The Role of Community-Based Agritourism in Sustainable Land Use Planning; A Case Study of Rural Morocco

Alheen Mahmud, Graduate Student, University of Minnesota Twin Cities;
Email: mahmu035@umn.edu,
Phone Number: 218.329.3614,
Mailing Address: 1414 S 3rd St. Minneapolis, MN 55454

Khadeeja Hamid, Graduate Student, University of Minnesota Twin Cities;
Email:hamid051@umn.edu,
Phone Number: 6124385304,
Mailing Address: 3600 12th Avenue South, Minneapolis, MN 55407

Sara Hussein, Graduate Student, University of Minnesota Twin Cities;
Email: hussi043@umn.edu,
Phone Number: 6129872682,
Mailing Address: 925 Delaware St SE, Minneapolis, MN 55414

Bill Khishigbat, Graduate Student, University of Minnesota Twin Cities;
Email:khish001@umn.edu,
Phone Number 651-233-4915:
Mailing Address: 215 Oak Grove St. Apt 302, Minneapolis, MN 55403

1. Introduction

Community-based agritourism focuses on preserving cultures, sustaining rural livelihoods, and protecting traditional agricultural methods through sustainable land use planning. It emphasizes local ownership of agritourism resources and widespread community benefits. We argue that community-based agritourism in Souss-Massa, one of the twelve regions in Morocco, presents a viable process that incorporates sustainable land use planning principles into agriculture and tourism development, contributing directly to the achievement of several UN sustainable development goals.

We explore a community-engaged process for developing agritourism in rural Souss-Massa that considers maintenance of ecosystem services and preservation of indigenous knowledge, while promoting economic growth to meet changing supply and demand needs. This work draws linkages across various disciplinary boundaries to highlight how incorporation of sustainable land use principles and practices into alternative tourism practices, such as agritourism, elevates the ecological, economic, and social sustainability of tourism activities.

This paper examines the unique characteristics of community-based agritourism in its role of sustainable land use planning over environmental, economic, and social dimensions, using the argan tree development in the Souss-Massa region as a case study. The paper is split into six sections: land use planning and sustainable development, agriculture in land use planning, community-based agritourism in land use, contextual overview of Moroccan tourism development, case study of Souss-Massa argan tree industry, and conclusion.

2. Land Use Planning and Sustainable Development

With rapid increase in population growth, land is becoming scarce while the demand for land and natural resources remain high, thus resulting in higher competition over land and its resources. The scarcity of land has been associated with many issues relating to food insecurity.. Simultaneously, there is a higher demand on land systems for urbanization and amenities, mining, food production, and biodiversity conservation.[1] A process is needed to be able to manage various stakeholders' development plans and interests with regards to the limited supply of land and its natural resources while maintaining the ecosystem balance.

Land is defined as "the section of the earth's surface with all the physical, chemical and biological features that influence the use of the resource".[2] Building off of that land use is not limited to agricultural and forestry purposes, it also includes land use for settlements, industrial sites, roads and other human activities. Hence, land use planning can be defined as "the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select and adopt the best land use options." [3]

For land use planning to be sustainable it needs to guarantee biodiversity and preserve the eco-balance of the whole system.[4] The term sustainable development has undertaken multiple definitions and there has not been a single universal way to define it. For the purpose of this paper we look at the Food and Agriculture Organization of the United Nations' (FAO) definition of sustainable development which is, "the management and conservation of the natural resource base and the orientation of technological and institutional change in such a manner so as to ensure the attainment and continued satisfaction of human needs for the present and future generations. Such sustainable development conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable".[5] Consistent with this definition, for land use planning to be sustainable it should develop into an "interdisciplinary, holistic approach that gives attention to all functions of the land and actively involves all land users through a participatory process of negotiation platform".[6]

Land Use Planning in the Environmental Dimension

Human activities such as agriculture, forestry, and other land-management practices have altered landscapes as well as plant and animal communities of many ecosystems around the world. This is because land-management practices such as fire, grazing, and tillage affect

[1]Crossman, N.D., Bernard, F., Egoh, B., Kalaba, F., Lee, N., and Moolenaar, S. The role of ecological restoration and rehabilitation in production landscapes: An enhanced approach to sustainable development. Working paper for the UNCCD Global Land Outlook, 2016 .

[2] Van Lier, Hubert, and Daniele De Wrachien. "Land use planning: A key to sustainable development." In 30th International Symposium on Agricultural Engineering" Actual Tasks on Agricultural Engineering", pp. 171-184. HINUS, 2002.

[3] Ibid.

[4] Ibid.

[5] Ibid.

