

Chapter 4

Monetary Value Change of Some Provisioning Ecosystem Services of Middle Draa Valley, South of Morocco

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ABSTRACT

The desert oasis is a wetland agro-ecosystem more and more under pressure. This trend threatens the oasis ecosystem services (ES) and then the wellbeing of the local population. In order to quantify this trend in Middle Draa Valley, South of Morocco, the monetary values for a selection of ES have been estimated. In this chapter, the economic values of 28 provisioning ES in 2014 was examined and next compared with the economic values of 2009. These values were standardized to US\$ per hectare per year. The total value of the studied provisioning ES in 2014 was found to be 8658.3 US\$/ha/year for the arable area (26000ha) and 150 US\$/ha/year for the whole Middle Draa Valley (1500000ha). Comparing these findings with the data of 2009, a slight increase of \$1245.7 (in 26000ha) and \$21.5 US\$/ha/year (the whole area) was detected in the period 2009-2014.

INTRODUCTION

Wetlands provide important ecological non-replaceable functions: they mitigate pollution, offer habitats, and preserve biodiversity (Sulman et al., 2013). Oases are among the most important wetlands in desert systems (Karmaoui et al., 2015a). The change in the oasis reflects both the ecological status and the changes in water availability (Lu et al., 2015). Water and soil quality are the main factors impacting the oasis system in the south of Morocco influencing the ability to provide ecosystem goods and services. Oasis is like other ecosystem provides a range of services of crucial importance to human well-being, health, livelihoods, and survival (Millennium Ecosystem Assessment (MEA) 2005 and TEEB Foundations, (2010). The ecosystem services (ES) values can express well the environmental change in an oasis. The repeated and prolonged droughts in recent years have severely limited the production of the medium that become too fragile (Chelleri et al., 2014). Ecosystem disturbance leads to the loss of ecosystem services and negative impacts on livelihoods and health. The socio-economic factors affect the ecological system of MDV and the health through the incidence of some neglected disease like cutaneous leishmaniasis (Karmaoui, 2018).

Recently, ES valuation is much studied. The economic valuation is among the most important approaches of ecosystem assessment used globally by several research teams, the most famous are De Groot et al., (2012), Costanza et al., (2014), and (Teoh et al., 2019).

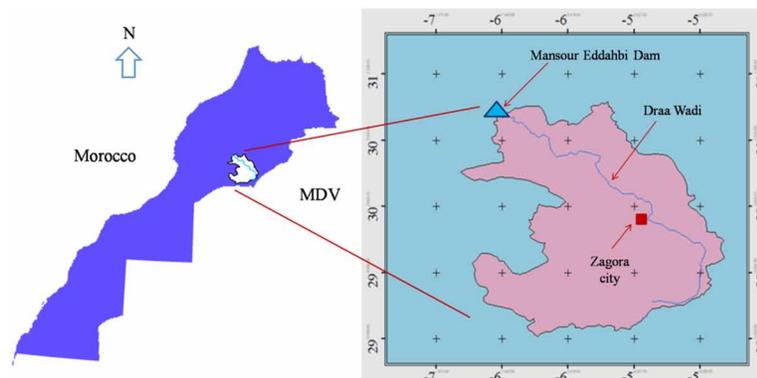
In this chapter, various provisioning ES provided by the oasean system of Middle Draa Valley (MDV) were estimated. The paper priority is to quantify the monetary value change between 2009 and 2014. The outputs can allow tracing the trajectory and evolution of oases in the south east of Morocco.

MATERIAL AND METHODS

Study Area

The study area, located in the south east of Morocco, with an area of about 15 000 km² (Figure 1). Hydrologically is the middle part of the Draa Basin. It is subject to an arid climate, the summer temperatures are between 43 and 50 ° C and The mean annual rainfall is about 80 mm.

Figure 1. Localization of the study Area; MDV, Middle Draa Valley



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