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Co-funded by the  
Erasmus+ Programme  
of the European Union



## Outline

- The Intercontinental Biosphere Reserve of the Mediterranean (IBRM).
- Family farming and Biosphere Reserve definitions.
- Family farming in the IBRM; a vit activity for the base community.
- The Environmental importance of family farming within the IBRM.
- Good family farming practices, techniques and traditional know-how.
- Family farming and other sectors

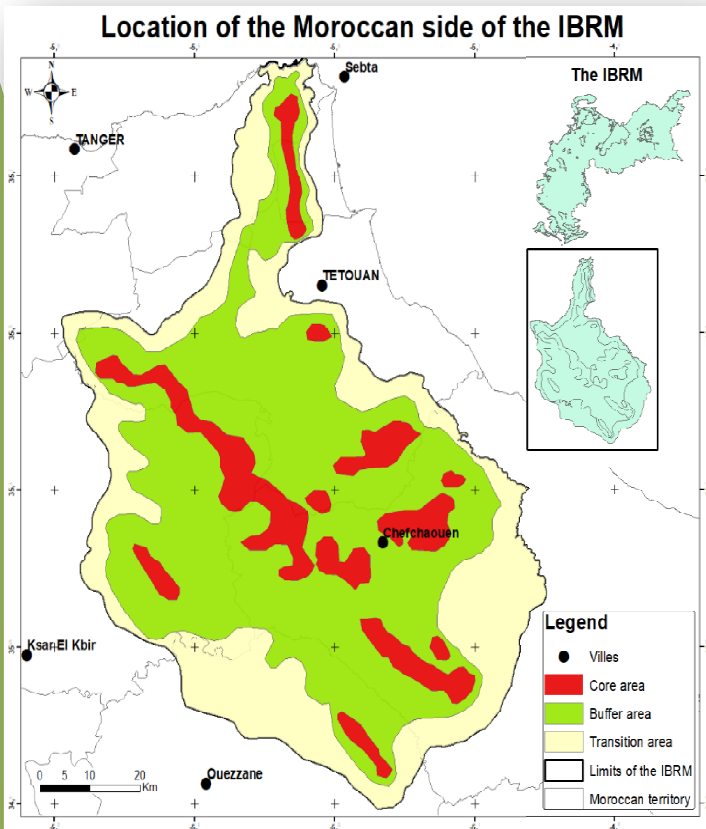
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May 2021

