

Assessing Land Degradation and Identifying Corresponding Conservation Measures at the Sub-National Level in Lebanon

by Nour MASRI, Dominique CHOUEITER, Tala MOUKADDEM
& George MITRI

This example illustrates the method used in the Qaraoun watershed in Lebanon to assess land degradation and rehabilitate degraded ecosystems. This work was presented as part of the project “Sustainable Land Management in The Qaraoun Catchment” funded by the Global Environment Facility (GEF) & United Nations Development Programme (UNDP) for a total duration of four years (2016-2020), implemented by the Ministry of Environment and executed by UNDP-Lebanon.

The Qaraoun Catchment

The Qaraoun Catchment lies within the Bekaa Valley and is characterized as Lebanon’s agricultural heartland running between Mount Lebanon and the Anti-Lebanon mountain ranges. The catchment spans parts of four districts – Baalbek, Zahle, West Bekaa and Rachaya, and feeds Lebanon’s largest and longest river, the Litani, up to where it discharges into the man-made Qaraoun Lake. The Litani River and Qaraoun Lake are considered to be the most important sources of fresh water in Lebanon, with 350,000 people in 161 communities being dependent on the surface and groundwater resources of the river basin for drinking water, food production and urban use. Despite its importance, the catchment suffers from accelerating land degradation, which is undermining ecosystem functions and affecting the welfare and livelihoods of rural people who are dependent upon these services. Land degradation is attributable to historic deforestation, excessive firewood collection, overgrazing, expansion of urban settlements, inappropriate infrastructure placement and loss of agricultural fields to competing land uses.

Acknowledging the environmental pressures on the natural resources and effects of land degradation in the Qaraoun catchment, the Government of Lebanon (GoL) partnered with the United Nations Development Programme (UNDP) to implement the Sustainable Land Management (SLM) in the Qaraoun Catchment project which is funded by the Global Environment Facility (GEF). The project is designed in a way to create a paradigm shift from unsustainable to sustainable land management in the Qaraoun catchment. It promotes an integrated approach towards managing land use in forests, rangelands and agricultural ecosystems. More specifically, the project activities aim to (i) rehabilitate degraded areas, (ii) prevent further degradation through land

use planning, and (iii) enhance capacity building and policy making at different levels and in different land use types in the project target areas.

Rehabilitating Degraded Ecosystems

As monitoring land degradation is needed for decision-makers to reverse degradation and implement land conservation techniques, a land degradation assessment was undertaken to establish evidence-based restoration targets and informed decisions-making on potential interventions (e.g., rehabilitation, prevention, mitigation of land degradation). The assessment also aimed at backing up efforts to prioritize interventions. A systematic approach for mapping and assessing land degradation was developed and tested at the sub-national level with the combined use of geo-spatial information and field data. While the specific objectives were to (i) assess trends in land degradation and the impact of historical land-uses on the current landscape characters, and (ii) investigate and characterize principal criteria of land degradation, ultimately it aimed at identifying site-specific land conservation measures. Multi-source and multi-resolution spatial data were employed using geographic object-based image analysis for assessing losses in vegetation cover, trends in land productivity and losses in soil organic carbon. Prioritizing lands prone to degradation was investigated using a set of spatial factors of different weights. Field data collection involved the use of pre-defined set of questions for assessing: type, extent, degree, rate and direct and indirect causes of land degradation. Accordingly, tools, practices and measures at site level were rolled out to avoid and reduce the impacts of land degradation in the three different land-use types in the catchment including high altitude forest lands, middle level rangelands and arable land on the valley floor in the districts of Zahle, Rachaya and West Bekaa.

In parallel, and to ensure sustainability of such measures, guidelines for improved management and protection of forests and rangelands were developed in close collaboration with concerned stakeholders (Ministry of Agriculture, relevant NGOs, experts, etc.).

Preventing Land Degradation

While reversing land degradation is essential in re-establishing ecosystem services, pre-

vention of further degradation and reduction of pressures on natural resources from competing land uses is critical in maintaining balance. The project has set a target for the development of integrated land-use plans and detailed urban plans (DUPs) that take into account land degradation at the landscape and local scale in line with sustainable use of natural resources. In supporting local administrations in their planning and monitoring roles, it is intended to develop a robust decision-support system, including a Strategic Environmental Assessment, along with an integrated Land Use Information Management System (LUIMS) for effective monitoring and tracking of trends in the condition of the land and take corrective actions before degradation becomes irreversible.

The planning process will result in a long-term territorial vision linked with the priority productive sectors and available resources. The plans will incorporate aspects of the environment that could present significant constraints or opportunities to the development of the region so as to protect the land from degradation, reduce/avoid impacts on ecosystem services, safeguard biodiversity and enhance livelihoods.

Building Capacity & Policy Making

Institutional strengthening and capacity enhancement among central and local-level government authorities as well as at the individual level are key in removing barriers to SLM. The aim is to shift land stewardship mindsets from 'deplete-abandon-migrate', to 'restore-sustain-protect' in order to reduce pressures on arable lands, forests, and rangelands while ensuring livelihoods of local communities are being met in a sustainable and equitable manner. The project is designed in a way to put forth the tools for participatory planning, management, enforcement in order to achieve wise land use and protection of ecosystem services. A series of trainings are planned at different levels i.e. district, municipal and village levels on various topics related to land-use planning, agriculture, forestry, rangeland management, efficient use of water resources and/or animal health care improvement. Additionally, policy and regulatory reforms necessary to resolve gaps or inconsistencies in legislation and necessary to remove barriers to SLM will be integrated into relevant policies, plans and legislation.

Nour MASRI
Dominique
CHOUETER
Tala MOUKADDEM

United Nations
Development
Programme-Ministry
of Environment
Lebanon
nour.masri@undp.org
dominique.
choueter@undp.org,
tala.moukaddem@
undp.org

George MITRI
Institute of the
Environment,
University of
Balamand, Lebanon
george.mitri@
balamand.edu.lb