Conclusions

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Abstract Smallholder farming is crucial for producing food and for sustaining the livelihoods of millions of people in developing countries.

Smallholder farming is crucial for producing food and for sustaining the livelihoods of millions of people in developing countries. Over 65% of rice production—one of the main staple foods worldwide—depends on smallholders with less than 2 ha in developing countries (Samberg et al. 2016), stressing the critical importance of this type of farming. Such relevance is also reflected in the production of several agricultural export commodities such as cocoa, coffee, tea, rubber and palm oil (Kuma et al 2019; Maertens et al. 2012), as well as in the critical dependence of the labour force on this type of farming (AGRA 2016). Given the centrality of smallholders, this book offers an updated perspective on their role in food and nutrition security by addressing three main policy questions. The first policy-relevant issue is whether smallholders should be treated homogeneously and therefore supported by blanket intervention. This is particularly relevant when designing policy and market interventions and, specifically, when setting up the eligibility criteria for targeting beneficiaries. The second issue is whether and to what extent the Asian Green Revolution could be replicated in Africa given the limited uptake record. After exploring these two key issues, the book engages with the main drivers policymakers should consider for promoting profitable smallholders and consequently, meet the poverty, nutritional, social and environmental Sustainable Development Goals.

As pointed by Hazell (Chap. [Importance of Smallholder Farms as a Relevant Strategy to Increase Food Security](#)), the majority of farms existing worldwide (84%) can be classified as small farms with a size of less than 2 ha (Lowder and Scoet 2016). The persistence of such land structure in the future may be even more dramatic,

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as suggested by Holden (Chap. [Policies for Improved Food Security: The Roles of Land Tenure Policies and Land Markets](#)), especially in those developing countries with large and growing rural population. Under this context **shall smallholders be treated as a homogeneous group?** Contrary to what usually happens in the design and implementation of development policies, Fan and Rue (Chap. [The Role of Smallholder Farms in a Changing World](#)), Hazell (Chap. [Importance of Smallholder Farms as a Relevant Strategy to Increase Food Security](#)) and Abraham and Pingali (Chap. [Transforming Smallholder Agriculture to Achieve the SDGs](#)) suggest considering the growing diversity of smallholders operating today. Therefore, a distinction between at least subsistence-oriented and market-oriented farms seems to be necessary, considering also the concrete conditions of development of the country or even the area (dynamic versus lagging regions). Such a distinction needs to be considered as it has policy implications in designing national food strategies (Fan and Rue, Chap. [The Role of Smallholder Farms in a Changing World](#), and Hazell, Chap. [Importance of Smallholder Farms as a Relevant Strategy to Increase Food Security](#)). As pointed out by Fan and Rue (Chap. [The Role of Smallholder Farms in a Changing World](#)), smallholders having the potential to become profitable should be supported to produce high-value products for urban areas or to increase their farm size. By contrast, smallholders without profit potential may require viable exit strategies from agriculture to engage in off-farm economic activities in the long run. The importance of non-farm activities is also stressed by Mishra et al. (Chap. [Impact of Casual and Permanent Off-Farm Activities on Food Security: The Case of India](#)) for India as a way to reduce food insecurity of rural households. These activities do not need to be permanent, since even occasional works outside the farm by both of the principal members of the household (operator and spouse) may have positive effects on the food security of the household. Frelat et al. (2016) also point the importance of improving off-farm opportunities to reduce food insecurity for sub-Saharan Africa by using data from more than 13,000 smallholder farm households in 17 countries.

Is it plausible to replicate the Asian Green Revolution in Sub-Saharan Africa?

The diversity of agro-climatic areas, broad crop portfolio and market conditions are more complex in sub-Saharan Africa than were in Asia, where a small set of technologies based on improved seeds and inorganic fertiliser fostered a great transformation on rural communities and food systems (David and Otsuka 1994; Evenson and Gollin 2003; Estudillo and Otsuka 2013). The dominance of rice and wheat in Asian farms and diets facilitated that a productivity boosting of these two crops was sufficient to promote transformational changes and reduce regional poverty rates (Otsuka and Larson 2013). In sub-Saharan Africa, the crop variety is more diverse, with regional differences. Besides rainfed rice (mainly cultivated in Western Africa) and maize (often cropped in Eastern and Southern Africa), there are other crops of importance such as roots. Due to these circumstances, Larson et al. (Chap. [Rural Development Strategies and Africa's Small Farms](#)) suggest that technology promotion based on a single technology package (i.e. seeds and fertiliser), as occurred in the Asian Green Revolution, has been proved to be of limited success transformation in Africa. While maize remains the most important food security crop in sub-Saharan Africa, chronic food insecurity persists. Showing that the development

