Fishing	Halieutis : Strategy for development and competitiveness in the Halieutis sector in Morocco	2020
Port	Strategy for harbors 2030	2030
Rural	National strategy for rural development	
Tourism	Plan for 2020: "Plan Azur"	2020
Transportation	Road :	2030
	- Development strategy for the roads sector	
	- Second master scheme for highways 2030	
	Harbor :	2035
	Strategy for harbors 2030	
	Air :	2040
	- National strategy for civil aviation (Ajwae) / Master scheme for national airports	
Rail	2040	
- Plan "Morocco Rail"		

6.2. History of urban planning and design in Morocco

Modern urbanism in Morocco was born more than 90 years ago with the enactment of the founding law in 1914, which was way ahead of its time comparing to the French equivalent. This law emerged thanks to the modern spirit of Marshal Lyautey and to the genius of his close team of architects and urban planners alike. The needs that emerged due to the protectorate's administrative installations and the economical requirements forced the development of new urban centers either surrounding existing medinas or places chosen for their military or strategic positioning. Therefore, urban planning urgently needed to create modern Moroccan towns that also needed to be sustainable so including right of propriety, public utility, and introducing maps and graphic document. The first urban planning laws were only forecasts and tools for orientation and framework. Their goal was to create simple harmonization and urban sprawl plans. Nowadays, urban action is experiencing a great number of transformations (decentralization, territorial development) which favor a renewal of intervention policies in the town and provide a more complex network of actors. The domain of urban studies is a striking example of those changes.

From the 1960s to the 1980s

During the year post independance, politicians have tried to focus more on the rural sector. State authority encouraged them to redirect their focus towards the "urban world" during a time Morocco suffered through many different crises (growth of illegal habitations and slums, transformation of medinas into slums...).

The 1990s

The decade between 1985 and 1995 is characterized by the monopoly of a specialized French study office on planning and carrying out master scheme of urban design of big cities which was responsible for urban planning and focussed on the outskirts of the big cities especially after the riots in Casablanca in June 1981 (Rachick, 1995). It was the Pinseau agency's role for more than ten years (1981-1995) to produce master schemes and urban planning guidelines for the main Moroccan cities (Casablanca, Rabat, Fès, Marrakech, Tanger, Agadir) or their neighboring municipalities (Fonds Pinseau, IFA).

Until 1995, Moroccan politicians were chosen in a centralized manner, dictated by a strong and authoritarian State for whom urban planning was for a long time only a matter of security. But in the last ten years there has been reorganization of the State and a decentralization trend which gives local collectivities more public authority but still keeping them in check, and this going through the governors (Philifert, 2005).

The 2000s

The 2000s have experienced a renewed authority coming from foreign specialized study offices. The "IAU IDF" further enrooted in Casablanca while the "Parisian Atelier for urban planning" did so in Rabat and Marrakech. Furthermore, more and more French architecture and urban planning agencies (agencies Y. Lion or B. Reichen) were being assigned projects, as well as Spanish, Swiss (Urbaplan) and Tunisian (Dirasset) agencies and organization responsible for cooperation (German or independant, like with the Great Lyon).

This call for foreign study offices was then justified by the public authority in the name of independance, of taking a step back from national tensions and challenges by bringing in highly specialized experts. Those structures did contribute to a transfer in know-how inspired by international models ("urban project", "strategic planning") and a certain co-development

with administrative powers is starting to emerge.

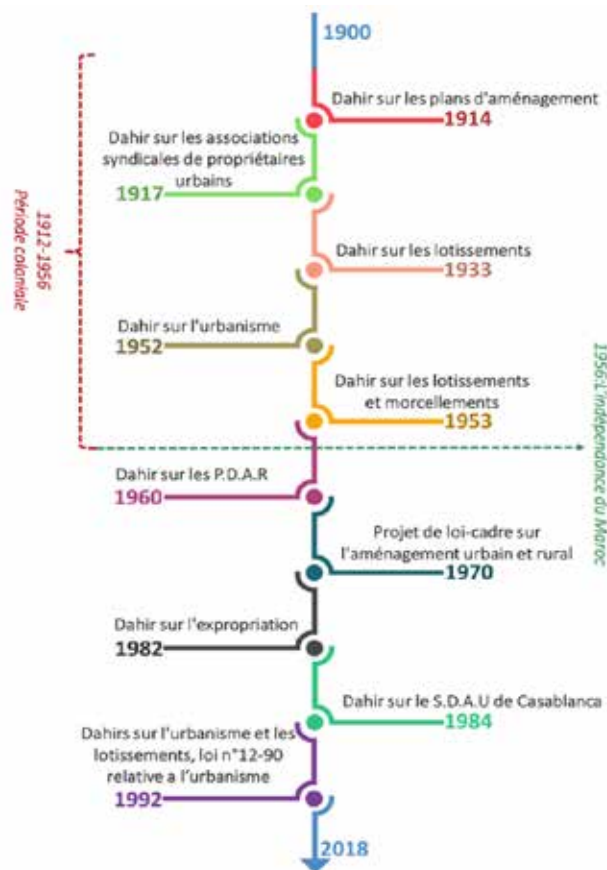
Urban agencies

In the same spirit as the decentralization reforms announced by the public authority, urban agencies are supposed to link together centralized level and local level. And thanks to the decentralization since the 2000s, urban agencies have boomed. Their role now is to establish territorial strategies and local expertise, and they show a will to break free of traditional urban management and planning to move towards a territorial engineering approach based on bringing local actors together.

EXTRACT of: <https://journals.openedition.org/geocarrefour/8126>

RACHIK A., 1995, Towns and power in Morocco, Casablanca, Afrique Orient, p. 196

PHILIFERT P., JOLE M., 2005, The decentralization in Morocco: a new dynamic for actors and professions of urban planning, in MIRAS C. de (ed.), Town Intergration and urban services in Morocco, Rabat-Paris, INAU/IRD, p. 363-401



NB : A dahir or Cherifian dahir is a Moroccan's King decree. In Moroccan legislation this word refers to the royal seal put by the King on legislative texts voted by the Parliament.

6.3. Law of the land and collective right of the land

The legislation of the land in Morocco revolves around two parallel but complimentary systems:

- The first comes from ancestral traditions, which inspired muslim law according to which deeds are mediated and made authentic by an "Adoul", then called "adoulia acts" .

- The second one, land registration, has been established in 1913 and is characterized by publication and probative force in a land registration book. This system has legal, topographic, economical and social advantages, but remains optional which gets in the way of its efficiency. The legal and technical description of propriety is established by a digital land register called "Legal Land Register", but it remains sparse and incomplete due to the fact that the registration is not mandatory. There is another land register with a more economical aspect called "National Land Register" and its purpose is to have a much better understanding of the ownership division of the territory. It includes a map and a report describing each land on rural municipalities and its owner(s).

Even though those different and complex statutes vary a lot, both can be seen as a general system of land registration.

When it comes to the land, the Great Ouarzazate has huge potential of varied legal procedures, and the following qualifiers :

- Collective ethnic terrains
- Land owned by the State
- Private and municipal properties

Housing operations are being initiated by the delegated ministry in charge of housing and urban planning on the scale of the Great Ouarzazate.

They are made in collaboration with organizations under their trusteeship like the Al-Omrane holding, which is being assigned to supervise the programmed realizations with the National Funds for the Purchase and Infrastructure of Terrains (FNAET) as well as the Regional Institution for Urban Planning and Construction of the South Region (ERAC/Sud), while also being partnering with communal councils. Those operations:

- Make the terrains viable and they are attributed to relevant people opposing the self-building of housing and socio-economical infrastructure;

- Build adaptive housing in the context of the program on rural and social housing and fighting substandard housing and slums;
- Better the living conditions of the citizens, especially when rebuilding underequipped districts, and rehabilitating old parts of town.

Characteristics of the land system in Morocco

The land ownership sector is regulated by the principles of muslim law and local customs. The right to propriety is unquestioned, when probative written documents exist:

- On public peaceful ownership, as a permanent possession (longer than 10 years when it is being opposed by an external third party, longer than 40 years when opposed a parent).
- The acquiring for the benefit of the owner beyond the abovementioned duration.

Furthermore, premises under the traditional are characterized by:

- The absence of public record about ownership.
- The outsider's (sometimes the beneficiaries') lack of knowledge about the premise, its situation, its robustness, its limits and about their rights on it.
- The uncertainty of the transaction because the law exists until proven otherwise.
- The difficulty to get loans as there is no real guarantee.
- Weak investment.
- A multitude of lawsuits between town inhabitants and others which make up more than 50% of pending disputes in court.
- No public record of non registered premises and their owners which makes the traditionally managed sector opaque to the circulation of goods, investment and modernization.

However, the sector using land registration has its own characteristics:

- It is based on a very public approach.
- It has a purging effect, as it annuls all other previous rights within the land registration procedure.
- Each house is individually called, has a map and a number. It's this "land title" which makes up the civil status of ownership and gives him a fresh start.
- The land title is unchangeable.

- The rights that go with the land title have a legal effect and a probing force between parties, towards third parties and during court procedures.
- All rights are held by the person to last register, which makes usurpation impossible. There can't be a disruption in the steady registration process or issues when taking a loan or when investing, etc.

The land tenure status in Morocco

The land is structured by statuses; some of them are not stable enough and don't have the necessary guarantees for long term investments:

- **The "Melk"**, predominant by a large margin (76% of UAA, utilized agricultural area), estimated at 7 million hectares, can be owned by one individual as well as by many. Nowadays it is confronted by fragmentation and indivisibility issues and the deficiencies of the traditional system concerning deeds on ownership rights.
- **Housing on federal land, owned by the State**, legal person under public law, classified as public domain (roads, beaches, harbors), private domain (through amiable acquisition, expropriation, confiscation...) and forest domain (forests, dunes...), and make up 270 000 hectares (3% of UAA).
- **Collective land** (about 1.5 million hectares, 17% of UAA): indivisible and fully owned by the entirety of concentrated ethnic communities and the Guich (tribal) land (about 240 000 hectares, 3% of UAA). Those two statutes are experiencing a heavy dismembering of ownership rights, as beneficiaries only have an insecure and vulnerable tenure.
- **The habous** land are the properties used by the religious power to beneficiaries of their choosing (public, family, zawiya (school)) and are most often leased for short periods. They represent 59 000 hectares, less than 1% of the UAA.

Source: https://www.fig.net/resources/proceedings/fig_proceedings/morocco/proceedings/TS1/TS1_5_mhassni_et_al.pdf

2

Functioning of the oasis system

1. The regional oasis model

The oasis is a particularly dense and productive agricultural area where several crops are irrigated by khattaras¹ and/or seguias². The tree layer is occupied by date palm, tamarisk or poplar; the shrub layer by fruit trees, such as olive and almond; and finally the herbaceous layer by low plants, such as aromatic plants or cereals. The tree layer provides shading for different crops and allows space to coexist with different plants. These environments strongly contribute to the production of local products, both traditional and authentic from southern Morocco. Agricultural production is largely carried out in the Oases of the area of investigation along the main Wadis of the territory (localities of Fint, Taghdoute, Ighels, Afra, Izerki, Amergzane, Toundoute, etc.).

These agricultural productions are carried out on the edge of the Wadi, on the low points of the valleys in order to harvest a maximum of water of run-off and to draw the water of the secondary aquifers. Plots are usually very small in size and rectangular in shape

* The Skoura palm grove is the largest agricultural area in the study and an intensive agricultural production area, thanks to irrigation. Its cultivated lands extend over 3800 ha. Palm dates, takkout nuts from tamarisk and poplar wood are mainly harvested for construction.

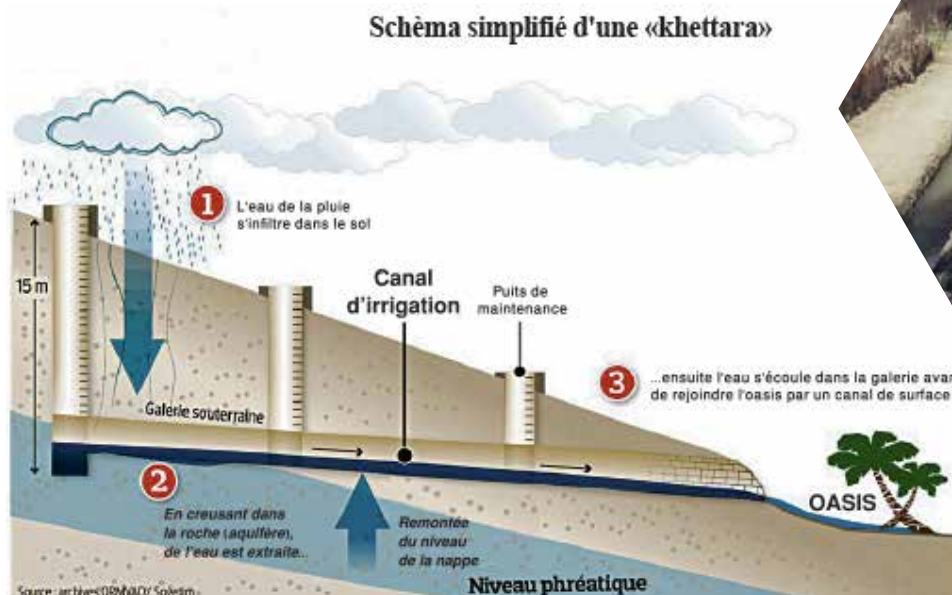
• The municipality of Skoura also hosts an oil cooperative that manages the production of local olive oil and a cheese factory. As in all other oases, economic activity in Skoura is dominated by agriculture and livestock (77% of the population according to the 2014 RGPH). It is a predominantly irrigated agriculture. 17% of farmers have areas less than 1 ha, 72% have land between 1 and 3 ha and 11% have areas greater than 3 ha³.

1 Is a structure intended for the catchment of an underground water table and the water supply to the outside. A qanat consists of a set of vertical wells connected to a slightly sloped drainage gallery that carries water to cisterns or a Karst spring

2 Is an open-air irrigation canal in North Africa that the we often meet in oases. Given the climates of the regions concerned, these rudimentary systems involve significant losses of water by evaporation.

3 <http://www.saidi.ma/memoirs/marah.pdf>

source : ORMVA



2. Watershed agriculture

The Wadi Ouarzazate basin is located on the southern slope of the Central High Atlas. This area, mostly arid and desert, is occupied by people of diverse origins, concentrated at the bottom of mountain valleys and oases. The constraints of the natural environment have strongly influenced the economic and social organization of these populations, imposing in peculiar agropastoralism, the development of adapted irrigation and cultivation techniques, and a rigorous management of social solidarity. Availability of arable land and water availability have thus drawn two original landscapes:

* Oases where arable land is relatively extensive, where agriculture dominates but is practiced on small and discontinuous perimeters, depending on water availability. Intensive cultivation techniques are implemented, and the water distribution networks are collectively maintained.

* A mountain area where, if water supplies are relatively abundant, but where the arable land is so small that only livestock seem possible. The efforts of a few generations of peasants, and very strong social solidarity have however resulted in the creation of long ribbons of terraces hung on the mountainside, where a self-subsistence agriculture is practiced.

The Wadi Ouarzazate watershed, like all the Moroccan countryside, is changing rapidly. Emigration and the opening of the area to the outside world have led to changes in the behavior of the population, and today we are witnessing the break-up of traditional society and a breakdown of agro-pastoral equilibria (Abdelaziz 2000)¹



Fint Oasis - september 2018

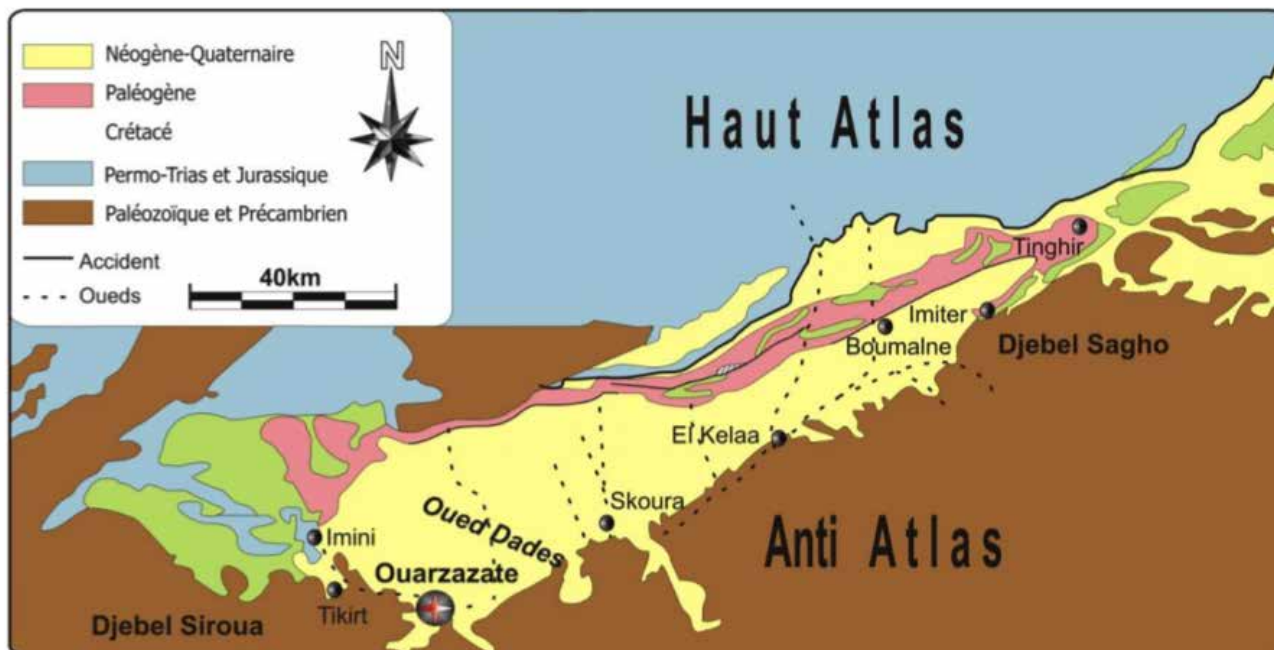


Source: Ateliers Cergy



¹ Organization of the space and rural life in the Wadi Ouarzazate watershed (Morocco), by Abdelaziz Essaid under the direction of André Humbert

2.1. Presentation of the Ouarzazate Basin Essaïd



Geological setting of the Ouarzazate basin (according to the geological map of Morocco at 1 / 500,000 °, sheet of Ouarzazate, simplified-thesis Madani Benyoucef-2012)

The Ouarzazate basin occupies the central part of the furrow that has been individualized between the High Atlas and the Anti-Atlas. It is limited to the north by the South Atlas Accident and the Precambrian outcrops of the Anti-Atlas to the south (Saghro buttonhole). It is a relatively narrow basin (about 160 km long and 45 km wide at the level of Ouarzazate and Skoura), with altitude between 1100 - 1500 m (M. Agoussine et al, 2004)¹.

The Ouarzazate basin corresponds to transitional units between the Atlas domain and the Anti-Atlas both by their Stratigraphy and by their tectonic style. It is also characterized by a slightly wrinkled cover, less developed in the South than in the North and placed on a penetrated substratum.

¹ M. Agoussine et al. - Water Ressources of the Ouarzazate Basin, Bulletin of the Scientific, Rabat, Earth Sciences Section, 2004, No.26, 81-92.

2.2. The role of agriculture in the province

The agricultural sector is one of the driving forces of the Draa Tafilalet region's economy, accounting for 13% of regional GDP. In the province of Ouarzazate, agricultural activity focuses on basins and valleys, while in the lowland areas in the

interior, the drier climate causes desertification, and therefore these lands are not very suitable for agriculture. Agriculture, which plays a fundamental role in the region, is characterized by the diversity of its crops (cereals, citrus fruits, fruits in general, etc.). The main products obtained, both in terms of surface area and volume of production, are as follows¹.

