

How Can Nexus Research Address the Sustainable Development Goals (SDG's)?

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In recent years policy relevance of research has emerged as an important consideration for international research institutes and think tanks. Unlike conventional universities, the United Nations University (UNU-FLORES) is mandated to develop global public goods with potential to alleviate poverty through robust management of environmental resources- water, soil and waste. Some examples of global public goods include high yielding varieties of seeds, improved livestock, irrigation and fishery management practices and models of agricultural value chains that operate within a complex political economy of food production, distribution, retail and consumption. To what extent the adoption of such public goods could serve to ameliorate planetary boundaries through their impacts on freshwater use, biogeochemical flows, changes in biosphere integrity and climate change remains a moot question¹.

A recent CGIAR Standing Panel on Impact Assessment synthesis report, for example found adoption rates for full-fledged NRM technologies to be remarkably and consistently low, ranging between 1 to 10% in areas where a variety of actors had been promoting these technologies. The technologies that were reviewed included Conservation Agriculture (CA), Fertilizer Micro-dosing (MD), Alternate Wetting and Drying (AWD) and Integrated Soil Fertility Management (ISFM). The remarkable conclusion that the report draws is that “the empirical cases were motivated by a prior claim of widespread adoption which led the CGIAR centres to invest in promoting them. It seems unlikely that these efforts have completely failed to reach farmers”. This conclusion gives rise to several questions, notably: what constitutes success, how does one assess the poverty-environment nexus and what mechanisms can serve to “institutionally” embed NRM research and enhance policy relevance?

The Water-Energy-Food (WEF) Nexus debate has important implications for the international agricultural research agenda. The Nexus approach by introducing concepts such as trade-offs, synergies and optimization has encouraged thinking along the lines of planetary boundaries and the circular economy. However, analysis of the political economy of Nexus interactions remains a glaring omission, thereby limiting the potential for research to address challenges of food, water and energy security. The potential benefits of employing a Nexus approach include addressing rebound effects of developmental action by integrating economic, environmental, institutional and socio-economic perspectives in assessments of policy and management interventions. The Nexus approach distinguishes between global challenges such as climate change that operate at planetary scale and local and regional challenges of food, energy and water security that operate at administrative scale, thereby enhancing the prospects for institutional embedding of NRM research.

¹ The relevant Sustainable Development Goals (SDG's) relate to poverty (goal 2), water and sanitation (goal 6) and climate action (goal 13) (CGIAR, 2016).

Institutional embedding would make it clear that while administrative and planetary scales and the concomitant pressures they impose may be interconnected and interdependent, policy and management interventions need not always succeed in aligning both sets of interests. The Nexus approach offers a framework to view policy and management interventions as outcomes of choices that operate at global, national and local scales, guided in turn by norms, agency and individual behavior with regards to allocation of financial and human resources and institutional capacity with the goal of balancing bio-physical risks with institutional ones reflected in efficiency and equity considerations of infrastructure operation and maintenance. Therefore, the novelty of the Nexus approach lies in its emphasis on the importance of coordination across sectors to remove siloes in decision making but without presuming that integrated management but rather integrative analysis will improve the prospects for sustainable development. From a cultural standpoint, the experience of applying the Nexus approach to enhance policy relevance can serve as an example of the kinds of changes required to effectively promote “trans-disciplinarity” in higher education and capacity development.

One example of policy relevance of research undertaken by UNU-FLORES includes the development, validation and pilot-testing of a monitoring methodology for SDG target 6.3 called the Wastewater Reuse Effectiveness Index (WREI). The key results of engaging with decision makers and scientists as part of three regional consultations organized with UNHABITAT in Hanoi, Amman and Sao Paulo were presented at an Expert Group Meeting (EGM) co-organized by UNHABITAT and WHO in Geneva on March 1-2, 2018. The Synthesis Report currently under preparation for the Secretary General of the UN and the High Level Political Forum (HLPF) to be held in New York in July, 2018 will recommend the need for the inclusion of an additional sub-indicator on reuse for target 6.3. This serves as an example of how critical gaps in SDG goals and associated targets can be effectively filled through cooperation between UN agencies, Member States and knowledge institutes in both the developed and developing world. Additional information on the proposed monitoring methodology for SDG target 6.3 on reuse can be found in the following article: Kurian M. 2017. The Water-Energy-Food Nexus: Trade-offs, Thresholds and Transdisciplinary Approaches to Sustainable Development, *Environmental Science and Policy*, Vol. 68, pp. 96-107, Elsevier.