

Innovation of UNESCO-MAB: An Opportunity for the Territorial and Sustainable Development of the Arganeraie Biosphere Reserve

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Abstract

Aim: Morocco has implemented several strategies and rules for saving biodiversity and safeguarding natural and territorial riches in protected regions since the release of the Vizier Decree on January 19, 1942. Within this context, the UNESCO MAB designation encourages creativity in the World Network of Biosphere Reserves. However, its goal of reconciling protection and resource management in order to generate territorial and sustainable development possibilities has been criticised. This article focuses on the deficiencies of local population involvement in the Arganeraie Biosphere Reserve in preserving the forest environment, as well as the role of innovations brought about by the UNESCO MAB label commitment in this reserve rich in remarkable biodiversity and threatened endemic resources.

Methodology: This research is founded on the results of fieldwork conducted as part of the Erasmus + EduBioMed Project. This work was carried out through a documented study of MAB programmes and strategies, as well as the clash of advances introduced by the latter with the actuality of the field of ABR.

Findings: According to this study, the majority of social, economic, and territorial innovations coming from the use of the UNESCO MAB label have led to significant changes in local communities. However, the impacts are more concentrated in regions where the actors have a stronger presence.

Implications/Novel Contribution: The qualitative results of the study are crucial for understanding the reality of RBA who is a specific territory concerning the various forms of innovation brought about by the UNESCO MAB label.

Keywords: Label, MAB UNESCO, ARB, Innovation, Territorial and sustainable development.

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INTRODUCTION

In Morocco, the Arganeraie Biosphere Reserve (ABR) (Figure 1) covers a very large area of 2,560,000 hectares in two regional territorial communities, namely Marrakech-Safi and Souss-Massa. It includes the provinces and prefectures of Agadir Ida Outanane, Inzeguane Aït Melloul, Chtouka Aït Baha, Taroudant, Tiznit and Essaouira. It is inhabited by a large population that exceeds three million inhabitants, “according to the High Commission for Planning”. It has rich and diversified local Amazigh knowledge and a specific material and immaterial heritage.

It is considered a vital natural ecosystem by its biodiversity richness and environmental and socio-economic functions. It has decisive roles in the life of its populations and in ensuring the socio-economic development of a good part of west-central Morocco.

The ABR was the first Moroccan biosphere reserve recognized internationally in 1998. It is part of a world network of biosphere reserves, launched in 1976, which currently consists of 727 reserves labelled Man and Biosphere (MAB) by UNESCO.

This label is considered a differentiating tool that brings innovations to the entire World Network of Biosphere Reserves (WNBR). These innovations concern sustainable financing with an economic character; they also deal with inclusion with a social character and effective governance in the case of territorial innovations (Dyer & Holland, 1988; Pool-Stanvliet, Stoll-Kleemann, & Giliomee, 2018; UNESCO, 2017; Ziauddin, Khan, Jam, & Hijazi, 2010). Therefore, this article aims to address the innovations brought by the MAB label to see if they can

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be adapted to specific environments such as those of west-central Morocco. While showing their participation in sustainable territorial development is what makes the positioning of this study.

In our case, these innovations are emerging strategies prescribed in the roadmap for the Man and the Biosphere (MAB) Program and its WNBR, which governs the MAB Strategy (2015-2025) to achieve territorial and sustainable development. But if these innovations are formulated globally, what could be their contributions in the context of this reserve very well known by the endemism of its famous Argan tree Spinoza? Could they also contribute to this protected area's territorial and sustainable development?

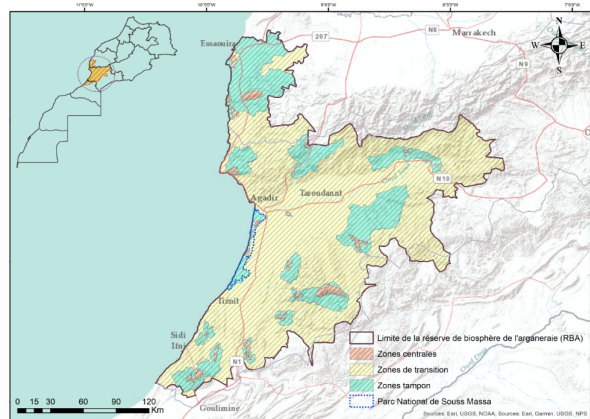


Figure 1. Location of the Study Area

METHODOLOGY

To address this objective, we conducted a study using critical and territorial approaches, implementing a documentary analysis of MAB programs and strategies and selecting innovations from the latter. We then confronted these innovations with the reality observed in the ABR field through a qualitative human and social sciences analysis. This research was carried out within the framework of the Erasmus+ project “Development of skills for education and applied research in UNESCO Mediterranean biosphere reserves” (EduBioMed), which enabled us to meet with all the critical stakeholders of the ABR following the central and regional, provincial, and local scales. The study focuses on the deficits of involving local populations in the ABR's forest environment preservation process and the role of innovations brought about by the UNESCO MAB label in this reserve rich in remarkable biodiversity and threatened endemic resources.

