

# Smallholder farmers as a backbone for the implementation of the Sustainable Development Goals

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## Abstract

This paper reviews the role of smallholder farmers with respect to the Sustainable Development Goals (SDGs). Their double function in the adoption of the SDGs and their socio-economic limitations have made it difficult for them to fulfil the expectations as promoters of sustainable development. Our analysis showed that 13 SDGs and respective targets address these socio-economic limitations. We identified that the satisfaction of basic human needs is a central issue for smallholder farmers. Other essential issues are (a) innovative education and training options for producers; (b) new organisational forms such as cooperatives and start-ups along the value chain from production to logistics and marketing; (c) financial support; (d) access to farming information; (e) suitable, low-cost, and simple technological solutions and innovations; and (f) an enabling institutional environment. We grouped these issues under the categories “social,” “environment,” “economic,” and “governance.” To assess the double function of smallholder farmers, we proposed to apply the handprint approach. This approach focuses on positive sustainability performance and on the social dimension, after modification for food and agriculture. It can therefore illustrate the potential of smallholder farmers as a backbone for sustainable development.

## KEYWORDS

agriculture, change agents, food security, handprint, resilience, sustainability assessments

## 1 | INTRODUCTION

In September 2015, sustainable development gained worldwide visibility. Today as well, the issues of sustainable agriculture, food security, and an end to hunger are receiving increasing attention. The foundation was laid in 2015—an important year for the future of agriculture and development—when the Millennium Development Goals, which were in place from 2000 to 2015, were replaced by the Sustainable Development Goals (SDGs). SDGs differ from Millennium Development Goals, as they focus both on developed, developing, and emerging countries. Additionally, the philosophy of the SDGs is based on an interconnected world. The intense involvement of the private sector in developing the SDGs is also unique. The final 17 goals with 169 targets were agreed by all 193 member states of the UN and cover the 15-year time frame from 2015 to 2030. Almost each of the 169 targets listed under the SDGs is, to a greater or lesser extent, related to food and farming.

Experts, politicians, non-governmental organizations (NGOs) and companies, as well as academics set out a series of conditions for a successful and effective implementation of the SDGs. These include harmonised data definitions, methodologies, and sources, as well as published data in common, open, and electronic formats, strengthening of governance, and greater private sector involvement. But actors have also gained importance as agents of change. The UN Food and Agriculture Organization (FAO) in its publication “Coping with the food and agriculture challenge: smallholder farmers' agenda” mentions the following five agents of change: family farmers, rural women, investors in infrastructure, vulnerable people, and policymakers (Wolfenson & Rome, 2013).

Family and smallholder farms have already received special attention in 2014 due to the International Year of Family Farming declared by the UN. Their contribution to sustainable food production and food security has been gaining global importance, in Europe as well as in less developed and transformation countries.

**TABLE 1** Characterisation of smallholder farmers

Characteristics of smallholder farmers	Organisational structure	Degree of sustainability and biodiversity
Small acreage	Family-run business	Sustainable land cultivation
Independent	Low degree of technology	High degree of biodiversity

Source: Michael Blanke, own interpretation.

Family farmers or smallholder farmers were already a centrepiece of several discussions prior to the SDGs, which have led to many new activities for rural transformation. For instance, three United Nations Rome-based Agencies<sup>1</sup>—the International Fund for Agricultural Development, the FAO, and the World Food Institute—organised side events on the role of small food producers and family farmers in the post-2015 agenda. These events offered a platform for discussions on policies and action plans to strengthen the resilience and risk management of small food producers and family farmers and to better consider their needs in agricultural extension activities, while protecting the natural resource base. The NGO Fairtrade International underlined the need to focus on smallholder farmers and increase their role in planning and implementing the SDGs:

*We must listen to smallholder farmers and workers. Delivering the Sustainable Development Goals requires the voices of smallholder farmers and workers to be heard at the highest levels of government and commerce. (Lamb, 2015)*

As mentioned above, the majority of the SDGs are more or less related to agricultural producers and inclusion of the poorest among the farmers. However, their prioritisation varies from organisation to organisation. For example, Fairtrade International focuses on SDGs most closely related to export supply chains, whereas other NGOs, for example, Plan Vivo, which deals with carbon standards, focus on SDGs related to ecosystems, biodiversity, and climate change.