# The Intercontinental Biosphere Reserve of the Mediterranean (IBRM)

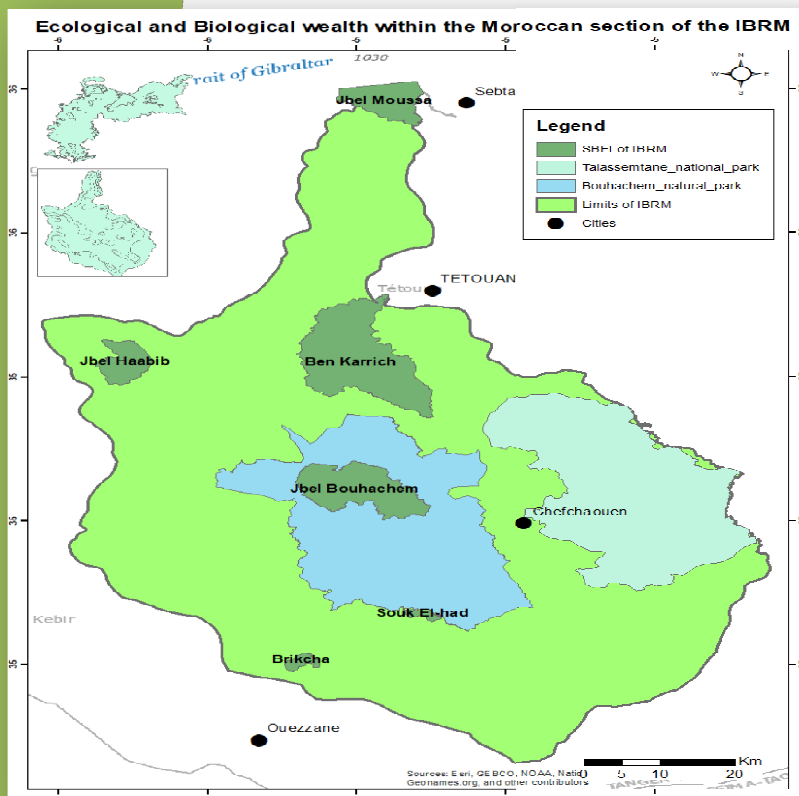


The Intercontinental Biosphere Reserve of the Mediterranean (IBRM) is a unique biosphere reserve around the world, as it is the first one of its kind to be designated by the Man and the Biosphere Program of UNESCO. This protected area was established in 2006 on an area of 894,134,75 ha, bringing together two different continents, the Tingitane Peninsula in Morocco within Africa and the southern Iberian Peninsula of Andalusia in Spain within Europe, between the northern and the southern shores of the Mediterranean Sea.

Both countries -Morocco and Spain- are located in a biogeographic region of deciduous forests and evergreen sclerophyllous scrub within the Mediterranean bioclimatic zone.

In the southern part of IBRM -the Moroccan section-, the biosphere reserve covers an area over 470,6 hectares, dividing into three main zones, plus to a maritime area that connects to the northern section of Spain across the Strait of Gibraltar.

## Ecological and environmental characteristics



The Moroccan section of the IBRM includes numerous natural ecosystems (forest, coastal and marine) and enjoys a great biodiversity. The biosphere reserve was created to combine two natural parks and 6 sites of biological and ecological interest, areas containing many plant and animal varieties as well as unique and endemic species.

- ✓ **Flora:** *Abies maroccana* (Moroccan fir), endemic, constituting the most original forest), *Cedrus atlantica*, *Quercus* spp., *Pinus* spp., *Tetraclinis articulata*, *Buxus balearica* and *Olea silvestris*.
- ✓ **Fauna:** Many remarkable and rare endemic species such as macaque, otter, lynx.





## **Family farming**

Family farming represents an agrarian system based on small-scale farms, each one worked by a family consuming part of its production. Food and Agriculture Organization of the United Nations (FAO) afforded a comprehensive definition on the occasion of the International Year of Family Farming (IYFF, 2014): “Family Farming (also Family Agriculture) is a means of organizing agricultural, forestry, fisheries, pastoral and aquaculture production which is managed and operated by a family and predominantly reliant on family labour, including both women’s and men’s. The family and the farm are linked, coevolve and combine economic, environmental, reproductive, social and cultural functions”.

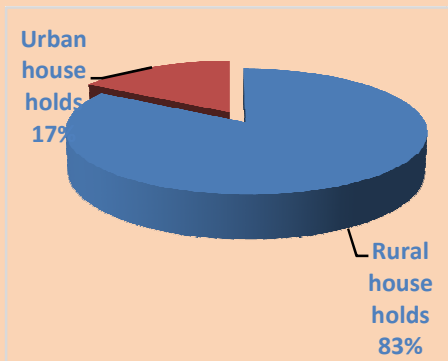
Biosphere reserves are learning places for sustainable development. They are sites for testing interdisciplinary approaches to understanding and managing changes and interactions between social and ecological systems, including conflict prevention and management of biodiversity. They are places that provide local solutions to global challenges.

Biosphere reserves are areas comprising terrestrial, marine and coastal ecosystems. Each biosphere reserve promotes solutions reconciling the conservation of biodiversity with its sustainable use.