LITERATURE REVIEW

A Half-Century of Innovation in Biosphere Reserve Preservation Tools

UNESCO's MAB is a worldwide study programme on Man and Biosphere that was formally started in 1970 following an international conference in 1968 with the subject “The scientific basis for rational use and conservation of biosphere resources.” This was differentiated by “conservation” problems rather than “protection,” resource use, and humans as a whole part of the ecosystem. These issues were also addressed at the Seville conference in 1995, with the goals of conserving biodiversity, promoting sustainable development, and participating in the development of biosphere reserve stakeholders' capacity to address environmental problems and ensure societal relevance (Qian, Parker, & Zhu, 2023; Sagie & Orenstein, 2022).

The UNESCO MAB program has therefore been introduced as a preservation tool that will lead UNESCO-labeled biosphere reserves to respect its charter of commitment to creating a relationship between humans and the biosphere reserve through the adoption of innovative, ecosystem and bio-regional approaches (Matar & Anthony, 2022) based on:

- The principles of sustainable management of biological diversity at the level of the core area, which occupies an area of 16620 for the core area of the ASR;
- Reconciling conservation and sustainable use of resources. This is a role ensured in particular by the buffer zone, which is 582,450 ha;

- Benefit sharing through the transition area occupying the 1,900,900 ha of surface area;
- Recognition of the ecosystem goods and services basket aims to place the local population at the centre of the biosphere reserve management.

It should be noted that for Morocco, the UNESCO MAB label is managed by the Moroccan National Committee of the Man and the Biosphere program (MAB-Maroc, UNESCO) in collaboration with the High Commission for Water and Forests and the Fight against Desertification (HCEFLCD) for all the BRs in the kingdom, except for the Biosphere Reserve of the Oases of Southern Morocco (RBOSM), which is a collaboration between MAB-Morocco, UNESCO and the Ministry of Agriculture, Maritime Fishing, Rural Development and Water and Forests of Morocco.

The MAB-Morocco label, like all UNESCO labels, is a technical label used to coordinate and enhance the RBOSM launched in 1976. It gives the reserves of the network, as mentioned earlier, legitimacy, visibility and international credibility (UNESCO, 2017) and is also perceived as a central element of sustainable development (Ahmad, Youjin, Žiković, & Belyaeva, 2023; Luo, Wang, & Guo, 2022; Pouresmaïeli, Ataei, & Qarahasanlou, 2023; Shahbaz, Tiwari, Jam, & Ozturk, 2014) by allowing the local populations of the reserves belonging to the WNBR to present a special territorial offer with an innovative approach based on local identity.

In contrast to the traditional strategies of protected area management in Morocco, MAB has implemented global and innovative strategies prescribed in the Roadmap for the (MAB) Program and its World Network of Biosphere Reserves that governs the MAB Strategy (2015-2025). These include meeting the Sustainable Development Goals (SDGs) in the WNBR, inclusiveness, External Partnerships and sustainable financing, communication and experience sharing, especially for effective governance (Coenen, Newig, & Meyfroidt, 2022).

RESULTS AND DISCUSSION

Creating a State Body that Adopts MAB Innovations: An Ambitious Decision to be Implemented

Since its integration into the WNBR in 1988, the ABR has been committed to applying for the UNESCO MAB label program and contributing to implementing sustainable development objectives through biodiversity conservation. The latter is rich and diversified within the ABR, and it is home to a threatened and rare fauna and flora, including the Moroccan lotus (*Lotus maroccanus*), the selaginella *balansae*, the lynx (*Felis caracal*) and the cuffed sheep which is part of the red list of the International Union for Conservation of Nature (IUCN).

