

WHY SUSTAINABLE LAND MANAGEMENT? THE CASE OF THE MEDITERRANEAN BASIN

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This policy brief reflects on how particular regions such as the Mediterranean Basin, can hugely benefit from the progressive adoption of Sustainable Land Management (SLM). It moreover reviews enabling factors that can facilitate the effective implementation of SLM. For that, it firstly introduces what is meant by SLM and how it can address environmental challenges. It follows up by reflecting on barriers and opportunities for its adoption. It then finishes by inspecting the case of the Mediterranean Basin, and the available capacity-building existing governance.

SLM as an integrated approach to land management

Sustainable Land Management (SLM) was defined in 1992 by the UN Earth Summit as “the use of land resources, including soils, water, animals and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions” (ICCD/CRIC(11)/INF.3). SLM practices are, therefore, actions that increase resilience against climate change, address land desertification and degradation, prevent loss of biodiversity and assist overcoming water scarcity in land managed systems (Fig. 1).

Many SLM practices are suitable vehicles to simultaneously address the causes and consequences of land degradation, desertification and climate change in managed systems. Principles and SLM solutions from a scientific and technical perspective are well-known. In practice, guidance for identification and implementation of SLM is being provided by different organizations and initiatives, using similar but different criteria, in accordance with their specific objectives and area of implementation.

Highlights:

- *Water availability is, and it is likely to become even more, the most limiting factor for the provision of ecosystem services in the Mediterranean Basin.*
- *Mainstreaming of Sustainable Land Management (SLM) in future land policies could enhance the resilience of territories to climate change.*
- *The four main barriers/opportunities for SLM implementation are: economic, educational, institutional, monitoring.*
- *There is a rising number of capacity-building institutional infrastructures aimed at supporting SLM that can assist in overcoming the barriers of implementation.*
- *SLM can potentially contribute in a balanced manner to several SDGs, as well as to multiple regional-to-local objectives and strategies.*



Figure 1. Contribution of Sustainable Land Management to different ecological services. Source: Own elaboration.

Although most SLM technologies are rather specific to a certain land-use type, i.e. animal management only relates to grazing lands, other groups can apply to different land use types, i.e. managing soil fertility and vegetation management can be related to croplands and grazing lands. In implementing SLM technologies, the interrelationship and interdependence of biophysical factors such as soil quality, water availability, weather and climate change and biodiversity changes (losses or gains) have to be carefully looked into at different scales⁽¹⁾. Moreover, economic and socio-cultural factors, such as traditional values, knowledge and land use rights, also have to be taken into account.

SLM thus, represents an opportunity to manage rural lands in an integrated way. However, as indicated in the following section, it is necessary to carefully consider potential barriers for SLM implementation to ensure success and scale up.

Barriers/opportunities and institutional infrastructures for the adoption of SLM

There is an extended body of literature inspecting barriers and opportunities for SLM implementation (e.g. Sanz *et al.*, 2017). As a summary, these can be condensed into four broad areas: economic, educational, institutional and monitoring.

- **Economic:** facilitate access to appropriate technologies, practices or equipment; fairly distribute subsidies and loans; incentive schemes for SLM implementation through sustainable business models and/or payments for ecosystem services; carry out cost-benefit analyses of planned actions; develop compensation schemes to landowners for the maintenance costs of SLM.
- **Educational:** increase opportunities for local training; promote well-trained stakeholders that facilitate and guide SLM implementation; support the direct implication of scientific bodies that align outputs to national frameworks; support transdisciplinary research programs; seek for arenas of communication that facilitate knowledge exchange, through the translation of scientific findings into a policy-relevant language and the transmission of local skills, experience and knowledge to stakeholders and scientists (i.e. downscaling and upscaling lessons that inform policy frameworks).
- **Institutional:** provide infrastructures to co-create objectives and means of adaptation among scientists, policy-makers and land users; decentralize action, that is, promote existing regional and local bodies to design, coordinate, evaluate and monitor the implementation and impacts of SLM; develop frameworks with short-, medium- and long-term priorities; improve land tenure security and rights; adequate / develop policies and regulations that facilitate the implementation and maintenance of SLM; assure long-term government commitment.
- **Monitoring:** develop qualitative and quantitative indicators at different spatial and temporal scales; make results of monitoring available in a cross-sectoral format; understand the base-line condition of the landscape and calculate the share between human- and climate-induced degradation; recognize that the SLM assessment needs to take place within the context of broader monitoring; scale up results through meta-analyses and modelling studies; identify barriers to implementation and opportunities for creating an enabling environment.

