

# The Sustainable Development of Oued Noun Oases through the Integration in the Biosphere Reserve Oasis of Southern Morocco

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**Abstract:** *The Moroccan government has adopted a new approach to development that integrates environmental, renewal of natural resources, measures for the reduction of poverty at the social and spatial distribution of wealth at an advanced regionalization plan. In 2000, UNESCO in collaboration with the Moroccan State creates Biosphere Reserve Oasis of Southern Morocco (BROSM) in the Provinces of "Errachidia, Ouarzazate and Zagora" to support the strategies of preserving the environment. The project to integrate the Oasis of Oued Noun in the program of the biosphere reserve Oasis of southern Morocco (BROSM) will have a positive impact on the region. This direction aims to strengthen the efforts of the government and ONG programs working in the sector. Through this institutional status, it becomes appropriate to rethink about the preservation and enhancement of the natural heritage and local culture.*

**Keywords:** Sustainable development, Oasis of Oued-Noun, BROSM

## 1. Introduction

The Oases of Oued Noun are characterized by a particular richness that matches the oasis of the desert and mountainous areas thanks to the semi-arid, arid and desert climates, also of multiple pedagogical structures, very important water resources, diversified vegetation and a wildlife which is rich, identified, and endemic.

Additionally, the oases are known by the mobility of the associations' activity, the role of cooperatives and economic interest companies in the fields of: tourism, trade, crafts and agriculture.

Nowadays, Oued Noun Oases (ONO) witness some environmental and socio-economic constraints such as: soil salinity, the wind and water erosion and the lack of water for the irrigation. These factors of degradation lead to the phenomenon of siltation, desertification, and the abandonment of farmlands; this situation is more deteriorating by the urbanization of the oases areas.

In fact, the integration of Oued Noun Oases (ONO) in the biosphere reserve Oasis of southern Morocco (BROSM), will allow to value the efforts realized by the state, then will offer an institutional frame (executive) for NGO (Non-Governmental organization) which advocate to protect and value the local, natural and cultural heritage.

We shall highlight a reflection which projects the essence of this new trajectory in which positions Morocco regarding the sustainable development with this consciousness which is organized as for the emergence of the phenomenon of the consumption of assets and natural potentialities according to regions. Any action is based on public-spirited, participative, responsible, ethical and fair principles.

## 2. Oases of Oued Noun: A threatened territory

### 2.1 General context

The Oases of Oued are situated in the region Guelmim-Oued Noun, province of GUELMIM on a surface of 2170 ha (E. CHMOURK, 2011). The province establishes a buffer zone between Sahara and the sub on a surface of 10783 Km<sup>2</sup> is 18.34% of the total surface of the region. It is limited by: the province of Sidi-ifni in the north, the province of Tan-Tan in the WS, the province of Assa-Zag in the ES, the Atlantic Ocean W and the province of Tata (Souss-Massa region) in the East.

The plain of Guelmim is a part of the western Anti-atlas. It contains two main morphological units: the trays of limestone of western Anti-Atlas and Jbel Baní which is considered the source of feijas (Destombes et al.1985), establishing a bridge between the desert zone and the semi-arid sub. The city possesses a dry and Saharan climate through the interference of several geologic and geomorphologic aspects: the closeness of the Atlantic Ocean, the influence of the cold currents, and the presence of a mountainous barrier of the Anti-Atlas.

All these factors insure a protection against the east and south east sandy winds in addition to the effect of the Saharan continental character, especially in summer. The average annual temperature is 19, 6 °C.

The hydrological network of surface is established by three main watersheds: Oued Noun, Bouissafen and Aouriouira on a 9300 Km<sup>2</sup> surface. The aquifer represents the underground water resources: the deep aquifer at oscillating levels of lower limestone of the Georgian then the groundwater and alluvial aquifer between 15 and 45 m(F.CUZIN, 2003).

The biodiversity of the various ecosystems of the region is based on a sheltered biotope. Thanks to their aridity and the rarity of the human activity and especially in a little isolated areas, numerous endemic species find an environment which is favorable to them (Interior menestere 2015). The region contains a vegetable belt of forests on 31700 ha, then an identified and endemic flora, according to the peculiarities of each life area. The fauna consists of a fair important number of mammalian organisms, avian, amphibians and rare and endangered reptiles.