The term biodiversity was first used in the 1980s (Kumar, Kumar, Saikia, Roy, & Khan, 2022; Pröbstl et al., 2023) and has been considered the result of both Earth's history and the evolution of the world for many years (Mammola et al., 2022; Sobti, Thakur, Kaur, & Mishra, 2023). This biodiversity is defined according to the 1992 United Nations Convention on Biological Diversity as "the variability among living organisms from all sources, including, among other things, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part, and includes diversity within species, between species and of ecosystems." Research on its "value" (Hautereau-Boutonnet & Truilhé, 2017; Vivien, Dannequin, Diemer, & Petit, 2000), focuses on two distinct components which are on the one hand use as a service to humans and on the other hand non-use as an end in itself.

The value of biodiversity at the ABR is also used among local populations. Take the example of the argan tree, which is the image of the reserve for the local population; its leaves and fruits are edible and are used in medicine and cosmetics. As for its wood, it is used for heating etc. But as for the state management bodies of the ABR, the value of biodiversity is non-use because their use threatens the preservation of biodiversity, which is a significant issue in the face of overexploitation of the reserve's environment.

For this, the body responsible for managing the reserve has set top-down strategies that will subsequently be imposed on all protected areas in Morocco. Following the survey carried out, this has caused a conflict (Figure 2) that has led to contempt on the part of the local population, who describe this body as an "environmental policeman", given its tasks, which are essentially related to the control of any violation committed against the environment. Faced with this situation, the state actors have admitted during the surveys that they are looking for a solution to this conflict by changing the traditional tasks of the management, as mentioned earlier body by adopting the innovation brought by the UNESCO MAB label, respecting the SDG 15, considering the human capital not only as a whole part of the ABR but also the centre of its territorial and sustainable development and achieving efficient governance.

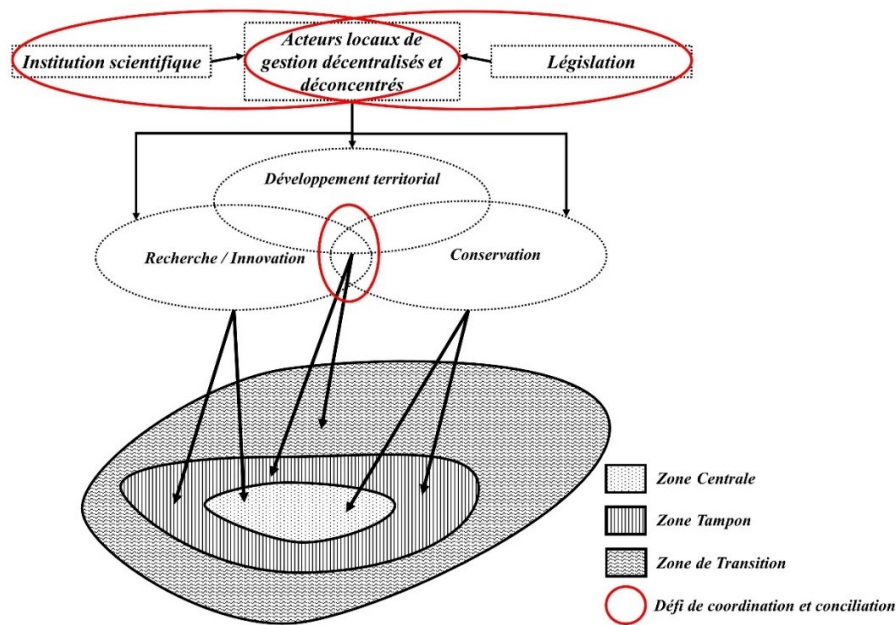


Figure 2. Coordination challenge within the Arganeraie Biosphere Reserve

The change in question will, therefore, also affect the whole of the HCEFLCD; first of all, its name will become the Forest Development Organization (ODF), then the approach based on the control will be a participatory approach and projects within the ABR will now be the subject of a request from the reserve by representatives of the douars and finally, any decision will be based on consent through awareness days on biodiversity that the animators of the ODF will lead also appointed development agents. The objective is to involve the population in decision-making and recognize its place in the ABR's governance system.

However, it should be noted that this change is still in the preparation phase, but it remains an ambitious state decision for its application for these MAB-related innovations.

The gap between ABR as a concept with the UNESCO MAB label and the reality on the ground

Innovation as a concept includes the creation of alternative solutions. It can be social, economic or spatial and territorial. The social one is introduced in Quebec, defined as a process allowing social transformation, serving a common interest and examining the role of individuals (Caicedo et al., 2023; Harrisson & Boucher, 2011). It was proposed to remedy the social consequences of economic crises generated by technological innovation.