This paper investigates the role of smallholder farmers in the adoption of the SDGs. Our objective is to examine their double function both as beneficiaries and as agents of sustainable development. The first research question focuses on the suitability of SDGs, the respective targets, and indicators for smallholder farmers. The next research question looks at sustainability assessment tools for smallholder farmers. The social dimension requires a particular focus, because it has been underrepresented by measures such as life cycle analysis or the carbon footprint, which consider only negative and environmental effects.

In this paper, we search for tools that also measure positive and social contributions to sustainable development. In the first section, after a short typology of smallholder farmers (Box 1 and Table 1), we exchange views on how smallholder farmers can be activated as change agents. We highlight prerequisites such as access to finances, markets, and (domestic) institutional support through policies in favour of smallholder farmers as well as (domestic) certification programmes. The SDGs, their targets, and indicators are the central

part of the first section. Because the SDGs are ambitious, urgent, and interconnected, we first identified the SDGs directly related to the advancement of smallholder farmers. As Hong (2015) pointed out, the goals to “end poverty (SDG 1), and end hunger (SDG 2) will only be achieved by supporting farmers” and the resilience of their socioecological systems. Second, we illustrate which SDGs, if implemented, will empower smallholder farmers to become the backbone of sustainable development. For example, increased agricultural productivity improves nutrition for children and mothers, “particularly in the critical 1,000-day window between pregnancy and a child’s second birthday” (Hong, 2015). In the second part, we concentrate on smallholders’ crucial function as agents of change. Because they are part of the value chain, we identify innovative sustainability assessment instruments, which include positive and social performance criteria. The paper concludes with recommendations on building an enabling environment for smallholder farmers and emphasises their importance for the global food supply.

#### Box 1 Who are the smallholder farmers?

Smallholder farms are usually family-operated, own two or less hectares, and lie in suburban areas (Dixon, Taniguchi, & Wattenbach, 2003). They are low-tech farming enterprises, although due to technological innovations such as smartphones and apps, Internet sales of produce have an important business impact. Smallholder farmers benefit from their independence in cultivating and marketing crops, which may lead to high biodiversity, because they avoid monocultures. This business concept makes them more resilient to economic crisis and also makes them a potential backbone of sustainable food supply for many cities worldwide (see Table 1).

In their studies, Parker and Mwape (2004), Fréguin-Gresh, D’Haese, and Anseeuw (2013), and Barrett, Little, and Carter (2013) identified three broad types of poor rural households:

- better-off smallholder farmers;
- smallholder farmers with access to land (less poor); and
- (virtually) landless or very poor smallholder farmers (working in and living off agriculture).

Fréguin-Gresh et al. (2013), writing about contract farming, suggest a more elaborate characterisation. They distinguish between

- microfarmers cultivating plants only for self-consumption;
- subsistence small-scale farmers producing staples for their own consumption and vegetables for local markets;
- small-scale producers of staples, fruits, and vegetables for local markets;

<sup>1</sup>Rome-based Agencies dealt intensively with identifying and articulating critical issues related to food security, nutrition, and sustainable agriculture in the new post-2015 development agenda. They highlighted the importance of these issues throughout the agenda.

- medium-scale producers specialised in vegetable production for the local and domestic markets;
- emerging industrial chicken and vegetable producers;
- extensive commercial farmers;
- producers of fruits mainly for the domestic market; and
- intensive commercial producers of fruits and vegetables for the domestic and export markets.

