



A Case Study of Zarqa River Basin in Jordan

An economic valuation of a large-scale rangeland restoration project through the Hima system in Jordan

The aim of the study is to provide market and non-market economic values associated with the Hima-restoration approach in Jordan’s Zarqa River Basin.

As result it is shown that even without capitalizing on ecosystem services such as carbon sequestration or sediment stabilization it is still in the private interest of rangeland communities to use the Hima system to manage their rangelands, provided that adequate tenure systems and rights are established.

Background

Jordanian rangelands are a source of valued livestock produce, carbon storage, biodiversity and medical plants. They also serve as watersheds that receive rainfall, yield surface water, and replenish the groundwater throughout the east and south of the western Jordan highlands. Over the past five decades, indigenous plant species have disappeared and rangeland productivity in Jordan has halved, due to overgrazing, declining rainfall, high run-off, changes in tenure regimes and the abandonment of natural water harvesting and Al-Hima practices.

Method

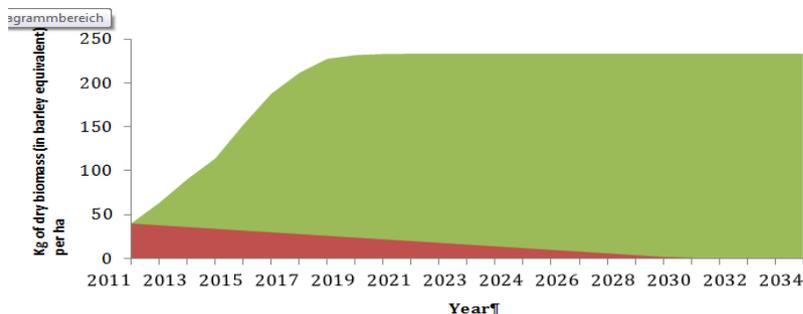
In order to carry out an ex-ante cost benefit analysis two scenarios have been defined and valued. The baseline scenario shows the expected evolvement of the rangeland in the Zarqa River Basin without any changes in current land use management schemes. The second scenario, the Hima restoration scenario, is based on the experience of a pilot study conducted by the International Union for

Al-Hima Restoration

Al-Hima (Arabic: protected land) refers to the development of grazing protocols whereby herds or flocks are regularly and systematically moved to rested areas with the intent to maximize the quality and quantity of forage growth. Resting grazed lands allows the vegetation to renew energy reserves, rebuild shoot systems, and deepen root systems, resulting in long-term maximum biomass production.

Conservation of Nature (IUCN) and the Ministry of Agriculture at Bani Ha-shem area. In order to fully realise the benefits of Hima restoration it needs to be implemented on a large scale; therefore, an adoption for the Zarqa River Basin has been explored.

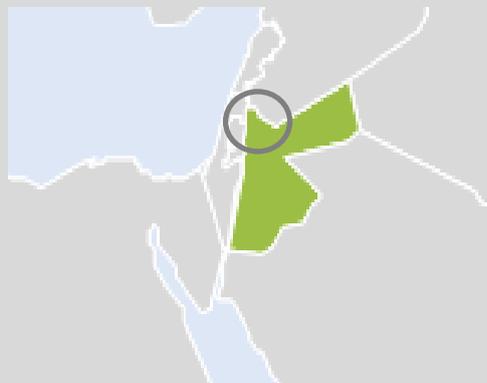
The ecosystem services that arise from rangeland restoration are valued using a combination of stated preference, avoided costs, replacement cost and market price approaches. The economic analysis has built on high-resolution remote sensing, GIS and biophysical Soil and Water Assessment Tools (SWAT) elaborated to rigorously calibrate the impact of



Predicted evolution of dry biomass yield in kg per ha in the baseline scenario versus the Hima Restoration Scenario

land use changes on forage availability ground water infiltration, carbon sequestration and sediment stabilisation.

Zarqa River Basin, Jordan



Area: 379,995 ha

The Zarqa River Basin is considered one of the major productive ground water basins in Jordan. Approximately 109,093 ha of the total area were estimated to be suitable for potential Hima restoration (high potential areas located in the south-eastern part of the basin).

Results and Limitations of the Study

Large-scale adoption of the Hima approach within the Zarqa River Basin, may deliver between 289 and 144 million JOD¹ worth of net-benefits to Jordanian society, using discount rates between 2.5% and 8%. Including benefits for the global society such as carbon sequestration the net-benefits could amount to 144-327 million JOD (discount rate between 2,5% and 8%). Although pastoral communities benefit directly, the largest share of the benefits is allocated to the society as a whole.

Even without capitalizing on ecosystem services such as carbon sequestration or sediment stabilisation, it is still in the private interest of rangeland communities to use the Hima system to manage their rangelands, provided that adequate tenure systems and rights are

established. The installation of Hima restoration sites can also positively contribute to the process of strengthening these rights, as experience of IUCN shows.

Although this study shows that rangeland restoration is highly cost effective, the true potential for rangeland rehabilitation might be still under-estimated by solely looking at the Hima approach. Further research is needed to evaluate the costs and benefits of combining this approach with other technologies or approaches for rangeland rehabilitation.



Survey implementation in the Bani-Hashem community, March 2014

Recommendations

1. Increase public investment to strengthen local governance for community-based rangeland rehabilitation, through revival of Hima.
2. Strengthen awareness of the economic values of rangeland rehabilitation and develop market-based incentives.
3. Build institutional capacity and awareness to implement and monitor Hima processes, to provide suitable rangeland management advice, and to stimulate innovation in rangeland management.
4. Create an enabling policy and institutional environment for sustainable rangelands management.

¹ Jordanian Dinar; Exchange rate: 1 JOD = 1.11 EUR (12.12.2014)

For further information please contact:

Fida Haddad: fida.haddad@iucn.org or
Vanja Westerberg: vanja.westerberg@iucn.org or
Masumi Gudka: masumi.gudka@iucn.org



©2015

Study commissioned by:

ELD Secretariat
Mark Schauer
c/o Deutsche Gesellschaft für
Internationale Zusammenarbeit
(GIZ) GmbH
Friedrich-Ebert-Allee 36
53113 Bonn, Germany

T +49 228 4460 3740
E eld@giz.de
I www.eld-initiative.org