Furthermore, SLM implementation can be **a means to achieve UN Sustainable Development Goals** (SDGs) goals and beyond. This opportunity arises from the recently renovated commitment of governments to combat climate change through the implementation of the Paris Agreement in line with the SDGs. That is why SLM has the potential to create a common framework within which efforts promote the goals of several international bodies such as the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD), the Food and Agriculture Organization of the United Nations (FAO) and the Convention on Biological Diversity (CBD), as well as regional, national and local strategies and action plans (Fig. 2). Moreover, beyond assisting to restore water cycles, i.e. SDG6 "clean water and sanitation", and helping adapting and mitigating climate change, i.e. SDG13 "climate action", the setting of shared goals across sectors contributes to the alleviation of other multiple impacts of climate change and human action such as SDG1 "no poverty", SDG2 "zero hunger", SDG3 "good health and well-being", and SDG15 "life of terrestrial ecosystems".

(1) The implementation of certain SLM practices in a catchment headwater, for example, can affect water availability in downstream parts, both positively and negatively

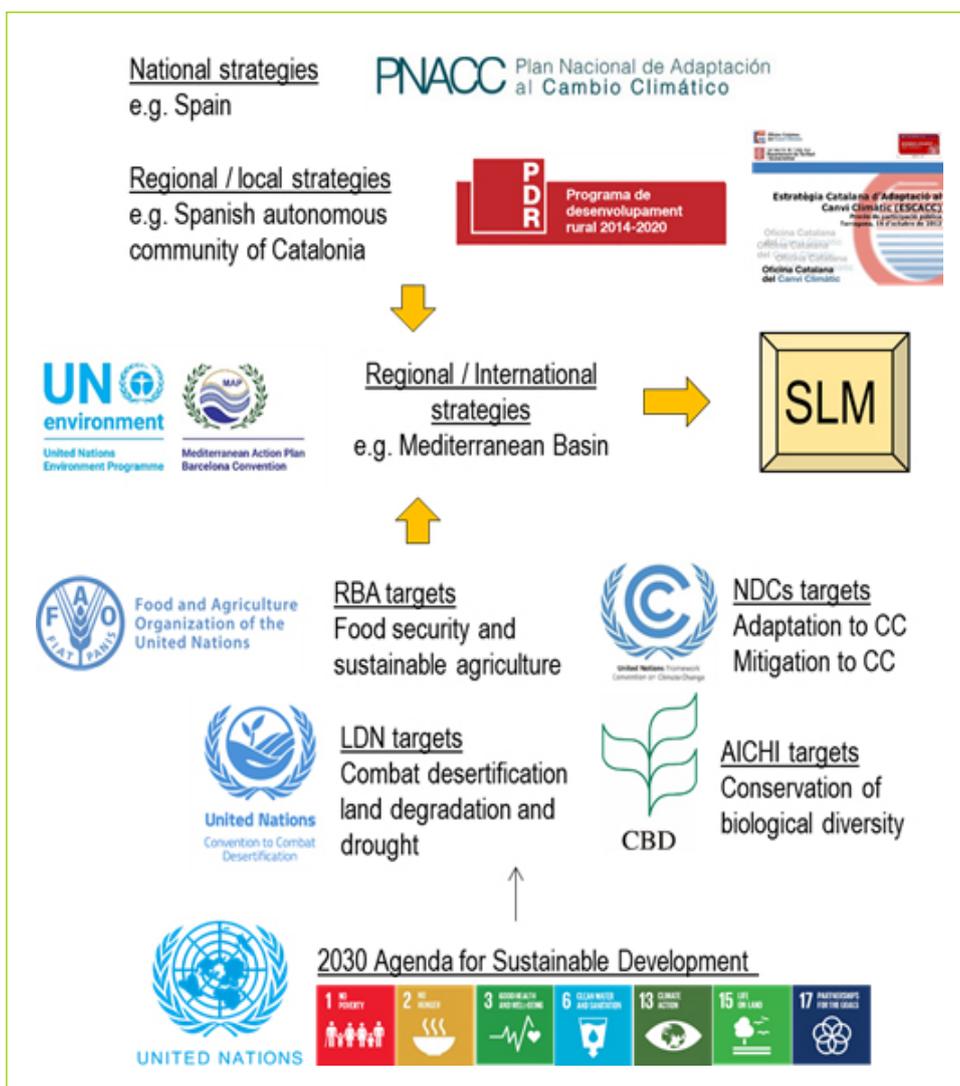


Figure 2. Contribution of Sustainable Land Management to the multiple SDGs and goals of the FAO, UNFCCC, UNCCD, and CBD organizations (bottom); regional and international strategies and frameworks (left); and national and local strategies and action plans (top). The yellow arrows indicate the best option recognized to steer SLM efforts. Source: own elaboration.

Why SLM in the Mediterranean Basin?

Climate change is estimated to strongly impact the Mediterranean region by rising heat summer stress and heatwaves, decreasing precipitation, enhancing storminess, increasing evapotranspiration due to temperature rise, enlarging demands of goods and services due to population growth and largely declining riverine runoff; all of which critically influences its already fragile hydrological cycle of the region (Collins *et al.*, 2013).