## 2 | MAKING SDGs RELEVANT FOR SMALLHOLDER FARMERS

Food and agriculture are core issues of the 17 SDGs (Farmingfirst.org, 2013; Wolfenson & Rome, 2013). Smallholder farms (Box 1 and Table 1) are crucial to national food supplies and economies, and they will play a large role in the sustainable food systems of the future (Hong, 2015; SDSN, 2013). Social and financial investments in smallholders improve progress towards multiple SDGs at once.

Smallholder farmers are written into the SDGs and their respective targets. As mentioned above, the SDGs focus first on supporting and empowering smallholder farmers and second on how empowered smallholder farmers and family farmers can help achieve the SDGs.

Strengthening the role of smallholder farmers as agents of change will deliver many cobenefits, from biodiversity conservation and combatting climate change to ensuring economic growth and human well-being. If smallholder farmers earned more, for example, they would not have to clear additional land for agricultural use and could keep their children in school. Good organisational structures and effective governance, solid social systems with access to education and stable incomes, and access to (micro)loans enhance the capacities and resilience of smallholder farmers. In fact, empowered smallholder farmers with improved access to sustainable natural resource management contribute significantly to many SDG targets. Therefore, the mentioned cobenefits (access to education, conservation of biodiversity, and social inclusion) might drive sustainability.

The below compilation sums up some of the potential synergies from the empowerment of smallholder farmers.

### 2.1 | Governance aspects (SDGs 1, 2, 8, 9, 10, 14, 15, 16, and 17)

Despite policies worldwide designed to improve the chances of smallholder farmers, there is a gap between intentions and reality. This gap affects many areas of agricultural life. For instance, in terms of access to loans (SDG 9.3.), smallholder farmers often cannot meet the strict loan conditions (Markelova, Meinzen-Dick, Hellin, & Dohrn, 2009; Olomola, 2013). Other challenges arise from the low levels of equity in tenure governance (SDGs 1.4. and 5.a.) and access to resources such as fertilizer, machinery, and other equipment (SDGs 1.4.1.; 2.3.; 2.5.; 2.c.; 7.1.; 7.a.; 8.3.; 8.10., 9.1.; and 9.3.). In addition, access to markets, especially for female smallholder farmers (SDG 5.a.), is quite limited and needs improvement. Table 2 presents a summary of all

**TABLE 2** Governance SDGs

#### Direct governance SDGs

- 1.4. Equal rights to economic resources, as well as access to basic services
- 2.3. Access to land other productive resources and inputs
- 2.5. Access to genetic diversity of seeds
- 2.c. Access to market information
- 8.3. Access to financial services (promote policies)
- 9.3. Access to financial services (SME)
- 10.2. Empower and promote the social, economic, and political inclusion of all
- 10.4. Adopt fiscal, wage, and social policies
- 10.7. Facilitate orderly, safe, regular, and responsible migration policy
- 14.b. Access for small-scale artisanal fishers to marine resources and market
- 17.12. Duty-free and quota-free market access (World Trade Organization decisions)

Note. SDGs: Sustainable Development Goals.

Source: Authors' own interpretation.

governance SDGs. However, the implementation of these governance SDG targets is only possible if basic needs (see Table 3) are satisfied.

### 2.2 | Social aspects (SDGs 1, 2, 3, 4, 5, 14, and 15)

Smallholder farmers heavily depend on powerful actors such as landowners or traders. This affects their ability to manage their resources (SDGs 1.4., 2.3., 5.a., 14.6., and 15.7.). Besides, although smallholders

**TABLE 3** Basic needs SDGs

#### Basic needs SDGs

- 1.1. Eradicate extreme poverty (minimum and living wage)
- 1.2. Social protection coverage
- 2.1. Access to safe, nutritious, and sufficient food
- 3.7. Access to reproductive healthcare services
- 3.8. Access to quality essential health care, medicine, and vaccines
- 3.b. Vaccines Doha Declaration
- 4.2., 4.3., 4.5, 4.7., 4.a. Access to education
- 5.6. Access to sexual and reproductive health
- 6.1. Access to drinking water
- 6.2. Access to sanitation
- 7.1. Access to energy services
- 8.5. Productive employment and decent work for all women and men
- 8.10. Access to banking, insurance, and financial services (number of bank branches)
- 9.1. Access to infrastructure
- 9.c. Access to information (coverage mobile)
- 10.1. Achieve and sustain income growth
- 10.3. Insure equal opportunity
- 11.1. Access to housing
- 11.2. Access to safe, affordable transporting system (public transport)
- 11.7. Access to green and public spaces
- 15.6. Access to genetic resources (country level)
- 16.3. Access to justice

