Links4Soils

Linking Alpine Soil Knowledge to Sustainable Ecosystem Management

Project Background

Alpine ecosystems are under increased pressure due to human influence and climate change effects. Soil is the basis of Alpine ecosystems. It is a fundamental natural resource especially in the vulnerable Alpine region. Through the sustainable management and protection of soil we will enhance the sustainable management of Alpine environment, considerably contribute to the performance and resilience of key ecosystem services, preserve biodiversity, enhance the ecological connectivity of Alpine ecosystems, and ensure human well-being. The soil management and protection is provided for the framework of the Soil Conservation Protocol of Alpine Convention, which aims

"[to] safeguard the multifunctional role of soil based on the concept of sustainable development. To ensure sustainable productivity of soil in its natural function, as an archive of natural and cultural history and in order to guarantee its use for agriculture and forestry, urbanism and tourism, other economic uses, transport and infrastructure, and as a source of raw materials."

Project Focus

The Alpine Convention Soil Conservation Protocol has still not been successfully implemented. Among the important reasons is the lack of applicable soil information adapted to user needs and environmental threats, knowledge of sustainable ecosystem management, as well as applicable and best-case management practices. *Links4Soils* will overcome several gaps by improving the systematic applicability of the Alpine Convention Soil Protection Protocol; it will focus on preparation of the existing regional and national soil data to generate user-friendly information, the transfer of knowledge and best management practices to policymakers and other stakeholders, and the promotion of efficient soil protection strategies in their day-to-day work.

Project Objectives

- To better integrate soil management into sustainable development strategies and nature protection;
- To process existing soil data (often too technical) so as to be understandable for end users in different sectors;
- To assist users in the implementation of soil information on real test cases and in their day-to-day work;
- To transfer knowledge by coaching users on the efficient exploitation of soil information;
- To link professional and research institutions so as to utilise their existing data in an Alpine-wide soil database;
- To build best practice examples for future users: practitioners, decision makers, and authorities;
- To contribute to better soil and ecosystem management in the Alps.

Sustainable & Best Practice Soil Management Plans

Where accessible, understandable, adapted, and applicable soil and environmental information and related best management practices are needed:

- **Spatial planning**: minimising soil sealing, sustainable urban planning, the mitigation of soil contamination, smart use and protection of the best soils;
- **Management and preservation of ecosystem functions:** the buffering and filtering capacity of soils, water purification, and the preservation of soil and aboveground biodiversity;
- **Environmental protection**: groundwater protection, management of CO_2 and other greenhouse gas sinks; the mitigation of soil organic matter depletion, climate change mitigation;
- **Prevention of natural disasters**: the mitigation of flood threats, the prevention and mitigation of landslide risks and severe erosion, improving resilience to drought and flooding;
- **Nature conservation:** protection and management of habitats;
- **Agriculture**: sustainable soil management and tillage, the prevention of over exploitation, soil protection, combating soil organic matter depletion, implementation of the Nitrate Directive, designing measures towards sustainable agricultural production, groundwater protection;
- **Forestry**: minimising erosion and soil compaction (timber harvesters), support for forest biodiversity and sustainable forest exploitation;
- **Tourism:** setting-up soil and biodiversity expositions in nature park visitor centres; sustainable management of ski areas (erosion, management of ski slopes, etc.);
- **Education:** raising awareness of soils in schools and amongst the general public.

Selected Project Results & Deliverables

The following list comprises some of the interesting results to be elaborated in close cooperation between project partners and project observers:

- A consultancy service regarding Alpine soil management for decision-makers and stakeholders;
- A handbook for the implementation of soil protection in forest management practice for forest practitioners;
- Measures and management practices regarding soil and biodiversity protection in ski/pasture areas;
- A protocol for the integration of soil and hydrological data; a draft of an user-oriented alpine soil classification;
- A web-based handbook comprising the most significant case study results and recommendations for the successful implementation thereof in management plans;
- New methods to provide information for use in soil ecosystem service management;
- The integration of Alpine soil information in the ESDAC (spatial information, protocols, web GIS);
- The establishment of an Alpine Soil Management Partnership;
- Post-International Year of Soil 2015 activities, raising awareness on soil protection in the Alps;
- An educational/promotional video on Alpine soil, summer schools for YPAC students, etc.

Project Links

Official Alpine Space Links4Soils project website: www.alpine-space.eu/links4soils
Web Plattform: www.alpinesoils.eu
Links4Soils at ResearchGate: https://www.researchgate.net/project/Links4Soils-Linking-Alpine-Soil-Knowledge-for-Sustainable-Ecosystem-Management-and-Capacity-Building

Project Partners

AT: Climate Alliance Tirol ● Institute of Geography, University of Innsbruck ● Office of the Tyrolean Provincial Government
DE: LAND-PLAN Bureau for Landscape Ecology and Planning ● Municipality of Kaufering, Department of Environment and Nature
FR: National Research Institute of Science and Technology for the Environment and Agriculture, Grenoble Regional Centre, Mountain Ecosystem Research Unit
IT: Autonomous Region of Aosta Valley ● University of Torino, Department of Agricultural, Forest and Food Sciences
SI: Agricultural Institute of Slovenia **(Lead partner)** ● Slovenian Forest Service

Project Observers

AT: Austrian Federal Ministry of Agriculture, Forestry, the Environment and Water Management (BMLFUW) ● CIPRA Austria ● Climate Alliance Austria ● Environment Agency of Austria ● European Land and Soil Alliance (ELSA) e.V. ● Office of the Regional Government of Carinthia ● Austrian Research Centre for Forests (BFW) ● Ötztal Nature Park
CH: Swiss Federal Office of the Environment (FOEN), Topic Soil ● Office for Environmental Protection, Uri Canton, Department of Emission Control
DE: German Federal Environment Agency (UBA) Department/Monitoring and Geological Study and Soil Remediation ● Bavarian State Ministry of the Environment and Consumer Protection
FR: Chamber of Agriculture of the Rhône-Alpes Office of Agronomy and Territorial Innovation ● French National Federation of Forest Communities (FNCOFOR)
ISL: Icelandic Forest Service
IT: Environmental Protection Agency – Piedmont Region Geological Department/Monitoring and geological study and soil remediation ● Italian Ministry of the Environment, Land and Sea ● Slow Food
SI: Ministry of Agriculture, Forestry and Food ● Ministry of the Environment and Spatial Planning ● Triglav National Park ● Kranjska Gora Ski Centre ● Vogel Ski Centre

AC: Permanent Secretariat of the Alpine Convention (PSAC)
EU: The Joint Research Centre of the European Commission, Institute for the Environment and Sustainability (IES), Land Resource Management Unit, Soil Action, European Soil Data Centre (ESDAC), Ispra, Italy
FAO: European Soil Partnership ● Mountain Partnership Secretariat at the Food and Agriculture Organization of the UN