Date of poster presentation: 11 April 2022

Nature-based solutions as building blocks for the transition towards climate resilient and circular food systems

Keesstra, S.D., 1,2); Veraart, J., 3); Appelman, W., 4); Linderhof, 5); van der Berg, J., 5); Verhagen, J., 6); Deolu-Ajayi, A., 6); Visser, S.M., 7); Kragt, M., 8); Groot, A., 3)

1) Team Soil Water and Land Use, Wageningen Environmental Research, Wageningen UR, Postal address: P.O. Box 47, 6700 AA Wageningen, The Netherlands;

2) Civil, Surveying and Environmental Engineering, The University of Newcastle, Callaghan 2308, Australia.

3) Team Climate Resilience, Wageningen Environmental Research, Wageningen UR Postal address: P.O. Box 47, 6700 AA Wageningen, The Netherlands.

4) Wageningen Food & Biobased Research Postbus 17, 6700 AA Wageningen, The Netherlands;

5) Green Economy and Land Use at Wageningen Economic Research

6) Agrosystems Business Unit, Wageningen Plant Research, Wageningen UR, postal address: P.O. Box 16, 6700 AA Wageningen, The Netherlands

7) Corporate strategy and Accounts; Wageningen-UR; Postal address Droevendaalsesteeg 3, 6708PB Wageningen, The Netherlands.

8) Centre for Environmental Economics and Policy, University of Western Australia, Perth WA 6009 Australia,

---

Food systems—encompassing food production, transportation, processing and consumption, including food losses and waste—are currently not delivering what is expected or needed to ensure their full contribution to societal well-being and ecological sustainability. The literature has defined a set of food systems failures related to the functioning of the biosphere, society, and economy (including governing structures). In this paper, our hypothesis is that Nature-Based Solutions (NBS) can form the building blocks for a transition pathway to climate-resilient and circular food systems. We develop a conceptual framework to assess how NBS contribute to such transitions. Three types of NBS are evaluated: intrinsic NBS which make use of existing ecosystems; hybrid NBS which manage and adapt ecosystems; and inspired NBS which consist of newly constructed ecosystems. The evaluation of these three types supports our hypothesis is valid, and shows that inspired NBS in particular will increase opportunities to achieve sustainable development in food systems. We identify the knowledge gaps that impede the development of NBS to support a transition towards climate-resilient sustainable food systems.

Keywords: foodsystem transformation, climate change adaptation, ecosystem services, benefits and challenges