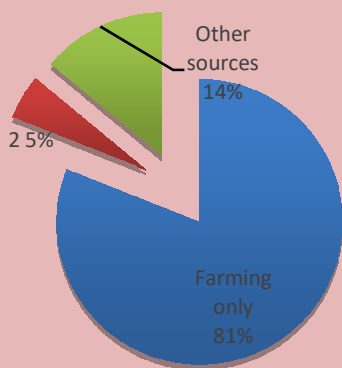
## **Biosphere reserve**



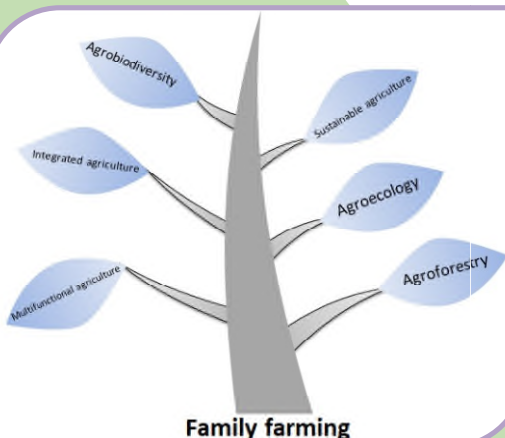
# Family farming in the IBRM; a vital activity for the base community



With a density of 100 hectares / km<sup>2</sup> dominated by the rural population, the Moroccan Rif is one of the most densely populated mountain ranges in the Mediterranean. Inside the IBRM, the local population consists of the majority of rural families, which explains the focus of daily activities on family farming.



Family farming forms an ancient human activity that dates back to several centuries ago, occupying a significant place in the socio-economic life of the base community as it is the predominant form of agriculture in the food production sector, the main and the only source of income for almost of rural population, the principal economic activity and the first contributor in food security and self-sufficiency.



The Agro-silvo-pastoralism agrarian system is a system based on the reconciliation and combination of tree production, crop production and animal production (Livestock, agriculture and forestry).

Thanks to this multi-characteristic agrarian system, family farming knows a range of different type of agriculture, which made it a basic socio-economic activity, a major contributor to local-rural development and a pivotal element in the preservation of natural resources and biological diversity, protection of natural ecosystems, and restoration of areas of ecological importance. The flexibility allows this family farming to combine several agricultural varieties system

# The environmental importance of family farming within the IBRM

Most of the time, agriculture and farmers are constantly in a conflicting relationship with natural resources and the surrounding environment. Instead, the situation is quite different in the IBRM.

The adoption of responsible behaviors and favorable attitudes through a high level of awareness of the importance of their environment and biological wealth in their agricultural activities, made of the farmers the actual managers of IBRM's natural resources. Because of their proximity, peasants are the main actors in the

Family farming is at the service of

resources in one way or another

especially since this agricultural activity is strictly dependent on the surrounding environment

and has positive effects on the ecosystems within the IBRM.

Through family farming, peasants are considered as the primary custodians of the surrounding environment. Therefore, farmers are the essential key to the environmental improvement and the sustainability of the various natural resources.

Historically, family farmers have adopted ancestral, specific and varied knowledge that is more relevant to the conservation of natural resources and biodiversity processes. The innovations and agricultural approaches of local farmers within the BR provided a framework for linking natural resource management to people's daily needs, thanks to the traditional agricultural techniques and methods used.

family farming attaches a great importance to the preservation of natural resources and biological diversity through responsible methods and practices using simple tools, that farmers take into account in the improvement of their agricultural productivity without disturbing the natural balance. The relationship between farmers and nature is a direct, close, reciprocal, symbiotic and harmonious one. This is what a farmer referred to by saying: "The forest is our home. It is part of us and we are part of it. We do not seek to destroy it; otherwise, without these natural resources, we will not be able to live here". This innate awareness by the local people of the importance of the ecosystems for their agricultural activity represents a valuable element for the preservation of the biodiversity and natural resources

