

Session Biosphere: April 13th 11.00 hrs

1s6b A healthy soil as a basic enabling condition for the transition towards circular land management and land use

Sustainability rooted in soil science

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Soils are an indispensable resource. They are critical for maintaining the health and productivity of ecosystems, and ultimately for sustaining the development of global societies and world economies. Since the founding of the Sustainable Development Goals in 2015, there has been growing recognition about the importance of soils for driving development. Over the past decade, game-changing progress and innovation across the sciences – not least, in soil science – have better enabled us to confront growing environmental, societal, and economic challenges. Six years since the founding of the UN Sustainable Development Goals, and less than ten years before we review their achievement, now is a critical point to determine where we are, and what we need to do in this next decade.

In this presentation, we will synthesise the key achievements in soil science over the past decade, with particular focus on five major environmental challenges: food security, water security, urban development, ecosystem conservation, and climate change. Next, we will present a timeline of the past decade, highlighting some of the global initiatives towards which soil scientists have contributed, including major guidance and recommendation documents, status reports, expert group collaborations, public awareness campaigns, and legislation. This exercise shows that soil scientists have

contributed comprehensively to recommendation reports, but work is rarely translated into policy. With limited resources and budget at disposal, we argue that it is critical to consider how soil science can support global efforts to secure sustainable development by 2030.

Here, we propose three 'ways of working' for soil science. First, it is vital to implement research into policy and practice, and although this depends on policy makers, researchers in soil science should consider how to strengthen their relationships with policy teams, as well as innovative solutions to engage the public consciousness about the threats facing global soils. Second, we argue that soils-based policies should be sufficiently co-ordinated with other environmental domains through trade-off and synergy evaluation assessments. Third, we highlight that future-proofing soils-based policies requires soil scientists to consider how soils will change over time, and integrating monitoring and modelling methodologies will be key.

Keywords: Climate change, food security, water security, urban development, ecosystems