On the other hand, oases are known by a good mobilization of the activity of the associative fabric. Cooperatives and economic interest companies play an important role in the development of the agriculture sector on a surface of 100000 ha and contribute in a substantial way in the evolution of the generative activities of the returned as well as in trade, tourism or crafts (MEMEE, 2010).

The local population of the province is about 187808 inhabitants, that is 43, 29% of the regional population with a rate of 1.2% evolution a year (HCP, 2015).

## 2.2 The degradation of the physical environment

The ecosystem of the ONO is threatened by the degradation related to several factors. The increasing anthropological pressure on natural resources constitutes a major action. The effects of climate change such as the succession of periods of drought and the decrease of water resources, contribute considerably to this negative impact. In these actions come to be added others like wind and water erosion, soil salinisation, silting and desertification, then date palm disease (Bayoud) (E. CHMOURK, 2011)..

All of these facts make the natural space profoundly modified and threatened by a despoilment more aggravated by the urbanization of the oases space as well as a transformation of the way of exploiting farmlands.

As a matter of fact, water resources are in clear decrease in certain zones of the plain because of the prolonged cycles of drought. The province estimates the renewable resources of water between 500 and 600 l/s. This debit is distributed between samplings of drinkable water and the agricultural water (that is 350 – 400 l/s).

The loss by evaporation in the zone where the aquifer is close to the surface (less than 10m) and the flow by the drainage at the level of the downstream part of the basin of Oued Noun also decrease water resources (PDA, 2014).

On the other hand, the annual contributions in surface water are of the order of 67 Mm (Seyad & Assaka basins) with an aquifer of phreatic nature established on a 1000 km surface. The average consumption in 2012 was 155 l/s of the drinkable water supply and insure the irrigation of 19 053 ha of agricultural grounds (HCP, 2015). Water demand was estimated in The ONO of 163.5 Mm/Year, showing a deficit which will be the most important to the order of 71.4 Mm, knowing that 92.1 mm are mobilized in 2020, the needs will be covered only in 56% (L.KABIRI, 2014).

Thus, the agricultural activities contribute in the decrease of water of irrigation by the multiplication of private pumping on the outskirts of palmeraie. The fossil aquifer are very requested to create new plantations of modern and more intensive palm tree and the irrigation of market gardening like watermelon. Watermelon occupies a surface of 250 ha in the province with a production of 7500T whose yield is 30T/ha is a turnover of 7 million DH (SMDHBA, 2013).

As the watermelon contains 92% of water, the water requirement for this operation is of the order of 12.6 mm or 30% of the total consumption with regard to all the agricultural activity of the province.

The population of oases is 47127 inhabitants in 2014 and continues keeps recording a progressive increase these last years. The density of 10 hab/km reported in 2004 will become 14.3 hab/km in 2030 (HCP, 2015). This rapid growth of the demography will have by consequence an increase of the consumption in volume of the resources of water, which will have disastrous repercussions on water requirement of the future generations in the region, if in the meantime no rational plan is set up.

Climate change is only stressing the risk which presses on oases by the phenomenon of water erosion. In November, 2014, the basin of Guelmim experienced an exceptional precipitation of 10 days, which reached respectively 208 mm at the station of Taghjijt, 233 mm in Assaka station and 260 in the city of Guelmim with a maximum flow of 974 m/s in Oued Seyad and 940m/s in Oued Om Laachar. The catastrophic floods caused by these torrential rains have caused human losses (32 victims) and a very significant amount of material damage (SMDHBA, 2014).

Other important factor concerns the wind erosion which is considered the main cause of siltation of agricultural land. This phenomenon is generated by the wind “Chergui”, hot and dry, which bring sand throughout the summer period.

Besides, the salinity of the groundwater is rather good between 0.5 and 1g/l, if we consider the maximum value found in ONEP catchments (107 g/l) as the bearable threshold of salinity. The western zone is known by a high salinity subjected to an intense evaporation of aquifer (SMDHBA, 2011). Soil salinisation has a negative impact on the palm groves of Oued Noun where irrigation water is more salty and where evapotranspiration is strong as shown by the presence of a halophyte of the genus mesembryanthemum that adapts to soil high salt content. The forest area occupies approximately 31.700 ha with a rate of 3% afforestation (HCWFAD, 2008). This figure remains very low and does not reach the necessary standard to guarantee the ecological and environmental balance. As a matter of fact, this situation pulls and promotes the phenomenon of the desertification which is moving forward gradually in the basin of Oued Noun. The region is known for the agricultural activity over an area of 100 000ha and date palm production of 3960 tons with 150 000 feet. However, the bayoud disease (Fusarium: soil fungus) causes serious damage to palms and poses socio-economic and technical problems by reducing the number of palms.