Note. SDGs: Sustainable Development Goals.

Source: Authors' own interpretation.

are resilient to shocks to their agricultural systems (SDG 15.3) because of their crop diversity and independence (see Box 1), they remain strongly vulnerable. This is due to a lack of health (SDGs 3.1. and 3.4.) and education (SDGs 4.1.–4.7., 12.8., and 13.3.) services or due to chronic food insecurity (SDGs 2.1. and 2.2.), geographic isolation, or extreme weather events (SDGs 1.5. and 2.4.), and ensuing disease outbreaks (SDG 3.3.). Table 4 presents a summary of all social SDGs.

### 2.3 | Environmental aspects (SDGs 1, 2, 4, 5, 7, 9, 12, 15, and 17)

Smallholder farmers are often less educated (SDGs 4.1.–4.7.), less organised in networks, and have limited access to information despite

the Internet (SDG 9.c.; Blanke, 2015). Hence, they often act without the knowledge (SDGs 2.3., 4.4., and 5.b.) and technologies (SDGs 7.1. and 17.7.) required to conserve resources (SDGs 2.5., 15.1., and 15.4.) such as land/soil. They may waste water or use inadequate techniques to cultivate or irrigate (new) land (land degradation) and may fail to combat soil erosion (SDG 12.2.). This is where access to training (SDGs 4.1.–4.7. and 13.3.) and information (SDG 9.c.) would be of great help. Table 5 presents a summary of all environment SDGs.

### 2.4 | Economic aspects (SDGs 1, 2, 5, 7, 14, 15, and 17)

Smallholder farmers usually lack access even to nearby markets (SDGs 2.3., 2.c., and 9.3.) due to perishable produce, lacking transportation

**TABLE 4** Social SDGs

Social SDGs
1.4. Equal rights to economic resources, as well as access to basic services
2.3. Access to land other productive resources and inputs
5.a. Equal rights to economic resources for women; access to ownership and control over land
12.8. Ensure the relevant information and awareness for sustainable development and lifestyles in harmony with nature
14.6. Subsidies for fisheries to combat illegal fishing
15.7. End poaching and trafficking of protected species of flora and fauna

Note. SDGs: Sustainable Development Goals.  
Source: Authors' own interpretation.

**TABLE 5** Environment SDGs

Environment SDGs
2.5. Maintain the genetic diversity of seeds
7.1. Access to affordable, reliable, and modern energy services
12.2. Achievement of the sustainable management and efficient use of natural resources
15.1. Ensure the conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems and their services
15.4. Ensure the conservation of mountain ecosystems, including their biodiversity
17.7. Promote the development, transfer, dissemination, and diffusion of environmentally sound technologies