# Good family farming practices, techniques and traditional how-know

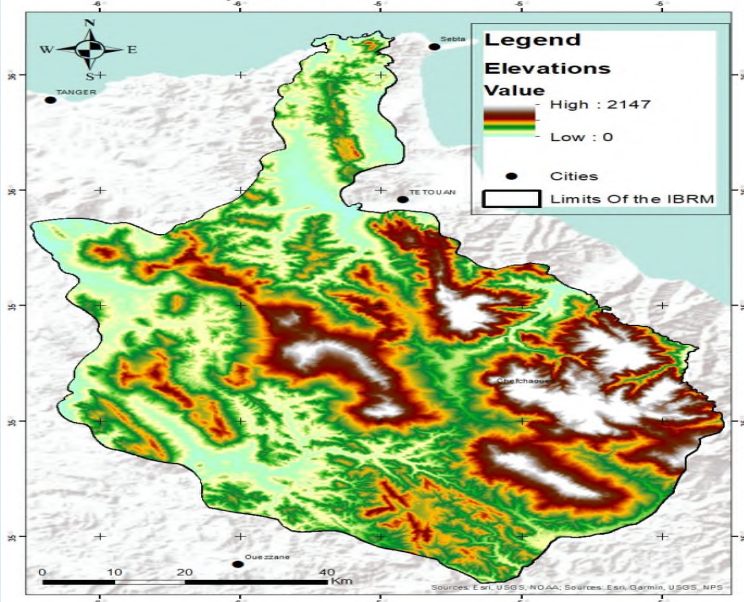
1

Since the emergence of the agricultural activity in the IBRM, farmers have been able to understand the mutual relationship and complementarity between agriculture and biological diversity and the surrounding environment. As a result, farmers have invented conservative techniques that are still used today, and they refuse to abandon it because of its socio-economic and environmental advantages.

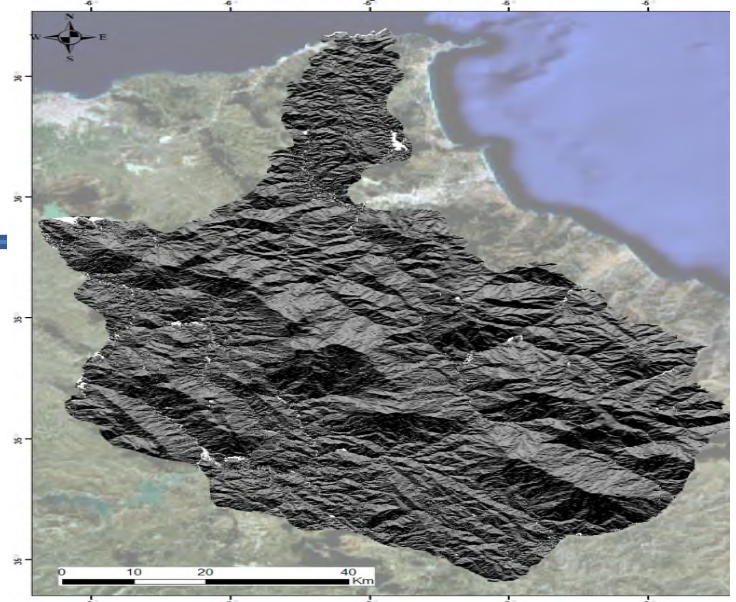
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The traditional agricultural know-how has contributed to the prosperity and continuity of agricultural activity, while preserving biological diversity and natural resources through its techniques and methods inspired by simple and good practices for man and nature at the same time.

Map of IBRM elevations



Hillshade map of the IBRM



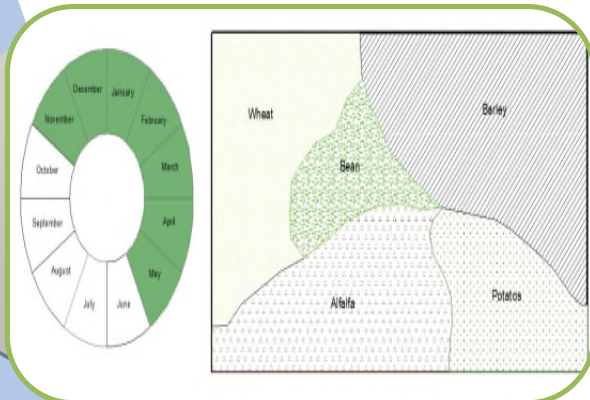
The IBRM natural conditions forced the base community since ancient times to devise agricultural methods and techniques that would help them in farming and to organize the agricultural landscape in an isolated mountainous area that is missing the simplest agricultural requirements. The agricultural traditions and knowledge of the local population are part of the rich cultural heritage witnessed by the region.

