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Lessons for research, capacity development and policy in agroforestry for development

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Abstract Since its foundation in the 1970's, agroforestry science has evolved from setting its concepts, research approaches and flagship technologies towards its increasing contribution to ecologically sound land use, food security and income generation in the global North and South. The Third World Congress on Agroforestry held in Delhi in April 2014 continued contributed to this evolution by focusing, beyond the scientific realm, on the implementation of findings by convening ad-hoc stakeholders and subjects. Accordingly, some of the congress sessions dealt with key aspects of how agroforestry can foster and contribute to development. The special issue "Lessons for research, capacity development and policy in agroforestry for development" compiles approaches, experiences and overall lessons from (i) research, (ii) capacity development, and (iii) policy-making, capable to promote and generate developmental change through agroforestry. This introductory paper outlines the rationale for the three areas and the contributing articles.

Keywords Third World Congress on agroforestry · Agroforestry and development · Research · Capacity development · Policy-making

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Introduction

The third World Congress on Agroforestry "Trees for Life: Accelerating the impact of Agroforestry" held in Delhi in 2014, convened more than 1000 participants to discuss how can agroforestry make a difference? In contrast to previous congresses, which emphasized knowledge per se and the audience was largely scientists, the third congress expanded its scope towards 'hands-on' themes and actors, non-governmental organizations as well as the private sector to streamline efforts to increase the impact of agroforestry on human development, national growth and ecosystem sustainability (http://wca2014.org/).

The repeated claim to move from rhetoric to action requires linking research with implementation. Significant progress has been made in the case of agroforestry (Simmons 2014). Agroforestry provides

woody biomass for multiple uses, associated with crops, livestock, and other components, and it is capable to generate products, by-products, and services that contribute to meet people's demand for food, energy, income, nutrients, etc. However, despite their scientific validation, many agroforestry practices are not yet widely adopted and/or used by, potential beneficiaries. A key issue for decision makers and development practitioners is to take strategic steps towards enabling more farmers to adopt agroforestry practices and thus increasing its beneficial effects on their livelihoods.

Research, capacity development, and policy-making are key pillars on which the practice of agroforestry at scale rests and, accordingly, three sessions were organized at the congress covering broad thematic viewpoints and geographic perspectives: (1) 'Bridging science and development', (2) 'Building development abilities through education and capacity development', and (3) 'Policy, governance and international frameworks'. The special issue "Lessons for research, capacity development and policy in agroforestry for development" compiles some of the contributions, ranging from exploring mechanisms to generate and transfer scientific knowledge to farmers and decision makers, to assessing training programs on agroforestry in the global North and South, and unveiling the impact of transnational policy regulations on farmers' dealing with agroforestry products.

Research for development

Science and research have evolved from being just instruments for the societal transition from traditional to modern (Rostow 1990). They increasingly support conceptualization and decision-making in social, economic, and environmental policies (UNESCO 2015). 'Development' for its part has evolved from pursuing a centrally determined and faster economic growth of nations towards a broader set of aspirational goals, where modernity and self-determination struggle with often non-compliant political and economic settings (Crewe and Axelby 2012). In this context, research for development, originally aiming at "(…) cultural, demographic, economic, environmental, political and technological change in the low and middle income world" (Stamm 2008), has to now expand its scope beyond finding the "right answers", to pursue adoption and implementation of research outputs, engage in policy dialogue and design and lobby for funding (Hornidge et al. 2009; Conway et al. 2010). Accordingly, on-the-ground concepts to increase the effectiveness of research for development should include: adopting participatory, inter- and transdisciplinary approaches, embracing problem-focused and problem-solving strategies, and encouraging horizontal and transparent bi- and multi-lateral cooperation (Johnston and Sasson 1986; Röling 2009, p. 15; STEPS Centre 2010).

Hence, the article by Callo-Concha et al., address the issue from the perspective of a university think-tank, which—through implementing large agroforestry-related research initiatives in the global South—has developed a set of premises and guidelines to achieve long-lasting impact. From the point of view of an extension service, Martini et al. assess in their article, how agroforestry research outputs are disseminated within a community and which are the determinant intrinsic and institutional factors that facilitate this process.

Capacity development

Many low- and middle-income countries continue to be confronted with a complex of serious economic, social and environmental challenges and generic capacity constraints. Organizational capacities remain one of the most common bottlenecks in the development process. Capacity development in agroforestry, like many other fields, may include formal (basic and higher) education and distance learning, internships, advisory and extension services, partnerships, knowledge networks and leadership development for individuals and organizations to effect change and to strengthen capabilities for innovation, discovery and delivery.

Capacity development through Official Development Assistance-financed projects has been, at best, partially successful (OECD-DAC 2000), because conceptual frameworks and indicator sets for capacity development are still largely inspired by a technocentric results-based approaches rather than on a complex adaptive system approaches. Complex adaptive system approaches put greater emphasis on changes in the behaviour of, and relationships among the participants of the process rather than pre-specified

outcomes, and also facilitate more reflection about the assumptions underpinning capacity development activities and the conditions needed for behavioural change to occur, and be sustained overtime (Vallejo and When 2016).

Capacity development enables research and development organizations, individuals, and their networks to achieve impact. While capacity itself is internal to individuals and organizations, external actors can support its further progress through appropriate interventions. However, as these interventions form only a small part of change processes, these require constant adaptation to internal and external contextual changes.

Three articles draw on examples from pedagogy and andragogy on learning, and the facilitative role of institutional networks in advancing agroforestry capacity through education and practice. The article by Khasa et al. focusses on student education and discusses the structure, content, achievements and challenges of a master program on agroforestry in Canada. Yaye et al. present a case of linking university educational programs with agribusinesses in African countries through a network of tertiary educational institutions, and the article by Reid analyses an adult learning program designed for farmer capacity development in agroforestry and its transferability from Australia to Africa.

Policy reform

The potential of agroforestry to contribute to rural development has been recognized. Multiple challenges remain such as inadequate policy incentives, legal constraints and governance in silos among the sectors to which agroforestry contributes. A key challenge facing the adoption of agroforestry practices in many countries is the continued emphasis on monocultures, industrial agricultural and tree crop plantations as well as mechanized farming that discourage the integration of trees into production systems. Accordingly, agroforestry is still not sufficiently addressed in national policy-making, land-use planning and rural development programs (FAO 2013).

National policies are commonly established and implemented on the basis of high level economic, social, environmental or security objectives often without explicit mention of agroforestry. Yet, agroforestry is highly influenced by many different policies given the wide range of practices it includes. For example, agroforestry practices to enhance soil fertility are highly affected by agricultural programs that focus on subsidies to reduce the farmer's costs of fertilizer. Likewise, agroforestry practices that generate products of commercial value to sustain local livelihoods are shaped by national and global policies and regulations (Purnomo et al. 2014; Rousseau et al. 2015). Relatedly, the article in this special issue by Erbaugh et al. describes the influence of the European Union-led Forest Law Enforcement, Governance, and Trade agreement and national Legality Verification System to smallholder timber growers in Indonesia.

Conclusion

This special issue does not aim to comprehensively deal with the thematic areas of research, capacity development and policy for scaling up agroforestry. It rather compiles diverse case studies that illuminate key challenges in each. More studies like those reported are needed to better understand how innovations in research for development, capacity development and policy can ease the adoption of agroforestry and subsequently contribute to facilitate societal transformation towards a more sustainable one.

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