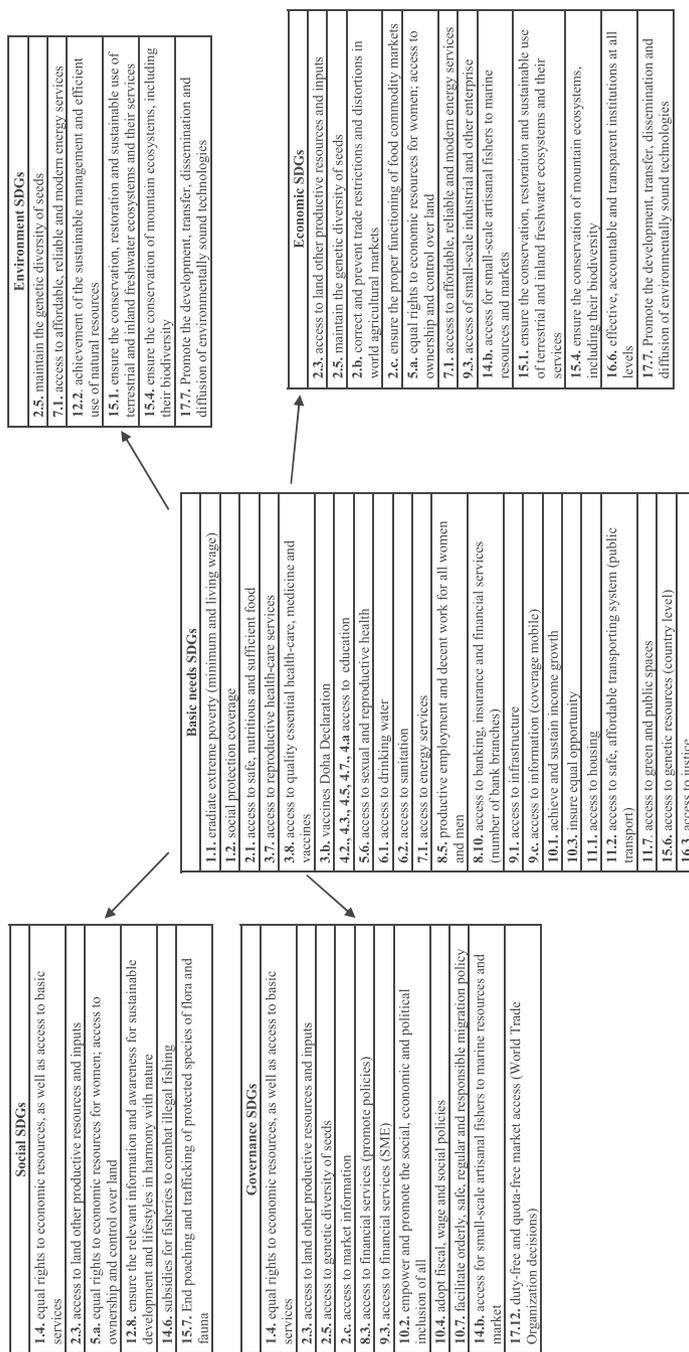
Note. SDGs: Sustainable Development Goals.  
Source: Authors' own interpretation.

**TABLE 6** Economic SDGs

Economic SDGs
2.3. Access to land other productive resources and inputs
2.5. Maintain the genetic diversity of seeds
2.b. Correct and prevent trade restrictions and distortions in world agricultural markets
2.c. Ensure the proper functioning of food commodity markets
5.a. Equal rights to economic resources for women; access to ownership and control over land
7.1. Access to affordable, reliable, and modern energy services
9.3. Access of small-scale industrial and other enterprise
14.b. Access for small-scale artisanal fishers to marine resources and markets
15.1. Ensure the conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems and their services
15.4. Ensure the conservation of mountain ecosystems, including their biodiversity
16.6. Effective, accountable, and transparent institutions at all levels
17.7. Promote the development, transfer, dissemination, and diffusion of environmentally sound technologies

Note. SDGs: Sustainable Development Goals.  
Source: Authors' own interpretation.

**TABLE 7** Adapted handprint assessment approach to smallholder farmers



Note. SDGs: Sustainable Development Goals.  
Source: Authors' own interpretation.

