



NewLife4Drylands – Remote sensing oriented Nature-Based Solutions towards a new life for drylands: Restoration Plan for Asterousia Mountains' area

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Introduction

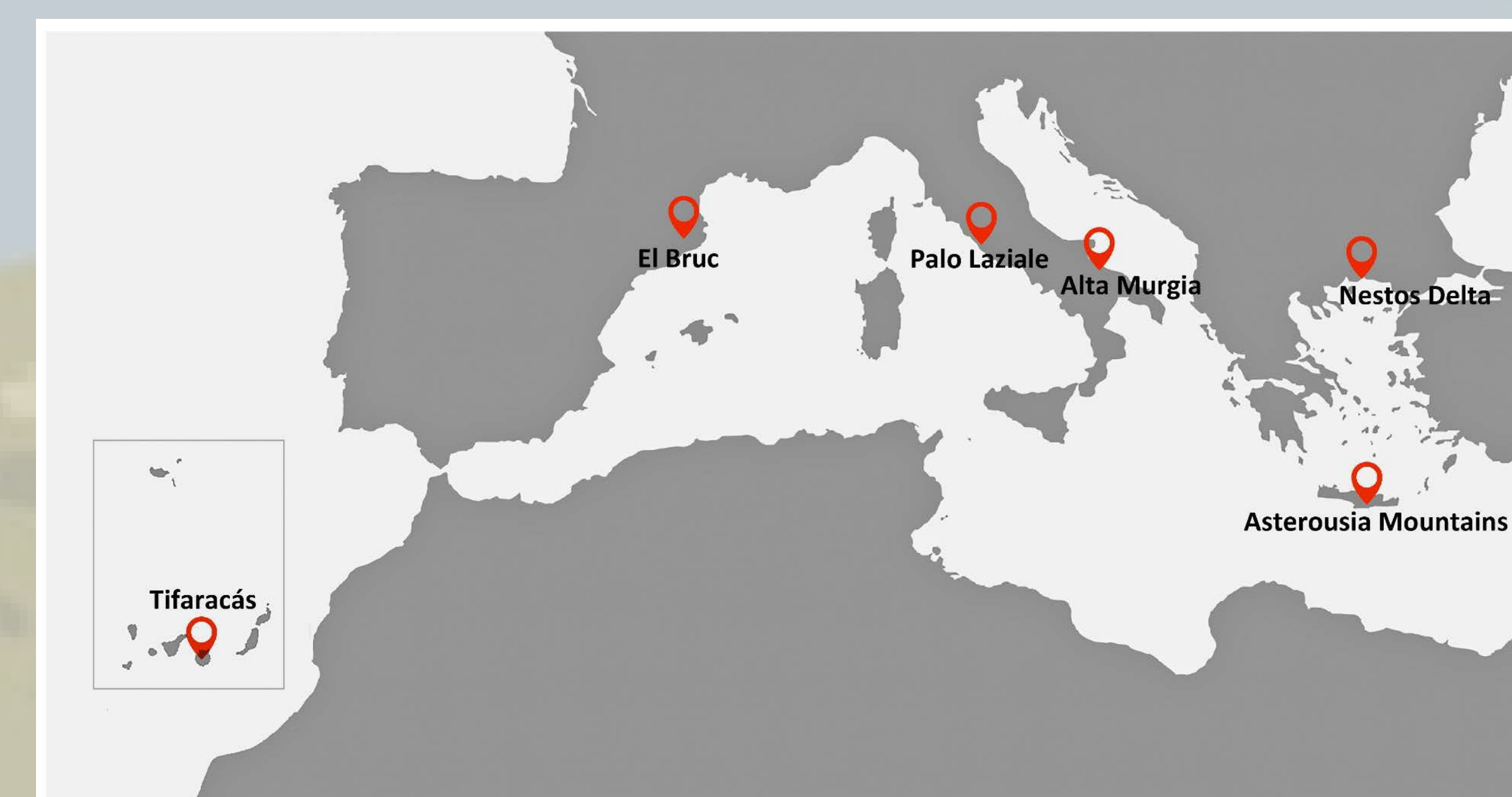
Land degradation and desertification are two constantly intensifying phenomena, which affect large land areas of southern, central and eastern Europe with huge environmental, social and economic impacts. One of the main drivers of desertification is climate change, affecting particularly the Mediterranean region. Drought intensity and frequency are expected to increase with global warming in southwestern parts of Europe, whereas an