[6] Ibid.

ecosystem composition, cycling of nutrients, and distribution of organic matter.[7] Nowadays land degradation represents a major challenge which continues to threaten food security in different regions around the world. As previously mentioned with land being scarce and limited, increasing agricultural production must be carefully considered through using efficient land use and land management practices.[8] This is because land degradation results in the loss of soil quality and it lowers the environmental and habitat functions of the ecosystems. Furthermore, there are multiple stakeholders, ranging from small farm owners to large industrial corporations, competing over land and its resources. This puts further pressure on lands and biophysical resources, leading to several other environmental consequences and implications. Additionally, human activities are continuously interfering with the natural equilibrium of the ecosystem. This is due to the fact that the ways by which people adjust their activities to environmental changes are largely dependent upon the productivity of the land. Hence, environmental changes may either enhance productivity of the land or cause irrevocable damages to it. Similarly, changes in land use may either improve productivity and sustainability of land or degrade land resources. Thus, sustainable land use planning needs to be able to pinpoint what regions are subject to improvement or threat due to the deployment of different land-use practices.[9] Accordingly, studies call for the need to establish adequate land-use policies and land management programmes that combine development and environmental goals and implement them through integrated and participatory approaches.[10]

Land Use Planning in the Economic Dimension

Land use planning and economic development are strongly interconnected. In most cases land use planning usually requires a trade-off between economic development and environmental conservation.[11] Hence, economics is strongly tied to issues of biodiversity and land-use. This is because the exploitation of land resources provides a range of economic benefits yet leads to land degradation and resource depletion, therefore governments need to tackle the impact of global economic policies on biodiversity. It is important to evaluate and thoroughly assess the impact of economic policies on the country's biological resources. It is also important to account for the utility of enforcing land use practices that entail a combination of economic incentives and disincentives to promote conservation objectives.[12] Even though the main objective of land use planning is to address land degradation as well as socio-political issues, studies convey there are economic consequences associated with land use planning. Those consequences rely on the "context, institutional settings and substantive policies that are responsible for coordinating land use planning and economic development practices".[13] It has been shown that regional economies and land use planning are tightly interrelated. Land use regulations contribute to socioeconomic activities resulting in betterment of the performance of regional

[7] Ojima, D. S., K. A. Galvin, and B. L. Turner. "The global impact of land-use change." *BioScience* 44, no. 5 (1994): 300-304.
[8] Koohafkan, A. Parviz. "Land resources potential and sustainable land management: an overview." In *Natural resources forum*, vol. 24, no. 2, pp. 69-81. Oxford, UK: Blackwell Publishing Ltd, 2000.
[9] Ojima, D. S., K. A. Galvin, and B. L. Turner. "The global impact of land-use change."
[10] Koohafkan, A.. "Land resources potential and sustainable land management: an overview."
[11] Kim, Jae Hong. "Linking land use planning and regulation to economic development: a literature review." *Journal of Planning Literature* 26, no. 1 (2011): 35-47.
[12] McNeely, Jeffrey A. "Economic incentives for conserving biodiversity: lessons for Africa." *Ambio* (1993): 144-150.
[13] Kim, "Linking land use planning and regulation to economic development: a literature review."

economies. Land use regulation and planning have countervailing effects on the performance of regional economies, where government interventions in land use can either have positive or negative effects on regional economic prosperity. [14]

Land Use Planning in the Social Dimension

Land-use planners always seek to improve the socio–economic conditions of the rural population. There are a variety of methods to improve them through sustainable land use planning including: creating and improving farmland, increasing production, relocating farm buildings, creating villages etc. The development and changes in farming methods and agricultural practices and activities can provide some explanation behind the drastic changes of the countryside. Farming practices such as the enlargement of scale, intensification, specialisation and mechanisation have resulted in major problems in the countryside, which are not only environmental but also have negative social impacts, where such practices contributed to the loss of the social countryside life and recreational values.[15]

Studies have shown that "society foregoes large gains in welfare when it ignores the value of ecosystem services".[16] As mentioned in the previous section, one of the problems associated with sustainable land use is that the environmental aspect of sustainability often clashes with the economic aspect and it is hard to account for social justice and social gains within such context. There are always conflicts between private economic interests and societal interests. For instance, landowners earn economic gains through producing only marketed goods but not for non-marketed public goods. As a result, landowners tend to pursue only private gains through their provision of market goods and fail to provide non-marketed ecosystem services desired by the society such as: improving water quality, providing habitat for species, etc.

3. Agriculture in Land Use Planning

We identify three stages of agriculture: traditional, intensive, and sustainable agriculture. Traditional agriculture is primarily used to provide organically grown food and other locally produced necessities using existing natural resources as well as local knowledge and tools of the community consuming them. Often, traditional agriculture is associated with subsistence farming. With increasing population growth and globalization, farming techniques and systems were replaced with intensive agriculture, which solely concentrated on productivity. One of the main reasons intensive farming garnered support publicly is because it was thought to be the solution to global poverty and food insecurity. Original farming methods were rebranded as traditional agriculture and became stereotyped as primitive with drastically lower productivity, ignoring the sustainable and social benefits it provided to the environment and communities. Intensive agriculture, or mainstream agriculture, involves the practice of tilling large amounts of land to plant monoculture crops for commercial purposes only, where the land users/owners are, usually, not indigineous inhabitants of the land. Recognizing the detrimental effects of