- * Cereals: Wheat, durum wheat, corn and barley.
- * Vegetables
- * Forage crops - Leguminous
- * Industrial crops - Citrus
- * Arboriculture: olives, figs, palm trees, apple trees, apricot trees.

¹ Monograph of the province of Ouarzazate.

3. Biogeography and vegetation

3.1. Flora and vegetation

The natural environment of the Draa Valley of which the great Ouarzazate is a part is of great wealth. This richness was justified by the emergence of a special ecology in dry environments.

Five middle units have been identified:

* The plateau unit, particularly poor in terms of cover (15%) and the number of species, with a clear dominant of *HAMMADA SCOPARIA* (The broom moss (*Hammada scoparia*) is a species of plants of the family *Amaranthaceae* This plant is native to North Africa and the Middle East)

* The slope unit that is distinguished from that of the plateaus by a higher recovery species abundance as *FARSETIA OCCIDENTALIS* and *SCIEROCEPHALUS ARABICUS*; in areas with boulders, characteristic species of ravines are.

* The ravine unit, with high recovery and a large number of species

* A halophilic unit, developed on dirty loams.



Among the plants observed on the site, silts *PRUINOSUM SSP ALLEIZETTEI* is a species considered rare in Morocco (Fennane and ibn Tattou 1998)¹

* To the north-west of the lake-side area is a *Tamarix aphylla* group, forming a wide belt at the river mouths (in particular Wadi izerki) and narrow in general, with a tendency to fluctuate upwards or downwards the bottom according to the average levels of the lake; at the river mouths, many dead trees that are partly submerged testify to lower levels of the lake in recent years.

* A regional floristic inventory has revealed about 80 species, including at least four rare endemics in Morocco.

* The sector is characterized by the coexistence of elements of Mediterranean, tropical and Saharan stock and by the presence of some endemic.

* The local vegetation has a small amount of space, a sign of its great fragility. Generally homogeneous in appearance, several units are describable.

* The steppes generally consist of perennial tufted grasses, dwarf shrubs (max 50cm tall), and tall shrubs (up to 2m tall), crassula shrubs.

* In general, the floristic procession is poor. The flora illustrates a dry continental climate characterized by large seasonal fluctuations mainly thermal.

* Tree species, when present, are limited to the edges of Wadis where they organize repellent formations.

¹ Fennane.M and M.IBN TATTOU, 1998.catalogue of rare, threatened or endemic vascular plants in Morocco.Boccone, 243p

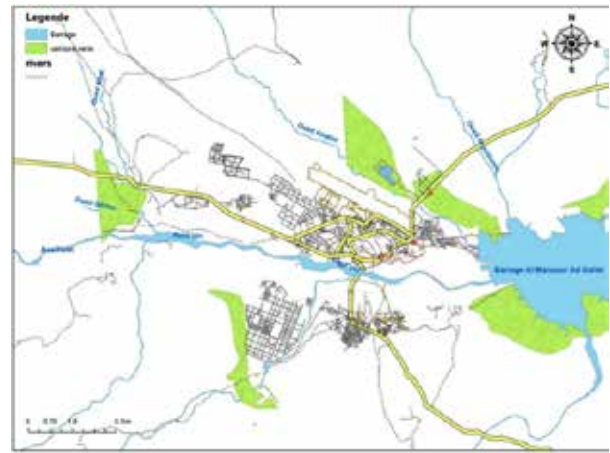


3.2. The Green Belt Pilot Project

The Ouarzazate Greenbelt pilot project and the reuse of wastewater helps protect the city from strong winds and dust clouds, provides local people with a place where they can enjoy nature, generate jobs in the agriculture sector and encourages public participation in the prevention of land degradation and loss of biodiversity.

In order to irrigate these new green spaces, the wastewater and treated wastewater from Ouarzazate has been reused. Funded by the Moroccan government and the Korean Forest Service, with the support of UN-Environment and local partners, this project also aims to improve air quality, contribute to biodiversity conservation, provide fodder and improve the livelihoods of urban and peri-urban communities

The attained area of this project is about 402 ha



WILDLIFE

The majority of the species listed below are threatened with extinction due to a hostile environment and anthropization.

> Mammals: Jackal and Rüppell's Fox. At nightfall: small jerboa, various species of gerbils, and other species of mice.

> Birds: The dam area is a place full of rare bird species and evolving in reconstructions of their natural environment. In particular, there are 9 migratory passage species and probably 10 nesting ones including pigeons, hawks, barn owls, parsley birds, Barbary partridge, brown raven.

> Reptiles: Among the snakes are the endemic horned viper, the fascinating cobra of North Africa, the viper bumping, several species of snakes. Among the lizards and other reptiles we can observe the Agamidae such as the whip, the agama impalearis, and small geckos.

> Arachnids: we will not miss to find various species of scorpions, during the day under the stones or walking at night when it is hot, and none of which is aggressive. Spiders are abundant as well as tarantulas and representatives, often very impressive, of the order of solifugae. There are also many species of locusts, beetles and dragonflies.

> Amphibians: among the main amphibians are Brongersma's toad, green toad, Mauritanian toad and green frog.

3.3. Wetlands classified Sites

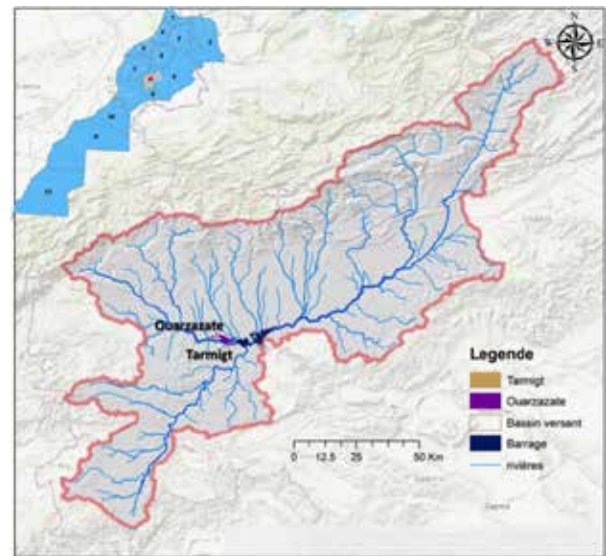
The dam is classified as a wetland of international importance by the Ramsar Convention¹. The species of fish introduced into this lake are black bass, common carp and blue carp. There is also an abundance of Chinese carps that grow particularly well and can reach more than 20 kg. The site is an important refuge for migratory species, especially sparrows that come to rest before and after crossing the desert.

The ornithological stand of the lake is very interesting, more with regard to the breeders than the wintering ones. At least 7 species breed at this site (Great Crested Grebe, Gray Heron, Little Egret, Late Cranberry, Mallard, Common Coat, and Ringed Plover).

¹ The Ramsar Convention, officially the Convention on Wetlands of International Importance especially as Waterfowl Habitat, also commonly referred to as the Wetlands Convention, is an international treaty adopted on 2 February 1971 for the conservation and use of wetlands. sustainable wetlands, which aims to halt their degradation or loss, now and in the future, by recognizing their ecological functions as well as their economic, cultural, scientific and recreational value

(Chamayou et al., 1977). This basin constitutes the upstream part of the great Wadi Drâa basin and contains about 7% of Morocco's undergroundwater resources and very accessible and exploitable surface waters.

The Drainage basin hydrographic map



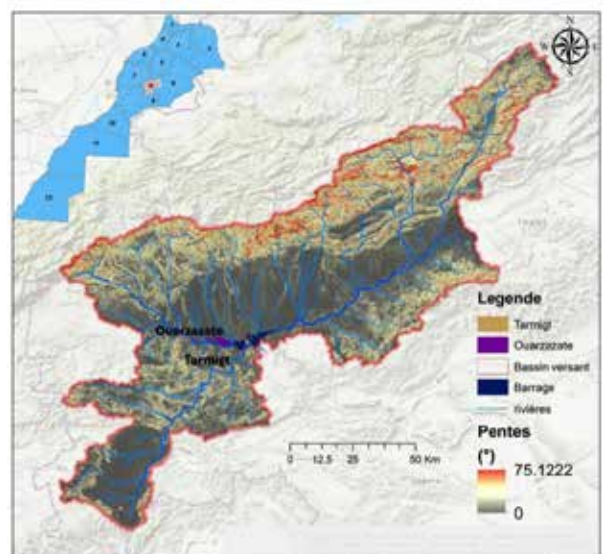
Source: Ateliers Cergy

4. Hydrology and operation of Wadis

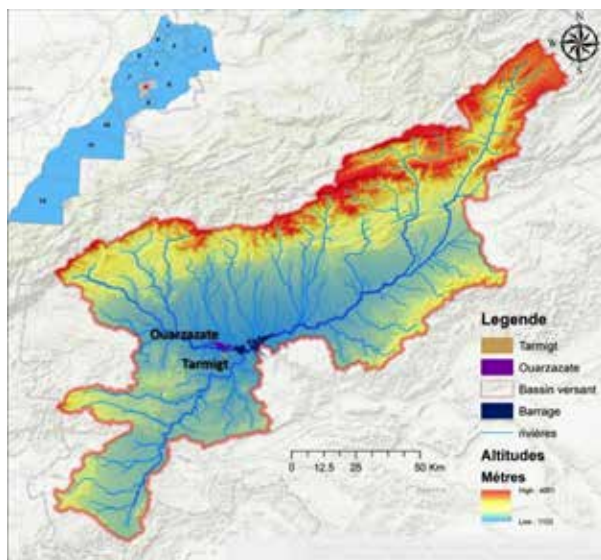
4.1. Hydrology of the Ouarzazate watershed

The hydrographic network of the basin is formed by Wadis DADES, M'GOUN, IZRKI, OURZAZATE and its tributaries (el Maleh, IMINI, IRIRI and AIT Bouchechenefint). These Wadis form the upper basin of Drâa whose areas are 15 170 km². At the confluence was built the Dam El Mansour Eddahbi. The Ouarzazate basin extends over an area of 5,407 km² and corresponds to a groove generated during the Atlasic compressions. It is thus, limited to the north by the chain of the High Atlas, to the east by the old massif, to the east by the Eastern Anti Atlas and to the south and east by the Paleozoic outcrops, its average slope is 2%

the Drainage basin slope Map



Source: Ateliers Cergy



Source: Ateliers Cergy

4.2. Operation of wadis

The water course par excellence of arid environments is wadi (wadi), essentially episodic. In the Wadi, the flow merges with the flood. In certain regions, the same word designates both of them. The water flows flanked by banks and receives the contributions of the water table and streams diffuse water flowing down the slopes. The rain flood delay is more or less great according to the distance traveled, the flow, the slope and the permeability of the bed of the stream. In cultivated areas, the flood, both expected and feared, brings new alluvium and recharges the undergroundwater, but it carries, on the other hand, gardens and trees. It can also lead to irreversible transformations of the morphological landscape, capable of upsetting the living environment of neighboring populations (Joly, 1962)¹. The water flows in the beds of wadi also diffuses on the sides, through the banks, and feeds lateral water tables which also receive the water of infiltration of the rain and diffuse runoff on the slopes.

1 Joly F. (1962) - Southern Relief Studies -Is Moroccan. Rabat, Work of the Scientific Institute Sherifian, Physical Geography Series, 10, 578 p

The river regime of the Ouarzazate basin is of the nival type¹ Autumn floods are generally few in number but can be important in terms of volume brought. On average, the number of floods is two per year. Rainfall is erratic and their average is low and evaporation is very strong. The average surface water intake of the watershed at Mansour Eddahbi dam is highly variable (the average inter annual precipitation over the watershed at Mansour Eddahbi dam is 115 mm²). The undergroundwater potential of the basin is quite large but difficult to access. The most exploited waters are those of the alluvial water table (Wadis Dadès, M'Goun and Ouarzazate). The quality of this water deteriorates from upstream to downstream by increasing mineralization, which leads to an increase in soil salinization after evaporation of water.

1 The snow regime is a model of a simple hydrological regime, characterized by a single annual alternation of high and low water. It is found in the slopes mainly fueled by precipitation in the form of snow, that is to say in the mountainous areas and in the northern plains.

2 ESIA evacuation line project for the solar power station and solar power station substations, Ouarzazate and Tazarte National Electricity Office-E4489 v3 2013

4.3. Hydraulic installations

The hydro-agricultural scheme of the Haut Draa sub-basin consists mainly of the Mansour Ed Dahbi dam, commissioned in 1972, with a capacity of 560Mm³ (439 Mm³ on 04/05/2010). This building, built on the site Zaouiat N'Ourbaze, at the confluence of the Wadis Dades and Ouarzazate at the entrance of a very narrow canyon of 45km in length, 25km from the city of Ouarzazate. This dam responds to several issues:

- > The protection of the Draa Valley against devastating floods
- > The development of the 6 palm groves of the average Drâa valley
- > The power of the solar station 2Mm³ / year
- > The drinking water supply / irrigation (5Mm³ / year) of the greater Ouarzazate, in particular via the floating water intake installed at the level of

the marrabe, with a peak flow of 170L / s and an average production capacity at the level of 140 L / s treatment station (The allocation for drinking water from the Mansour Ed Dahbi dam is 3.5 to 4 Mm3 / year, compared with around 180 Mm3 / year for irrigation. evaporation is estimated at about 56 Mm3 / year).

□ The production of electricity
The main wadis feeding the dam are:

* The wadi Dades with an average annual flow of the order of 7.4 m³ / s is a contribution of the order of 233 Mm³ / year (at the level of the Tinouar hydrometric station)

* The Wadi Ouarzazate with an average annual flow of about 4.6 m³ / s is a contribution of about 145 Mm³ / year (at the Tinouar hydrometric station)

Unfortunately, we know an annual siltation rate of 2Mm³ / year, due to the phenomenon of soil erosion¹

¹ Maintenance director Ouarzazate water basin agency



Vue sur le lac el Mansour Ed Dahbi depuis le barrage - septembre 2018



The hydroelectric power station of the dam - September 2018



4.4. Underground waters

The main aquifer zone is that of the Ouarzazate basin which is fed by infiltration occurring in the High Atlas and in the Piedmont areas.

The resources traditionally used consist of the underflow of the wadis forming localized layers of low thickness, less than 10L / S and of a satisfactory chemical quality.

5. Vulnerabilities and adaptations: current projects

5.1. The development of solar energy in Ouarzazate

It is from Ouarzazate that Morocco begins its energy transition by the big door. The Solar Plan Morocco aims to produce 2,000 megawatts of energy by 2020 through green energy such as solar, hydro or wind. This ambition is confirmed and consolidated through the launch of the second phase of the integrated solar energy program.

Launched in 2009, on a royal initiative and managed by the Moroccan agency for solar energy (MASEN), the Ouarzazate solar complex project is the first of the series of five sites of the Moroccan Solar Program that will have an installed capacity of 2 000 MW by 2020. It is an essential component of the Moroccan Solar Plan (PSM) which also includes the sites of Ain Bni Mathar, and the sites of Foum El Oued, Boujdour and Sebkhah Tah. Other sites like those of Midelt and Tata would be selected to house future projects of the Moroccan solar plan Noor.

The implementation of the Moroccan solar plan will cover 14% of the country's energy needs. The strategic objective is to ensure that the share of renewable energies represents 42% of the installed electricity capacity through these solar projects and those developed in wind power.

5.2. The development strategy of the oasis zones and the argan tree

The pre-Saharan provinces are well integrated in the approach of regional planning which relies on the vocations and potentialities of each territory to promote its development. The development strategy of the oasis zones and the argan tree 45 was launched by His Majesty King Mohammed VI in Errachidia on October 4, 2013. Forty-five programs were identified mobilizing an envelope of 93 billion DH of which 84 billion are in course of implementation by the ministerial departments. ANDZOA will mobilize DH 8 billion by 2020. The development of the oasis and argan zones, which takes into account the potentials of each region, includes an economic component which aims at ambitious objectives by 2020 to create more jobs and improve the incomes of the population in urban and rural areas. The strategy also includes a social component which concerns the strengthening of basic services dedicated to the population. The development plan for the oasis and argan forest areas also includes an environmental component that focuses on the protection of resources through the awareness of the population on the importance of forests, the preservation of water resources and ecological diversity, the fight against desertification and the requalification of 200 hectares of forests, including the argan tree.

3 Local Lifestyles

Lifestyles in Morocco and Ouarzazate

Morocco is firmly looking to its future. However, this does not mean it wants to break from its history and traditions, that which constitutes its strength—being a crossroads of Berber, Arab, Sub-Saharan African and European cultures. This mosaic of cultures and influences is what makes Morocco so culturally rich.

1.1. The Daily Life of a Moroccan

With the growth of its population, together with economic, educational and cultural improvements, Moroccans have changed their focus and lifestyles as well as the ways in which they use their time. According to the results of the National Time-Use Census in Morocco¹, which was carried out on a sample of 9,200 households, Moroccans were found to divide their time, on average, between three main categories: physiological needs, professional work and free time.

¹ National Survey on Time Use in Morocco, Haut-commissariat au plan (HCP) (2011/2012).

1.1.1. Language

Morocco represents a complex linguistic situation as dialectal Arabic or Moroccan Arabic (Darija) is spoken by nearly 60% of the population (the majority), according to the RGPH-2014¹; although Berbers, also known as Amazighs, represent 40% of Morocco's general population.

In the province of Ouarzazate, dialectal Darija represents 59% of the language spoken locally, while Shilha (Tachelhit)² and Tamazight³ represent 83.2%, according to the RGPH-2014.

¹ Recensement Général de la Population et de l'Habitat de 2014 [population and housing census] (RGPH-2014).

² Shilha (in French: tachelhit, chelha or chleuh) is an Afro-Asian language that is part of the Amazigh linguistic family. It is spoken by the Shilha (Chleuh) people of Morocco. Shilha is the most important Berber language in Morocco because of its high number of speakers and the scope of its reach. The Sous Region is the heart of its area of influence.

³ Berber languages (locally known as Tamazight) are a group of dialects or tongues that are part of the Afroasiatic or Hamito-Semitic linguistic family (spoken in the Middle East and North Africa) and are derived from "ancient Berber". They are spoken from Morocco to Egypt.

1.1.2. Kitchen

Moroccan cuisine is one of the richest in the world due to the great diversity and unique geographical location of Morocco, a testament to the presence of so many different cultures: Berbers, Jews,

Arabs, Sub-Saharan Africans, among others. For example, the Arab-Andalusian civilization brought many dishes to Moroccan cuisine, especially those that range from sweet to salty, whereas cereal-based dishes are typical of Berbers. Finally, the art of candied vegetables and fruit remains a Jewish speciality.

Moroccan cuisine is a combination of sweet and savoury dishes, with both types featuring many of the spices introduced to Morocco by the merchant caravans coming from India and Egypt. Despite the diversity of the regions, the same types of dishes can nevertheless be found throughout Morocco.



1.1.3. Family

Since the beginning of the 20th century, Morocco has experienced rapid population growth due to a high birth rate and a reduction in mortality. According to the 2014 population census, Morocco's official population stands at 33,848,242 million inhabitants, with a density of 78.0 inhabitants / km², a population growth rate of 0.99%, and an estimated life expectancy at birth of 75.5 years (74.5 years for men and 76.4 years for women)¹.

According to data from the 2014 Moroccan population census, the average household size was 4.6 persons in 2014, or 4.2 persons in urban areas versus 5.3 persons in rural areas. In terms of household structures, 7.2% of all households consisted of a single person and 46.7% had 5 or more persons.