opposite trend is projected for north-eastern Europe. Methods to combat desertification are usually adapted to the climatic, geological, social and economic conditions of each area and are based on natural processes and the experience of past generations, which are abbreviated as Nature-Based Solutions (NBS).



NewLife4Drylands Project (NL4D)

NL4D is a LIFE Preparatory Project co-funded by the European Union under the LIFE programme. It started in January 2021 and it will end in June 2024. The project aims to study the evolution of land degradation and desertification through satellite monitoring of specific indicators and analysis of various natural and man-made parameters that affect and change the natural landscape of the region. The project is being implemented in 6 pilot areas in Italy, Spain and Greece.



Restoration Action Plan of Asterousia Mountains

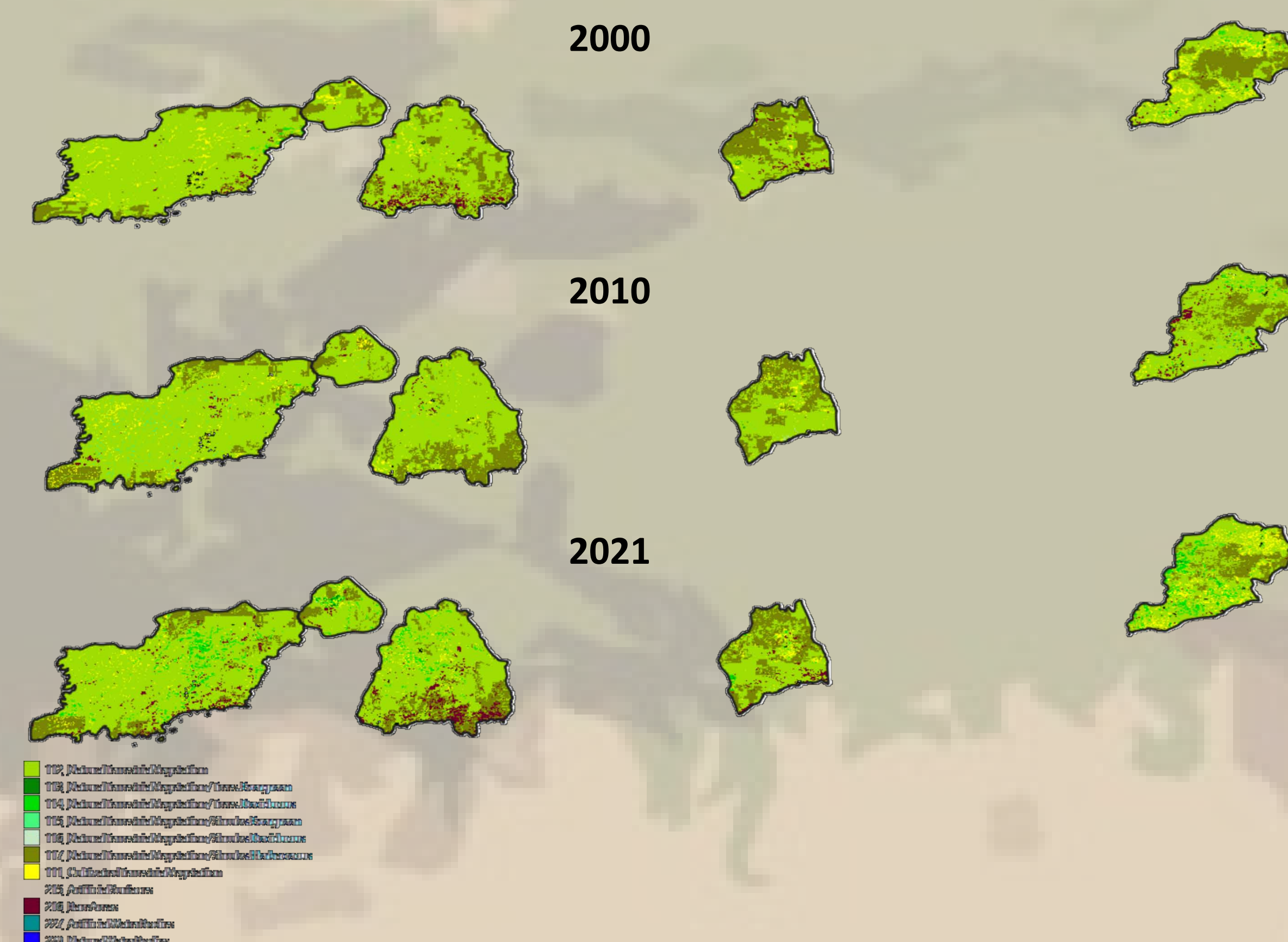
NewLife4Drylands (NL4D) project foresees to produce a Restoration Plan for the pilot area of Asterousia, Crete, Greece, with the most suitable Nature-Based Solutions (NBS) for the area to be suggested. The Restoration Plan of Asterousia will not be binding, but it will serve as an advisory and scientific tool for local authorities and governmental agencies to deal more effectively with desertification and enhance the resilience of ecosystems, environment and local communities.