[14] Ibid.
[15] Van Lier, Hubert N. "The role of land use planning in sustainable rural systems."
[16] Pennington, Derric N., Brent Dalzell, Erik Nelson, David Mulla, Steve Taff, Peter Hawthorne, and Stephen Polasky. "Cost-effective land use planning: Optimizing land use and land management patterns to maximize social benefits." *Ecological Economics* 139 (2017): 75-90.

intensive farming (and that food insecurity is largely a result of political and social instability rather than not enough food being produced), support for sustainable agriculture grew among researchers, yet not as recognized through government policies. Sustainable agriculture equally focuses on environment, personal profitability, and social and economic equity in their methods. The following section delves into each agricultural type and their influences in land use through environmental, economic, and social dimensions.

Traditional Agriculture in Land Use Planning

Traditional agriculture produces many environmental benefits. Often the methods and practices are adaptable to increase biodiversity and resilience to the agroecosystems. They implement climate smart approaches through smart, efficient use of water, soil, and energy.[17] The existing landscape, vegetation, animals, climate patterns, and other environmental characteristics influence what resources they harvest, hunt, and grow as well as how they conduct those activities to ensure the resources are not depleted for future generations. Other types of ecological landscapes that are not entirely devoted to agriculture, such as forests, still have features that have been influenced by traditional agricultural methods. Indigenous knowledge and practices in natural resource management are integral to the shaping and development of both agricultural and non-agricultural areas. Protection policies that completely remove all human influence (especially traditional ecological and agricultural knowledge of forests) from these areas may prove to be detrimental to health and preservation of the protected lands.[18]

The economic influence on traditional agricultural methods is minimal to non-existent. As the goal of traditional agriculture is self-sufficiency rather than profit, many of the decisions made on an individual and community level are mostly influenced by environmental and social factors.[19] This is characterized by equal ownership or sharing of land and the resources it provides, rather than private ownership that is common among most households.[20]

In many developing countries, households depend on their immediate surroundings to sustain their livelihoods as well as future generations. It becomes integral to most aspects of their well being that traditional societies hold their land in high social and spiritual esteem.[21] This belief is embedded into traditional agricultural practices where farming, hunting, gathering, animal husbandry, and other resource use and management is used solely for livelihood needs of the immediate community in consideration of their impact towards future generations. This includes food consumption, but can extend to medicinal use, housing construction, craft and garment making, spiritual and traditional practices, etc. Social rules and cultural expectations of behavior and actions to resource use established within a community are used to protect the environment as well as livelihood security of everyone within the community. A community's values and

[17] Singh, Rinku, and G. S. Singh. "Traditional Agriculture: A Climate-Smart Approach for Sustainable Food Production." Energy, Ecology and Environment 2, no. 5

[18] Harrop, Stuart. "Traditional Agricultural Landscapes as Protected Areas in International Law and Policy." Agriculture, Ecosystems and Environment 121, no. 2007 (January 22, 2007)

[19] Pulido, Juan, and Bocco, Gerardo. "The traditional farming system of a Mexican indigenous community: the case of Nuevo San Juan Parangaricutiro, Michoacán, Mexico." Geoderma no. 111 (2003): 249-265.

[20] Juanwen, Yuan, Wu Quanxin, and Liu Jinlong. "Understanding Indigenous Knowledge in Sustainable Management of Natural Resources in China Taking Two Villages from Guizhou Province as a Case." *Forest Policy and Economics 22, no. 2012 (March 13, 2012):* 47–52.

[21] Wit, Paul De, and Willy Verheye. "Land Use Planning for Sustainable Development," n.d., 28.

social and cultural practices both are influenced by the surrounding environment and influence future development of the environment through natural resource management and land use planning.

Intensive Agriculture in Land Use Planning

The health and balance of the environment do little to influence decisions in resource use and land planning in intensive agriculture. Often, land is converted to grow one or two crop types regardless of its impact on the environment and local plants and animals. Industrialization of agriculture resulted in converting wide stretches of land into agricultural fields requiring intensive use of water, fertilizer, pesticide, monoculture crops, and soil tilling- all of which causes pollution, destroys natural habitats, and negatively alters composition of the land.[22] Excessive use of water, artificially produced fertilizer and pesticides have led to water insecurity and contamination, toxic air, and soil being stripped of its nutrients.[23] The practice of growing monoculture crops reduces biodiversity as the fertilizer runoff and pesticides contaminates and kills local plants and animals. The crops are, also, more vulnerable to disease or drastic weather changes, leading to increased food insecurity and vulnerability.[24] Mainstream agriculture has escalated negative environmental impacts through its focus on economic efficiency and neglect of social and ecological impacts.