of input subsidy programmes helped smallholders to access and use of inorganic fertiliser, Ricker-Gilbert (Chap. [Inorganic Fertiliser Use Among Smallholder Farmers in Sub-Saharan Africa: Implications for Input Subsidy Policies](#)) points that due to the low response rates of maize to fertiliser and the relatively high implementation costs of the programmes, their effectiveness and sustainability may be jeopardised. Finally, as stressed by Hanjra et al. (Chap. [Global Change and Investments in Smallholder Irrigation for Food and Nutrition Security in Sub-Saharan Africa](#)), the area under irrigation in sub-Saharan Africa is still quite limited, contrary to the expansion of irrigated areas that occurred during the Green Revolution in South Asia, hindering the adoption of improved agricultural technologies.

Given the diversity of smallholders and the difficulties to enhance agriculture productivity in sub-Saharan Africa, **what are the main drivers that the policy makers should consider for promoting profitable smallholders and consequently, meet the poverty, nutritional, social and environmental Sustainable Development Goals?** Abraham and Pingali (Chap. [Transforming Smallholder Agriculture to Achieve the SDGS](#)) focused on the transaction costs small producers need to face in order to identify the main areas of intervention. According to Holden (Chap. [Policies for Improved Food Security: The Roles of Land Tenure Policies and Land Markets](#)), one of the main pillars to intervene is related to land markets, since secure and well-defined property rights are crucial to create incentives for investments (e.g. irrigation or obtaining more optimally sized farms) and to promote new types of production (i.e. high-value products). Irrigation adoption is proved to reduce poverty, not only on rural areas but also on urban and peri-urban areas (Hanjra et al., Chap. [Global Change and Investments in Smallholder Irrigation for Food and Nutrition Security in Sub-Saharan Africa](#)). Water availability may also widen the range of crop-type opportunities for smallholders towards high-value products as a strategy to improve their income. Such reorientation towards efficient and inclusive food value chains requires also other strategies such as reducing the costs of product access to markets by, for instance, facilitating the contact between producers and retailers or end-users (Abraham and Pingali, Chap. [Transforming Smallholder Agriculture to Achieve the SDGS](#), and Langyintuo, Chap. [Smallholder Farmers' Access to Inputs and Finance in Africa](#)). The financial market is pointed out as a second pillar of intervention, by facilitating smallholders the access to credit and insurance services (Langyintuo, Chap. [Smallholder Farmers' Access to Inputs and Finance in Africa](#), and Abraham and Pingali, Chap. [Transforming Smallholder Agriculture to Achieve the SDGS](#)). A third pillar to highlight is related to improving women's access to agricultural production and markets. Fan and Rue (Chap. [The Role of Smallholder Farms in a Changing World](#)) and Abraham and Pingali (Chap. [Transforming Smallholder Agriculture to Achieve the SDGS](#)) identified this area as a priority in order to boost productivity and welfare at household level. Mishra et al. (Chap. [Impact of Casual and Permanent Off-Farm Activities on Food Security: The Case of India](#)) also found evidence that spouses' education plays a crucial role in reducing food insecurity in India. Finally, it is important to stress that improvements on these three pillars may contribute to smallholders' performance but also to agricultural growth, since the reduction of transaction costs is central to it. However, as Mary and Shaw (Chap. [The Superior](#)

Role of Agricultural Growth in Reducing Child Stunting: An Instrumental Variables Approach) point out, such growth is necessary but not enough for fighting against child stunting, and consequently, complementary and direct nutritional interventions should be considered by policymakers.

These findings provide useful guidance for identifying the different types of smallholders and the policy implications of such diversity, particularly when focusing on sub-Saharan Africa. The lessons learned in the Asian Green Revolution may not be simply extrapolated to sub-Saharan Africa given the differences between both contexts. Hence, development policies may be redefined to achieve the goals of higher agricultural productivity, poverty reduction and nutrition security. Harder question concerns on how these reforms should be implemented and how they should be tailored to the highly heterogeneous smallholder farmers of sub-Saharan Africa.

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