

## SUSTAINABLE INTENSIFICATION STRATEGIES FOR THE RURAL POOR

### Matching innovations with human and ecological potential within and outside the agriculture sector

The rural poor differ widely with regard to their capabilities and the agro-ecological potential of the areas where they live. Thus, sustainable intensification is not just another optimization problem for ensuring higher productivity with less environmental impact. Rather it is a complex task of creating value through innovations in the institutional, organizational and technological systems of societies. Importantly, sustainable intensification is not only a challenge to be met by and within the agriculture sector alone, but by society as a whole. Relevant strategies can range from increasing crop harvest or diversity per area to increasing income opportunities outside agriculture.

#### Strategies for Sustainable Intensification

To take into account diverse social and ecological contexts, innovations need to be matched with human capabilities and agro-ecological potential. Having **capabilities** enables people to actually make choices from a set of opportunities, which requires the freedom to choose and the availability of options to choose from. **Agro-ecological potential** refers to potential provided by the land and its respective ecosystem services.

Innovations for the rural poor include institutional and technological innovations which broaden the set of opportunities for the poor to improve their wellbeing. **Technological innovations** in agriculture can improve wellbeing by increasing efficiency in the production process and reducing labor costs. **Institutional innovations** can improve the wellbeing of the poor, e.g. through improved access to land, better land use rights or better income opportunities that do not involve working on the land. The two cannot be entirely separated; however, distinguishing between them shows different opportunity sets for the rural poor to improve their wellbeing.

Strategies and associated innovations for different segments of smallholders can be

broadly grouped into four categories along a gradient of human capabilities and agro-ecological potential (Figure 1):

1. agricultural intensification,
2. agricultural diversification,
3. income diversification, and
4. coping strategies.

The dominant type of productivity to be improved in each segment varies. Innovations which lead to improved land productivity will be favored in strategies 1 and 2 where agro-ecological potentials are relatively high. Innovations which lead to improving labor productivity will be favored in strategies 1 and 3 where human capabilities are relatively high. In strategy 4, intensified efforts for improving both types of productivity need to be made. This strategy is typically the domain of development organizations and needs to be embraced by national development and social safety net programs.

**Strategy 1 is preferable for Green Revolution type of interventions.** The strategy applies to areas with relatively high human capabilities and relatively high agro-ecological potential. Here, measures to promote sustainable agricultural intensification could involve improved access to production means, such as high

Figure 1: Strategies for sustainable intensification





yielding varieties, fertilizer, pesticides and seeds to enhance productivity while minimizing environmental impact. Technological and institutional innovations need to support the aim of increasing yields per area of land.

The optimism for productivity gains under strategy 1, however, needs to be accompanied by a word of caution. Decreasing land/labor ratios alone does not automatically suggest similar opportunities for intensification, especially not in marginalized areas where infrastructure development is not a priority, alternative income opportunities are scarce, and property rights do not favor the majority of the poor. Experiences from India have shown that even when agricultural productivity increases as a result of intensification, the majority of the rural poor, who might be tenant farmers, will not necessarily benefit from that growth. Supporting measures will be needed to ensure that this segment of the poor is not left behind.

**Strategy 2 focuses on agricultural diversification as a means of ensuring food security**, possibly including non-staples and animal production. It applies to areas with low levels of capabilities and high agro-ecological potential. In this segment, innovations need to support the aim of diversifying and increasing agricultural yields per land area to reduce external inputs and risks of failure and maintain agro-biodiversity.

**In strategy 3, measures to diversify income sources and facilitate exit strategies are most promising.** Here, the rural populations are characterized by relatively high capabilities and low agro-ecological potential. Innovations should support the goal of increasing in-

come opportunities per household. Examples for measures taken in this segment include improved access to agricultural and non-agricultural markets, access to micro-credit to take advantage of private business opportunities, social protection and seeds which are stress tolerant and can cope in harsh environments.

**In Strategy 4, interventions will aim to secure livelihoods by diversifying strategies for coping** to assist stakeholders with the lowest capabilities who live in areas with low agro-ecological potential, i.e. extreme poverty in harsh environments. Innovations in this segment are also people-focused, as in strategy 3. They involve providing basic educational, food and health services for the most deprived, including them in social safety nets and connecting them to communication and transport infrastructure.

Depending on the specific context in which innovations are sought, strategies towards sustainable intensification will need to be more people and/or area-focused. Indeed, maintaining the sustainability of agricultural technologies for productivity growth requires a two-tiered dynamic approach: making technologies people-ready and making people technology-ready. Even the most promising agricultural innovations, which fit the local ecological environment and promise to close yield gaps, need to be accompanied by programs which reduce risks, enable smallholders to scale up production levels or secure them the benefits from productivity increases. Tapping agro-ecological potentials by means of agricultural innovations will therefore be more sustainable the more the human capabilities of the smallholders are realized.

## IMPRINT

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