The focus on financial profitability of farm products is a new development in agricultural practices that rose through globalization. Decisions on land acquisition, resource management, types of crops grown, technological development in agriculture tools, and laws and regulations of food production and trade are almost entirely dependent on, specifically, the financial profitability of the intensive farmland owners. Economic opportunities of the local population have some influence in land use planning and resource management, but very little in comparison to the bottom line of commercial crop growers. Increasing focus and pressure on economic development has allowed lax policies in protection of land and environmental resources to increase the ability of external land users to obtain and use the land for commercial purposes.[25]

Similar to the environmental dimension, the social factors of indigenous inhabitants of the land used for intensive farming are largely ignored or absent in decision-making for resource management and land use planning. Much of land development is made in favor and convenience of the private sector, where communities are pushed out and marginalized for foreign entrepreneurs to obtain the land at low cost.[26] Land use planning in this manner creates a habit of imposing a top-down and disconnected approach that ignores the needs and desires of the local population. This creates damaging consequences in the social dimension, one of which is the erosion and removal of traditional knowledge and communities as foreign owners

[22] Kim, Jullee. “Applying Sustainable Land Use Development Studies to Sustainable Agriculture: Are the Conditions Ripe for a Successful Movement Toward Sustainable Agriculture?”
[23] Ibid.
[24] Ibid.
[25] Wit, Paul De, and Willy Verheye. “Land Use Planning for Sustainable Development,” n.d., 28.
[26] Ibid.

replace them.[27] The new, private landowners and users are absent of cultural and social ties to the land as well as absent of the responsibility for the resources they manage. This results in unsustainable practices that exploit the land of its resources, destroying it, before being abandoned once profit cannot be made.[28]

Sustainable Agriculture in Land Use Planning

In sustainable agriculture, all three dimensions (environment, economic, and social) are equal influences in decision-making with regards to land use planning and resource management. Part of sustainable agriculture includes reverting back to protection of local knowledge and environmental balance of traditional agriculture along with a part incorporating economic stability and profitability incentives of intensive farming. Land use strategies must adapt to the context-specific characteristics of the land and its communities. [29]Intimate knowledge and understanding of environmental characteristics and impacts of agricultural practices are necessary to inform land use planning. Environmental considerations include rate and degree of irreversible resource depletion, rate of non-renewable resource use against potential use of future generations, and climate change impacts.[30]

Adopting some characteristics of intensive agriculture, sustainable agriculture incorporates economic impacts of land use planning in decision-making as well. However, the economic dimension for sustainable agriculture extends beyond financial profitability of the farm owner. The food system extends beyond the farm and includes interactions with the immediate communities, local organizations, sellers, consumers, and other actors involved in the process directly or indirectly.[31] This includes factors such as: food availability, stable income flows, adaptability during natural or economic shocks, and holistic evaluation of cost/benefit analysis of individual households, local communities, and national and international communities.

Sustainable land use planning requires genuine exchange of thoughts and ideas between all stakeholders involved and affected by the decisions made. Social factors in land use planning include: respect and value of indigenous knowledge, local diversity, and rural livelihood strategies, allowance of social and cultural evolution without disruption, active participation of all stakeholders in policy planning, government and local accountability for resource use, protection of rights, and redistribution of wealth.[32] One difficulty with maintaining these relationships, processes, and plans is that they require long-term goals, which are not generally in line with policy plans and resources outside the local community (which are provided and used in a short span of time).[33] However, the integration of traditional practices with modern, sustainable

---

[27] Juanwen, Yuan, Wu Quanxin, and Liu Jinlong. "Understanding Indigenous Knowledge in Sustainable Management of Natural Resources in China Taking Two Villages from Guizhou Province as a Case." *Forest Policy and Economics 22, no. 2012 (March 13, 2012):* 47–52.

[28] Wit, Paul De, and Willy Verheye. "Land Use Planning for Sustainable Development," n.d., 28.

[29] Harrop, Stuart. "Traditional Agricultural Landscapes as Protected Areas in International Law and Policy." Agriculture, Ecosystems and Environment 121, no. 2007 (January 22, 2007)

[30] Wit, Paul De, and Willy Verheye. "Land Use Planning for Sustainable Development," n.d., 28.

[31] UC Davis Agriculture & Natural Resources Program. 2020. Sustainable Agriculture Research & Education Program

[32] Wit, Paul De, and Willy Verheye. "Land Use Planning for Sustainable Development," n.d., 28.