In light of these projections, taking action to combat climate change is an emerging priority in the Basin, as well as a **potential vehicle to protect and enhance its water cycle**. This is the case, as strong links among land management, the water cycle and the re-circulatory atmospheric processes in the Mediterranean region exist (Millán *et al.* 2005). Moreover, well design actions for land use and forestry are key to achieve basin-wide adaptation and mitigation to climate change, and these can be effectively achievable through SLM (Sanz *et al.*, 2017).

SLM practices that are documented in the literature, are in most of the cases designed and adopted at the local scale, as these, are tightened to the site-specific characteristics in where they are implemented. However, the wide region of the Mediterranean Basin (30–47°N, 10°W–35°) represents a niche of opportunity to **steer SLM efforts** towards the common goal of managing the hydrological budget and restoring its impoverished water cycle. The greatest challenge that this

entails is that while the hydrological system of the Basin is driven by global climate change and regional anthropogenic action, adaptation actions are locally addressed, mixing different time and regional scales that encompass non-linear behaviours and distinct internal thresholds. That is to say, that while SLM actions consider that vulnerabilities and risks are local or proximal, there are wider non-straightforward challenges (and solutions) that affect the whole region, as for example, the state of the water cycle.

Since water availability is the most limiting factor for the provision of services in the Mediterranean Basin and the biggest threat to climate change adaptation and mitigation (Costantini *et al.*, 2016), efforts should be directed towards a more effective **management of water budget**. Attempts to decrease pressure on freshwater resources might be stewarded towards limiting land use intensification and preserving traditional extensive systems of high cultural and productivity values, e.g. through vegetated earth-banked terraces or agro-forestry systems, or towards improving the state of freshwater resources and its management. This can be achieved by decreasing the extension of wetlands for cropping, e.g. change crops to lower water demands; by improving irrigation efficiency, e.g. micro-irrigation systems; by reducing direct soil evaporation with increased plant transpiration, e.g. reforestation, green cover in perennial woodlands; or by enhancing water use efficiency by the flora, e.g. preservation of mosaic-like landscape, among others. In this way, besides tackling locally specific challenges through SLM implementation (e.g. loss of biodiversity due to pests), the joint promotion of actions that assist managing water resources can benefit from emerging synergies that arise from these needs (e.g. pest control not only with natural pesticides but also with canopy, which, besides acting as a natural barrier to pest spreading, can boost surface water infiltration, decrease soil erosion and enhance evapotranspiration and atmospheric moisture).

The development of coordinated, coherent and consistent environmental policies for SLM actions within the Mediterranean Basin is therefore key to ensure regional objectives that go beyond the local scale of SLM implementation. For that, **mainstreaming of SLM** could be a solution (Akhtar-Schuster *et al.*, 2011).

Mainstreaming of SLM is understood as systematically integrating “*decision-making processes, policies and laws, institutions, technologies, standards, planning frameworks, educational curricula and public awareness-raising activities*”, ensuring their continuity in the political and institutional agenda (UNDP, 2008). Thus, mainstreaming does not mean implementing successful SLM elsewhere, but seeking ways to replicate success stories by making local SLM relevant to policies wider than the scale of their implementation based in solid knowledge of the processes that drive the systems at the relevant scales. For example, the [Mediterranean Strategy for Sustainable Development](#), MSSD 2016-2025 is an integrative policy framework under the coordination unit of the United Nations Environment Programme / Mediterranean Action Plan (UNEP/MAP) that aims to translate the 2030 Agenda for Sustainable Development at the regional level (i.e. downscaling) and stimulate regional cooperation (i.e. upscaling). Similarly, the [Union for the Mediterranean](#) (UfM) is an intergovernmental institution that brings together 43 countries to likewise, promote dialogue and cooperation within the Mediterranean region. Such transnational instruments can support national and local efforts aiming at integrating cross-sectoral and multi-stakeholder knowledge, translating it into national and wider regional (i.e. Mediterranean Basin) policies and frameworks.

We recognize the option of steering SLM actions under **Objective 2 of the MSSD 2016-2025**, which states “*Promoting resource management, food production and food security through sustainable forms of rural development*”. The MSSD 2016-2025 addresses crucial systems disturbed by human actions from urban to rural areas (and the marine realm) with one of the focuses on climate change. This framework defines strategic directions and actions to ensure implementation and monitoring of SLM, offering the opportunity to overcome the above exposed barriers for SLM implementation, as it is an already existing body that coordinates the implementation of intergovernmental (top-down), national and regional (bottom-up) actions, provides support and technical guidance to all interested parties, facilitates platforms for the civil society to participate with stakeholders, offers monitoring processes, allocates financial resources, cooperates with the scientific community for the development of analytical tools that allow forecasting and assessment of measures and engages in civil awareness and sensitization.

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