The area of Asterousia in Crete (GR4310013) is facing severe land degradation and soil erosion due to overgrazing, prolonged dry season, excessive groundwater extraction and high salinity. A combination of old practices based on natural solutions and new Nature-Based Solutions are implemented for the Asterousia area.

A selection of NBS that "Asterousia Restoration Plan" will suggest:

- ✓ **Fencing off** areas for regeneration by promoting the natural regeneration process, allowing native plant species to recolonize the area, without the impact of overgrazing.
- ✓ **Agroforestry practices** which combine tree plantations with crops and/or livestock systems, promoting an holistic way of cultivation and grazing, while maintaining soil health and biodiversity.
- ✓ **Grazing management** by either prohibition of grazing in certain areas to allow natural regeneration or application of periodic sustainable grazing by maintaining an annual vegetation which helps in proper water runoff and loss of soil water due to evapotranspiration and reduces soil erosion.
- ✓ **Traditional drystones** as structures for the control of soil erosion. They are simple constructions that require minimal maintenance, while they are permeable to water and thus allow its smooth passage, protecting the construction and are acting in practice as anti-flood and anti-corrosion measures. They also act as a safe habitat for flora and fauna species, increasing the area's biodiversity and ecological value.
- ✓ **Soil management practices:** **a)** reduce or eliminate tillage composting to minimize soil disturbance and preserve soil structure; **b)** mulching to protect soil erosion, temperature extremes and moisture loss; **c)** crop rotation to prevent soil exhaustion and disease buildup (different crops have varying nutrient requirements, which can help restore soil health); **d)** erosion control practices such as contour farming, terracing, or planting windbreaks to prevent further soil erosion; **e)** change direction of plowing and cultivation along the lines, following the natural soil inclination; this technique helps reduce soil erosion by reducing the speed of water runoff, promoting water infiltration and reducing the formation of streams and gullies.



Based on specific indicators monitored by satellite, NL4D project will define a Monitoring Model and a Protocol that will be able to connect NBS and remote sensing indicators. These indicators will provide a guide for the identification of specific measures for the restoration of drylands to be used as a support in decision-making for adaptive management of restoration actions in drylands, improving ecosystems services and related economic issues, including local resources to mobilize and new green jobs.



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