By virtue of its geographical location in the heart of the Rif Mountains, the natural factors of the IBRM, represented by the difficult topographical conditions and the predominance of steep slopes, the nature of farming techniques was controlled. Hence, the inhabitants were obliged to try to overcome these obstacles using several simple traditional farming practices.

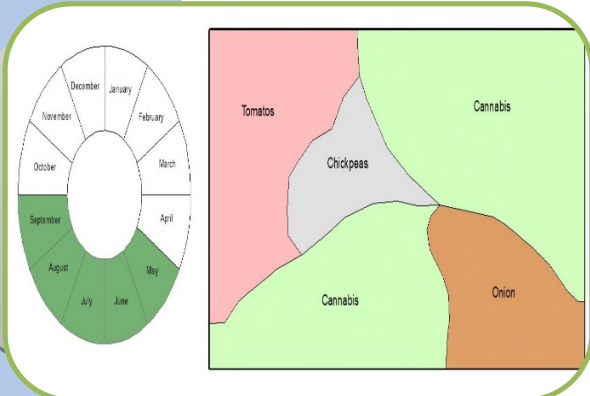


# Examples of good family farming practices, and traditional how-know

## Crop cycle/ Crop rotation

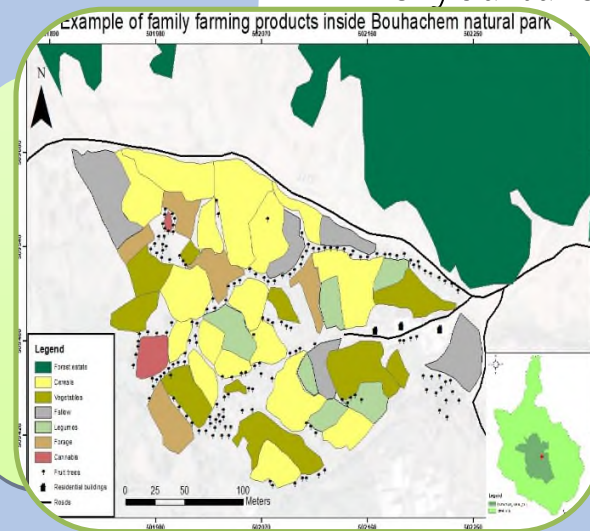


The process of rotating different crops on a single plot of land or one farmland. This process is useful in preventing the depletion of minerals and elements in the soil and impoverishment. Taking into account climatic conditions, soil properties, water resources, and a host of other considerations. In the IBRM, there are areas where a farmland is cultivated three to four times a year with different products.



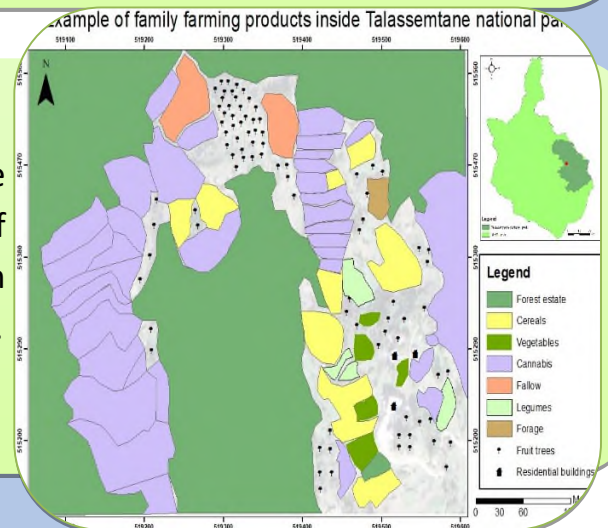
This practice helped family farmers in the IBRM to achieve food security and self-sufficiency, and also contributed to preserving soil fertility and productivity, in addition to reducing the population's dependence on forest areas as pastures, for example, after wheat or barley is harvested, those farmlands serve as a pasture for livestock.