[33] Harrop, Stuart. "Traditional Agricultural Landscapes as Protected Areas in International Law and Policy." Agriculture, Ecosystems and Environment 121, no. 2007 (January 22, 2007)

approaches and knowledge can lead to development that is beneficial in terms of climate adaptation, food insecurity, and preservation of sustainable livelihoods.[34]

4. Community-Based Agritourism in Land Use Planning

We define community-based agritourism as a practice of tourism where the local community has significant control over, and participation in, the development of agricultural infrastructure, practices, products, services, and experiences that are shared with and/or sold to visitors and other foreigners, where the majority of benefits are redistributed within the community. Figure 1 provides a visual representation of agritourism categories which include sales, education, hospitality, outdoor recreation, and entertainment of agricultural products, traditional cultural practices, and other aspects of indigenous communities and the surrounding environment. In community-based agritourism, the local community plays a central role in defining what kind of tourism is desirable based on their desires and values as well as what role they wish to play in developing their desired vision.[35]

Community-based agritourism is an extension of sustainable agriculture which adopts its land-use planning processes and characteristics with regards to the environmental, economic, and social dimensions of sustainability (as explained in the previous section). Each of those dimensions encompass additional factors that are integral to tourism development that contribute to the uniqueness of land-use planning through community-based agritourism. When identifying and selecting land use activities to be developed, existing natural resources and environmental capacity must be accounted for in order to absorb the impact of developing such activities. In line with this, for developing human activities, in particular tourism and recreational activities which are related to land, the current existing environmental resources and the ecological stability of the territory must be accounted for. [36]

[34] Singh, Rinku, and G. S. Singh. “Traditional Agriculture: A Climate-Smart Approach for Sustainable Food Production.” Energy, Ecology and Environment 2, no. 5.
[35] Hamid et al. “Developing Community-Based Agritourism in Souss-Massa, Morocco.” (2020).
[36] Senes, Giulio, and Alessandro Toccolini. "Sustainable land use planning in protected rural areas in Italy." *Landscape and Urban planning* 41, no. 2 (1998): 107-117.

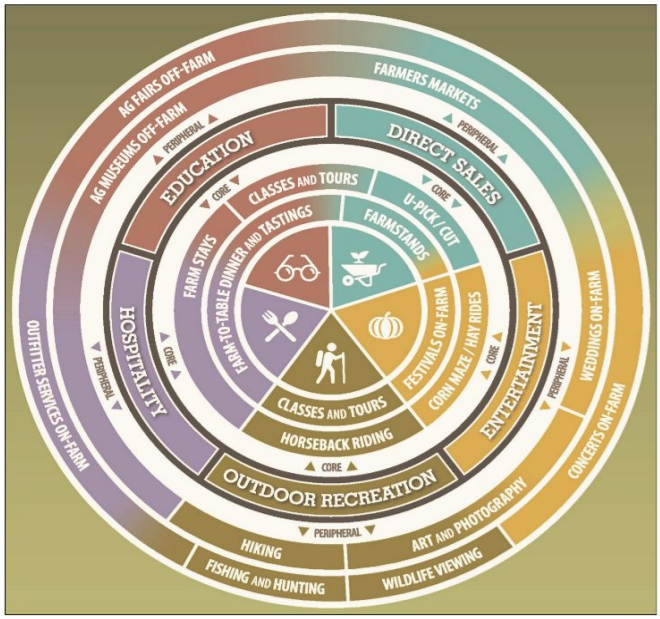

Figure 1: Chase et al. Five categories of agritourism including direct sales, education, hospitality, outdoor recreation, and entertainment

Community-based agritourism development is rooted in the protection of land, its resources, the indigenous population, and the knowledge they have. Government policies that neglect to protect these lead to increased vulnerability and poverty of people as well as environmental degradation. One method is the protection and continued use of traditional farming methods. However, there is a need for new instruments and policies to recognize, protect, and support these developments.[37]

Figure 2: Conceptual model for community based agritourism

[37] Harrop, Stuart. "Traditional Agricultural Landscapes as Protected Areas in International Law and Policy." Agriculture, Ecosystems and Environment 121, no. 2007 (January 22, 2007)

Recognizing the strong linkages and overlaps in the characteristics of agritourism and sustainable agriculture Figure 2 displays a conceptual model that encompasses the values and integral components of the two concepts. Given our emphasis on local knowledge and community participation through sustainable agriculture, as well as an established representation of agritourism products and activities in Figure 1, we shy away from making references to any specific agritourism products or practices in our model. Rather what is captured in the model are the aspects or the components that could facilitate the establishment, processes, and sustenance of community-based agritourism in any given place. They are: local context, stakeholders, economic viability, local capacity and sustainable networks.

5. Case-Study of Morocco

Contextualizing the Focus on Sustainable Tourism Development in Morocco

The Moroccan tourism industry goes as far back as 1912 to the period of French protectorate when the country was primarily a tourist destination for the French[38]. With the establishment of the first ministry of tourism in 1965, nine years after independence, Morocco officially entered into the international tourism market and expanded the industry to receive an impressive number of 2.2 million tourists in 1985[39]. Today, the industry makes up 8% of the country's GDP and employs around 50,000 people.

In 2001, Morocco adopted its first 10-year plan for tourism development. The first ten-year plan for tourism development, *Vision 2010.* Placing a strong emphasis on private sector involvement, this plan focused on developing mass tourism in the country to achieve the target of receiving 10 million visitors by the year 2010[40]. With the success of *Vision 2010*, the country adopted its second ten-year plan, *Vision 2020* in 2010. The primary aim of *Vision 2020* is to get Morocco recognized as a top twenty tourism destination in the world and to increase its tourism offering by focusing on sustainable tourism[41].

