



Is research on soil erosion hazard and mitigation in the Global South still needed? (Alexander von Humboldt Medal Lecture)

Jean Poesen

KU Leuven, Department of Earth and Environmental Sciences, Division of Geography, Leuven, Belgium
(Jean.Poesen@ees.kuleuven.be)

Soil erosion represents a geomorphological and geological hazard that may cause environmental damage (land degradation), property damage, loss of livelihoods and services as well as social and economic disruption. Erosion not only lowers the quality of our soils on site, resulting in a drastic reduction of their ecosystem functions that play a vital role in daily life, but causes also significant sediment-related problems off site. To curb soil erosion problems, a range of soil conservation techniques and strategies have been designed and are being applied. Worldwide, ca. 62 000 research papers on soil erosion and 116 000 on soil conservation have been published (Web of Science, Dec. 2015). The number of such papers dealing with the Global South represents less than 20 % of all papers, despite the fact that many regions in this part of the world face significant soil erosion problems, aggravated by a rapidly growing population and major environmental changes. Given the large number of research papers on this topic, one might therefore conclude that we now know almost everything about the various soil erosion processes and rates, their factors and consequences as well as their control so that little new knowledge can still be added to the vast amount of available information. We refute this conclusion by pointing to some major research gaps that still need to be addressed if we want to use our soils in a more sustainable way. More specifically the following topics need more research attention: 1) improved understanding of both natural and anthropogenic soil erosion processes and their interactions, 2) scaling up soil erosion processes and rates in space and time, and 3) innovative techniques and strategies to prevent or reduce erosion rates. This will be illustrated with case studies from the Global South. If future research focuses on these research gaps, we will 1) better understand processes and their interactions operating at a range of spatial and temporal scales, their rates as well as their on-site and off-site impacts, which is crucial for better targeting erosion control measures and which is academically spoken rewarding, and 2) we will also be in a better position to select the most appropriate and effective soil erosion control techniques and strategies which are badly needed for a sustainable use of our soils in the Anthropocene and for the improvement of environmental conditions worldwide.