



Soil Transformation of European Catchments (SoilTrEC)- Project Fact Sheet (www.soiltec.eu)

Soil importance for EU citizen

What are the lessons from history? In human history fertile soil generates food that, in turn, causes population to increase and that is what makes society able to expand. But fertile soil has been and still is subject to overexploitation. It is the fragile skin of the Earth. Soil is easily washed to the sea by rain and rivers. Several authors have chronicled the role of soil in the evolution of ancient and modern societies. They have found that soil degradation played an important part in the collapse of societies, including the Romans.

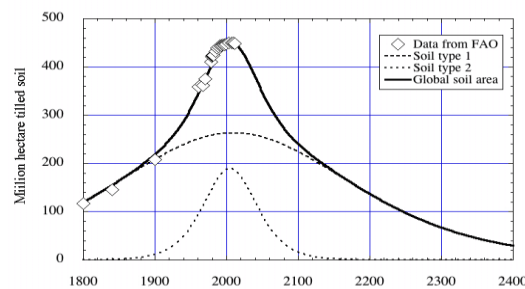


Figure 1. The area of agricultural tilled soils of the Earth peaked in 2005. That is a serious observation for humanity (Sverdrup et al. 2013).

Is soil a non-renewable resource? It has been documented that the area of agricultural soils of the Earth peaked in 2005; this is also referred to as “peak soil” in human history (Figure 1). Land taken by urbanization and housing is a growing concern for the general public. We lose soil by urbanization through soil sealing, and these are often the most fertile soils in the area because human dwellings develop within fertile agricultural areas such as on riverbanks. The daily rate of loss of fertile soils by sealing is 120 ha/day in Europe or 438 km² a year. There are more than 3,000,000 contaminated sites in Europe, mostly through uncared industrial practices. While soil erosion is not perceived by the European citizens as a major societal problem soil erosion is 10-100 times faster than soil forms in agricultural areas. When soil is gone, it takes centuries, at least, to reform. This means that soil formation rates are not fast enough for soil to replenish within a generation. Therefore soil is a non-renewable resource and how we treat soil now has huge ramifications for future generations.

What is sustainable soil care? There is now a need for new approaches to land care and move towards land and soil stewardship and sustainable agriculture, while still feeding 9.6 Billion of humans by 2050. Applying ecological concepts and principles to the design and management of systems of food production – referred to as agroecology – can help produce food more sustainably. Agroecology is the study of the relation of agricultural crops and the

environment. Agroecological approaches have a site-specific application that will last over the long term, a major pillar of sustainability. Evidence is amounting across the globe about how soil can be managed sustainably, by adopting such ecological principles. These have shown that soil can be protected and even regenerated, with the added bonus that carbon is being sequestered as organic matter into soil and hence having implications for aiding in halting climate change. When soil is understood to be a living, dynamic ecosystem – management for sustainability becomes an integrated, whole-system process. The application of our understanding of the ecological processes that maintain the structure and function of the soil ecosystem over time takes on greatest importance. To get there we need soil sustainability indicators – such as organic matter content in soil.

Is soil important for EU citizen?

Soil problems have global consequences for food security, poverty reduction, water protection and biodiversity. In 2001 the European Commission indicated that soil loss and declining soil fertility were a main threat to sustainable development, because they diminish the viability of agricultural land. Some soil protection is undertaken in Europe through various policy areas but a comprehensive European Community soil protection policy does not exist. Concerted approaches are therefore needed for providing solutions. A EU legislation with focus on agroecological approaches would be one step in the right direction. Long-term funding of soil observatories, as have been set up in SoilTrEC, is another important step towards soil protection because with the data gathered we can develop and test models and promote policy measures for soil protection for the future.

How do we transfer knowledge?

There is knowledge of sustainable soil management across the world, also in the EU, but the agroecological principles need to be explored in research projects, in curricula of agricultural colleges and in training of landowners, both in Europe and in the global South. The European Commission can aid in setting up such research and knowledge transfer. Building sustainable agricultural systems is an important intergenerational investment and it could be argued that the present generation has the ethical responsibility to do so.

Reference: Sverdrup H.U., Koca D., and Ragnarsdottir K.V. (2013) Peak metals, minerals, energy, wealth, food and population: Urgent policy considerations for a sustainable society. *Journal of Environmental Science and Engineering* B2, 189-222.

For more information visit SoilTrEC website: www.soiltrec.eu

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