## Polyculture or agricultural multiplicity



A significant farming method, rely on the combination of multiple agricultural products in one field or farmland, in one period of time per year, applied by local farmers as a way to increase production and improve income, as it was a reason for achieving food security and self-sufficiency for family farming in the IBRM.

Thanks to this knowledge, a single agricultural land may be formed from a large number of products. The cultivation of several plant species on the same farm is also associated with animal husbandry as a unique and rich mixed farming system.





## Terrace cultivation

A unique agricultural technique, based on the division of land into a series of small agricultural farms in the form of terraces of successively varying heights with the purpose of overcoming the problem of heights and good land use as well as decreasing erosion and surfaces runoff in mountainous or hilly terrain par excellence.

Thanks to this knowledge, the family farmer in IBRM has been able to gain hundreds of hectares of agricultural land in difficult mountain areas.



## The ground's heating by ashes

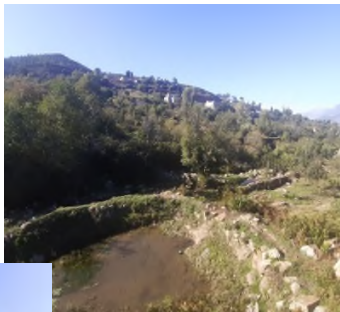
A somewhat strange practice, but it is widely used in biosphere reserves, as a substitute to chemical fertilizers. This technique is considered an alternative solution that is meant to increase soil fertility and increase its productivity without using chemical fertilizers that exhaust the soil and impoverish it. The ash used mainly comes from conventional ovens used for cooking and heating.





## Ploughing by animals

It is an ancient agricultural technique that was utilized by peasants and still widely present in the biosphere reserve. It relies on handcrafted agricultural equipment such as the wooden plough, in addition to strong and trained animals especially mules. This type of plowing is considered one of the most important pillars of family farming in the biosphere reserve that encouraged the emergence and continuation of agricultural activity in a difficult mountainous area where the use of modern tractors is impossible and impractical. This practice is environmentally friendly despite its simplicity.



## Traditional irrigation

Owing to the availability of large surface water resources, family farming depends on traditional irrigation in the majority of its production. Even though it is not the best irrigation technique, but it replaces wells that drain the groundwater resources.

## **Agroforestr**

It is one of the finest agricultural techniques used as an agricultural system prevalent in the IBRM. It is based on the combination of tree products and other products in a single farmland. The advantages of this system are numerous. It increases agricultural productivity and product diversity. Also, it is applied as a solution to overcome the problems of soil erosion, for it protects the crops between the trees from rainfalls and strong winds, especially in the mountain peaks. Olives are the largest of these trees used in agroforestry, with the presence of other types.



It is a process precisely used in the Bours areas; its main purpose is not to produce agricultural production, but rather to protect the soil from erosion, especially in the upstream, where the soil erosion and stone-laden torrents threaten fields and agricultural crops at the downstream.

## **Fruit tree cultivation for soil protection**

It is a practice on the way to disappear due to the spread of modern electric mills. However, the technique of extracting oil using the traditional method using animals and simple tools is considered better in terms of the environment and production quality. Also, the remnants of the grinding process are reused in other things such as heating, unlike mills Modernity, which gets rid of these residues in waterways and streams, while polluting water and destroying biodiversity in general.

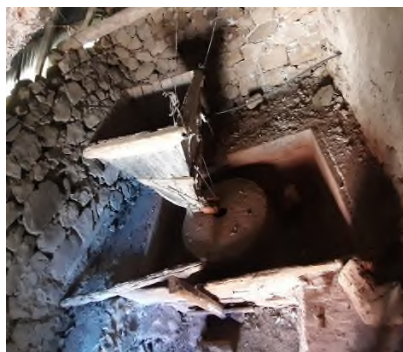




## Traditional extraction of olive oil

## Traditional apiculture

It is a production totally respectful of the environment, but it has undergone major transformations in recent decades; however, traditional production techniques are still present in some douars, where the population depends on the bark of trees as a home and warehouse for honey, a method of high quality and more profit.