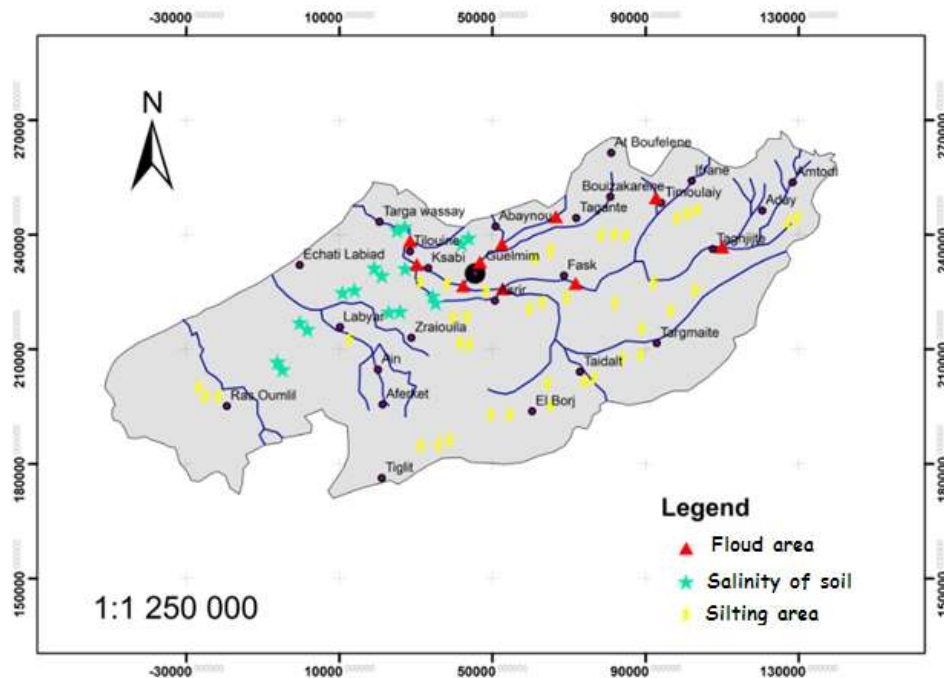


Figure 1: The state of the degradation of watersheds in the province of Guelmim

### 3. RBOSM: A Sustainable Development Strategy

#### 3.1 UNISCO convention: biosphere area

In 1974, UNESCO launched the Man and the Biosphere program (MAB) to create a global network for the preservation and protection of the environment through the concept of “Biosphere Reserves”.

The Seville strategy in 1995, on the occasion of the general conference of the UNISCO, presented the biosphere reserves as sites of sustainable development through the initiative of the states and the will of the associative fabric to exploit the natural resources with a long-lasting spirit. The biosphere reserve is then defined as “an area of terrestrial or coastal ecosystems, promoting solutions to reconcile the conservation of biodiversity with its sustainable use” UNESCO (1996).

Today, there are 651 biosphere reserves in 120 countries, including 15 transboundary sites and three in Morocco: The Arganeraie Biosphere Reserve (ABR) in 1998, biosphere reserve Oasis of southern Morocco (BROSM) in 2000 and the Mediterranean Intercontinental Biosphere Reserve (MIBR) in 2006. This reflects the desire and interest of our country to rationalize the consumption of natural resources.

In order to designate a geographical area as a biosphere reserve, the Seville Strategy (1995) laid down seven essential criteria with the aim of contributing to the protection of fragile environments and the preservation of the environment according to the rules advocated by the notion of sustainable development. This program has been acclaimed by many countries and international recognition had followed and the examples of good functioning are multiplied.