The focus on sustainable tourism is a pivot from the mass tourism focus of the previous ten-year plan. A big part of this commitment entailed expanding Morocco's tourism offering to capitalize on the country's "wealth of natural and capital advantages, while continuing to conserve those advantages so that their exploitation yields the best and most sustainable social and economic development"[42]. A big part of this was also identifying specific territories for tourism development, increasing local ownership and participation in the industry and establishing various sustainability standards for the industry.

One key element of the sustainability standards includes the formulation of territory specific, saturation thresholds which must not be crossed in order to ensure the conservation of ecosystems and habitats. Along with this the vision also paves way for the creation of

[38] John Steenbruggen, "Tourism Geography: Emerging Trends and Initiatives to Support Tourism in Morocco," *Journal of Tourism and Hospitality* 5, no. 3, 16, doi:10.4172/2167-0269.1000224.
[39] Ibid.
[40] Ibid.
[41] Nada Roudies, *Vision 2020 for tourism in Morocco: Focus on Sustainability and Ecotourism,* https://sustainabledevelopment.un.org/content/documents/4104roudies.pdf
[42] Ibid.

sustainability indicators based on environmental, socioeconomic and sociocultural pillars as well as regional monitoring mechanisms based on those indicators[43]. With the focus on such pillars, the *Vision 2020* provided an impetus for more concerted efforts on rural tourism development focusing on nature, agriculture and culture.

General Context of Souss-Massa

One region that has made some gains in developing sustainable tourism in Morocco is the Souss-Massa region. Souss-Massa, which is one of the twelve regions of Morocco, has a unique geography and history; to the west of the region is the Atlantic Ocean, while the Lesser Atlas mountain range dominates the interior. Agadir is the capital of the region, famous for its Atlantic Ocean beaches that attract about one million tourists alone,[44] mainly from France, Germany, England, Spain, and the US. Despite being "the capital of beach tourism in Morocco", the region is also the agricultural powerhouse of Morocco which produces vegetables and fruits with a GDP of 9 percent at the national scale.[45]

The region's economy is based on the fishery sector, in addition to tourism and agriculture. There are over 111 miles of Atlantic coastline with rich marine biodiversity that provides jobs to more than 3 million people in the region.[46] In recent years, the industrial sector experienced a boom in production of fabrics, agro-food, chemical and para-chemical products.[47] With the rapid development of these main economic sectors, including but not limited to tourism, servicing, agriculture, fishery, and manufacturing, all at the same time, the population and quality of life are both steadily increasing within the past decade. Geographically, Souss-Massa is characterized by an arid climate with low and irregular rainfall with recurrent droughts. With increases of human and industrial activities in the region, and expansion of the agricultural sector, overexploitation of natural resources, especially groundwater was inevitable. The region is currently suffering the most stress from water scarcity, because surface water resources have become insufficient, and the renewable water resources are not able to keep up with the current demand from the ever-evolving economic sectors, where the agricultural sector alone "consumes more than 90% of the region's total water resources".[48]

Argan trees in Souss-Massa

The valley of the Souss Massa, is over 70 percent covered by the Argan forest.. The argan tree, which is endemic to this region of Africa, holds both ecological and cultural significance to the population living in the area.[49] The tree's well-developed root system protects against erosion,

---

[43] Ibid.

[44]Boulmane, B. (2019, August 30). More Than One Million Tourists Visited Agadir In 2018. Retrieved July, 2020, from https://www.moroccoguidedtravel.com/agadir-city/

[45]Souss Massa. (2020). Retrieved July, 2020, from https://www.soussmassa.ma/en/agriculture

[46] Ibid.

[47] Ibid.

[48]Imane, M., Lhoussaine, B., Redouane, C., Bouchra, C., & Mohamed, E. (2017, October 28). Groundwater Resources Scarcity in Souss-Massa Region and Alternative Solutions for Sustainable Agricultural Development. Retrieved July, 2020, from https://zenodo.org/record/1211134

[49] Tudal E.M. Sinsin, Fouad Mounir and Ahmed El Aboudi, "Conservation, valuation and sustainable development issues of the Argan Tree Biosphere Reserve in Morocco," Environment and Socio-economic Studies 8, no.1, 28 - 35, DOI: 10.2478/environ-2020-0004

while the leaves, fruit pulp and oil cake (residue of oil extraction) provides fodder for livestock[50]. Wood from the tree has been used for fires and the argan oil which is extracted from the argan fruit nut has various culinary, medicinal and cosmetic uses. The increasing recognition of the nutritional and medicinal value of argan oil has led to an exponential increase in demand as well as commercialization of argan oil production, with development partners focusing on capitalizing on women's involvement in the production of oil as an important socio-economic benefit of the industry[51].