With regard to the heads of households in terms

¹ Study by the Centre d'Études et de Recherches Démographiques.

of gender, it should be noted that 16.2% of households were headed by women (18.6% in urban areas and 11.6% in rural areas). Among the latter, 20.9% of these households consisted of a single person. Therefore, when looking at female-headed households in terms of marital status, it is important to note that 55.2% of the women were widows, 19.7% were married, 14.3% were divorced and 10.8% were single according to the Study on Social Indicators in Morocco for the period of 2013-2014². In addition, the average number of children per woman was 2.2 in 2014. According to place of residence, this number stood at 2.5 in rural areas and 2.0 in urban areas for 2014. Fertility was the lowest (2.1) in the Oriental, Souss-Massa, Fez-Meknès, Casablanca-Settat and Rabat-Salé-Kénitra regions. However, the regions with the highest overall fertility rate were the Dakhla-Oued Ed-Dahab with 2.9 children/woman and the Drâa-Tafilalet with 2.7 children/woman (where the focus area of Greater Ouarzazate is located). Moroccan families mainly fall into two categories, namely:

- Complex families (large families) with an average size of 7.9 people, representing 21.6% of all Moroccan households (this type is found more in rural areas, with 46.6% compared to 33.1% in urban areas);
- Nuclear families (small families) represented by only parents and their children are the largest portion of Moroccan households. No less than six out of ten households (60.3%) belong to this category.³

In Moroccan society, generally speaking, it is hard to imagine an individual living in the same city (urban environment) or douar (rural environment) as his/her parents, but lives apart from them on his/her own. As such, it is common to see young people who still live with their parents even after marriage. For this reason, traditional Moroccan-

² Social Indicators for Morocco During 2013-2014, 2016 Edition of the High Commission Plan (HCP).

³ Structures and Characteristics of Families in Morocco, 2011 High Commission Plan.

style homes ⁴ represent 56.8% of the housing in Morocco, followed by rural lodgings (22.8%) and apartments (11.6%)⁵.

⁴ A typical Moroccan home includes an entrance hall, a traditional living room and bedrooms, as well as traditional toilets (beldi). Showers, however, are generally not found in Moroccan houses. The homes usually also have a terrace on the roof for drying clothes and for cooling off in the summer months.

⁵ Recensement Général de la Population et de l'Habitat de 2014 [population and housing census] (RGPH-2014).

1.1.3. Religion

Islam is the official religion of the State. The king is the religious leader of the country. Ninety-nine per cent (99%) of Moroccans are Muslim, mainly Sunni. Coexistence among different religions has been well established for centuries and the practice of other religions is guaranteed by the country's constitution.

Cultural and commercial exchanges with Europe, and the West in general, have influenced Morocco towards a more moderate approach to Islam. Fundamentalist movements remain marginal. While young people are still very religious, they are becoming slightly less devout practitioners. In cities, the day is punctuated by the muezzin, who calls the 5 daily prayers from the top of the minaret. During Ramadan, Moroccans fast, stop drinking and smoking from sunrise to sunset. Their daily lives change as a result, and public services and companies adjust their schedules.

1.1.4. Song and Dance

Song and dance hold an important place in Moroccan life. Chiouks (masters) are the custodians of these traditions and animate family festivities in villages, such as weddings, baptisms and other celebrations. During these festivals, ancient poems, religious texts or songs about daily life are sung. The chiouks are accompanied by musicians playing bendirs (a musical instrument). For example, the Ahwache (or Ahouache), the most famous dance in the city of Ouarzazate and throughout the Sous Region, is a celebratory group dance performed at all festivities and important moments in life. It is part of the social-cultural life of the Amazigh (Berber) people.

It is a musical art that harmoniously combines movement, rhythm and voice. It is instrumentalized by flutes and bendirs (drums on a frame called an allun in Berber) and is generally characterized by a series of poetic improvisations. For the dance, the

group of women are often found around or facing the group of men. Ahwache comprises several different stages, the most difficult one to achieve is the part that constitutes the dance's originality: the msaq, a poetic jousting that precedes the dance. Indeed, these poetic games require that the few Ahwache dancers who do them be endowed with an extraordinary power of poetic improvisation. The two choirs (male and/or female) stand face to face and alternate their songs, which generally refer to love, nature, or events in the tribe. Gestural manifestations then come into play. These include the clapping of hands and drumming, which create some of the strongest moments of the Ahwache. The dancers' musical rhythms and gestures accelerate as the dance intensifies. The solemnity that emerges from these dances makes them a show of extreme beauty.¹

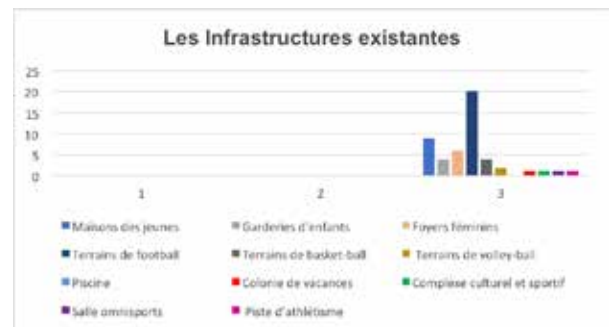
1 Elguerssani, Ahmed Bouzid, & Capgras, Marie. "Ahouach chants et danse collective de Souss". In Olsen, Myriam & Lort-Jacob, Bernard. (1997). Pref. Musiques de l'Atlas. Arles: Actes Sud Cité de la Musique. Available at www.noujoumsouss.com.

<https://lematin.ma/journal/2018/festival-national-arts-dahwach/297962.html>



2. Lifestyles in Ouarzazate

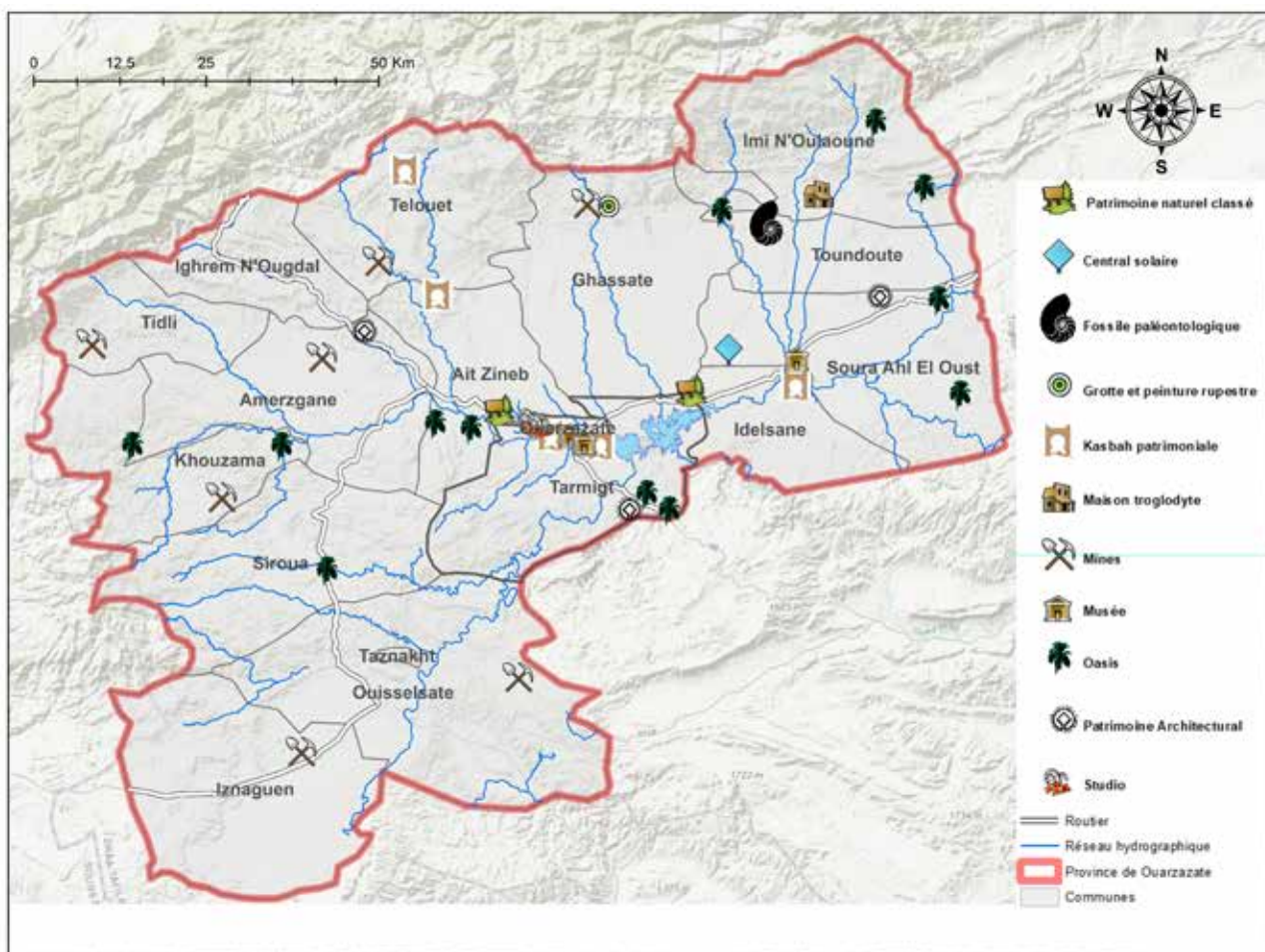
Ouarzazate, whose name is composed of ouar and zazate, is a perfect synthesis of two languages: Tamazight and Arabic. Ouar, for Amazighs, means negation in all its forms, i.e. the one who does not possess it. Zazate is the plural form of the Arab word zzaza, which means turbulence, disorder or noise. Therefore, the city of Ouarzazate means the city without noise. Even now, at the turn of the 21st century, Ouarzazate has yet to lose its authentic character as a rural area. It has perfectly integrated into the natural and human context inherent to the south-eastern regions of Morocco. The palm groves along the Ouarzazate wadi belie its desert setting.



Animations pour les enfants sur la place Mouhahidine - septembre 2018

2.1. Youth

The youth population (15–29 years old) represents 60.5% of Morocco's general population, according to the 2014 General Population and Housing Census, and represents 60.5% of the total municipal population of Ouarzazate Province. Within the province, many facilities—although insufficient—and associations are dedicated to this age group.



2.2. Culture

The province of Ouarzazate is characterized by the richness and diversity of its cultural heritage and historical monuments.

2.2.1 Educational Sector

Traditional Koranic Schools

These schools once played an important role in spreading the precepts of Islam and Islamic civilization. Certain ulamas and fuqahā, scholars from these type of schools, are renowned for their writings. Notable figures include Mohammed El Mehdi Ben Abass Todghi and Abdelouahed Dadessil, who were very famous in the 11th century AD.

The most famous Koranic schools:

- École de Tamaâroufte in Taznakhte
- École de Sidi Brahim SBAAl in Skoura
- École YAAKOUBIA in Amzaourou

Libraries:

- Public (modern): 8
- Private (traditional): 5
- Mobile library: a new concept in

Ouarzazate, spearheaded by the director of culture. This mobile library tours the province of Ouarzazate. As it is the only one in the province, it rotates between the cities for a maximum of 2 months each. Eventually, each city will have its own mobile library (according to an interview with the director of culture for the Ouarzazate Province).



«bibliobus» in Ouarzazate - <https://azekka.org>

2.2.2. Heritage Sector

Kasbahs and Ksour

Kasbahs¹ are an invaluable source of architectural and patrimonial heritage. It is worth noting that the region is often called the “region of a thousand and one kasbahs”. Some of them are listed as UNESCO World Heritage Sites and are known the world over (the Ksar Aït-Ben-Haddou

¹ Kasbahs are typically individual fortified residences, usually belonging to former dignitaries and dating from the 18th century, although some of the oldest date as far back as the 17th century.

and the kasbahs of Taourirt and Tifoultoute in Ouarzazate). And yet, the current situation facing ksour² and kasbahs is very worrying. This tangible and intangible historical heritage is severely degraded and threatened with extinction. But efforts are still being made to preserve them. The Ministry of Housing and Urban Policy (MHPV), working through the private group Al Omrane, has carried out a rehabilitation programme of 17 ksour and kasbahs, mainly in the area of Tafilalt. The programme was implemented based on the following components: the rehabilitation of walls and roads, the reinforcement of buildings (workshops, stores or houses in danger of falling apart), the installation of basic infrastructure (roads, sanitation, lighting), the redevelopment of public spaces (small courtyards, awnings, covered markets known as kissariats, etc.) and in certain cases the establishment of social infrastructure (such as women's centres).³

Historic Buildings and Sites

Some of these buildings and sites are classified as national heritage sites to be protected. Examples include the Dadès Gorges and the historical sites of the Bougafer Region and the Dadès Oasis.

Zaouias and Mausoleums of Saints

Some of these zaouias⁴ and mausoleums of saints are currently celebrating well-known moussems and festivals (see list of moussems⁵ in the paragraph reserved for the tourism sector in this document).

Traditional Arts: (40 Folk Troupes)

The region is known for its many folk troupes, some of which are world-famous such as the Ahidous of Kelaât M'gouna troops and the Ahouache of Taourirt and Tifoultoute troops (Ouarzazate).

² Ksour, the plural form of ksar, are villages surrounded by a fortified wall and protected by watchtowers. They are quite ancient, some being thousands of years old. They can house hundreds of houses and collective spaces.

³ Report from the "Programme d'accompagnement pour la valorisation durable des ksour et kasbah du Maroc", a programme aimed at the sustainable promotion of Morocco's ksour and kasbahs.

⁴ A religious institution under the authority of the Muslim brotherhood, specially dedicated to teaching

⁵ An annual regional celebration that combines a customary celebration, which can sometimes be religious with festive and commercial activities

Current Situation

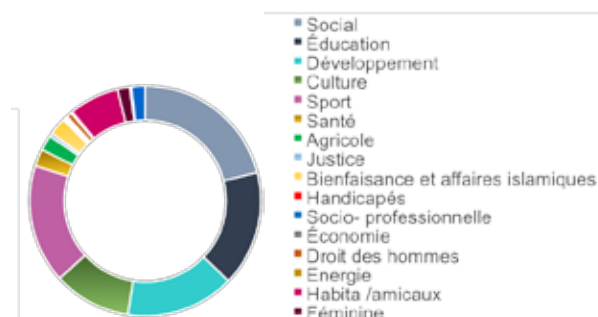
- Cultural associations: 200 associations participate in the animation of the cultural and social life of the region.
- Centre for the Conservation and Rehabilitation of the Atlantic and South Atlantic Architectural Heritage (CERKAS): Created in 1989, by the Ministry of Cultural Affairs, its aim was to address the destructive effects that threaten the area's earthen architectural heritage. It is located in the south-eastern part of the Kasbah of Taourirt in Ouarzazate. Since its creation, the centre has participated in the restoration of the Kasbah of Taourirt, Ksar Aït-Ben-Haddou and the collective granary of Ighrem Nougdal.

2.2.3. Association / Non-profit



The city of Ouarzazate has a large number of associations active in various fields (social, cultural, environmental, youth, health, etc.). However, it is crucial to note that most of these associations appeared with the launch of the INDH in 2005 and many are inactive. The role of these civil society actors is complementary to the work of the municipal council; therefore they remain essential partners for the council, particularly in certain sectors such as literacy, work with the disabled, the environment, etc. It should be noted that only 63 associations out of 416 received funding from the municipality (during the 2009 fiscal year) or 15.14%.

Domaines d'interventions des associations existantes



4

Regional economic growth drivers

The town of Ouarzazate is one of the last large-sized towns bordering the open desert at the southern foothills of the Atlas Mountains of the Sahara. Ouarzazate is the region's economic, cultural, social and tourist hub.

Its main sectors of activity are farming, mining, renewable energy, tourism and film-making. The province of Ouarzazate lies at the crossroads between three regions: Béni Mellal – Kénifra, Souss – Massa and Marrakech – Safi, close to the large tourist town of Marrakech. According to RGPH figures published in 2014, the two most densely populated and built-up areas in the province are Ouarzazate which has a population of some 70,000 inhabitants and the centre of the district of Tarmigt (Tabounte) which has a population of over 30, 000 inhabitants. Adjoining one another and separated by the Ouarzazate oued and its food crop area, they form the urbanized heart of Greater Ouarzazate. Agricultural case study of the province of Ouarzazate

1. Farming and cattle breeding

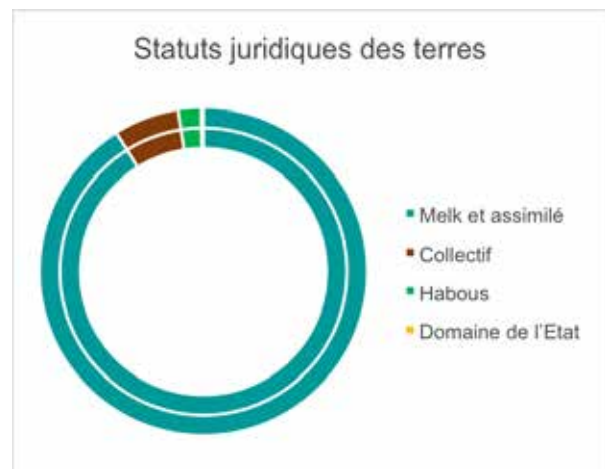
The province of Ouarzazate is mainly rural. The farming sector is vital to the province: it provides a livelihood and income for most of the population and helps regulate the exodus from the countryside.

From a legal perspective, agricultural land is

based on the Melk system («Melk» land is either purchased, inherited or donated and falls within the private domain) and accounts for 91.07% of total surface area. This status is followed by collective farmland with 6.44% of Habous allotments («Habous» land is bequeathed by a private individual to a religious institution») with 2.27% of total surface areas and by government estates with cover 0.22% of total occupied land. With regard to the occupancy and use of agricultural land, 91.07% hectares are directly managed by landowners while the remainder is leased for payment in cash (4.47%) or in kind¹ (4.47%)².

1 A rural lease is a contract by which a farm owner makes agricultural land or buildings available to a farmer for use in return for rent or for a share of the crops produced.

2 Agricultural case study of the province of Ouarzazate





The region comprises 23,037 hectares of agricultural land which is divided into highly fragmented micro units. The average size of farms does not exceed 0.95 hectares. The average number of allotments per farm is 7.64¹ ».

Agriculture in the province of Ouarzazate is a combination of vegetable crop and livestock production. Both activities are closely linked and complement one another on most farms 94% of which are no larger than 2 hectares in surface area.

The diverse agricultural landscape and habitat of Ouarzazate and the low usage of chemical fertilizers and pesticides favour the growth of a wide range of quality labelled crops² .

Under Morocco's Green Plan («Plan Maroc Vert»), several development projects were launched between 2009 and 2011 in the region of Ouarzazate. These include a project to develop date palms in the oases of Ouarzazate and Tinghir initiated in 2009 and a project to develop olive groves initiated in 2013¹.