and information, missing economies of scale, as well as governmental inefficiency. The strongest international barriers (SDGs 2.b. and 17.10.) are agricultural policies that subsidise high-income countries, especially in the European Union and the United States. In addition, the high requirements and standards (SDG 16.6.) of these countries block exports by developing countries and small farmers. There is a strong need for farmers to work together and also to improve access to credit (SDGs 1.4. and 9.3.), education (SDG 4.7.), steady information possibilities (SDG 9.c.), and better governance on the local, regional, national, and international levels (SDGs 12.2., 12.6., 12.8., and 16.3.). Although smallholders usually vary their crops (see Box 1), they are not per se sustainable. Due to the poverty levels (SDGs 1.1. and 1.2.) among the small farmers, they often place a very low premium on the environment and therefore tend to invest less in environmental conservation (SDGs 2.5., 15.1., and 15.4.). In addition, due to the limited resources at their disposal (SDGs 1.4., 2.3., 5.a., and 14.b.), they may be unable to adopt and use new technologies (SDGs 7.1. and 17.7.), even if they are aware of them. Smallholder farmers in particular need affordable and simple technology. Table 6 presents a summary of all economic SDGs.

Targets 1.1., 1.4., 2.3., 4.2.–4.7.9.1., and 9.c. and the respective indicators such as 1.1.1., 1.4.1., 1.4.2., 2.3.1., 2.3.2., 4.3.1., 4.4.1., and 4.6.1. are especially relevant for measuring the performance of smallholder farmers in the social dimension of sustainable development, because they focus on affordable, essential basic needs. Although recent studies (Abraham & Pingali, forthcoming; FAO, 2018; Kraemer et al., 2016) identify other targets and indicators, they emphasise the importance of basic needs for empowering smallholder farmers as agents of sustainable development.

### 3 | ASSESSMENT TOOLS FOR SMALLHOLDER FARMERS AS AGENTS OF CHANGE

Satisfied basic needs guarantee that smallholder farmers become agents of sustainable development and contribute to the (global) value chain. Assessment tools are needed to identify their contribution to the value chain. Present sustainability assessment tools such as life cycle analysis (Dressler & Strimitzer, 2016; Schaubroeck & Rugani, 2017) and the carbon footprint (Blanke & Burdick, 2005) do not sufficiently consider the social dimension of sustainable development. There is also not enough research to better understand the general construct of positive sustainability performance. However, there are novel approaches such as the handprint assessment approach developed by the Collaborative Centre for Sustainable Production and Consumption in Germany (Kühnen, 2018), which yields a holistic sustainability assessment. This approach considers positive and negative effects (caused internally by [un]sustainable practices and externally by floods and droughts) and all dimensions of sustainability (economy, ecology, and social ethics). This paper was informed by the handprint assessment approach and positive sustainability performance (Kühnen & Hahn, 2018). Therefore, we focused on the social dimension.

Positive contributions and benefits to sustainable development, such as health aspects, advantages of a circular economy, education,

and fair wages, have been elaborated (e.g., George, 2001; Haupt, Vadenbo, & Hellweg, 2017; Neugebauer, Martinez-Blanco, Scheumann, & Finkbeiner, 2015; Schaubroeck & Rugani, 2017). Empirical studies tend to originate from the technical development of products (e.g., Corona, Bozhilova-Kisheva, Olsen, & San Miguel, 2017). However, the positive contribution of the primary sector (food and agriculture) to sustainable development has been neglected. We propose the handprint assessment approach as a tool to measure this contribution.

The handprint assessment has 37 indicators that address five categories of SDGs (social, health and risk prevention, environmental, economic, and governance; Kühnen, 2018). For the smallholder farmers, we reduced the handprint assessment to four categories (social, environmental, economic, and governance) and added “basic needs” as a category, which already includes “health and risk prevention” (Table 7). The basic needs category, which includes access to safe, affordable food, education, and health care, defines basic preconditions for the SDGs and the human welfare of smallholder farmers. Table 7 shows indicators for the SDGs and the handprint assessment.

## 4 | CONCLUSIONS

This analysis showed the double function of smallholder farmers for achieving the SDGs: both as beneficiaries and as agents of sustainable development. They can only fulfil this function if their basic needs are satisfied. For this, we identified 13 SDGs and their respective targets. We propose a modified version of the handprint assessment as a holistic measure for smallholder farmers' contribution to the SDGs.

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