Cultivation and harvesting of argan trees are managed through ancestral practices that are very specific to the Berber people. These traditional practices draw on a number of important considerations that are important for both ecological and social sustainability. For instance, these areas which are governed by local customary practices are known as Agdals. The Agdals have complex rules regarding access and usage, which often includes closing off certain parts of the argan forests to grazing during certain times of the year.[52] This allows for the protection and restoration of the ecosystem as well as allows for rights to harvest fruits during this time. Between 2009 and 2018, argan trees played a substantial role in increasing the national GDP by over 5 billion USD.[53] due to the previously discussed cosmetic, medicinal and culinary benefits of the oil.

Our case study in the Souss Massa region has indicated that different economic sectors, such as tourism, have the potential to play critical roles to contribute to the solutions for resource management and adaptation issues. For example, in Morocco, more than 90 percent of the farmers work on a limited land area smaller than 10 hectares and in the Souss-massa region, these small farmers are scarcely populated in the rural areas. In recent years, these communities' livelihoods and way of living have become attractive for many foreign and domestic tourists who want authentic experiences by being part of the process that is often labelled as "traditional" because of younger generations who care more about climate change and sustainable food choices that economically benefit the communities, rather than big corporations.

Development of Argan Tree Agritourism Offerings in Souss-Massa

In recent years, the rise in commercial production of argan oil, expansion of agriculture as well as other urbanization pressures have placed stress on the argan forests. The diversification of the use of argan trees to include agritourism, will allow for the management of some of these stressors and conserve some of the environmental, social and economic gains of argan trees. The expansion of argan tree related agritourism offerings in the region, focusing on educational and culinary experiences could become a focus in this direction.

[50] Ibid.
[51] Ibid.
[52] Ibid.
[53] Yahia Hatim - Dec 11, -, Y., By, -, Hatim, Y., -, M., . . . GDP of Moroccan Oases and Argan Trees Increases Over Last Decade. (2019, December 11). Retrieved from https://www.moroccoworldnews.com/2019/12/288708/gdp-of-moroccan-oases-and-argan-trees-increases-over-last-decade/

Development of these activities will require collaboration amongst a number of different stakeholders, including tourism lodge owners, argan farmers, local population, and those involved in producing argan oil. In order for the local community to truly benefit from these activities it is important for these activities to be developed in a participatory manner that emphasizes and elevates the importance and centrality of indigenous knowledge. Participatory methods engaged in this regard must try to capture the environmental, economic and social value of argan trees to the local population and engage in a process to develop a collective vision of how the community could conserve and expand some of these values through an agritourism offering focusing on the argan tree.

Working in partnership with the Réseau de Développement de Tourisme Rural (RDTR), a tourism business membership organization in Souss-Massa that aims to develop rural tourism in the region, we developed tools and processes that could help the Souss region do precisely this. One is an agritourism assessment toolkit that allows the community members to identify and recognize the unique natural and cultural capitals in the region that could be expanded into agritourism offerings. This is complemented with a community facilitation guide which foresees a series of conversations on the resources identified through the toolkit. The conversations would focus on capturing and creating a shared understanding of how the community values these resources, and to what extent and how the community foresees developing these resources into economic opportunities, while conserving various unique environmental and social values derived from these resources.

6. Concluding Discussion

One important step towards sustainable land use is the identification of the multiple environmental, social and economic outcomes associated with it and how well landscapes perform in line with those functions. Our study conveys that there are strong interconnections between sustainable land use planning of community-based agritourism and sustainable agriculture. Combining community-based agritourism with efficient land use planning practices can advance economic and social gains of community livelihoods while combating the negative environmental impacts associated with land degradation and resource depletion. The case of community based agritourism development in the Souss-Massa region of Morocco is an example that demonstrates how community-based agritourism could contribute to sustainable land use planning as well as the achievement of a number of the sustainable development goals. The expansion of community-based agritourism offerings related to argan trees in the region, which holds ecological, economic and social value, through a participatory process emphasizing the holistic value of argan trees could lead to a shared understanding of these values and how different stakeholders could collaborate to materialize the different desired values attached to argan trees in the region. The major benefits of community-based agritourism are not immediate and require substantial time and resource investments in building relationships and lengthy stakeholder engagement processes. However, the environmental, economic and social benefits and their implications on sustainable development outweigh the short run costs.

Bibliography

Bin Che Soh, Mazlan. 2011. “Small Is Big: The Charms of Indigenous Knowledge for Sustainable Livelihood | Elsevier Enhanced Reader.” 2011. https://doi.org/10.1016/j.sbspro.2012.03.066.

Bouchaou, Lhoussaine & Choukr-Allah, Redouane & Hirich, Abdelaziz & Ennasr, M. & Malki, Mouna & Houria, Abahous & Bouaakaz, B. & Abdessadek, Nrhira. 2017.” Climate change and water valuation in Souss-Massa region: Management And adaptive measures.” https://www.researchgate.net/publication/322050444_Climate_change_and_water_valuation_in_Souss-Massa_region_Management_and_adaptive_measures

Boulmane, B. 2019. “More Than One Million Tourists Visited Agadir In 2018”, https://www.moroccoguidedtravel.com/agadir-city/

Crossman, N.D., Bernard, F., Egoh, B., Kalaba, F., Lee, N., and Moolenaar, S. (2016) The role of ecological restoration and rehabilitation in production landscapes: An enhanced approach to sustainable development. Working paper for the UNCCD Global Land Outlook. doi:10.2307/1312379.