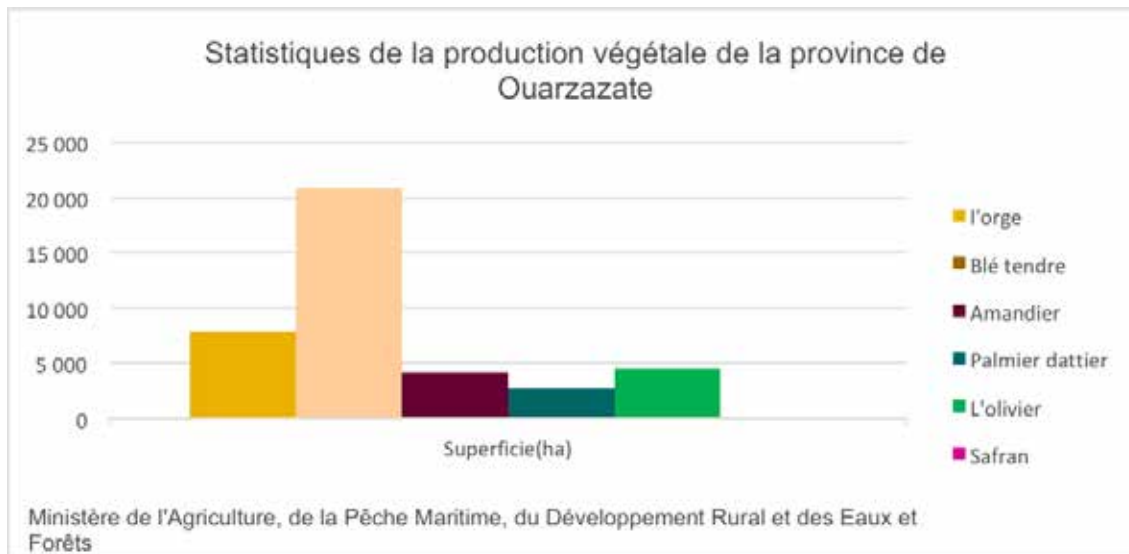
1 Agricultural case study of Ouarzazate

2 Labeling, the process whereby a product is awarded a quality label.

1 Regional Office for the Agricultural Development of Ouarzazate (2014), Review of physical projects, Ministry of Agriculture and Fisheries, Board of Directors – Tax year 2014, 16 p-SDAU 2018.



1.1. Food crop production



- Cereal crops are widely grown in the region and cover 33,530 hectares of cultivated land. However, their share fluctuates according to available irrigation of allotments of land.
- Barley, which is grown over an area of 7,900 hectares, is the main crop but it is being overtaken by soft wheat which covers 20,860 hectares. The latter is more productive and is being actively promoted by the government to reduce the national deficit for this crop.

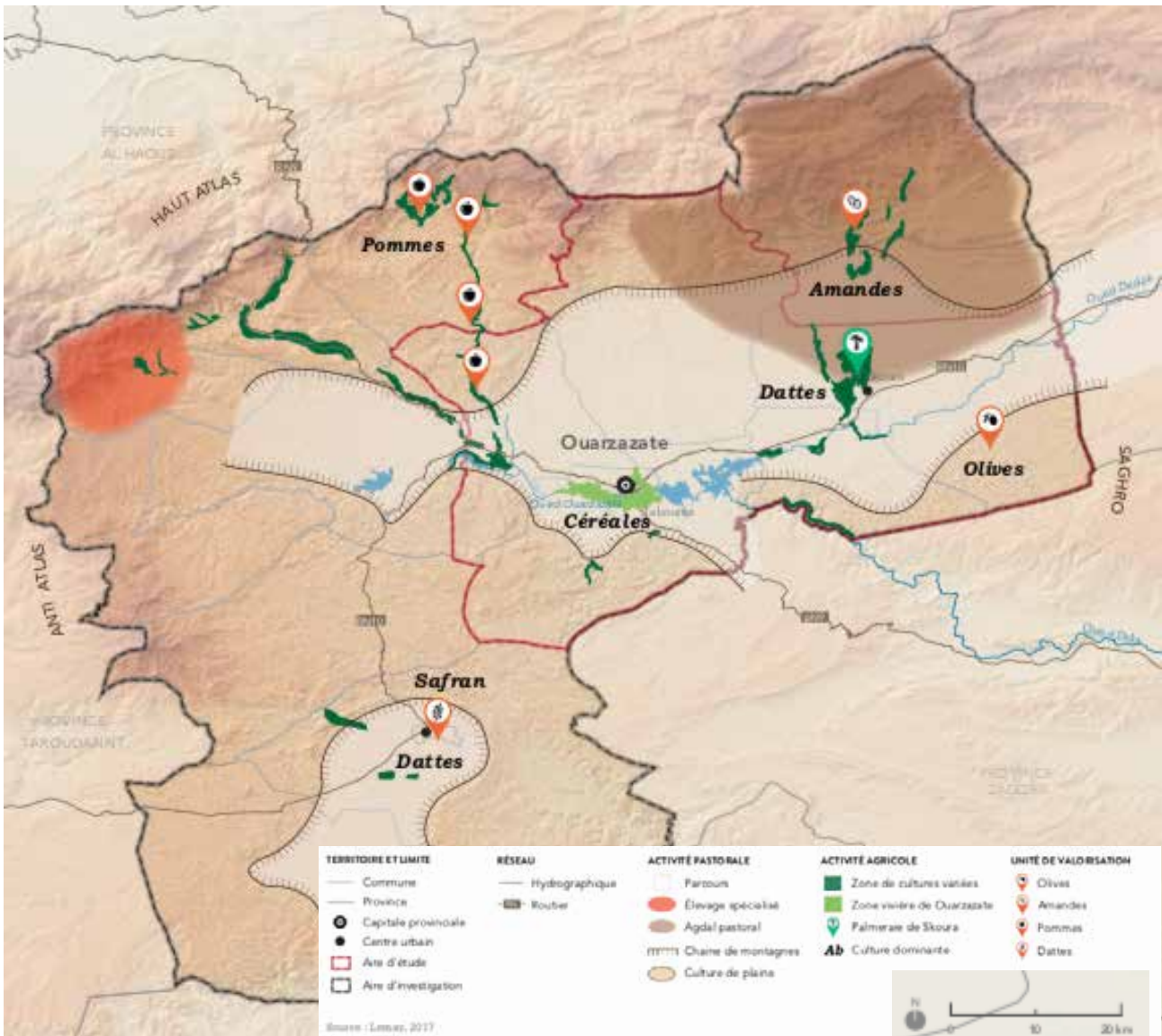


Pictures of the food zone of Ouarzazate - October 2018

Fruit trees are grown in areas supplied by irrigation water. Almond trees cover 4150 hectares, date palms 2,750 hectares and olive trees 4,520 hectares.

The region is also known for its production of specialty crops including saffron which is grown over a limited area (85 hectares).

Market gardening figures prominently in Ouarzazate. Market gardening crops are mainly grown for local consumption but some crops are sold outside the province (Marrakech, Taroudant and Agadir). Crop growing fields are being developed around the urban centres of Ouarzazate and Tarmigte to meet demand on the local market.



Location map of agricultural and pastoral activities in the region - SDAU mars 2018 - Agence lemay

Food producing areas and locations of seguias

Dans la commune de Ouarzazate, la zone vivrière est située sur les deux rives de l'oued Ouarzazate et s'étend sur 1 000 ha. Elle s'appuie sur un système d'irrigation débutant dans le ksar

de Tifoultoute, dont deux seguias acheminent l'eau jusqu'aux cultures, irriguées ensuite par une multitude de canaux secondaires. Il s'agit aussi en partie d'une zone d'épandage des eaux de crue, permettant une agriculture semi-intensive.





View of the food zone of Ouarzazate from the Kasbah of Tifoutout - September 2018

Seguias

Seguias are open-air irrigation and water distribution channels that carry water to urban and crops growing areas. Most seguias dug on open ground and provide irrigation for a majority of oases. Seguias are sometimes raised above ground to carry water by gravity to crop-growing areas via standard control valves



Localisation of seguias



Control valve of a Seguia food zone - October 2018



1.2. Livestock farming



Livestock farming accounts is a large contributor to the regional economy. A significant part of livestock farming is performed in forest areas where goats and sheep graze. Most of the region's pastureland has the legal status of forest land¹. Herd sizes (sheep 231,863 and goats 450,095) in the region vary considerably mainly owing to the uncertain climate².

1 Forests are government owned and fall within the public domain. They include forest estates, alfalfa forests, dunes, forest houses and their annexes, plantations and nurseries created in State forests, reforested State lands and lands acquired for reforestation. They are managed by the government authority in charge of forests; Public property subject to the forest regime may only be alienated with the prior authorization of the Minister in charge of forests; Resources come from the forest domain within the territorial limits of the municipality, The forest domain is governed by the following texts: The Dahir (Royal Decree issued by the King of Morocco) dated 10-10-1917 on the conservation and exploitation of forests, as supplemented and amended. The Dahir dated 30-09-1976 on the participation of communities in the development of the forest economy.
2 Ministry of Agriculture, Maritime Fisheries and Development of Rural areas, Water and Forests



<http://www.masen.ma> - Programme agrisud



2. Tourism and culture

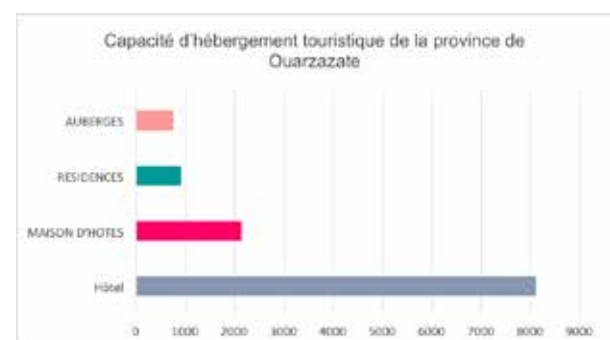
Ouarzazate and its outskirts have a diversity of landscapes and sites that offer major potential for the development of mountain, cultural and oasis tourism. The region's many natural combined with a variety of distinctive natural landscapes, including many oases, breathtaking panoramic views, exceptional sunshine and a rich culture and architecture all represent a potential for the tourist development of the Grand Ouarzazate.

2.1. Types of tourist accommodation available



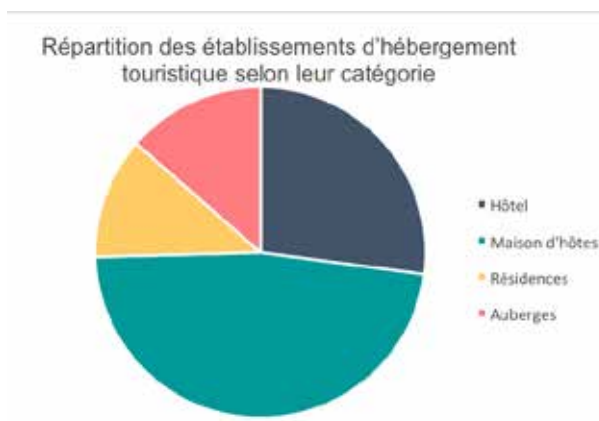
<http://www.hotel-berberpalace.com>

Local tourist accommodation is limited with an average capacity of 29.77 beds.



The availability of different categories of accommodation is a key indicator of tourist activity. The above pie chart shows that guest houses alone account for 47% of available accommodation offer, followed by inns with 14% and holiday apartments with 12%. These accommodation options represent 26% of hotel capacity in the province of Ourzazate. Hotels in all categories represent 47%. The province has a single 5-star hotel which accounts for 1% of total tourist capacity¹.

¹ Office of Strategy and Cooperation at the Department of Tourism, Morocco, 2017.SDAU 2018



2.2. Tourism

The volume of tourist arrivals increased from 266,507 in 2010 to 192,719 in 2016, i.e. a decrease of 38.28%. The number of overnight stays also declined, down 46.32% from 420,688 overnight stays in 2010 to 287,493 in 2016¹.

¹ Office of Strategy and Cooperation at the Department of Tourism, Morocco, 2017.SDAU2018



Short-stay tourism

Ouarzazate and its outskirts have a diversity of landscapes and sites that offer major potential for the development of mountain, cultural and oasis tourism. The region's many natural combined with a variety of distinctive natural landscapes, including many oases, breathtaking panoramic views, exceptional sunshine and a rich culture and architecture all represent a potential for the tourist development of the Grand Ouarzazate.¹

¹ Office of Strategy and Cooperation at the Department of Tourism, Morocco, 2017.SDAU2018



The impact of local tourism on the region's economy therefore remains relatively limited owing to the short time tourists spend in the region

The sharp decline in the number of tourist overnight stays is explained by the crisis affecting international tourism which is mainly due to the economic and financial situation in the main tourism-emitting markets. However, internal factors have made the situation worse: poor promotion of tourism, a lack of tourist activities and events and the relative remoteness of greater Ouarzazate from major airline routes.

« Arrivals of non residents recorded in listed tourist accommodation fell by 152.71% at the end of 2016 compared to 2010 and 13% compared to 2015. It should be noted that French tourists, who recorded a total of 100,634 arrivals in 2010 fell to 23,787 in 2016, a decrease of 323.06%. Arrivals from Germany, Spain, the United Kingdom, Italy and the Netherlands fell 15.06%, 14.07%, 70.02%, 196.52% and 83.31% respectively ».

2.3. Proposed plans to develop local tourism

As part of the Moroccan government's strategy to develop tourism, the Atlas Mountains and Valleys have been designed as a tourist region of which the Greater Ouarzazate is a part, as the flagship destination for ecotourism and sustainable development around three sites:

- The High Atlas: Mountains and its living culture.
- Ouarzazate: the gateway to desert.
- Valley and oasis: escape into the deser



events. After being initially planned under the name «Ouarzazate Lake City», this vast project was postponed several times; renamed and its budget significantly cut.

- As part of the «Azur 2020» programme n°1 aimed at rebalancing seaside resort offerings, new inland «carbon neutral» resort will be created in Ouarzazate. This programme plans to develop «the first African carbon neutral destination in Ouarzazate by drawing on the existing power grid so as to offset CO2 emissions released by local business and tourist activities».
- The aim of the Vision 2020 «Heritage» programme n°3 is to strengthen Moroccan cultural identity by leveraging its heritage, particularly its architectural heritage. This program was implemented in the region of Ouarzazate in 2011 with the launch of the Kasbah rehabilitation project. With a budget of 400 million Dirhams, this program aims to convert kasbahs into tourist accommodation units. No information is currently available on progress made in the implementation of these projects.
- Dn addition, in order to vitalize and strengthen the sport and leisure activities in the tourist industry, Vision 2020 also plans to create a cinema theme park called «the Ouarzazate Cinema Resort» under the «Events, Sports & Leisure» programme n°4. This amusement park will draw inspiration from the world's leading references in the leisure sector and will offer the general public a wide range of activities and

2.4. Tourist sites and the region's architectural heritage:

Citadels where local leaders lived (kasbahs), community villages (ksar, ksour) and fortified compounds (agadir, igoudar) are original features of the landscape in Morocco's pre-Saharan valleys. These three styles of architecture convey historical, aesthetic, cultural and socioeconomic messages. They meet the needs of the local communities and weave a network of relations between the natural environment and human groups¹

¹«Architectural land heritage in Morocco: proposals to create cultural amenities integrated into the Taourirt Tasbah in Ouarzazate », 1999.

Local villages

The ksar is fortified village whose location is dictated by the type of terrain, proximity to water supplies and arable land, abundance of building materials and by the need to be defended. It is an enclosure which bears the name of an ancient eponym, group or «tribe» and whose origins are sometimes steeped in mythology to give the location a historical consistency. It forms an integral whole whose elements are interdependent and reflect a consistent social organisation. This organization is manifested by the agglomeration of dwellings occupied by lineages. Each lineage (ikhs) is represented in the Ksar or tajmaàt assembly which manages all affairs related to daily life.

Ksours differ according to their historical, functional and commercial importance. Most ksour-zaouïas are not fortified because of their religious function. There are also ksours which are seats of power, such as the one at Taourirt, or which house the representative of the central power.



entry of Kasbah Taourirt - September 2018



Kasbah of Tifoultoute - September 2018



Ksar Taourirt - September 2018

Citadels

Kasbahs are a type of vernacular habitat found in the Atlas and pre-Saharan valleys. These are residences where the caid or regional chief and his family or local representative lived. They are in fact the expression of a social way of life based on agriculture where the caid exercised his authority to defend family interests.

Kasbahs are fortified fortresses, set on hills or rocks and dominating with their mass the dwellings, rivers and palm groves, are particularly rich in decoration, especially on the upper parts of their facades. The defensive vocation of these buildings is obvious. They have narrow slots and openings in the facades to defend dwellings and their occupants in the event of an attack or siege.

Village granaries

Village granaries are community warehouses that have been built to meet the socio-economic, climatic and even political needs of the local population. These buildings, rich and surprising in their architecture and organization, embody the soul and life of the community.

The village granaries were built by local inhabitants. Their architecture differs from one region to another: they can be circular, rectangular or square; they can be made of stone or adobe. They are fortified in a natural way on top of a hill or on a cliff overlooking a valley or access. Sometimes they are surrounded by impassable obstacles built or adjusted (walls, thorns, etc.).

Although these granaries have become abandoned, they were previously used by all members of the same village and social group and served to store agricultural products, money and valuables. This social contract functioned according to a customary law (azerf or louh) which was a charter written in Arabic on planks by a scholar in most cases a âlim (law teacher, theologian) from a medersa or a taleb (person who directs prayers) from a mosque.

These collective village granaries were sacred; their symbolic protection was entrusted to a saint or a mosque. Indeed, it was prohibited for anyone to commit murder, to argue or to utter words of bad omen and any act contrary to customary law in the attic was punished by society.

<http://aujourd'hui.ma/economie/greniers-collectifs-le-souss-massa-soigne-son-patrimoine-culturel>



Main tourist sites around Ouarzazate

The Aït Ben Haddou Ksar

The Aït Ben Haddou ksar, located 30 km from Ouarzazate, is one of the most important ksour in the south-eastern region of Morocco. Its earthen architectural spaces are of inestimable value. Its inscription on UNESCO's World Heritage List in 1987 is recognition by the international community of its outstanding values, as «an outstanding example of this architecture (...), illustrating a significant period in the history of Morocco (...), and having become vulnerable under the impact of irreversible changes». (Criteria IV and V).

This architectural complex comprises a collection of compact, enclosed and elevated buildings for both security (defensive) and socio-economic reasons related to community life. The Ksar had only two entrance doors to control the comings and goings.

Public buildings and spaces:

- A mosque built in the middle of the architectural complex. It has a well, two rooms (one for heating water, the other for ablutions), a prayer room and an annex for Koranic studies.
- A public square where festivals and traditional dance take place («Ahwach»).

- Threshing yards for cereal crops outside the town's ramparts.
- A fortification and probably a collective granary (Igherm n'iqddarn) at the top of the village.
- Alleyways where souvenir vendors have moved in.

Private residential areas mainly comprise earthen dwellings. In 1940, the number of families living in the ksar was estimated at 98, then it was estimated at 7 in the late 1990s, and recent censuses indicate that the number has risen to ten today. The Ksar is bordered by the wadi el Maleh, which is difficult to cross during floods. Between the wadi and the Ksar are agricultural plots, still cultivated today. Since the early 1990s, the ksar has undergone a series of restoration interventions carried out by CERKAS with the financial support of the Ministry of Culture, UNDP and UNESCO's technical assistance, with the aim of enhancing the heritage and environmental components of the site by integrating them into the sustainable development process of the entire region. The ksar owes much of its fame to the film industry. Since the 1960s, it has been the setting for many films, including Lawrence of Arabia, Sodom and Gomorrah, Jesus of Nazareth, the Jewel of the Nile, Gladiator, Kingdom of Heaven, etc

Situation du Ksar Aït Ben Hadou - Plan de gestion 2007 -2012





best preserved part of Ksar seen from the fortress october 2018

The Taourirte Kasbah and Ksar in Ouarzazate

Located at the edge of the town on Mohammed V Boulevard, this kasbah was one of the largest in the region and the stronghold of the Glaouis during the 1930s. It was then home to many members of the dynasty and their servants. This medieval-style town is considered one of the most admirable in Morocco.



Taourirt - Octobre 2018



Tifoultoute - septembre 2018



The Tifoultoute Kasbah

This Ksar is located at the edge of Ouarzazate. It was built in the middle of the 19th century. Like a sand castle on a hill, it was a former Glaoui residence. Used as a hotel in the 1960s to shoot «Lawrence of Arabia», it was building in the mid 19th century. It was a former residence of the Glaoui. Used as a hotel in the 1960s for the shooting of the film «Lawrence of Arabia», it has been converted into a hotel-restaurant.

