



New reading of Saharan agricultural transformation: Continuities of ancient oases and their extensions (Algeria)



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ABSTRACT

Agriculture in the Algerian Sahara underwent radical transformations during the second half of the 20th century. Agricultural development programs, aiming to integrate the Sahara in the national economy, were based on an agribusiness model implemented outside existing oases – in the so-called extensions – through the conquest of new agricultural land and the use of pumped groundwater. The rehabilitation of existing ‘traditional’ oases received less attention as their capacity for agricultural development was thought limited. While the new agricultural landscape is considered by policy makers to be a *creatio ex nihilo*, we demonstrate that the extensions are in fact, the *creatio ex materia* of the ancient oases, and that the two Saharan agricultural landscapes are firmly connected. The objective of this article is then to challenge the dichotomous view of Saharan agricultural development and the underlying binary policy categories. This demonstration is based on a study of the Sidi Okba oasis and the surrounding extensions. The results of this study first show that the binary framing of agricultural development in Algeria’s Sahara is inadequate, as it neglects the temporal and spatial continuities and the hybridity of both landscapes. However, the study also shows that binary policy categories, even when they are inaccurate, participate in the construction of the new Saharan agricultural realities. We conclude that the new extensions are a better-adapted version of the traditional oasis in the context of globalization but in continuity with the ancient oasis. Questions concerning the social, economic and environmental sustainability of this model remain to be answered.

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1. Introduction

The second half of the 20th century was marked by rapid economic changes both in the world economy and in society that transformed the essence of rural areas (Woods, 2007). The Middle East and North Africa (MENA) region experienced radical economic transformations during this period with the discovery of vast reserves of non-renewable natural resources, in particular oil (Mubarak, 1998). The oil resources constituted the main if not the only financial resource of these countries (Ahmed, Hamrick, & Gereffi, 2014). After the collapse of the price of oil in the 1980s

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(El-Erian, Eken, Fennell, & Chauffour, 1996; Shafik, 1995), and the exploitation of almost all surface water resources through the construction of dams, there were two options for the agricultural sector of these countries: increase the food import bills thereby importing virtual water (Allan, 2007) or develop the agricultural sector using the considerable but little-renewable groundwater resources that had been discovered (Yang & Zehnder, 2002). Most political leaders in the MENA region saw in groundwater resources a means to rapidly achieve food self-sufficiency and to reduce the costs of imports, mainly of cereals (Beaumont, 1997; Dubost, 1991; Shetty, 2006). Access to groundwater was seen as an enabler of an important rural socio-economic transition (Allan, 2007) and as a way to prepare for the post-oil period (Bisson, 2003). Following Asia’s experience during the green revolution, the new forms of agriculture were based on intensive use of groundwater and chemical inputs such as fertilizers, along with the introduction of “modern” high yield varieties (Byerlee & Siddiq, 1994: 1346).

Like other countries in the MENA region (e.g. Egypt, Libya, Saudi Arabia) in their respective desertic areas, the Algerian government wanted to promote agricultural development in the Sahara after independence, focusing on cereals in line with the idea to feed the growing cities (Beaumont, 1989; Beaumont, McLachlan, & Wilkinson, 1985). This development was developed by the State based on an “agribusiness” model, grounded in the exploitation of pumped groundwater using large pivot systems (30–50 ha) and cheap fossil fuel on “bare land”, outside of the existing oases (Côte, 2002: 10). However, the results of these projects were mitigated (Bisson, 2003). This was mainly due to the agricultural development model proposed by the state, which did not take the local biophysical and socio-economic context fully into account, and has been compared to a *creatio ex nihilo* (Bensaâd, 2011; Lavie & Marshall, 2017). The Sahara was considered as a physical support for national agricultural ambitions without necessarily considering existing local development trajectories (see Bebbington et al., 2008, for a discussion on the co-production of territory), aiming to develop a new type of landscape.

Another longstanding large-scale project for the agricultural development of the Algerian Sahara was linked to the promotion of the commercial export-oriented date palm variety *deglet nour* in mono-cropped plantations (Khiari, 2002; Lakhdari & Dubost, 2011). As was the case for cereals, this ‘modern’ sector was to be developed on new land, outside the traditional oases in the so-called ‘extensions’. The new idealized agricultural landscape represented a break with that of the traditional oasis and its multi-layered cropping systems made up of palm trees, fruit trees including fig, pomegranate and citrus, and annual field crops.