The criteria adopted by the Seville strategy are:

- 1) The area should encompass a mosaic of ecological systems representative of large biogeographical regions, including a gradual series of forms of human intervention.
- 2) It should be important for the conservation of biological diversity.
- 3) It should provide the opportunity to explore and demonstrate approaches to sustainable development at the regional level.
- 4) It should be of appropriate size to fulfill the three functions of biosphere reserves described in article 3.
- 5) It should fulfill these three functions with appropriate zoning recognizing:
  - a) One or more core area(s) established under legal provisions, dedicated to long-term protection in accordance with the conservation objectives of the biosphere reserve and the sufficient size to meet these objectives;
  - b) One (or more) clearly identified buffer zone (s) surrounding or adjacent to the core area(s) where only activities compatible with the objectives of the conservation can take place;
  - c) An external transition area where sustainable resource management practices are promoted and developed;
- 6) Provision should be made to interest and involve an appropriate range, in particular, of public authorities, local communities and private interests in the design and implementation of the functions of the biosphere reserve.
- 7) Mechanisms of implementation:
  - a) Mechanisms for managing the use of resources and human activities in the buffer zone (s);
  - b) A management plan or policy for the entire area as a biosphere reserve;
  - c) An authority or mechanism designated to implement that policy or plan;
  - d) Research, monitoring, education and training programs

### The integration project

Morocco has acceded to several international conventions dealing with the sea, the coast and the oases. The country also proposed development programs for certain protected natural areas.

In fact, UNESCO in collaboration with the Moroccan state created in 2000 the biosphere reserve Oasis of southern Morocco (BROSM) in the province of "Errachidia, Ouarzazate and Zagora" on an area of about 7,200,000 ha. In relation to this highly strategic and topical program with regard to global concerns about climate change and the protection of natural environments, it is convenient for us to propose to annex the ONOs of the province of Guelmim in

the biosphere reserve Oasis of southern Morocco (BROSM). The idea is to have a platform for exchange between different oases, with a view of supporting this strategy of safeguarding the environment with a real mutualization for the preservation and the promotion of the local cultural and natural heritage.

In our study, the development of appropriate zoning in the ONOs would ensure the possibility of positioning ourselves in relation to the framework concept established by the BROSM. It would then be interesting to review the delimitation (fig.2) of the reserve to optimize the actions undertaken in each territory in relation to its local population and the neighboring oases.

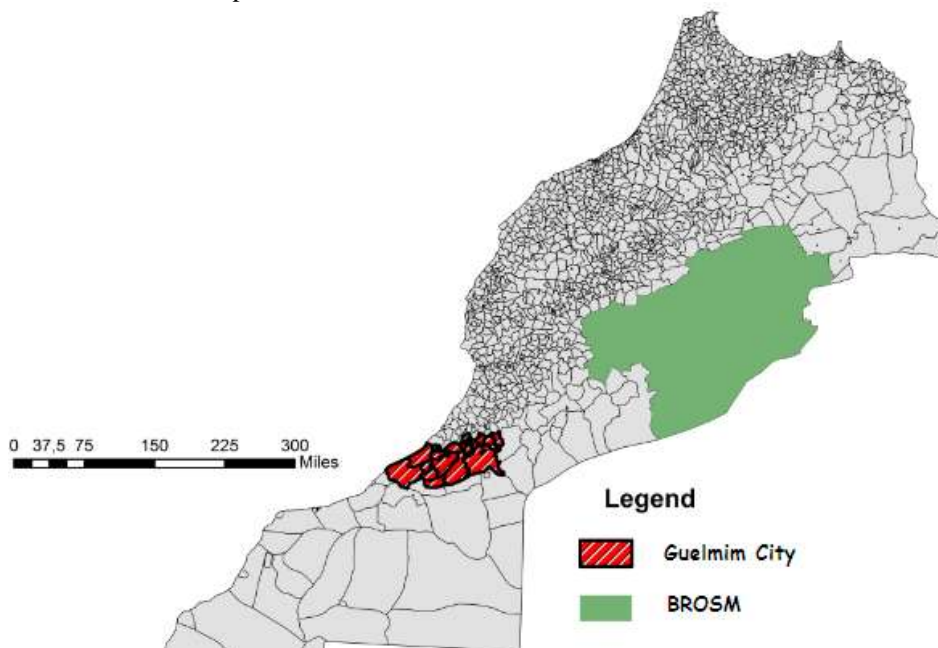


Figure 2: The project of the integration of ONOs in BROSM

### 4. The zoning of Oasis "Oued-Noun"

Zoning is a type of management that provides a progressive development following a relationship and partnership mode around a common project that applies to the entire area with different local levels of intervention on space and resources. The framework concept of this strategy distinguishes three types of interdependent zones at the level of each biosphere reserve. It is therefore our responsibility to proceed in the same way, according to the particularities of the ONOs region, to find the three areas that are as follows:

#### 4.1 The core areas: can be classified in three groups:

##### 4.1.1 Anti-Atlas Ecosystem

The plain of Guelmim is part of the western Anti-Atlas. It is presented as a shallow depression (internal Feijas groups) limited to the north by Lakhsas plateaus and Ifni buttonhole in the NW, JbalGuir-Taissa to the SE and the end of JbalBani to the east (A.PIQUE et al., 2006).

The plain is established on the shale and lower limestone of the lower Cambrian (MICHARD.A et al., 2011). Hydrology characterized by deep and alluvial aquifer groundwater of

the Oued Sayed and Om Laachar watershed with a semi-arid in the north and arid in NE (A.BENABID, 1985).

The plant belt is characterized by a forest of Thuja, Tamaris, date palm and argania tree. It is noted that the N and NW part of this area benefit from the southern boundary of the arganeraie biosphere reserve. The flora that occupies these medium-slope environments consists of genera Limoniastrum, Frankenia and Arthrocnemum. There are also herbaceous plants of the genera Atriplex, Euphorbia, Zygophyllum and Lycium.

This area has arid mountainous oases with an altitude of 600m up to 1000m spread over an area of approximately 1250ha: Taghjijt (500ha), Timolay (350 ha), Ifran Anti-Atlas (200ha) and Amtoudi (200 ha).

Agriculture is the main activity in these oases with livestock which occupies a large place. The original plantations are dominated by the date palm and then substitutions plantations which take more and more importance are represented by fruit trees such as olive and almond trees.

Some cereal, forage and vegetable crops are grown according to the nature of the land. The irrigation system is provided by some Oueds, Khetarra, and sometimes springs when an important and little deep groundwater is easily exploitable, not to mention the pumping techniques that are currently the essential mode for farms.

#### 4.1.2 Saharan and pre- Saharan ecosystem

This area is made up of Schist, sandstones and Georgian limestone, belonging to the lower limestone upper part of the adoudounian (*Michard et al., 2011*). The hydrology of this part is represented by Oued –Noun basin (Oued Seyad and Ouarg-Noun) and the groundwater. The climate is arid and Saharan, which causes a phenomenon of silting due to the SE wind, dry and hot. The vegetation consists of a date palm forest, Tamaris and Acacia (*Radianna and Ehrenbergiana*).

Herbaceous flora is presented by Taramis, Rhus, Lycium, Nitraria, Zygophyllum, Suaeda, Palygonum, Bubonium, Atriplex, Launaen, Zygophyllum, Brochia and Lycium. The area still shelters remarkable remnants of Saharan wildlife such as the golden jackal, the Cuvier's gazelle, the red fox, the genet and the sand cat (*F.Cuzin, 2003*). It also shows a number of faunistic species of reptiles and amphibians that are easier to find and observe.

The area has Oases of Saharan nature with an altitude of less than 400m, on an approximate area of 750ha: Asrir (200ha), Tighmert (450 ha) and Fask (100 ha). Agriculture is the main activity, just like in the whole oasis area, with camel breeding and the same irrigation system.

#### 4.1.3 Humid ecosystem

It consists of coastal alignment and the bottoms of the mouths of the plain, established on the middle Cambrian of schist-sandstones nature (*Michard et al., 2011*). The geological formations which feed it in alluvium are as well, granitic, schist-sandstones and quartzitic as calcareous (*WENGLER et al., 2002*).

The hydrology of this area is ensured by Oued-Noun basin, Bouissafe, Aourioura and the Bas-Draa valley downstream. The climate is humid thanks to the proximity of the Atlantic Ocean. The flora is very rich, characterized by the genera *Pentzia*, *Zygophyllum*, *Teucrium*, *Echiochilon*, *Nolletia*, *Heliotropium*, *Sasola*, *Suaeda*, *Rhus*, *Launaea* and *Frankenia*, with a Tamaris forest.