General, Secretary. 2013. “Vision 2020 for Tourism in Morocco Focus on Sustainability and Ecotourism.”

Harrop, Stuart. 2007. “Traditional Agricultural Landscapes as Protected Areas in International Law and Policy.” *Agriculture, Ecosystems and Environment* 121 (2007): 296–307. https://doi.org/10.1016/j.agee.2006.12.020.

Hatim, Y. 2019 “GDP of Moroccan Oases and Argan Trees Increases Over Last Decade.” www.moroccoworldnews.com/2019/12/288708/gdp-of-moroccan-oases-and-argan-trees-increases-over-last-decade/

Hong, Jae., 2011. “Linking Land Use Planning and Regulation to Economic Development: A Literature Review.” Journal of Planning Literature 26(1): 35–47. https://doi.org/10.1177/0885412210382985https://air.unimi.it/bitstream/2434/29169/1/RelVanLierDeWrachien1.doc, https://doi.org/10.1016/j.ecolecon.2017.04.024

Imane, M., Lhoussaine, B., Redouane, C., Bouchra, C., & Mohamed, E. 2017. “Groundwater Resources Scarcity in Souss-Massa Region and Alternative Solutions for Sustainable Agricultural Development”. https://zenodo.org/record/1211134

J, Steenbruggen. 2016. “Tourism Geography: Emerging Trends and Initiatives to Support Tourism in Morocco.” Journal of Tourism & Hospitality 5 (3), https://doi.org/10.4172/2167-0269.1000224.

Juanwen, Yuan, Wu Quanxin, and Liu Jinlong. 2012. “Understanding Indigenous Knowledge in Sustainable Management of Natural Resources in China Taking Two Villages from

Guizhou Province as a Case." *Forest Policy and Economics* 22 (2012): 47–52. https://doi.org/10.1016/j.forpol.2012.02.012.

Kim, J.H., 2011. "Linking land use planning and regulation to economic development: a literature review". Journal of Planning Literature, 26(1), pp.35-47.

Kim, Jullee. n.d. "Applying Sustainable Land Use Development Studies to Sustainable Agriculture: Are the Conditions Ripe for a Successful Movement Toward Sustainable Agriculture?" *Brooklyn Law Review* 78: 34.

McNeely, Jeffrey A,1993. "Economic Incentives for Conserving Biodiversity: Lessons for Africa." Ambio 22, no. 2/3 : 144-50. Accessed August 1, 2020.

Morocco Tourism Infos, "Region: Souss Massa." (n.d.). Retrieved from https://en.infostourismemaroc.com/region/morocco-tourism-region-souss-massa.html.

Ojima, D. S., K. A. Galvin, and B. L. Turner.1994. "The Global Impact of Land-Use Change." BioScience 44, no. 5 : 300-04. Accessed August 1, 2020.

Pennington, D.N., Dalzell, B., Nelson, E., Mulla, D., Taff, S., Hawthorne, P. and Polasky, S., 2017. "Cost-effective land use planning: Optimizing land use and land management patterns to maximize social benefits." Ecological Economics, 139, pp.75-90.

Senes, G. and Toccolini, A., 1998. "Sustainable land use planning in protected rural areas in Italy." Landscape and Urban planning, 41(2), pp.107-117. https://doi.org/10.1016/S0169-2046(97)00064-9

Singh, Rinku, and G. S. Singh. 2017. "Traditional Agriculture: A Climate-Smart Approach for Sustainable Food Production." *Energy, Ecology and Environment* 2 (5): 296–316. https://doi.org/10.1007/s40974-017-0074-7.

Sinsin, Tudal E.M., Fouad Mounir, and Ahmed El Aboudi. 2020. "Conservation, Valuation and Sustainable Development Issues of the Argan Tree Biosphere Reserve in Morocco." Environmental & Socio-Economic Studies 8 (1): 28–35. https://doi.org/10.2478/environ-2020-0004. Souss Massa Regional Council. 2020. https://www.soussmassa.ma/en/

UC Davis Agriculture & Natural Resources Program. 2020. Sustainable Agriculture Research & Education Program. June 30. Accessed June 30, 2020. https://sarep.ucdavis.edu/sustainable-ag.

Van Lier, H., & De Wrachien, D. 2002. "Land use planning: A key to sustainable development. In 30th International Symposium on Agricultural Engineering" Actual Tasks on Agricultural Engineering (pp. 171-184). HINUS.

Wit,Paul De, and Willy Verheye. n.d. "Land Use Planning for Sustainable Development," 28. www.jstor.org/stable/4314059.