## Water mill

It is one of the unique traditional techniques, based on the same principles as the old watermills in Europe. This practice is considered a natural, ecological and environmentally friendly, method that the local population has relied on for many centuries for flour. But its use has diminished greatly with the invention of modern electric mills.





# Family farming and other sectors Tourism

Family  
farming

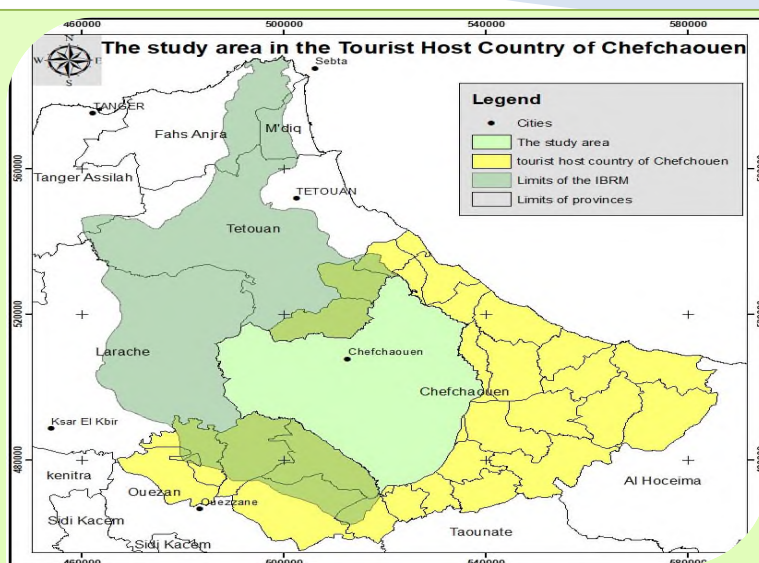


Conservation  
of natural  
resources



Diversifying the  
sources of  
income

## Natural qualifications



### The IBRM:

At the heart of the THCC (PATC). Unique natural and human tourist qualifications.

The first tourist destination for rural tourism in Morocco.

Local farmers strive to conserve these natural resources as it is the mainstay of tourism.



Family farming and tourism activities can work together to preserve various natural resources and the achievement of the desired local-rural sustainable



## Human qualifications



# Family farming within the IBRM; a way to achieve

## SUSTAINABLE DEVELOPMENT GOALS

Family farming represents the main source of income for the local population, it works to create multiple income-generating job opportunities through its multiple activities, as well as, fights against unemployment and the negative social phenomena associated with it. Poverty eradication is one of the principal objectives of family farming in the IBRM.



Zero Hunger, a sustainable development objective closely linked to family farming within the biosphere reserve. It is unthinkable to conceive of overcoming hunger without family farming, which is the main and only source of food for this rural population. The high productivity and the multiplicity of agricultural products make the family farming the capable activity for achieving food security and self-sufficiency for this IBRM's base community.

The family farms management is based on the equal participation of women and men in managing and sharing different activities. The definition of the FAO states that family farming includes both men and women, as it is impossible to imagine the continuation of this agricultural pattern without one of these two elements. As a result, IBRM's family farming has been able to restore, to a large extent, respect for women. Nowadays, females are a component of family farming and the rural economy as a whole.



Family farming is the main socio-economic activity within the IBRM, which the local population depends on as a daily activity that guarantees them decent and stable work, as well as contributing to a great socio-economic development.

Combating inequalities is one of the goals in which family farming contributes effectively. Equality between the various components of the rural community within the biosphere reserve represents a principal goal that family farming works to achieve.



The protection and restoration of wild systems and the promotion of their sustainable use are among the purposes of family farming within the IBRM, the sustainable forest management and preservation of wild biodiversity and mountain ecosystems in addition to the fight against erosion, desertification, land degradation and combating drought manifestations... constitute basic goals for family farming within the IBRM.

FAMILY FARMING  
SUPPORTS SDGs





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Université Mohammed V de Rabat

# Family farming

At the service of the ecosystems in the IBRM

**EduBioMed**

*Capacity Building for Higher Education  
and Applied Research in UNESCO's  
Mediterranean Biosphere Reserves*

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May  
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