The area shelters two remarkable species of national interest: The Barbary falcon and The Barbary partridge (*Bergier et al., 2010*) and three endemic species of global importance: The Audouin's gull, The Moussier's redstart and The Tristram's warbler (*Bergier et al., 2011*) then five rare species of national interest: The Eurasian spoonbill, the greater flamingo, the golden eagle, The Caspian tern, and the streaked scrub warbler (*Bergier, 2011; Bergier et al., 2013*).

The mammalian fauna is always present by the fennec, the sand cat and the serval; and a significant number of small mammals and rodents, recognized as the endemic population of the humid land: cape hare, Barbary Striped Rat, Desert Hedgehog (*HCEFLCD, 2008*).

The mouths of Assaka and Bas-Draa are sites of ecological and biological interest (SEBI) outstanding in ecological development, studies and monitored by the administration of water and forests.

#### 4.2 The buffer zone

This area is considered as an area of social and economical development through a set of income-generating activities. Several small villages where palm groves are cultivated, the local population with some cooperatives try to diversify some local products representative of Oued-Noun basin for a new form of subsistence. However, a particularity is assured when the traditional aspects of the region with the good will to keep the authenticity of the landscape.

Compared to the strengths of the region and the criteria stipulated in the institutional framework of the reserve, three types of sites can be mentioned in this zone:

Thermal sites: The area has small palm groves with two thermal stations, the village of Abaynou (part of the arganeraie biosphere reserve). The station is an emergence of the aquifer adoudounien. The water from this spring is hot and comes out at a temperature of 45°C. It has curative effects on dermal and rheumatic diseases. The second station is lalla Mallouka in Aday village.

- Historic sites: Lagsabi Tagoust and Nol Lamta (Asrir) are considered as historic capitals of the caravan and trans-Saharan trade. These were former trading hubs between northern Morocco and Tamboukto in the South. Other sites show particular, cultural archaeological and geo-tourist characteristics represented by caves, rock shelters, rock carvings, Kasbahs, granaries and other elements of former military forts.
- Ecological sites: where certain scientific and eco-tourist researches are sometimes favored with the aim of promoting the assets of the region, by the circuits in the contrasting desert landscapes (part of JbalBani-Taïssa).

#### 4.3 The Transition Zone

This area, which is located at both ends SE and SW of the province, deserves a different look with regard to the level of development of the nearby zones. The territory located on the axis of the Assa-Zag route has another view of a particular desert landscape, a Saharan piedmont with some villages whose resources are based mainly on a traditional breeding. The other territory is situated towards Tantan in the Aouirira basin, an arid landscape mixed with a marine influence by the impact of the humidity of the Atlantic Ocean.