The Telouet Kasbah

Former residence of El Glaoui, the Pasha of Marrakech, it is located in Telouat on the road linking Ouarzazate /Marrakech. Télouat is a must and a very popular destination for individual hikers or hiking groups. The facades and contours of the units composing the Kasbah give the appearance of abandoned and neglected places in ruins. Inside, only the main residence itself and its few annexes are sufficiently preserved to reveal the refinement and beauty of Moroccan art and the dexterity of a centuries-old craft industry.



www.guidedumaroc.fr

<http://fr.trekearth.com>



The Amridil Kasbah in Skoura

South of Ouarzazate and 42 km from the village of Skoura, the Amerdil kasbah, which dates back to the last century, houses a small Berber museum where agricultural instruments and everyday objects are displayed.



<https://www.placesofjuma.com>

Gorges:

- Gorges of Todgha (Tinghir).
- Gorges of Dadès (Boumalne).
- Gorges of à in M'gouna.



oasis de Fint - septembre 2018



Palm groves and oasis:

- Palm grove in the Tinghir valley.
- Skoura palm grove.
- Fint oasis.

The oases: mainly located in the Draa and Toudgha valleys, they cover an area of approximately 60,400 hectares. These strategic environments of unsuspected value are called upon to play an invaluable role in the economic and social sphere of the regional territory. The importance of oases as a millenary heritage has been reflected in their declaration by UNESCO as Biosphere Reserves: the Southern Moroccan Oasis Biosphere Reserve («RBO»).

Events, moussems, cultural events and local arts festivals

- Ahwach National Arts Festival: Popular arts (singing and dancing) for tribes from different villages - usually held in Ouarzazate in the spring;
- Azalay Festival: Music from Africa - usually held in autumn in Ouarzazate;
- Solar Festival: devoted to the sustainable development of desert areas - usually held in autumn in Ouarzazate;
- Imaghrane Almond and Walnut Festival - usually held in autumn in Toundoute;
- Amazigh National Film Festival
- Igrar Festival: Culture for Sustainable Development - usually held in spring;
- Ouarzazate Tourism and Cultural Week - usually held in November;
- Sidi Daoud Moussems – usually held in summer in Ouarzazate;
- Sidi Ahmed Bennaji Moysse – usually held in summer in Ghassate;
- Imerdal Daoud or Mouchi Moussems (Jewish Moussems) – usually held in the autumn in Tidli;
- Skoura /Sidi Othman, Moulay Tayeb, Moulay M’Hammed or Bel kacem Moussems – usually held in August in Skoura;
- Moussems Sidi Ali Ouamate – usually held in August in Aït Ben Haddou.

SDAU, Ouarzazate 2018



Photographies prises au cours des derniers festivals - sources : commune de Tarnigt

3. The film-making industry

3.1. Ouarzazate and the film industry

Whether they are historical or action films, the plans can be adapted to all times and circumstances. A real godsend for directors who do not have to fly long hours in search of locations that would faithfully implement the ideas of their scripts. Ouarzazate, five hours from America and a few hours from Europe, offers them exceptional natural resources. The world's largest film studios have recently begun to turn their backs on old destinations such as sites in Latin America in front of the «exorbitant fees» demanded for filming or those of Tunisia or Egypt, for which Morocco is becoming a competitor with whom we would now have to rely. The shooting of foreign films in Ouarzazate is certainly not new. Since the First World War, many great filmmakers, from Alfred Hitchcock to David Lean, have chosen to set up their cameras there.

List of films shot partly or entirely in Ouarzazate (the films are listed in chronological order, the years referring to their release date):

- Ali Baba et les quarante voleurs (1954)
- L'homme qui en savait trop (1956)
- Sodome et Gomorrhe (1962)
- Cent mille dollars au soleil (1964)
- Œdipe roi (1967)
- Patton (1970)
- L'Homme qui voulut être roi (1975)
- Banzaï (1983)
- Le Vol du sphinx (1984)
- Harem (1985)
- Le Diamant du Nil (1986)
- Tuer n'est pas jouer (1987)
- La Dernière Tentation du Christ (1988)
- Un thé au Sahara (1990)
- Kundun (1997)
- La Momie (1999)
- Gladiator (2000)
- Le Boulet (2002)
- Spy Game, jeu d'espions (2001)
- Astérix & Obélix : Mission Cléopâtre (2002)
- Ce dont rêvent les filles (2003)
- Alexandre (2004)
- Kingdom of Heaven (2005)
- Babel (2006)
- Indigènes (2006)
- La colline a des yeux (2006)
- La colline a des yeux 2 (2007)
- Mensonges d'État (2008)
- Prince of Persia : Les Sables du temps (2010)
- Les Chemins de la liberté (2010)



3.2. Infrastructures

STUDIO ATLAS

Atlas Corporation Studios are Morocco's first film studios. They occupy a 30 hectare sites. The studios contain a 3 star hotel with 65 rooms, model-making, joinery and costume workshops, a lighting studio, a covered pavillion that contains decors and a open space to produce external decors.

STUDIO CLA

The CLA Studios were established in 2004. They cover 160 hectares and include: two films sets with a surface area of 2,357 sq.m, three production studios covering 2,452 sq. m., a restaurant equipped to serve 200 meals/hour, a costumes rooms, an administrative office and an architecture and decoration workshop

The Ouarzazate Museum of Cinema

Location: The Taourirt district opposite the Taourirt Kasbah

Aims:

- Protect local cultural and cinematographic heritage.
- Spread and promote cinematographic and audiovisual culture through communication media.
- Promote tourism, art and culture in the town Ouarzazate.
- Organise cultural and interactive activities (workshops, conferences; symposia, seminars, congresses...)
- Promote cultural exchanges and forge cooperation links with other national and international associations and organizations which have same purpose.

Studios Atlas - octobre 2018



Musée du cinéma - septembre 2018



3.3. Public policy-making and the cinema

The film industry has become one of the drivers of the region's economy and directly or indirectly impacts different sectors:

Direct and indirect job creation;

Impact on tourist accommodation and catering units;

Dynamics for Transport companies and other equipment manufacturers;

Promotion of investments in the area in general, whether in sectors related to this activity or otherwise, through the effect of the image conveyed by this sensitive sector.

3.3. The OFC (Ouarzazate Film Commission):

The Ouarzazate Film Commission was created on the initiative of the Draa Tafilalet Regional Council, the Moroccan Film Centre and The province of Ourzazate on 28 January 2008. Its mission is to promote the region from a cinematographic point of view and to facilitate the hosting of film shoots in Ouarzazate. Its role is to offer film professionals and film crews in the region the best working conditions and the best production environment. To this end, the Ouarzazate Film Commission aims to promote the region's potential (technicians, artists, extras, service providers) and by giving it the means to strengthen its presence on the international market. The Ouarzazate Film Commission is thus putting in place all the necessary tools to strengthen the attractiveness of the Ouarzazate region as a filming site and as a privileged space for film and audiovisual production that meets international quality standards on a sustainable basis.

Members of the OFC

Moroccan Film Centre; The province of Ourzazate; Municipality of Ouarzazate

The Provincial Council of Ouarzazate, the Provincial Council of Tourism of Ouarzazate, the Regional Centre for Investment of the Ministry of Communication, Société Nationale de la Radio and Télévision, National Moroccan Office for Tourisme, the University of Ibnou Zohr in Agadir; the Office for Vocational Training and Job Creation, the Nationale Initiative for Human Development,

Société Dunes Films, Atlas Corporation Studios and Studios CLA.

The development of the film industry is a priority in the Region's development strategy. The province of Ourzazate has a series of essential assets that guarantee great competitiveness and high quality filming at the international level. To support this development, film training institutions have been set up such as the Institute Specialised in Cinema professions and the Multi-Disciplinary Faculty of Ouarzazate.

- To make Ouarzazate competitive, many facilities are offered by the Moroccan Film Centre and national and local authorities to the film industry. In addition to these advantages, there is a qualified and inexpensive workforce, competent technicians and a multi-ethnic population ready to make up for it. The enthusiasm that Ouarzazate generates in the film world is boosted by its well-adapted infrastructures such as the international airport, the developed hotel sector and professional film studios (Studio Atlas Corporation and Studio CLA). By choosing Ouarzazate as a film location, foreign productions can save between 30 and 50% of their production costs compared with Europe or the USA.

Aims of the Ouarzazate Film Commission

The «Ouarzazate Film Commission» has contributed to several activities in the region and beyond, including :

- Regular attendance at several international festival and trade fairs to promote the region of Ouarzazate, in particular: the Cannes film festival, the Los Angeles Location Trade Show and the international Film Festival in Dubai;
- Establishment of an investment fund to support projects consolidating the cinematographic vocation in Ouarzazate;
- Creation of two screening rooms and a film museum;
- Advocacy with other organizations, with political decision-makers, for the opening up of the region;
- Supervision of a fund to support film activities in Ouarzazate by the region of Draa Tafilalet¹.

¹ Ouarzazate, an international film-making destination of excellence: key success factors to increase competitiveness (Illustration supplied by the Ouarzazate Film Commission) – Produced by M. Said ANDAM

Why choose to move to Ouarzazate ?

- Diversity of sites and attractions: located within a radius of tens of kilometres, they border on imposing landscapes rich in colour and light (plains, mountains and plateaus, Kasbahs, dunes, rivers and lakes);
- Geographical proximity ;
- Mild and sunny climate;
- Ethnic diversity ;
- Experienced labour, artists, craftsmen, and technicians;
- Low production costs (30 to 40% compared to the United States and Europe); Symbolic fee for filming in historical sites and monuments;
- Simplification of the customs clearance procedure for imports and exports, filming equipment
- Exemption from VAT on all goods and services acquired in Morocco
- Administrative facilities and assistance from provincial and local authorities with the assistance, under excellent conditions, of government authorities and bodies, namely, the Royal Armed Forces, the Royal Air Force, the Royal Gendarmerie and the National Security
- Availability of logistics
- Major infrastructures

3.4. Projects with high potential

«One Stop Shop»

The «One Stop Shop» project is a strategic project intended to establish Ouarzazate as Morocco's main film production hub. This project, financed at an estimated cost of over 4 billion DH, should also allow this hub to be developed as a tourist attraction. The location of this film centre should

occupy an area of 243 hectares and be built near the existing studios, namely Atlas and CLA studios. The project involves the creation of a film production centre to provide a skilled workforce and all the services required for production (equipment, film studio, set design/manufacturing workshop, editing room, special effects, etc.) as well as a hotel infrastructure to accommodate film crews. The project is expected to be carried out in three phases: -the consolidation of major film sets and related services in order to face international

competition (horizon 2025), the creation of a synergy between the film industry and the tourism industry, including reception facilities for visiting facilities (horizon 2035) and the construction of a theme amusement park on the film industry in Ouarzazate (horizon 2040). The mandate for the implementation of the business plan was entrusted to Ucotra Consulting in 2015. The project had already been approved by the Provincial Council in May 2010. An international call for bids is expected to be issued shortly.

Ouarzazate Cinema Resort

The «Ouarzazate Cinema Resort» project has replaced the «Ouarzazate Lake City» project initially planned in the Azur 2010 plan. The ambitious original hotel and leisure complex project was criticized for its potential water consumption. The many green spaces and golf course developed within this complex would have required a quantity of water equivalent to the total current consumption of Ouarzazate. A quantity of water that could not have supplied the lake in the medium term. The new much smaller-scale project is expected to provide 1,800 beds rather than the 12000 initially planned. The project, which is part of the Animation, Sports & Leisure programme of the Ministry of Tourism's Azur 2020 plan, offers tourist facilities based on the theme of cinema. These entertainment activities would draw their inspiration from some of the world's leading references in the sector. The project was to be financed by Wessal Capital, a sovereign investment fund created in 2011 and comprising the state funds Aabar (United Arab Emirates), Al Ajial (Kuwait), Qatar Holding (Qatar), Saudi Public Investment Fund (Saudi Arabia) and the Moroccan Monetary Fund for Tourism Development.

4. Solar energy in Ouarzazate

The Moroccan Solar Energy Programme, an integrated development project that aims to build 3,000 MW of solar power generation capacity in five sites by 2020, has made Ouarzazate the pilot site for this plan. It will thus contribute to the national objective of an energy mix by 2030, 52% of which is of renewable origin. The Moroccan renewable energy agency, MASEN, has piloted in Ouarzazate one of the largest energy complexes in the world (making it one of the largest solar power plants in the world, with Solar Star in California) with a total capacity of 580MW. The Noor Ouarzazate project, covering 3,000 hectares, consists of four solar power plants using complementary and innovative technologies and a research and development platform. Together, they will produce 580 MW.

- Noor1: a thermal solar plant with cylindrical parabolic panels -160 MW – entered production in 2016
- Noor2: a thermal solar plant with cylindrical parabolic panels -200 MW – storage capacity 8h
- Noor3: a thermal solar plant with a Tower – 150 MW – Entered production in October 2018
- Noor4: Photovoltaic energy.

These projects have also enabled MASEN and Acwa Power (a Saudi company appointed as project manager) to be involved in local development: approximately 62 million dirhams have been invested in health, education, farming, entrepreneurship, culture and and sport.

The presence of several thousand Chinese, Saudi and Spanish expatriates in the country has had both a negative impact (increase in rents) and a positive impact (spread of shops and restaurants).





google pictures



As Project Noor 3 was recently commissioned, Acwa Power, Sener ¹ and Sepco ² will repatriate their employees, which will probably lead to a decrease in commercial activities and in the tourism and restaurant sectors.

¹ SENER est un groupe d'ingénierie et de technologie espagnol fondé en 1956, qui est spécialisé dans les solutions technologiques dans le domaine de l'ingénierie et la construction

² SEPCO Electric Power Construction Corporation est une société chinoise de construction et d'ingénierie qui conçoit et construit des infrastructures de production et de transport d'énergie

5. Higher education and vocational training

Two types of training are present: the first, of an academic nature, is mainly provided by the multidisciplinary faculty of Ouarzazate. Its particularity is to support regional development and integration by training in perspective of the needs of the local market. The second type of training is vocational training.

5.1. Higher education

The municipality of Ouarzazate includes four high schools, including a technical high school, while the municipality of Tarmigte hosts only one high school. There is therefore an imbalance between the two municipalities.

During the 2006-2007 academic year, the Ouarzazate Multi-disciplinary Faculty with 60 students in their first year was opened. Enrolment is increasing from year to year and the university now has more than a thousand students.

Since 2010, the Sous - Massa - Drâa region has led a process of development and regional integration in line with the specificities and potential of the region, thus stimulating the gradual opening of new sectors:

- Applied foreign languages
- Use of renewable energy
- Law and sustainable local development
- Computer and logistic systems
- Cinema, film production techniques and management.

5.2. Vocational training

The vocational training sector in Morocco was first developed in the late 1980s, following the first employment crisis. The first reform took the form of a UNDP project in the 1990s to match training with employment in the agricultural sector, then in industry and the handicrafts sector, with the structuring of real training content for professionals and the introduction of sandwich courses. The second reform of the training sector was implemented at national level in the 2000s.

As a result of these reforms, the province of Ouarzazate had 23 vocational training institutes in 2012.

Département	Établissements	Spécialité	Capacité
OFPPT (L'Office de la formation professionnelle et de la promotion du travail)	ITA	Technicien Qualification	170 210
Ministère du tourisme	ITHT	Technicien	230
Ministère de la jeunesse et des sports	F.F Massira	Spécialisation	60
	F.F Ait kdif		30
	F.F Tarligte		60
Ministère d'artisanat	CFP (Ouarzazate et Klaat)	Spécialisation	20 25
HCAR	CFP	Qualification	24
Total	08		829
Rapport diagnostic analyse sectorielle de la province de ouarzazate-EG2S Group, Rabat			

Vocational training which has historically been supported by donors, continued to be financed by the French Development Agency, the GIZ and the European Union as part of the project to set up a training institute for renewable energy and energy efficiency professions (IFMERE).

This project, promoted by the Ministry of National Education, Vocational Training, Higher Education and Scientific Research, has made it possible to initiate the establishment of three training institutes in Oujda, Ouarzazate and Tangier.

It will thus allow technicians to specialize in the following fields:

- Energy efficiency in buildings;
- Photovoltaic systems ;
- Wind power systems ;
- Solar thermal systems ;
- Biogas.

The work of the Ouarzazate Institute began in 2017, and the training centre should open in September 2019.

These bodies will operate on a management model delegated by the State to professionals in the sector constituted as a public limited company (IFMERE SA). The partners concerned are the National Federation of Electricity, Electronics and Renewable Energies (FENELEC), the Federation of Metallurgical, Mechanical and Electromechanical Industries (FIMME), the Moroccan Agency for Sustainable Energy (MASEN), the National Office of Electricity and Drinking Water (ONEE) and the Moroccan Agency for Energy Efficiency (AMEE).

6. The mining sector

Mining has been one of the most important economic activities carried out by the Moroccan population in recent decades. Currently, the mining sector occupies a prominent place in Morocco's economy. It represents nearly 21% of export revenues. Its share in the gross domestic product (GDP) is around 3% and contributes to 1/3 of national exports. Mining contributes to the labour market through the creation of about 35,000 direct jobs, and more than 1 million people live indirectly from this sector.

Ouarzazate is one of the richest mining provinces in the kingdom. It contains many mining resources. The extraction, processing and sale of mineral ores and other substances have played an important role in the region's local history and have enabled the development of infrastructures and flow of foreign exchange.

- Manganese is mainly found in the Imini mine, 40km north of Ouarzazate. There are other smaller deposits among which the closest to Ouarzazate are Taguenzelte (13km southwest of Ouarzazate), Tiouine (48km west of Ouarzazate), and Tachgagalte (18km southeast of Ouarzazate).
- Cobalt, a strategic metal, is found in the Bouazzer mine operated by Tifnout Tiranimine's company, 120 km south of Ouarzazate.
- Copper and gold, mainly in Titouit, 45 km from Ouarzazate near the town of Tinghir, are two minerals that have been mined since the 1970s.

7. The processing industry

The industrial sector is of secondary importance in the province's economic activity. It is made up of a very young industrial fabric, made up of small and medium-sized companies that are not very diversified and produce mainly for the surrounding market.

The province has a set of an industrial zone in Ouarzazate, economic activity zones in Tarmigte and Taznakht as well as professional premises built by the Chamber of Commerce, Industry and Services of Ouarzazate for the encouragement and assistance of projects for young developers. Created in 1983 as part of the national industrial zones programme, the Ouarzazate industrial estate lies to the northwest of the town. Owned by the municipality of Ouarzazate, it contains a large number of units, mainly small and medium-sized craft and industrial enterprises.

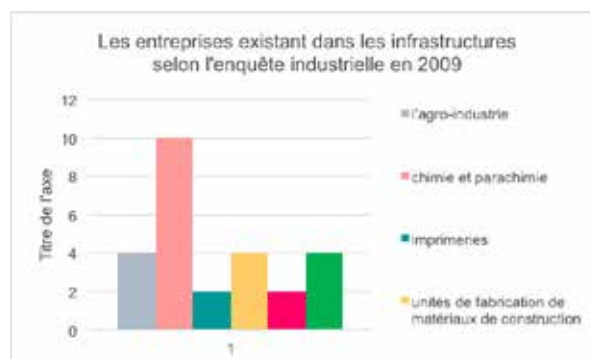
The industrial zone covering a total area of 77ha has been divided into two sections. The first, with an area of 39 hectares, is reserved for craft activities, the second, with an area of 38 hectares, has been set aside for large-scale projects. Given the incomplete state of certain facilities, the rehabilitation of the zone required a partnership agreement signed in 2011 and for which 17.7 million dirhams was allocated, between the Ministry of Industry, Trade and New Technologies, the Ministry of Economy and Finance, the province of Ouarzazate, the Souss-Massa-Drâa region,

Localisation de la zone industrielle de Ouarzazate -
Google Earth



the Municipality of Ouarzazate and the National Drinking Water Office.

