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## Power relations and socio-ecological resilience in small-scale farming systems: Learnings from a long-term research program

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### Abstract

Socio-ecological resilience (SeR) is an integral aspect in enhancing farm system sustainability and this integration is being widely adopted in recent years in development projects. Multiple indicators are used to assess socio-ecological resilience of suggested solutions in farming systems or, to design projects with an aim to ultimately enhance SeR. However, the indicators or the suggested solutions remain largely technical; often overlooking the role that social solutions or power relations play in the long term in farming systems sustainability. There is growing evidence indeed that unequal power relations in agriculture are a threat to food security worldwide. Hence, there is a need to focus on equity when determining indicator or when developing solutions for sustainable food systems. We set up a long-term farming systems programme in 2007 in three tropical countries (India, Kenya and Bolivia) to compare organic and conventional management systems across multiple parameters. In all the countries we have been working with small-scale farmers on specific cropping systems (cotton, cacao and maize). The approaches of our programme have been interdisciplinary focusing on all the way from fundamental agronomic questions to participatory farmer research. Over the years multiple studies and analysis have been conducted within our programme to understand the socio-ecological dimensions of sustainable farming practices in our study areas. We will present compiled learnings of these studies with a focus on two of our study regions, India and Bolivia. We will particularly summarise the role that factors such as farmer networks, farmer cooperatives, caste and identity, motivation and extension services play (a) in understanding farming systems and, (b) in adoption of suggested solutions. Using these results, we will discuss additional parameters that need to be considered when assessing social-ecological resilience of farming systems, with a particular focus on power relations. We will take inspiration from the widely applied social-ecological system framework by Elinor Ostrom to present our approach. We suggest that considering such an approach is crucial to balance trade-offs and synergies in the process of improving sustainability of small-scale farming systems.

**Keywords:** Equity, framework, indicators, power relations, resilience, small-scale farmers, socio-ecological