Innovation is a priority for the Moroccan state by adopting the principles of the UNESCO MAB label. It tends to consider Man as an integral part of the ABR by allowing him to use and manage resources in a sustainable way, which helps to eradicate poverty and thus to adapt to SDG1.

To face poverty, the ABR can use its rich and diversified heritage, which for many researchers, is a means of providing important support to projects in the territories, especially in rural areas (Hermawati, Ririh, Ariyani, Helmi, & Rosaira, 2023; Husson, 2008; Landel & Senil, 2009), and is considered to have a strong potential for reducing their vulnerability (Romagny & Boujrouf, 2010) The argan tree is a relevant example of the heritage of the ABR because it is recognized as heritage on a global scale. In 2014 these skills were labelled as intangible heritage of humanity by UNESCO, and in 2018 the Food and Agriculture Organization of the United Nations (FAO) registered the agro-sylvo-pastoral system based on argan as an ingenious system of world agricultural heritage. In 2021, May 10 was decreed International Day of the Argan Tree by the United Nations General Assembly.

Several researchers have confirmed that the argan tree is a heritage that allows the financial inclusion of the local population. It participates in the financial growth of the ABR, but despite its patrimonial and economic importance, the rural area of the ABR is one of the poorest areas in Morocco. According to the result of the mapping study of multidimensional poverty established by the High Commission for Planning (HCP) in 2014, the multidimensional poverty rate in the region of Souss-Massa in most of the ABR is 7.2%. Added to this is the

exodus of young people from the rural areas of the ABR in search of employment in different cities and regions of the country. As a result, several douars are emptied of their young forces. Those who remain are often unable to work, leading to the fall of agriculture and the loss of local knowledge leading to the degradation of fields and terraces, which goes against SDG 8 on work and economic growth and the principles of MAB of UNESCO.

To develop the local economy in the rural environment of the ABR, a movement of return of pensioners to their native Douar was born. These retirees have grouped under the status of an alliance which constitutes a form of social innovation in the ABR, such as the civil association for the environment of Ammelne, which has opted for a research and development approach in collaboration with Moroccan universities to achieve territorial and sustainable development. In the same vein, agroecological initiatives have emerged in the ABR, more precisely in AABRa Sahel and Tamait Oufella etc., thanks to Migration and Development, with the emergence of a global agroecological movement. This movement adopts the eco-design, which aims to integrate the environment from the design of goods and services and promote sustainable agriculture SDG 2, which is part of a global and multi-criteria environmental approach.

Although there are innovations aligned with those brought by the UNESCO MAB, they are not only applied to the ABR, they are the basis of several civil society movements in the majority of rural territories in Morocco, and this is not only the concept of the biosphere reserve, hence the existence of a gap between the ABR as a concept of reserve labelled MAB UNESCO and its reality.

CONCLUSION

On the one hand, the UNESCO MAB label is designed to reconcile sustainable resource management by the local population of the reserve with biodiversity conservation and achieve territorial and sustainable development. It brings several social, economic and spatial innovations, including the respect of the SDGs in the WNBR, inclusion, external partnerships and sustainable financing, communication and sharing of experiences and effective governance.

These innovations are far from the reality on the ground in ABR. There is much effort, awareness raising and project set to achieve it. It also follows from this study that the ABR only partially meets the aspirations of the SDGs, as it lacks SDGs number 1, 2, 5, 6, 8 and 10.

From this perspective, the Moroccan state has the ambition to apply these principles of the SDGs, to achieve territorial and sustainable development, to have effective governance (Benhsain & Salhi, 2023) and finally, to apply all the innovations of UNESCO's MAB through the creation of the ODFs. However, this remains a state decision emanating from the central level and labelling from above, which is that of MAB.

Although most of the social, economic and territorial innovations resulting from the application of the UNESCO MAB label have contributed to profound changes in local societies that are beginning to recognize the place of gender in the family system, the involvement of women in local organizations and their participation in decision making and development is very limited. The local economy is beginning to move from a subsistence economy to a solidarity economy, whose environment is based on local knowledge and is composed of non-equitable channels.

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Although this study encountered difficulties during its implementation, such as the limited availability of some actors and their reluctance to participate in surveys, as well as the need for extensive travel across the central, regional, provincial, and local scales to access and confront the data with reality, the qualitative results of the study are crucial for understanding the reality of RBA who is a specific territory concerning the various forms of innovation brought about by the UNESCO MAB label.

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