This agreement provides for the completion of public lighting, sanitation and road works and the construction of green spaces.



According to a 2009 study of the industrial sector, these infrastructures housed 18 companies, including 4 in agro-industry, 10 chemical and para-chemical units (2 rose water distillation units, 2 printing works, 4 construction materials manufacturing units and 2 carpentry shops) and 4 companies in the mechanical and metallurgical industry.

These figures are insignificant compared to the regional and national level except for the number of companies and the number of permanent jobs for which they represent respectively 3.32% and 0.23% of the companies in the region and the national level and 1.4% and 4 per thousand of permanent jobs in the region and the whole

national industry.

The remoteness and isolation of the province and the opportunities offered by the construction and public works and tourism sectors mean that, for the time being, there is not much attraction for industrial investment. The development of the activity remains dependent on the exploitation of the province's natural and economic potential, the availability of equipped land, the rehabilitation of existing reception infrastructures and the upgrading of existing SMES.

8. Handicrafts

Handicrafts play a significant role in the territory's economy. It employs a large workforce (about 25,000 artisans throughout the province of Ourzazate), and generates significant income. It is also one of the assets of the local tourism industry.

Handicrafts represent one of the fundamental characteristics of the daily life of the province which has kept its authenticity reflected in a wide variety of products, based on wood, metal, wool, clay, stone, copper and bone.

Art and craft activities are ranked under two main categories:

- Handicrafts that entail creativity and innovation: carpets, jewellery, pottery.
- Handiwork services that meet modern needs for building, repairs and maintenance.

Joinery is an important sector of activity in Ouarzazate and is one of the town's oldest and best equipped trades. It relies on manual skills and the use of modern tools and produces urban fixtures and furniture in private homes.

The town of Ouarzazate contains a cooperative which has 46 members.

The handicrafts sector is managed by:

- The Provisional Department of Handicrafts (Provincial Delegation for Handicrafts).
- The Chamber of Handicrafts.
- A handicrafts centre in Ouarzazate.
- A vocational training centre in Ouarzazate.

According to statistics published by the 2010 Plan High Commission, there are over 19 registered handicraft cooperatives in Ouarzazate.



5 How the city functions

1. Architecture

1.1. The vernacular earthen architecture is of great heritage value

At the beginning of the 20th century, the architecture of Ouarzazate remained authentic and specific to its local areas, thereby ensuring its perfect integration into the natural and human context.

The various forms of earthen architecture are located in semi-arid, rugged, rocky and sandy regions. Landlocked between the High-Atlas and Anti-Atlas mountain ranges and the vast desert, the pre-Saharan valleys are the most characteristic in terms of the exceptional density of earthen buildings, notably in the Dades and Draa valleys. The high concentration of earthen buildings in these parts of Morocco may be explained by the following factors.

- The geological, geographical and natural environment: the climate is one of the factors that contribute to this type of locality;

- The historical heritage: in these regions, there is a long tradition of earthen construction work;

- Social and economic factors: this type of habitat is in harmony with the inhabitants' way of life. The choice of earth as construction material is due to its low cost and adaptability to the environment, family organisation, etc. l'organisation

1.2. Materials and techniques: rammed earth and adobe

Two techniques are widely used in the pre-Saharan valleys of Morocco.

Rammed earth technique:

In accordance with the formwork principle, this consists of ramming the earth between two mobile panels of wood using a wooden pestle. These panels are moved as the work progresses. Thanks to this system, at a normal speed, the walls can reach 10 metres high risk-free.



Rammed earth technique – M.Barjali

Rammed earth technique – Ksar Ait Ben Haddou – September 2018



Adobe or mud-brick

The second technique is the adobe or mud-brick technique. These bricks are made in wooden moulds, dried in the sun for several days and used to build the interior pillars of homes, the upper-parts of buildings and provide the decoration. The dimensions of the mud-bricks vary between 20x11x6 cm and 30x15x15 cm. They are the material of choice for decorating the ksour and kasbahs. The architectural decoration is achieved by combining the mud-bricks horizontally and vertically on the main façades and on the sides, i.e. in the full depth of the walls. The modular nature of the bricks in terms of length and width gives the decorative features their perfect unity.



adobe technic- M. Barjali

Decorative features of the Lamkatra Ksar – M.Barjali



On earthen platforms, small bricks are laid back from the walls to form geometrical compositions. The other features that decorate the façades are either dug or carved¹.

¹ On earthen platforms, small bricks are laid back from the walls to form geometrical compositions. The other features that decorate the façades are either dug or carved

Benefits of earthen architecture

- Excellent integration into the landscape
- No transport or purchasing costs due to the abundance and proximity of the materials and the absence of industrial processing
- Ecologically clean and non-polluting
- Earth makes for greater coherence between buildings and better thermal insulation, which keeps buildings cool in the summer and warm in the winter
- The use of earth protects agricultural land and consumes much less water than other construction materials¹

¹ Houben, H. :»Pour une architecture nouvelle à base de terre», in Ecodécision, n°36, 3e trimestre, 1997, p.28.

Today, the appearance of new construction materials is changing the look of the landscape and towns, notably in Ouarzazate and Tarmigt.

The oldest neighbourhoods of Ouarzazate and Tarmigt were entirely made of earth. However, for the last few decades, the inhabitants have opted for cladding or fortifications made of concrete or breeze-blocks to stabilise their homes and protect them from heavy rainfall at least cost. Moreover, as earth is a simple material associated with poverty, Moroccans no longer wish to live in earthen homes, particularly as in the towns of southern Morocco people are very sensitive to the way others perceive them and to social status, two basic criteria in this region.

The neighbourhoods that have the largest number of rammed earth homes in Ouarzazate are Taourirt (80%), Hay Essalam (70%), Tassoumaâte (70%), Hay Fadragoum (60%), Tamassinte (40%), Tighremt niqlane (40%) and Aït Kdif (40%). In Tarmigt, the neighbourhoods with the most typical earthen architecture are Tabounte (60%), Zaouite Sidi Othman (60%), Tajda (50%), Inzbiatine (50%) and Tiguemmi L'jdid (30%). In these neighbourhoods, which sometimes feature informal housing, the techniques and materials used are sometimes disparate.

Al Qods neighbourhood in Ouarzazate – October 2018



1.3. Typologies d'habitat

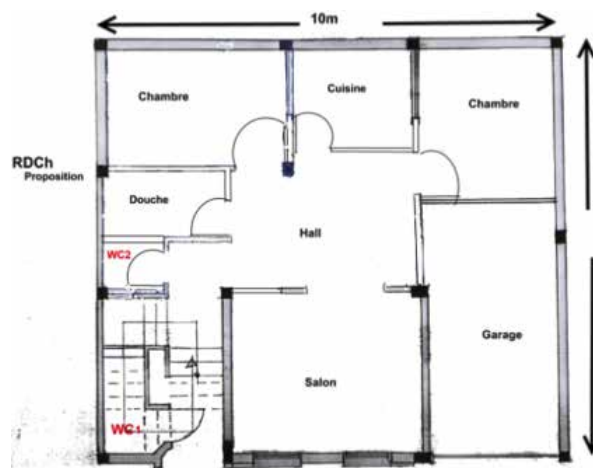
In the most central districts, along the main thoroughfares (Al Magrehb el Arabi Avenue, Mohamed V avenue) the architecture and the urban fabric remain quite coherent. The height of the buildings does not exceed four storeys and is compatible with the town's height limitations.



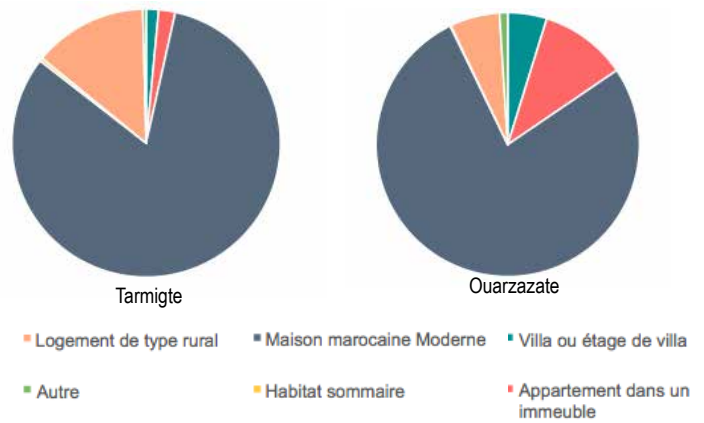
Typical building in a neighborhood under construction near Al Whada - October 2018

Since the 2000s, the housing typologies have evolved and appear to be more and more “typically Moroccan”, i.e. single storey dwellings. The central hall gives access to all the rooms in a house.

Examples of the standard type of Moroccan home
Source : www.plan-de-maison.eu/plan-maison-marocaine.html



The rural municipality of Tarmigt has probably undergone the most radical change in housing typology. The share of “Moroccan style homes” rose from 52.2% in 1994 to 82.1% in 2014. This change was due mainly to population growth in its central urban district, Tabounte, where over 77.8% of households live.¹

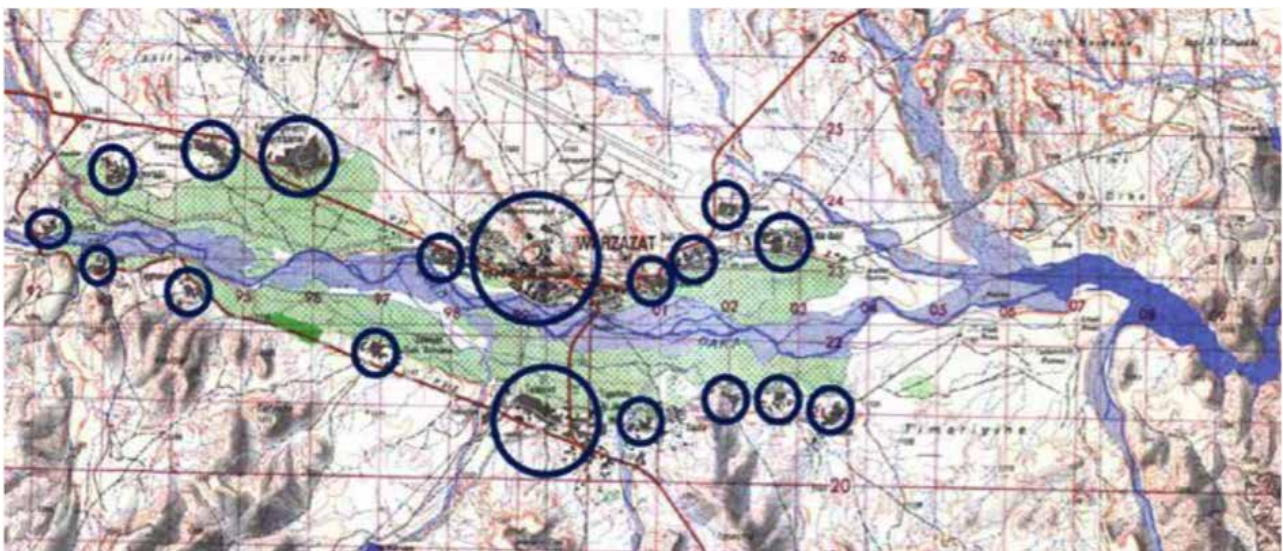


¹ : haut-commissariat au plan-RGPH 2014

2. Urban development and specificities: Ouarzazate and Tarmigt¹

¹ essentially from SDAU Lemay 2018

Since its elevation in 1956 to the status of provincial capital, Ouarzazate has seen the development of housing around the ancient urban fabric of Taourirt-Sidi Daoud-Tasoumaat- Tighremt Niklane.



Location of the former Ksour where the urban developments of Ouarzazate and Tarmigt originated – 1/50 000 map of Ouarzazate- 1977

The towns of Ouarzazate and Targmit are mainly made up of residential, retail and industrial neighbourhoods connected by major communication links to the shopping centres, large infrastructures, services, public spaces and town centres. In spite of a degree of integration of urban functions along the major communication links, segregation of functions is quite marked.

The residential quarters feature the following:

- a minimum amount of community facilities;

- buildings with between two and four storeys;

- very uncomplicated architectural content. In the main urban centres there are numerous housing estates on a larger scale resulting from affordable housing schemes, i.e. rehousing or subsidised housing schemes. They usually form a regular grid of streets and provide local inhabitants with small green spaces. Given their lack of functional diversity and employment areas, these estates are often dormitory suburbs. dortoirs.

Features of Ouarzazate's urban fabric:

- A complex urban fabric fragmented by sometimes sinuous major roads
- A linear road grid system
- High building density
- Large pieces of undeveloped land in the heart of the city
- The boundary of the current urban area is located between the Ouarzazate wadi (river) and the city's airport.

The city of Ouarzazate is surrounded by two areas whose morphology partly limits its radical expansion: the airport to the North and the banks of the Ouarzazate river to the south, which constrain its urban expansion along an east-west linear axis. Ouarzazate's food production areas on both banks of the wadi have driven the city's urban development towards the south of the right bank of the wadi, notably due to the development of Tabounte, the centre of the municipality of Targmit. Today, the two areas form a single urban agglomeration separated by the wadi and its food production area. Tabounte's suburban hub currently fulfils the same functions as Ouarzazate's urban centre and contributes to the day-to-day functioning of the city of Ouarzazate.

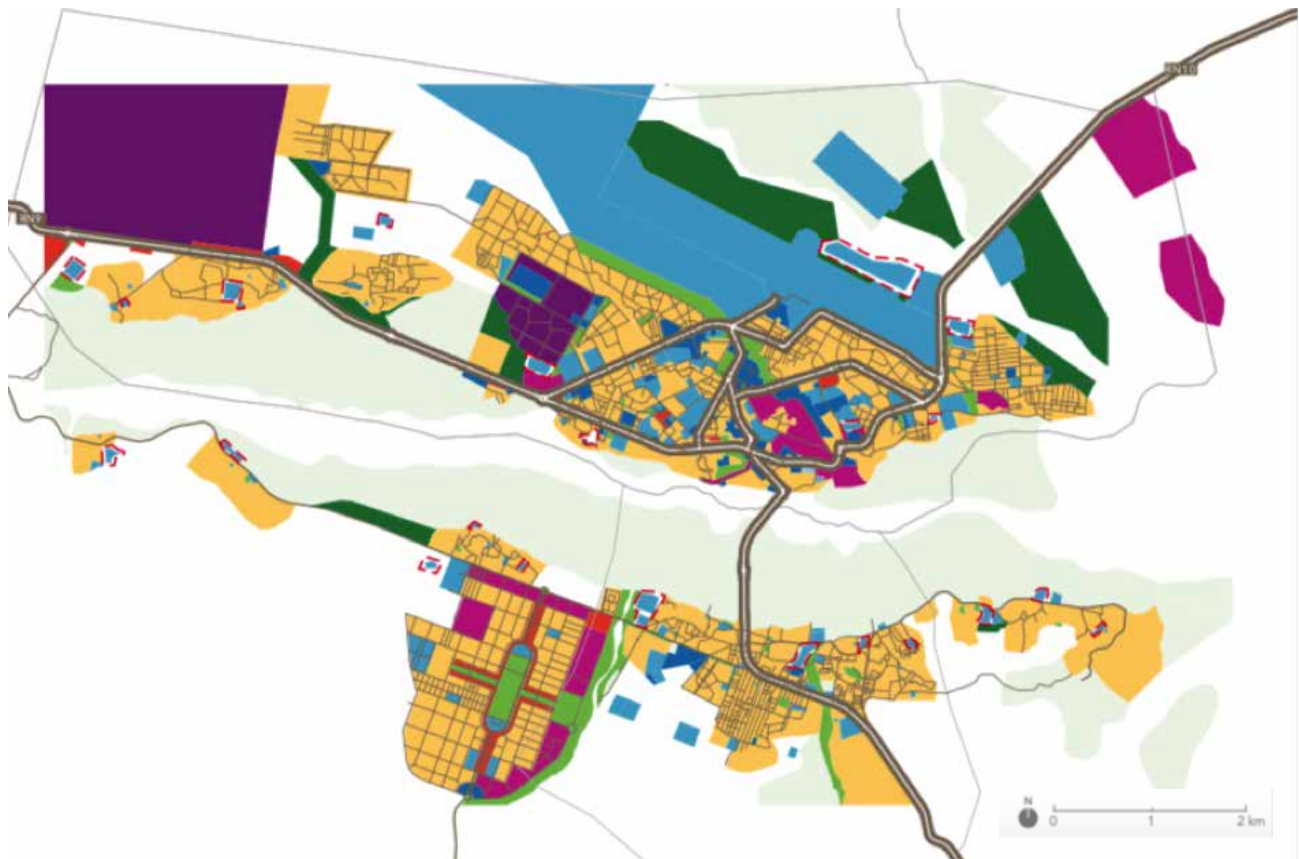


Google earth

Thus, the urbanisation of the Ouarzazate region has been driven by a logic based on two major parallel developments:

- One to the north of the wadi: this is the historic axis that marks the extension of the old part of the city established at the time of colonisation. This dynamic led to the spatial extension of the historic core city along the Ouarzazate wadi (towards the kasbah of Tifoultoute and as far as that of Taourirte);

- The other axis to the south comprises the centre of Tabounte and its new housing estate. This axis is the “planned outskirts” of Ouarzazate, featuring a set of ksour and douars whose urban fabric is fragmented. However, this development has been limited to flat areas close to the wadi. In Tabounte, urban sprawl has been limited by the presence on the edge of the city of high land. d'importants reliefs en bordure de la ville.



PLAN D'OCCUPATION DU SOL

AIRE URBAINE

- Prédominance résidentielle
- Prédominance commerciale

AIRE ÉCONOMIQUE

- Industrielle
- Commerciale (touristique)

AIRE RURALE

- Agropastorale
- Milieu oasien

AIRE PUBLIQUE

- Parc et espace vert
- Conservation
- Infrastructure publiques
- Service administratif

SERVITUDE

- Non aedificandi
- Non altius tollendi
- Zone tampon
- Site patrimonial

LIMITE ADMINISTRATIVE

- Commune
- Province

RÉSEAU

- Hydrographique
- Routier national
- Routier local

Land use plan in Ouarzazate – Lemay March 2018

The urban morphology of Ouarzazate features an assembly of road grids which cut across each other in very different directions and routes. The central organic route gradually joins up with the more straight-lined routes on the periphery. The grid is interspersed with major thoroughfares that cross the entire city, follow the banks of the wadi and linking Ouarzazate with Targmit.

Ouarzazate's urban fabric is partially incomplete and does not provide very efficient connectivity, notably for slow means of transport (pedestrians, cyclists). The existing connectivity is partly provided by informal lanes or alleyways that cross the blocks of urban quarters. Some very large urban blocks interspersed with pieces of vacant land occupy much of the city centre, thereby reducing the permeability of the urban fabric and limiting pedestrian access to a number of neighbourhoods.

To the north, the airport is the main man-made obstacle to the development of the road system.

The denser and more compact urban fabric of Tarmigt featuring a large number of connected streets ensures much more effective permeability, notably for slow means of transport. In Targmit, two road systems stand out: one is to the north of road n°9, highlighting its old age; and the other follows a straight line to the south of the road, testifying to its more recent development. However, the more recent road system is crossed by the Anti-Atlas mountain range. The Ouarzazate wadi is also a major natural barrier that cuts across the Ouarzazate and Tabounte road systems, thereby greatly limiting their accessibility, which is restricted to a single axis.

Two large housing estates exist in the municipalities of Ouarzazate and Tarmigt, which are located on the periphery of the city-centres: the Tarmigt urban centre and the Atlas housing

estate. The homes have not been built yet, but the road system and several public facilities (lighting, sewage, paving, pavements, etc.) have already been developed in these future residential neighbourhoods.