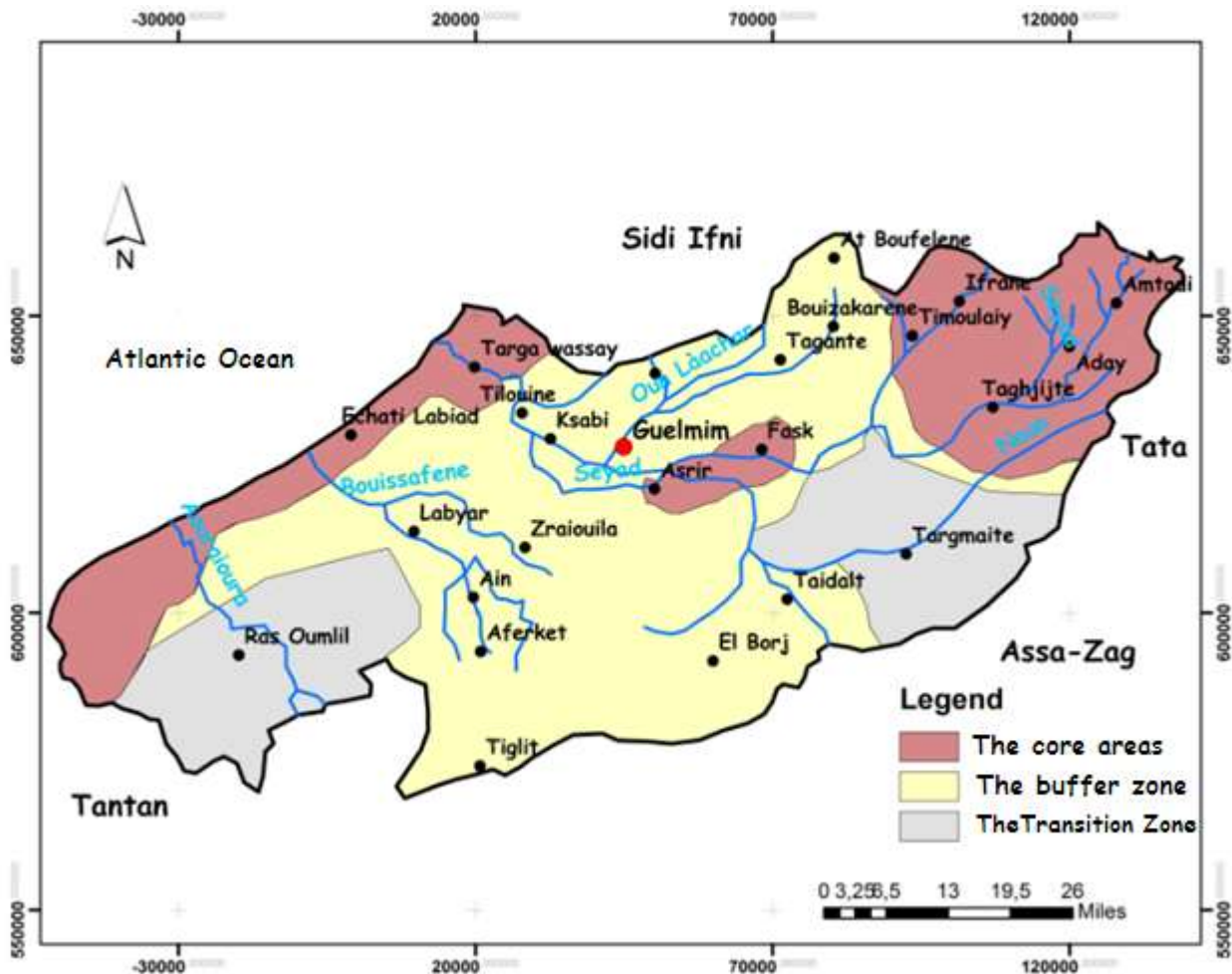


Figure 3: The proposed zoning of the Oasis of Oued Noun

## 5. The Objectives of the Integration of the ONOs in the BROS M

Starting from the working platform established and argued by the Seville strategy, the proposed ONO zoning allows us to position the region in relation to the criteria and objectives set by the project's framework convention. Four areas of development are thus put forward to support our study:

### 5.1 The conservation and preservation of the heritage

Zoning is considered a management method with a certain performance for the enhancement of conservation projects. In fact, it constitutes a real guarantee of the notion of the protection and the preservation of one or more central zones forming part of a protected area. Zoning becomes more efficient when the area in question is subject to multiple uses (N. Dudley, 2008).

It is also an appropriate tool for all actions taken by managers according to the practices used in the principles of management (plan, organize, coordinate, command and control). These rules will be widely observed once affected within a protected area.

The zoning proposed in the ONO will have as objectives in accordance with the strategy:

- Ensure the protection of ONOs natural heritage within BROS M;

- Ensure the rational exploitation of resources with the principles of sustainability
- Preserve the quality of the site being a part of the whole of the BROS M;
- Promote the actions and activities of sustainable development in the same way as the experiments carried out in the BROS M.

This support will meet several environmental criteria with concrete actions that will lead to the conservation and protection of these natural environments.

It also aims to form solidarity with the local population with the aim of creating with the authorities of the region and other actors, activities likely to fix the inhabitants and to generate income on the scale of the territory between several partners.

### 5.2 The assets and the natural potentialities

The agricultural sector is the most profitable economic activity in the province with a significant number of jobs created. Cultivated land is mainly located in Oasis, Wadi beds, foms and spreading areas. Several cropping systems are adopted covering an area of 100.000 ha, ie 9.61% of the province's surface area, of which 65.000 ha are Faid (floods), 30.000 ha are bour and 5.000 ha are irrigated (3.000 ha from sources or khattara in the traditional

palmerais and 2.000ha irrigated by pumping and drainage directly of the groundwater).

Breeding comes second in the province. The region of Guelmim contains immense rangelands, whose extent is of the order of 900.000 ha. The breeding technique is of extensive type based mainly on grazing and transhumance with 30.000 head (*DPA Guelmim, 2014*).