The agricultural development policies (economic liberalization, subsidies and credit), along with the land reforms in the Algerian Sahara in the three last decades, thus largely focused on the conquest of ‘virgin’ agricultural land through market-based agriculture. The ancient oases remained on the margins of these large-scale initiatives of agricultural development. Their agrosystems were viewed by political actors as something of the past and only some limited preservation or restoration programs – with more of a social than an economic ambition – were conducted to preserve the material and immaterial heritage of existing oases (Côte, 2002; Kouzmine, 2012). Due to their social and agrarian complexity, they were considered in agricultural policies as unfit for market-oriented agriculture. Thus, territorial development was planned through a dichotomous lens of binaries by separating the traditional from the modern, the economic from the social, the global from the local (Kouzmine, 2012).

We argue that these binary qualifiers are useful to understand the policy categories underlying the formulation of two distinct Saharan agricultural development models. Agricultural policies considered ‘traditional’ oases and ‘modern’ extensions as two types of agriculture that co-existed over the past 30 years, but disconnected from one another. Oasis agriculture is often described as ‘traditional’, ‘local’, community-managed, based on solidarity and collective action, and as a social construct (Lavie & Marshall, 2017). The most frequently heard qualifiers about new forms of Saharan agriculture in the extensions are ‘modern’, ‘global’, ‘state’, ‘private’ and ‘economic’. These new landscapes are very different from ancient oases “in their management, size, existing production and also farmer investment and involvement” (Ahmed & Abdedayem, 2017: 12). Production in these landscapes is market-oriented: agricultural intensification, mechanization, use of inputs and modern technologies including drip irrigation, greenhouses, and individual tube-wells (Marc Côte, 2002). Ahmed & Abdedayem (2017: 12) added that in such landscapes “the land is exploited like a mine, that is to say until available natural resources exhausted”. In this study, we used the dichotomous temporal binaries (tradition-modernity) denoting change and spatial binaries

(oasis-extension) denoting different agro-ecological and socio-institutional realities as an entry point for our analysis, as they reveal the view policy actors have on agricultural development in the Sahara through the creation of two distinct landscapes (traditional oases and modern extensions). Also, such policy categorisations – even when they are inaccurate, as we argue in this article – can be considered performative and thus, in our case, constitutive of agricultural development in the Algerian Sahara.

However, we deliberately went beyond these binary qualifiers in our analysis of the agricultural dynamics, by explicitly recognizing the hybridity of each landscape and the territorial continuity of both landscapes, situated in the same territory. Swyngedouw (1999: 444) discussed the “clear” and “unambiguous” hybrid character of the Spanish water landscapes in which the social and the natural are mutually constitutive, as a product of “centuries of socioecological interaction”. This hybridity is arguably nowhere more evident than in the highly artificial Saharan oases, constructed over a long period of time in a hostile arid environment, where water was central to life and around which society was organized. Similarly, we will argue that some of the most used binary qualifiers by policy actors to distinguish oasis agriculture from new Saharan agriculture (modern versus traditional, economic versus social, local versus global, etc.) can apply to both landscapes. In other words: “we need to know about the categories being deployed in order to appreciate the society we are studying, and we need to deploy our own categories in order to undertake that study” (Clope, Johnston, & Johnston, 2005: 2). We then looked at the (spatial, temporal) territorial continuity between both landscapes, understood here as the “cluster of processes that underline the convergences” (Ferrer-Gallardo, 2011: 26).

The aim of this article is then to challenge the dichotomous view of Saharan agricultural development and the underlying binary policy categories of traditional oasis agriculture and that of the market-oriented extensions. While the new agricultural landscape appears to be a *creatio ex nihilo*, we argue that the extensions are in fact, the *creatio ex materia* of the ancient oases, and that the two Saharan agricultural landscapes are firmly connected. Yet, we will also show that it is important to carefully consider the binary policy categories, as they contribute to shaping field realities in both landscapes. As a case study, we chose the oasis of Sidi Okba, located in the region of Biskra, in particular the ancient palm grove and its Tadjdid extension. This study area is particularly interesting because the oasis community of Sidi Okba developed new forms of agriculture on the margins of the existing palm grove. This case study highlights the paradox of two Saharan agricultural landscapes, which at first sight may appear to be physically and ideologically separated, but in reality, they are hybrid and interconnected especially since they involve the same actors who combine traditional and modern knowledge and practice farming systems that combine economic and social logic. Moreover, both landscapes are subject to state interventions and local initiatives by the irrigation community, and individual and collective actions. It can be concluded that the new extensions are a new version of the traditional oasis that are better adapted to globalization but in continuity with the ancient oasis.

2. Context and methodology

2.1. A Dual agricultural policy

The two types of Saharan agriculture, traditional oases and the new extensions, were considered as two different entities in agricultural policies. This policy categorization was reflected through the promulgation of development programs that concerned either one agricultural landscape or the other.

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