The Sidi Othmane urban centre in Tarmigt – September 2018



The Atlas housing estate in Ouarzazate – October 2018



The Sidi Othmane housing estate in Tarmigt

It is very different from the urban landscape of Ouarzazate-Targmit. Named after a former ksar, the new Sidi Othmane urban centre has been created to rebalance the two banks of the river in terms of population, social and economic status and quality of infrastructures. The plan is to structure the hub around two major highways that cross the estate, along with a green way around the site, a tourist trail along the main avenue and links with the banks of the Ouarzazate wadi to the north and the Fint oasis to the south. The internal linear and orthogonal road grid features a vast oval public space in its centre reserved for retail and handicraft activities. This urban hub, whose streets and infrastructures have already been developed, will comprise approximately 10,000 building lots.

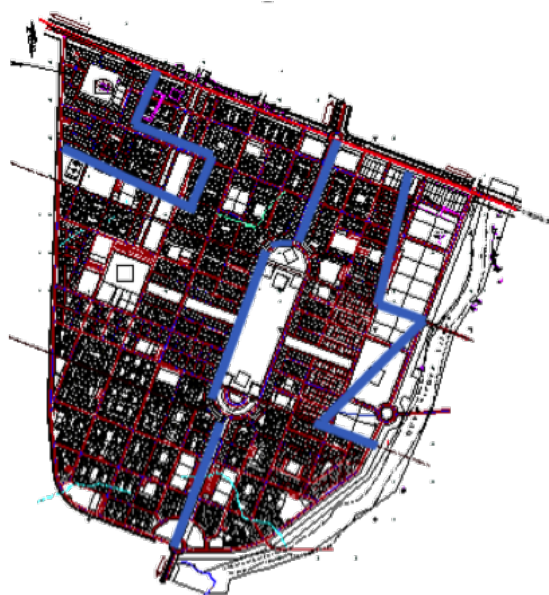
Sidi Othmane urban centre project in Tarmigt – Google earth



Site picture october 2018



Site Plan for the Sidi Othmane Project



3. Urban Expansion and Need for Housing

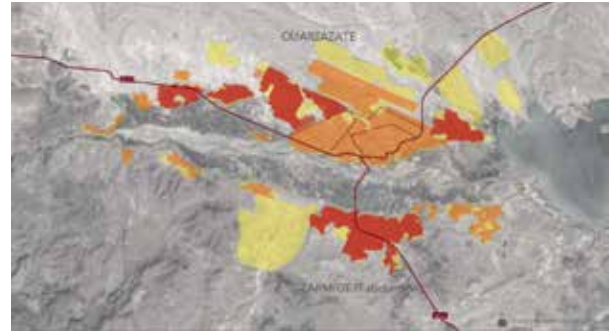
The municipality of Tarmight already has 510ha of developable land in Sidi Othmane. However, to accommodate the expected urban growth rate over the 2014-2024 period, it would have to urbanise 400 extra hectares. Indeed, using current density parameters, over 1,000 additional hectares of developable land will be necessary every 10 years to meet the projected population growth.

The estimated 3,000 hectares of extra land needed by Ouarzazate and Tarmigt represent 143% of the existing urban area. Thus, by 2044, the amount of urbanised land in these towns should more than double.

By 2044, it is estimated that the demand for new homes in Ouarzazate and Tarmight will reach 1,000 housing units per year.¹

¹ SDAU AGence Lemay - 2018

The below map shows that most high-densification urban areas are located in districts where the increase in informal housing is becoming increasingly problematic.



ADMINISTRATIVE BORDER

— Municipality

ROAD NETWORK

— RN Trunk road

— Secondary road

URBAN AREAS

Urban area existing in 2004

Urban sprawl between 2004 and 2014

Significant densification between 2004 and 2014

Informal housing in Ait Kdif close to the flood zone - October 2018



Informal housing in an eastern neighborhood of Tarmight - september 2018



4. Transport and Mobility

4.1. Airport Infrastructure

Since 1971, the territory has had an international airport, located two kilometres from the city-centre. According to the Department for Infrastructures, Transport and Logistics, in 2013 this airport's volume of air traffic represented only 0.33% of Morocco's total air traffic.

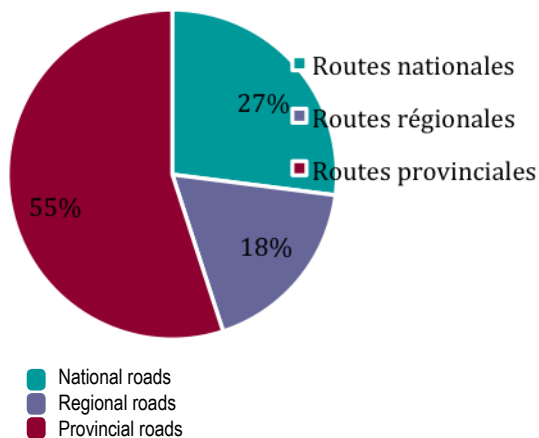


4.2. Railway infrastructure

Because of the High Atlas mountain range, the Moroccan National Railway Company (ONCF) does not provide any railway services in the territory east of this range. The Morocco 2040 Railway Plan currently does not include a project to link Greater Ouarzazate with the Moroccan railway network by 2040.

4.3. Road infrastructure

The total length of the road network in the province of Ouarzazate is 1,620km. It is split as follows:



Out of the 1,620km of roads, 770km are surfaced, i.e. 46% of the road network.

Ouarzazate province has only one bus station, located in the city of Ouarzazate. However, the Greater Ouarzazate area is well connected to Morocco's other major urban centres (Casablanca, Rabat, Marrakesh and Agadir) by several regular bus or coach services. Other lines also give access to the more adjacent towns of Zagora, Tinghir, Boumalne and Er-Rachidia. The major bus routes and short-distance/long-distance taxi services all

converge on the bus terminal in Ouarzazate.

Two other smaller bus stations are located in Deux Skoura and Taznakht. In addition to the bus lines, which provide most of the inter-city transport, there is mixed transport, plus a dozen vans operating as taxis and a dozen all-purpose vehicles for travelling to the souks and other nearby places¹.

¹ L'ensemble des informations contenues dans cette partie est issu du diagnostic établi par l'agence Lemay dans son schéma directeur d'aménagement urbain en mars 2018

Lack of real bypasses and congestion

For the towns of Ouarzazate and Tarmigte, having to cross an urban centre via a main road because of the lack of a true bypass route is a major constraint. The crossroads of the N9 and N10 main roads with their heavy transit traffic and local car traffic regularly cause congestion and adversely affect the N9-N10 section of the road between Kasbah Taourirte and the centre of Tarmigte. An increase in the local population and the occasional intensification of economic activities only increases the frequency and scale of road congestion with its related irritants: noise, diverted traffic towards local streets, insecurity, delayed deliveries, etc.

Dysfunctional accessibility and safety

During the rainy season (October-November and January-February) in the Tarmigte, the footpaths and tracks through the wadis are often flooded. Entire communities find themselves isolated or forced to use less suitable paths and ways.

The flooding of structures that allow wadis to be crossed adversely affects sections of provincial, regional and even national roads, as exemplified by the N9 road in Tarmigte territory. The design of this bridge that crosses a wadi that is a tributary of the Drâa wadi prevents the water from flowing naturally, which prevents vehicles from crossing, damages the ill-designed infrastructure and even jeopardises the safety of the local population.

Because of the intensification of flooding due to climate change, other similar events are likely to occur and cause even more damage, thus endangering people's safety and adversely affecting the regional economy. Work has been completed or is still in progress on reinforcing certain physical structures. However, in some cases, it has been necessary to entirely re-design certain structures and their integration into the environment. Moreover, in some parts of the centres of Tarmigte and Ouarzazate, the absence of sidewalks or pavements is detrimental to the safety of pedestrians.

At the same time, in both Tarmigte and Ouarzazate, many roads have no gutters and the impervious soil prevents the water from being discharged.

The centre of Ouarzazate after a short rain shower – October 2018



The centre of Tarmigte after a rain shower – September 2018

4.4. Public Transport

The private bus transport company has a fleet of six vehicles that use three lines that go from the centre of Ouarzazate to Aït Kdif, Tabounte and Tifoultoute. However, this service is faced with problems relating to the local population's modest purchasing power and to competition from unauthorised transporters. However, no public data is available concerning the ridership of this network.

4.5. Taxis

Taxis are divided into two categories.

First, those that are authorised to operate only within urban perimeters (within each municipality), i.e. small taxis.

Second, large taxis, which are authorised "for divisible or indivisible rentals" within a radius of 20 kilometres around their operating base (shared taxis) and for "indivisible" rentals (single destinations) within a radius of 50 kilometres. Beyond 50 kilometres, a special authorisation is required issued by the police.

There are small taxis and a few parcel-delivery taxis in Ouarzazate and Tarmigte. Nearly 50% of their customers are tourists. There are also nearly 100 large taxis, half of which operate only in Ouarzazate.

4.6 Two-wheelers: bicycles and mopeds

Although many schoolchildren and adults are often to be seen cycling along cycle paths and roads in Greater Ouarzazate, no particular rules or amenities exist for this activity, which forces cyclists to expose themselves to the risks of cycling in the company of cars and heavy lorries. The only special facilities for cyclists are to be found on the bridge over the Ouarzazate wadi between Ouarzazate and Tarmigte. However, after crossing this bridge cyclists have to rejoin the normal road traffic to continue on their way. Another factor that discourages people from cycling in the existing urban environment is the scarcity or even the absence of special marked bicycle lanes, whereas such facilities already exist inside unbuilt housing estates.

5. Services

5.1. Drinking water

Non-profit organisations in the district of Tarmigte have played a key role in the supply of drinking water. Most douars are connected to the drinking water supply which covers 95% of the area.

5.2. Rainwater drainage

A joint Franco-Belgian sewage and drainage project has been launched with a local partner that has plunged the municipality of Tarmigte into heavy debt.

- Waste management: uncontrolled discharge by the municipality, burial of waste. This is having a damaging and worrying impact on the local population since cases of Leishmaniasis have been detected and following increasing pollution of the groundwater and of Lake El Mansour.

- A waste sorting centre has been financed and built.

5.3. Power supply

The municipality de Tarmigte is connected to the electricity grid which is managed by the electricity supplier ONE. The total number of subscribers is divided between 3,949 households and 378 licence-holders. The El Mansour Ebbadhi dam contributes to the the production of energy nationwide. It has a capacity of 526,316,000 m³. Over 95% households are connected to this grid. Some douars such as Douar Tamayouste, are entirely powered by solar energy.

5.4. Telecommunications

The Agence Nationale de Réglementation des Télécommunications (ANRT) is tasked with regulating the telecommunications sector while radio broadcasting centres fall within the sole remit of the aforementioned operator. ANRT has no power to authorise the installation of radio broadcasting stations. However, operators usually consult the municipal authorities and the building's owner before installing a new telecommunications tower.

As a result of fierce competition between mobile phone operators, relay antennas (also known as base stations) have sprung up, often

haphazardly, at different locations across the region. These antennas transmit and receive radio-electric signals for mobile devices and to access the Internet. These infrastructures are a major blot on the landscape. Several countries have taken effective steps to minimise their visual impact: they can therefore control their number, size or height. In urban areas, related telecom towers and facilities are often installed and built on buildings (mosques, office blocks, multi-family residential buildings) with disregard for the local environment. They are also concealed by a fixture or are raised on structures of variable height depending on their location without smoothly blending into the landscape. Besides the inclusion of these structures into the urban fabric, the local population is increasingly questioning the potential health risks caused by the electromagnetic waves transmitted by these relay antennas.

were wholesalers.

Trading activity takes two forms. The first is the traditional form found in rural districts and mainly comprises small so-called convenience stores that sell general goods and services such as food outlets, hairdressing salons and other beauty care outlets. The population density in these areas does not allow a store selling less general goods and services (restaurants, cloths stores, furnitures stores, domestic appliances, sports gear) to be profitable.

In the urban built-up district of Ouarzazate, stores and craft workshops are mostly located on the ground floor of mixed-purpose buildings which contain apartments on the upper floors. Trading outlets are concentrated in the town centre and along the Avenue Mohammed V. Trading outlets, just as in the countryside, are mosly independent with the exception of auto outlets (service stations and car dealers). Tourist transport firms and beauty/fragrance stores are mainly franchises of national or international companies.

6. Facilities

6.1. Healthcare



Ground floor shops in a residential district – October 2018

6.2. Trading outlets

Greater Ouarzazate includes four supermarkets, three small supermarkets, 14 town markets, three shopping centres, four kissariats (shopping malls), 11 slaughter houses and two trading hubs. In 2014, the trading sector comprised 4,800 merchants of which 4,700 (98%) where retailers and 170 (2%)



Ground floor shops along the Avenue Mohammed V – October 2018

With the region's projected demographic growth, the trading sector could undergo major changes. We could see a trend towards the creation of trading hubs. The bundling of similar outlets in the same neighbourhood of the town is likely to attract more customers who will be able to reach them more easily and be able to compare a wider selection of goods and services. At the same time, the presence of customers in the same neighbourhood would attract new stores seeking visibility for potential customers. The polarisation of trading outlets, which is a global trend, is radically changing urban areas.



Location of the Ouarzazate covered market - October 2018



Location of the oldest market of Ouarzazate, near Mouahidine square - October 2018



Entrance to the Tarmigte souk on a Saturday morning – September 2018

Souks:

The municipalities of Ouarzazate et Tarmigte both hold a souk market once a week. While souks are well attended in rural areas, they are losing customers in urban areas. Indeed, the souks are located far from the town centres and local inhabitants prefer to shop in local convenience stores at the bottom of their buildings. The Tarmigte souk is held every Saturday while the Ouarzazate souk is open on Sundays. Both towns also have a covered market.



The Tarmigte souk overlooking the town of Ouarzazate – September 2018

- Besides Ouarzazate which has a diversified range of goods and services, trading activity in the surrounding region is limited to basic commodities and services;
- Trading activity is mostly conducted by independent outlets located along the main roads;
- Industrial activity is limited and mainly comprises small and medium size enterprises
- Production capacity is mainly based on arts and crafts (including in the mining sector);
- The leading industries in the region are atypical (energy production, film-making);
- Offices are still scattered across the town of Ouarzazate but could become concentrated during the deployment of the SDAU (Regional Development and Urban Planning Master Plan).

7. Public spaces

Most urban centres have no public spaces such as local parks, narrow streets or small public squares to enable the urban fabric to breathe, allow local inhabitants to congregate and enjoy spaces devoted to relaxation or meetings. This lack of green areas and public spaces leaves a major gap in these highly compact urban habitats where the arid climate is stifling in summer.

The geology of Ouarzazate and Tarmigte poses a real problem since their soil mainly contains clay which is subject to subsidence and swelling.



Rare aménagement sur un axe principal de Ouarzazate - Octobre 2018

GEOLOGY & PLANNING OF PUBLIC SPACES

Brief description of subsidence and swelling

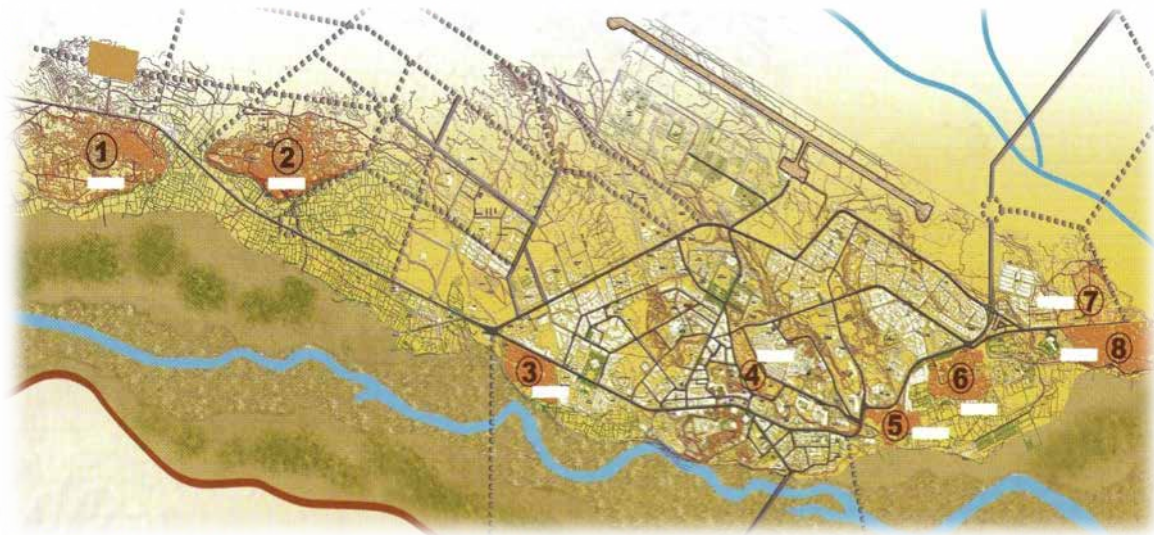
Soils containing clayey minerals change their substance depending on their water content. They may be firm in low humidity and become plastic or liquid when this humidity increases. These variations in the condition of the soil are accompanied by major variations in volume depending on the mineralogical nature of the soil's clayey components. Changes in water content are directly related to weather conditions. In dry weather, the water content decreases and the soil shrinks (subsidence) whereas when it rains the volume increases (swelling). These variations in volume causes differential movements on the surface which may damage the superficial foundations and lead to cracks in the structure. The vertical elements (sailing stones, well facings, pile drums) are also subject to stray loads. In general, only the most superficial section of the soil undergoes variations in volume (depth of between 0 to 2 metres). Overall, we can distinguish between factors that predispose the soil to these phenomena: nature of the terrain, hydro-geological conditions, topography of the site, vegetation (nearby trees), building flaws on the one hand and triggering factors on the other hand: rainfall, leaks in supply networks for example.

Impact on buildings

Structural movements caused by clay shrinkage and swelling mainly result in the cracking of supporting walls which are often oblique and affect weak parts such as openings. Disturbances also appear in the form of detachments between joining elements (garages, door steps, terraces), the deformation of doors and windows, the dislocation of slabs and partitions and occasionally the rupture of embedded conduits (which exacerbates the disturbances since these resulting water leaks cause localised swelling). In extreme cases, these disturbances can make buildings unfit for habitation¹.

¹ <https://www.geosoc.fr/quid/134-quid/amenagement-geotechnique/748-en-quoi-la-presence-d-argiles-dites-gonflantes-est-dangereuse-pour-les-fondations-des-constructions.html>

To mitigate the disastrous effects of swelling clay and to improve the stability of buildings, the Ministry of Housing drawing on the Al Omrane agency for the implementation phase, has begun a project to reconfigure 9 neighbourhoods of Ouarzazate. The project involves covering the floors of all buildings with self-locking slabs and two-layer road at a cost of 74 million MAD. The neighbourhoods in question are listed below:



Al Omrane - map of restructured neighborhoods



Tassoumaat



Assalam



Moulay Rachid

Mouahidine square in Ouarzazate

The example of Mouahidine Square: a testimony to the change in the layout of public spaces in Morocco.

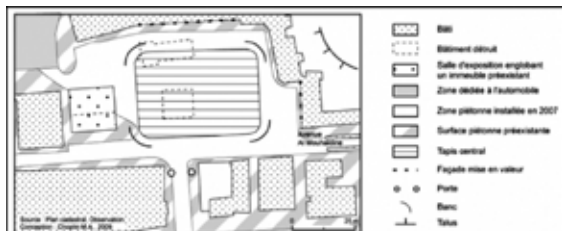
This square is located in the town centre of Ouarzazate and is the town's main public space. It was built in 1928 and was substantially redesigned in the 2000s. The main aims of the planners were to attract tourists in a context where visitors are confined to the hotel district, located at a distance of two kilometres from the town centre, while complying with international standards in safety, cleanliness and attractiveness.