The forest land in the province of Guelmim occupies about 31.700 ha; corresponding to a rate of 3% afforestation. The forest of Oued Noun consists of 1200 ha of date palm (*Derouiche, 2013*), 1.700ha of Thuja, 28 000 ha of Argania, 2000ha of Raddiana and Ehrenbergiana Acacia and 1400 ha of Tamaris (HCEFLCD, 2008).

The mining sector remains underdeveloped despite the province's wealth. Lead, iron and golden ores constitute the main resources of the basement as well as certain geography-materials such as clays and the marble in NE. we also note the presence of the zirconium and the titanium on the littoral zone(*Naser, 2006*).

In terms of energy and thanks to the climate of the region, the sector offers a territory well adapted to the renewable according to storage standards and in the image of other national projects carried out further east. Studies may well lead to consider wind turbines in the communes of Asrir, Afreket Rass Oumlil and solar in the communes of Taghijit, Aday and Fask.

### 5.3 Education and environmental awareness

One of the main components of this strategy concerns all actions carried out for environmental awareness in an educational and social context. Among the accompanying measures, a global vision of the heritage resources of the region is taken into account in order to draw the necessary orientations and indications that could lead to a means of conservation in the spirit of sustainable development.

As a matter of fact, the research undertaken must integrate environmental impact studies more as a priority, to ensure that this strategy is effective, according to the recommendations and tools implemented, in order to complete the conservation program of the threatened natural space in a global regional project.

This strategy will be of great use when we project over a few years the current state of degradation of these oasis spaces. Scientific research programs, skills, and networks working on desert and oasis environments will play a key role in developing a methodology and public use guide for the rational management of oasis ecosystems. All actors can be asked to contribute and collaborate to raise the awareness and educate the local population to save these fragile environments.

### 5.4. Ecotourism

With its rich cultural and natural heritage, the province of Guelmim can attract visitors from around the world. It had important tourist attractions that combine seaside, desert,

hydrotherapy, ecology and adventure, which makes it a destination for domestic and foreign tourists Despite these strengths, the visit rate remains low and the economic activity linked to tourism is penalized by the lack of communication and the lack of quality reception infrastructure.

The tourist aspect is little considered, while it presents a tool of development unavoidable compared to what the region offers. Special attention should be given to this activity as a development lever to be sought within the ONO integration project in the BROSM.

The oasis environments respond perfectly to the different criteria of ecotourism in its form of sustainable tourism. This definition, which respects a certain ethic such as protection of nature and the direct impact on the local population, will make it possible to value the natural, cultural and human resources being the main assets of the province. From this perspective, this type of tourism will contribute to a reduction of negative impacts on this natural environment following the principle of long-term preservation.

Sustainable tourism will have created a dynamic and economic activity and encouraged the local population to participate actively with safeguarding and education actions related to the protection of biodiversity (reforestation, protection of sites, preservation of fauna and flora, reintroduction of endangered species...).

## 6. Conclusion

The geographical location ONO gives to this territory a big potentiality for the sustainable development with an interesting ecological experience that has not yet been exploited.

Certain rules and tools apply systematically and responsibly to a development approach in the context of a project as that of the integration of ONO in the BROSM. The scale of observation begins at the level of the local platform to well take into account the problematic, the various stakes and the impacts on the territory. The development however has to integrate a reflection into the global scale to consider external elements as the climatic factors, the structure of the territory and the policy adopted at the regional level.

The idea of proposing the integration of the ONO in the of the biosphere reserve of southern Morocco comes in the spirit of the current policy which aims at supporting certain depressed areas and at reducing the impact of the degradation caused by climate change and anthropological action. Thanks to the potentialities of the province, its strategic location, its biodiversity and the urgent need to protect certain spaces and to revive others, the experience of its integration in the BROSM, would be a rich and beneficial contribution for a big part of its population.

This strategy will constitute a real initiative for sustainable development and according to the charter that will be established, it will become possible to observe rules of respect for the environment and the historical and cultural heritage of the region. Awareness-raising actions will be

multiple and measures dedicated to this program, will be able to respond to a number of threats and to intervene in a practical way on specific situations depending on the context and space.

The objective is to ensure a better vision in the fragile oasis environment to better project actions of protection and preservation of the local cultural heritage. It will be the same for the rationalization of socio-economic activities and the involvement of all in a responsible, fair, united and sustainable spirit.

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