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Raising the profile of soil's essential contribution to society

Soils play a vital role in the Earth's life-support system, yet their importance and value to society is not always recognised. A recent study suggests that incorporating soils into a National Capital and Ecosystem Services framework will raise the profile of soils and enable soils to be more easily integrated into policy decisions.

Soils are a vital natural resource, but generally are not perceived to be as fundamental to human wellbeing as air and water. Yet soils supply many essential ecosystems services, not only for example, food, feed, fibre and wood, but they also provide a diverse habitat and gene pool from which we obtain medicines, they regulate air quality by storing carbon, they recycle waste and filter water. More-over, they also offer cultural services in the form of archaeological preservation and recreation opportunities, from sports turf to supporting attractive landscapes.

The study, partly funded by the EU's SoilTrEC project[1], describes soil's 'natural capital' as its stocks of 'mass, energy and organization' including all physical, chemical and biological components, for example, mass includes, organic and inorganic material, soil air, soil water, and living organisms in the soil. The flow of soil ecosystem goods and services is supported by soils' natural capital and depends on the quality of the soil. Human activities may alter the stocks of soils' natural capital in relatively short timeframes, for example, by clearing forests for intensive agriculture or covering up soils ('soil sealing') in urban development.

There is generally a trade-off between the provision of soil ecosystem services and the maintenance of natural capital that supports the provision of goods and services, the study says. However, for sustainable development, it is important that ecosystem services are not obtained at the expense of the natural capital, for example, nutrients used by agriculture must be replaced, erosion avoided, and strip mining should be followed by regeneration to restore soil stocks.

To ensure that soils continue to function for the benefit of society, are adequately protected, and are incorporated into the policymaking processes, this study proposes that a broad framework should be developed to identify and value all elements of soils' stocks and the ecosystem goods and services that flow from soils to support human wellbeing. The framework should link the concepts of soil natural capital, ecosystem goods and services and soil change that occurs over short timeframes.

The study makes four recommendations to the soil science community to ensure that soils' important contributions to supporting life are valued within the framework:

1. Develop frameworks to identify the natural capital stocks and ecosystems goods and services provided by soils that support essential natural systems and sustain human life and biodiversity.
2. Establish indicators and ways to monitor changes in the natural capital of soils and soil ecosystem goods and services to provide an evidence-base for land managers and policymakers.
3. Create ways to value soils and to incorporate these values in decision making processes. This includes recognising the value of non-market services, such as flood control and carbon sequestration, in addition to valuing the decline of natural capital and soil stocks.
4. Participate in developing decision- support tools for policymaking.

The researchers urge soil scientists to be actively involved in developing the framework to ensure policy and other decision makers are fully aware of integrating soil in planning decisions.

1. SoilTrEC (Soil Transformation in European Catchments) is supported by the European Commission under the Seventh Framework Programme. See: www.soiltrec.eu

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