To achieve this, the initial function of the square as a bus station was reviewed. Shopkeepers had to renovate their facades and mechanics on the ground floors had to move out with only trading activities and restaurants remaining.

However, most of the inhabitants of Ouarzazate cannot afford to drink coffee on this square and fill the centre of the square instead. During the summer, the square only comes alive at night-fall when the temperature becomes bearable. The square is deserted the rest of the time and is only crossed by people, mainly tourists.

«In order to represent a traditional vision of the special function of public areas with regard to the separation of social groups, the south side, removed from the shops, would be intended for beggars and women that the planners associated with individuals who want to walk without being bothered. The central section would be devoted to pedestrians and the northern section would be devoted to tourists and shops¹»

1 Marie-Astrid Choplin et Vincent Gatin, « L'espace public comme vitrine de la ville marocaine : conceptions et appropriations des places Jemaâ El Fna à Marrakech, Boujloud à Fès et Al Mouahidine à Ouarzazate », Noroît [En ligne]



The new layout plan of Al Mouahidine Square in Ouarzazate (2007) - M.A. Choplin

Mouahidine Square and Avenue, deserted during the day but abuzz with activity as soon as night falls. – September 2018



Un potentiel d'espaces publics ...

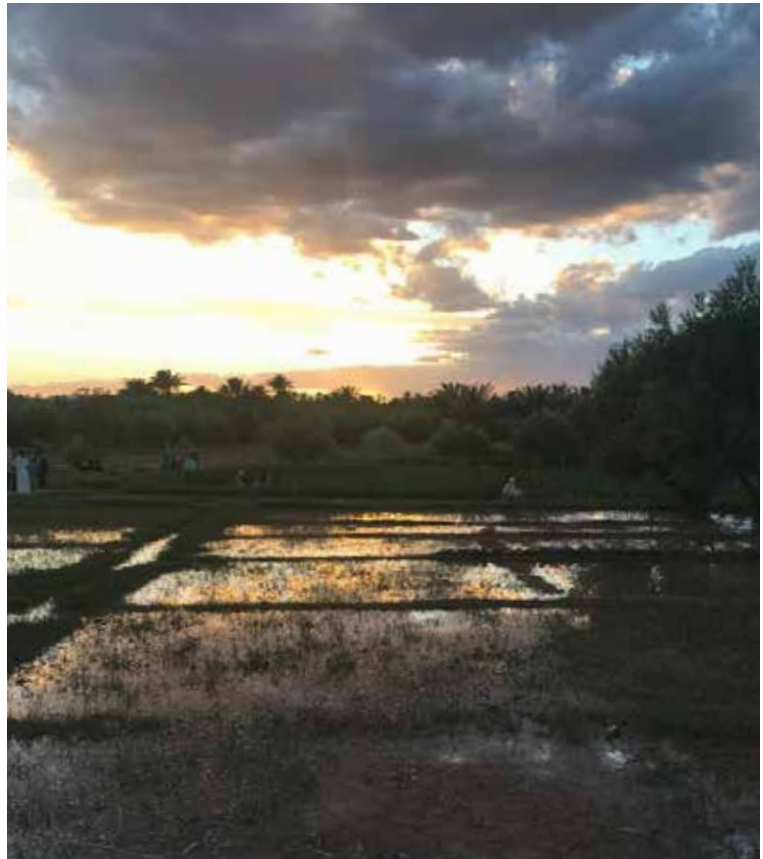
The current SDAU provides a numerous number of «green» spaces or public spaces. If geology, climate and financial resources sometimes constrain the development of these spaces, the cities of Ouarzazate and Tarmigt however reveal a potential of empty areas to develop or area that can be appropriated by the inhabitants, like the wadi from Ouarzazate, where the inhabitants of the two communes meet to enjoy the cool evening in summer.



Tarmigt - october 2018



Things to do in Ouarzazate -
September 2018



Wadi Ouarzazate, a place to stroll in the evenings and weekends in the summer

zone qualifiée «espace vert» dans le SDAU, proche du quartier El Wahda

L'ancien lac artificiel, une zone vide au coeur de la ville de Ouarzazate, face aux quartier des cadres



6

Current Projects in Progress



Agricultural Sector

Project 1: Development of the Ouarzazate olive grove

Production: Olive trees

Project type: Expansion and promotion of the olive grove

Implementing agency: The Ouarzazate Regional Office of Agricultural Promotion (ORMVA)

Project objectives:

- Improve productivity
- Promote olives
- Increase the income of farmers
- Create jobs
- Preserve natural resources

Project justification:

- High demand for olive oil
- Olive trees grow well in the zone
- Creation of jobs in the rural area

Project specifications:

- Construction of seguias
- Extension of the olive grove perimeter over an area of 1,500 ha
- Improvement in olive oil production (installation of a grinding unit with a capacity of 40 T/day)
- Technical assistance: Monitor the construction of the hydro-agricultural network and plantings and perform a study on the grinding system.

General information:

- Duration: 5 years
- Total cost: 43,096 kDH (kilos Dirham). Multiply the number by 1,000; therefore, 1 kilogramme = 1,000 units.
- Surface area: 2,100 ha;
- Varieties used: Picholine Marocaine
- Number of beneficiaries: 850
- Rural communes: Amerzgane, Ait Zineb, Tarmigt, Idelsane
- Province: Ouarzazate



Project 2: Densification of the date palm grove upstream of the Drâa River and Maïder Basin

Production: Date palms

Project type: Densification and development of the date palm grove

Implementing agency: The Ouarzazate Regional Office of Agricultural Promotion (ORMVA)

Project objectives:

- Increase production
- Promote dates
- Increase the income of farmers
- Create jobs

Project justification:

- Restoration and development of palm groves
- Maximize the profitability of the hydro-agricultural infrastructure built in the Drâa Valley
- Creation of jobs
- Protection of the environment and biodiversity of palm groves
- Improvement in farmer incomes

Project specifications:

- Installation of 62,837 ml of seguias
- Planting of 168,000 date palms (tree shoots and micropropagation cultures) or 3,800 ha
- Grove maintenance for 50,000 date palm clusters
- Improvement in date production (installation of 3 cooling and refrigeration units)

General information:

- Duration: 5 years
- Total cost: 141,138 kDH
- Surface area: 3,800 ha
- Varieties used: Najda, Boufeggous, Mejhoul
- Number of beneficiaries: 1,900
- Rural communes: Ouisselsate, Tarmigt, Idelsane, Ghessate, Skoura, Tazarine, Taghbale, Ait Ouallal, Aït Boudaoud, N'kob, Agdez, Tamezmoute and Taghzoute
- Province: Ouarzazate, Zagora and Tinghir



Project 3: Development of a date palm grove in the oases of Ouarzazate and Zagora

Production: Date palms

Project type: Densification and development of the date palm grove

Implementing agency: ORMVA of Ouarzazate

Project objectives:

- Increase production
- Promote dates
- Increase the income of farmers
- Create jobs

Project justification:

- Restoration and development of palm groves
- Maximize the profitability of the hydro-agricultural infrastructure built in the Todgha Valley
- Creation of jobs
- Protection of the environment and biodiversity of palm groves
- Improvement in farmer incomes

Project specifications:

- Construction and development of 108.6 km, 22 oases and 6 dykes
- Plantation of 420,700 micropropagation plants and 30,000 date palm tree shoots
- Grove maintenance of 155,000 date palm clusters
- Improvement in date production (installation of 3 processing units)
- Supervision and training of producers

General information:

- Duration: 5 years
- Total cost: 393,391 kDH
- Surface area: 11,000 ha
- Varieties used: Najda, Boufeggous, Mejhoul
- Number of beneficiaries: 9,248
- Rural communes: Tinghir, Ouaklim, Toudgha Oulia, Toudgha Soufla, Taghzoute and Aït El Eersi, plus the communes of Tarmigt and Zagora
- Province: Tinghir and Ouarzazate

INFRASTRUCTURE AND URBAN DEVELOPMENT SECTOR

Project 4: Flood prevention for the city of Ouarzazate



Protective dyke
 Extension of the Chaâbat Niklane
 Installation of a seguia below the dyke
 Total cost (excluding tax): 21,325,149 DH

Implementing agency: Ouarzazate Watershed Agency (ABH)

The city of Ouarzazate is the urban centre most affected by severe rainfall events, which thus lead to heavy flooding. The situation is due mainly to its location in a geographical basin, as well as being at the convergence point of all the wadis.

Project plans:

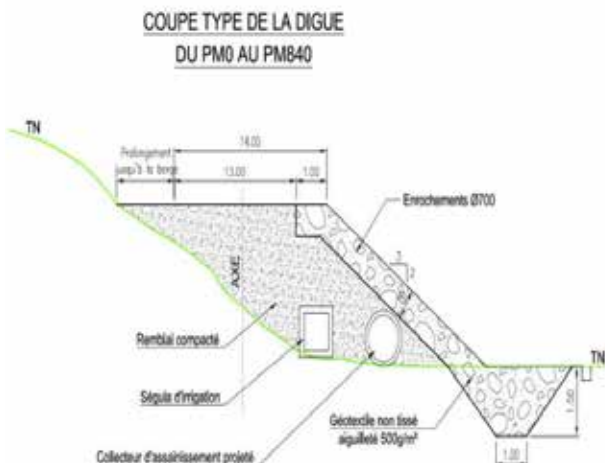
- The construction of a dyke (linear structure that is part of a system of protection against flooding, which, together with the other defence structures, allows for the protection of flood zones) to prevent flooding (between the existing bridge, which currently connects Tarmigt and Ouarzazate, up to the one planned by the group Al Omrane). This project's main objective is to protect the existing population in the flood zone (refer to map).

- The installation of a seguia below the dike, to allow the water from the wadi to flow if irrigation is required.

Note: There is another flood prevention project under consideration in the municipality of Tarmigt (Oued ASRIR)



project location - google earth



Project 5: Tarmigt urban centre

The Zaouite Sidi Othmane subdivision project is located in the commune of Tarmigt. The project covers an area of 318 ha in Section 1 + 91 ha in Section 2.

- Surface area: 318 ha + 91 ha
- Project cost: MAD 720 million
- Number of lots: 7770 + 1540

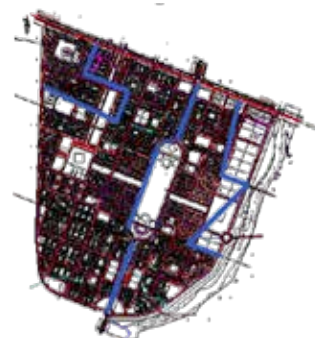
In 2009, Al Omrane estimated Tarmigt's population density to be 176 inhabitants per hectare or 35 dwellings per hectare. It was on this basis for which all the public facilities necessary for daily life in the 6 districts of the urban centre were planned.



project location - Al Omrane

List of Local Facilities

High schools	2
Middle schools	4
Primary schools	7
Childcare centres / Nurseries	2
Health centres	2
Youth homes	2
Women's centres	2
Neighbourhood mosques	5
Neighbourhood police stations	5
Traditional ovens	5
Hammams	5
Police headquarters	1
Neighbourhood sports fields	1
Government buildings	4

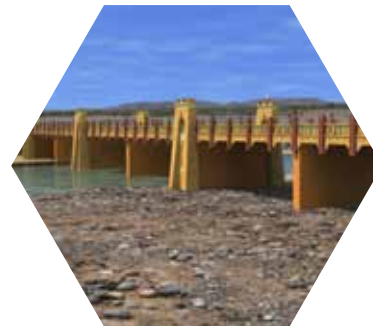


Project Master Plan – Al Omrane

List of Facilities Within the Provincial Boundaries

Large mosques	2
Cultural centre	1
Multimedia library	1
Music conservatory	1
Covered theatre and open-air theatre	1
Multi-purpose hall	1
Central park	1
Commercial centre	1
Gymnasium	1

Project 6: Bridge linking the communes of Ouarzazate and Tarmigt



The engineering structure linking the municipalities of Ouarzazate and Tarmigt, a project led by the group Al Omrane, will double the crossings over the Ouarzazate Oued (river) at the new urban centre of Tarmigt, extending over a distance of 1.6 km.

- The project cost is estimated at MAD 93 million

Procurement is underway for the recruitment of a construction company. The call for tenders is expected to be launched in early November in order for an effective start to the work, which is expected to begin in March 2019.

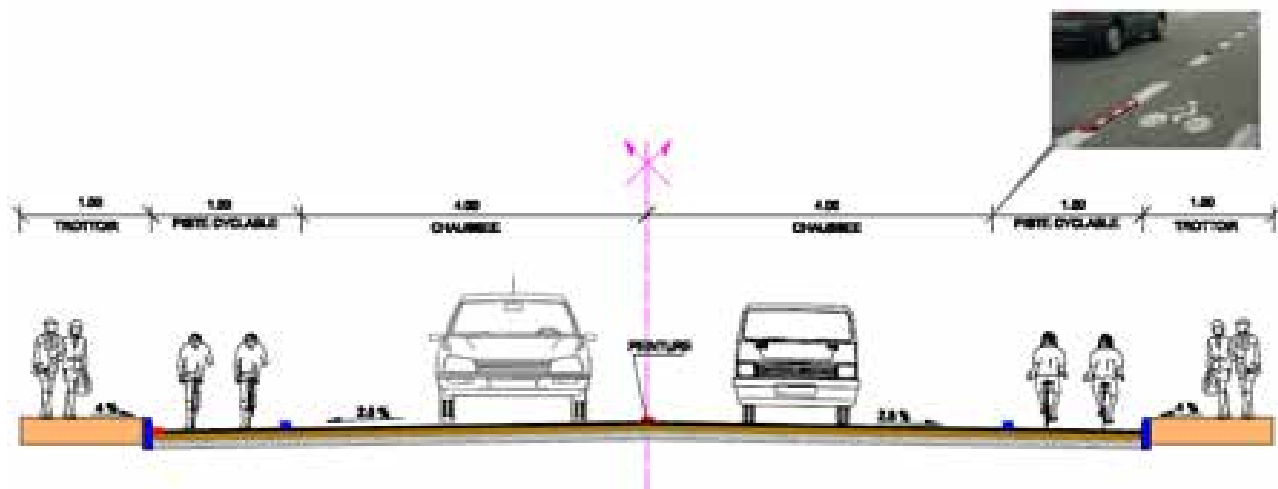
Project specifications:

- Length: 1,600 m
- Road category: Class 3 with a speed limit of 60 km/hr
- Platform width: 15 m (8 m of roadway, 3 m of bicycle paths, 4 m of raised sidewalks and a crash barrier)

Bridge location - Al Omrane



Proposal for the architectural detailing of the future bridge linking the city of Ouarzazate to the municipality of Tarmigt. Project manager: Ahmed Benlyamani, Architect D.E.N.A



Projet 7 : Other projects in progress in Tarmigt and Ouarzazate



Urban projects:

- Project to delegate the management of the Tarmigt and Ouarzazate waste and refuse centre: An international call for tenders was launched in 2018, but will likely be unsuccessful due to a lack of necessary funding from the municipalities.

- Infrastructure projects included in the municipality's budget: The Tabount Talahte road and the paving of dirt roads at city's entrances

- Arguiwne residential and hotel development project : Located opposite the Tarmigt urban centre project, between the Ouarzazate wadi and the RN9, this project covers an area of 282,509 m2 and involves the construction of 316 villas, 6 hotels, 14 commercial lots and 4 facilities still to be determined. The estimated cost of the project is MAD 120 million.

Economic projects:

- Export of copper ore from Tarmigt: An employment opportunity for young people in Ouarzazate Province in general and in the Tarmigt commune in particular.

Studies in progress: :

- SDAU – Lemay Agency

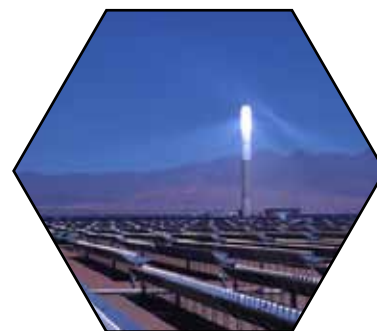
- Flood prevention study in the municipality of Tarmigt – MOA Watershed Agency / MOE B.E. SOMATEP

Project plan Arguiwne residential and hotel development project- Al Omrane



VOCATIONAL TRAINING SECTOR

Project 8: The Institute for Training in Renewable Energy and Energy Efficiency Professions (IFMEREE)



This project, initiated by the Ministry of National Education, Vocational Training, Higher Education and Scientific Research, and co-financed by the French Development Agency (AFD) in cooperation with Germany and the Kingdom of Morocco, involves the construction of three training centres for energy-related professions, one of which will be located in Ouarzazate.

The project aims to meet the needs anticipated by professionals in the solar energy sector and will train them in energy-efficient building trades, photovoltaic systems, wind energy systems, solar thermal systems and biogas.

The Ouarzazate training institute, whose construction was supposed to start in 2017, has not yet been completed and is located in the northwestern part of the city, close to the Atlas subdivision project.

The adopted operating model is one where the State delegates management to professionals in the sector, who constitute a public limited company. The partners are the National Federation of Electricity, Electronics and Renewable Energies (FENELEC), the Federation of Metallurgical, Mechanical and Electromechanical Industries (FIMME), the Moroccan Agency for Sustainable Energy (MASEN), the National Office of Electricity and Drinking Water (ONEE) and the Moroccan Agency for Energy Efficiency (AMEE). Work-study and apprenticeship training will also be offered¹.

¹ IFMEREE – AFD

Tourism and Heritage Sector

Project 9: Centre for the Conservation and Rehabilitation of the Architectural Heritage of Atlas and sub-Atlas Areas (CERKAS) projects



Known formally by its full name, the Centre for the Conservation and Rehabilitation of the Architectural Heritage of Atlas and Sub-Atlas Areas, CERKAS was created in 1989 following the MOR/87/016 project, a document co-produced by the Ministry of Culture, UNDP and UNESCO to address the shortcomings in the conservation, restoration and rehabilitation of earthen monuments in the southern region in order to promote and develop this component of Morocco's cultural heritage. The centre was created as a direct source to promote the application of the government's policy in the field of the protection, conservation and rehabilitation of architectural heritage.

Status and objectives:

CERKAS is a public institution under the supervision of the Ministry of Culture, whose objectives are to:

- Rehabilitate and promote the architectural heritage of the Atlas and sub-Atlas areas for socio-cultural purposes, in collaboration with the organizations and authorities concerned;
- Establish programmes for the preservation of buildings and architectural complexes considered as cultural assets of the country;
- Conduct technical, sociological, ethnological or other studies likely to advance the knowledge of traditional architecture in Atlas and pre-Saharan areas;
- Publish and disseminate information on the architectural heritage of southern Morocco in the form of printed or audiovisual materials;
- Collaborate in comparative studies on earthen architecture, particularly in the Atlas and pre-Saharan regions;
- Establish and maintain relations with national or international institutions with a similar vocation.

In addition to its function at the national level, the centre is called upon to play a decisive role in the conservation, promotion and continuation of earthen architectural techniques in both Maghreb and sub-Saharan countries that have a similar architectural heritage.

To promote the values of this architecture at the international level as a tangible cultural heritage, CERKAS is a member of the UNESCO Chair on Earthen Architecture and a technical partner of the World Heritage Programme on Earthen Architecture 2007/2017.

Structure:

The centre is comprised of three departments:

- The study and survey unit, which is tasked with collecting ethnographic, historical and sociological data concerning clay or stone architectural heritage;
- The technical unit, which is responsible for the implementation and monitoring of restoration and rehabilitation projects for architecture in the southern region;
- The administrative unit, which is responsible for the management and operation of the institution